Subject: IDL FAQ - new format 1 (ignore)
Posted by Mike Schienle on Wed, 04 Jun 1997 07:00:00 GMT
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This is a multi-part message in MIME format.

--------------2781446B794B
Content-Type: text/plain; charset=us-ascii
Content-Transfer-Encoding: 7bit

--
Mike Schienle   Hughes STX - EROS Data Center, Sioux Falls, SD
Work: schienle@edcsgw13.cr.usgs.gov   Home: mgs@sd.cybernex.net

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Content-Transfer-Encoding: 7bit
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<H2>IDL (Interactive Data Language) FAQ</H2>

<P><B>F</B>requently <B>A</B>sked <B>Q</B>uestions about the

<B>I</B>nteractive <B>D</B>ata <B>L</B>anguage (<B>IDL</B>).
<HR>
<EM>Archive-name: </EM><B><EM>idl-faq</EM></B><EM>

Last-modified: </EM><B><EM>1997 May 30</EM></B><EM>

Version: </EM><B><EM>4.0</EM></B></B></P>

<P><EM>Latest IDL FAQ: See <A HREF="#A02">Appendix A02</A>.

FAQ maintainer: </EM><B><EM>Mike Schienle</EM></B><EM>

Email:
</EM><B><EM><A

HREF="mailto:mgs@sd.cybernex.net">mgs@sd.cybernex.net</A></EM></B><EM>
</EM></P>

<PRE>Changes in version 4.00:</PRE>

<BLOCKQUOTE><PRE>New FAQ Maintainer and FAQ Location - <A HREF="#A02">A02</A>
Updates to Introduction
Change to email address for J-F Pitot de La Beaujardiere - <A HREF="#A03">A03</A>
Gary Kushner's IDL data acquisition web page location update - <A HREF="#G13">G13</A>
Change to current version of IDL - <A HREF="#G04">G04</A>
Change to next version of IDL - <A HREF="#G11">G11</A>
Added David Fanning's FTP site - <A HREF="#G07">G07</A>
Added David Fanning's training info - <A HREF="#G12">G12</A>
Clarification to "Does case matter" - <A HREF="#T13">T13</A></PRE>
</BLOCKQUOTE>

<P><A HREF="#A04">Previous changes</A> may be found in Appendix A04.
<HR>
</P>

<H2>Introduction</H2>

<P>This is a list of Frequently Asked Questions about the Interactive
Data Language or IDL. These questions pop up fairly regularly in the
newsgroup <B>comp.lang.idl-pvwave</B>. This list is an attempt to cut
down on net traffic regarding commonly asked questions. Users are
encouraged to read through this list before posting a query to the
newsgroup.</P>

<P>As of 1997 May 15 Mike Schienle has been maintaining the IDL FAQ.
Ray Sterner was handling this previously, and Mike Schienle before
him and Patrick Ryan before him; much of the material and many of the
comments here were compiled by them.</P>

<DL>
  <DT>A Note from the editor about PV~WAVE:

  <DD>I have nearly as much experience with PV~WAVE as I do with
  IDL, and was maintaing the PV-WAVE FAQ at one time. I felt
  obligated to cease maintaining the PV-WAVE FAQ when I began some
  contract work for RSI. I will try to minimize comments which
  appear to favor one package or the other. If someone is interested
  in maintaing the PV-WAVE FAQ please contact me.
</DL>

<H2>Contents</H2>

<P>This list is roughly divided into two categories: <B>general

questions</B> and <B>technical questions</B>. General question numbers are prefixed with a <B>G</B> and technical ones with a <B>T</B></P>

<H3>General questions</H3>

<UL>
  <LI><A HREF="#G01">G01.</A> What is IDL?

  <LI><A HREF="#G02">G02.</A> Where can I contact them?

  <LI><A HREF="#G03">G03.</A> How do I get IDL?

  <LI><A HREF="#G04">G04.</A> What is the current version of IDL?

  <LI><A HREF="#G05">G05.</A> On what systems does IDL run?

  <LI><A HREF="#G06">G06.</A> What is PV~WAVE and how is it related to IDL?

  <LI><A HREF="#G07">G07.</A> Are there anonymous FTP sites for IDL?

  <LI><A HREF="#G08">G08.</A> How can I get help?

  <LI><A HREF="#G09">G09.</A> Why are there two newsgroups for IDL?

  <LI><A HREF="#G10">G10.</A> Does anyone at RSI read this group? Is anyone there listening?

  <LI><A HREF="#G11">G11.</A> When is the next version of IDL due out?

  <LI><A HREF="#G12">G12.</A> Are there training courses available for IDL?

  <LI><A HREF="#G13">G13.</A> Is there a World Wide Web server for IDL or IDL based projects?

  <LI><A HREF="#G14">G14.</A> How can I find if a routine to do what I want already exists?

  <LI><A HREF="#G15">G15.</A> Where can I find online manuals and tutorials?
</UL>

<H3>Technical questions</H3>

<UL>

<LI><A HREF="#T01">T01.</A> Why doesn't polycontour fill open contours?

<LI><A HREF="#T02">T02.</A> How do I increase the number of commands stored in the history buffer?

<LI><A HREF="#T03">T03.</A> How do I get IDL to call routines in language X, running

<LI><A HREF="#T04">T04.</A> Why does XPALETTE edit my color table incorrectly?

<LI><A HREF="#T05">T05.</A> Is there on-line help for IDL?

<LI><A HREF="#T06">T06.</A> I run IDL under X in SunOS 4.x, and after I logout, the screen

<LI><A HREF="#T07">T07.</A> Sometimes my variables seem to disappear. Why is this?

<LI><A HREF="#T08">T08.</A> Are there any editors that support IDL programming?

<LI><A HREF="#T09">T09.</A> How do I get 3-D widgets under OpenLook 3.0?

<LI><A HREF="#T10">T10.</A> Why does one of the widgets appear red under OpenWindows?

<LI><A HREF="#T11">T11.</A> Where are all the IDL routines and userlib procedures?

<LI><A HREF="#T12">T12.</A> Does anybody know how to put multiple image plots on one page in PostScript?

<LI><A HREF="#T13">T13.</A> Does case matter in IDL?

<LI><A HREF="#T14">T14.</A> How do I set up IDL to get precise control over plot window and text positioning with either portrait or landscape page orientation on a PostScript or HP-GL printer?

<LI><A HREF="#T15">T15.</A> I get the error message "Code Area Full". What do I do?

<LI><A HREF="#T16">T16.</A> Sometimes I get the following error message: % Unable to allocate memory: to make array. not enough core

<UL>
  <LI><A HREF="#T17">T17.</A> How can I set the cursor to a
  crosshair on my display?

  <LI><A HREF="#T18">T18.</A> How can I vectorize an equation of two
  different arrays?

  <LI><A HREF="#T19">T19.</A> How can I get IDL to work with MacX?

  <LI><A HREF="#T20">T20.</A> How can I determine if a variable is
  defined?

  <LI><A HREF="#T21">T21.</A> Why should KEYWORD_SET not be used to
  check if a variable is defined?

  <LI><A HREF="#T22">T22.</A> What is the undocumented routine
  TVRDC?

  <LI><A HREF="#T23">T23.</A>How can IDL be used to generate dynamic
  GIFs for display on the World Wide Web?

  <LI><A HREF="#T24">T24.</A>How can IDL be used to save an IDL
  window in a specified graphics format file (GIF, TIFF, ...)?

  <LI><A HREF="#T25">T25.</A>Why don't my desktop PC applications
  recognize the preview portion of IDL EPSI files?

  <LI><A HREF="#T26">T26.</A>How can I fix widgets that broke with
  IDL version 4.x.x?

  <LI><A HREF="#T27">T27.</A>Why is memory not released back to the
  operating system after an array is deleted?

  <LI><A HREF="#T28">T28.</A>Why do color bars in PostScript not
  look as good as on the screen?

  <LI><A HREF="#T29">T29.</A>Does anyone know how to ensure
  vector-drawn fonts look good (and similar) across different X11
  servers?
</UL>

<H3>Appendix</H3>

<UL>
  <LI><A HREF="#A01">A01.</A> Disclaimer

  <LI><A HREF="#A02">A02.</A> Obtaining the latest IDL FAQ

  <LI><A HREF="#A03">A03.</A> Acknowledgements

<LI><A HREF="#A04">A04.</A> Previous version history
</UL>

<P>
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<H2>GENERAL QUESTIONS:</H2>

<P>
<HR>
<A NAME="G01"></A></P>

<H3>G01. What is IDL?</H3>

<P>IDL is the Interactive Data Language. It is a product of Research
Systems, Inc. (RSI).</P>

<P>The following is quoted from the README file at
rsinc.com:/pub/idl/README. As such, it describes IDL's capabilities
in an understandably subjective manner. ;-)</P>

<BLOCKQUOTE><P>IDL, Interactive Data analysis Language, is a complete
package for the interactive reduction, analysis, and visualization of
scientific data and images. Optimized for the workstation
environment, IDL integrates a responsive array oriented language with
numerous data analysis methods and an extensive variety of two and
three dimensional displays into a powerful tool for researchers.</P>

<P>IDL supports an extensive data import capability, publication
quality hard copy output, and user-defined Motif graphical user
interfaces.</P>

<P>Users can create complex visualizations in hours instead of weeks
with the aid of IDL's high level capabilities and interactive
environment.</P>

<P>IDL is useful in physics, astronomy, image and signal processing,
mapping, medical imaging, statistics, and other technical disciplines
requiring visualization of large amounts of data.</P></BLOCKQUOTE>

<P>Here is a short history of RSI:

[attributed to ali@rsinc.com (Ali Bahrami)]</P>

<BLOCKQUOTE><P>IDL is a product of Research Systems, Inc., founded in
1977 by David Stern. The origins of IDL were developed at the

Laboratory for Atmospheric and Space Physics (LASP) at the University of Colorado. David was one of the people involved in efforts to make computers easier to use for the physicists at the Lab. The first program in the evolutionary chain to IDL was named Rufus (named after Dave's dog). Rufus was a very simple vector oriented calculator that ran on the PDP-12. It accepted 2 letter codes that specified (1) An arithmetic operation (2) The input registers to serve as operands, and (3) the destination register. The next version was the Mars Mariner Spectrum Editor (MMED) which was a version of Rufus that ran on the PDP-8.</P>

<P>The next program in this line was named SOL, and it also ran on the PDP-8. Unlike its predecessors, SOL was a real computer language with a real syntax (no more 2 letter codes). It was an APL influenced array oriented language with some primitive graphics capabilities. The resemblance to IDL was there, but very faintly.</P>

<P>In 1977, Dave left LASP to start Research Systems Inc. (RSI) with the intention of building on the ideas contained in SOL. The initial result of this endeavor was PDP-11 IDL, which was much more capable than SOL. Graphics was usually done on Tektronix terminals and outboard raster graphics displays. I used this version at LASP in 1981 on a PDP11/34 under RSX-11M in 1981 (I worked as a student at LASP from 1981 to 1987). I didn't use it for very long though, because 1981 was the year that Dave released the VAX/VMS version of IDL. This version, which was written in VAX-11 MACRO and FORTRAN, took advantage of the VAX virtual memory and 32-bit address space, and was a huge step beyond the PDP-11 version. It used essentially the same sort of graphics hardware as the PDP-11.</P>

<P>In 1987, Dave decided that Unix workstations were the direction in which IDL should progress, but porting the current VAX IDL to Unix didn't make much sense because of its MACRO and FORTRAN implementation. I had just finished my Masters degree and was looking for work. Dave hired me and together we wrote the current version of IDL for Unix on the Sun 3 taking advantage of the re-write to extend and improve the language. Since then, we've ported it to many Unix machines and moved it back to VMS. RSI has many other employees now, but our focus is still the continued development of IDL. Recently, IDL was ported to PC class systems running Microsoft Windows.</P>
</BLOCKQUOTE>

<P>
<HR>
<A NAME="G02"></A></P>

<H3>G02. Where can I contact them?</H3>

<P>Their address is:</P>

<PRE>   Research Systems, Inc.
     2995 Wilderness Place
     Boulder, CO 80301
     (303) 786-9900   (Voice)
     (303) 786-9909   (Fax)

      Email:

       info@rsinc.com or support@rsinc.com

    World Wide Web
     http://www.rsinc.com/
 </PRE>

<H3>Research Systems' Inc., International Distributor Offices</H3>

<PRE>Austria, Germany, Lichtenstein, Luxembourg,
Switzerland, The Netherlands
  CREASO, GmbH
  Talhof Str. 30
  D82205 Gilching
  Germany
  Telephone: 49 8105 25055
  Fax: 49 8105 25623
  Contact: Bernhard Kortmann
  email: 100137.2421@compuserve.com

Brazil
  SulSoft
  Rua Dom Pedro II, 1220 cj 515
  90550-141 Porto Alegre - RS
  Brazil
  Telephone/Fax   55 51 337 38 91
  Contact: Michael Steinmayer
  email: mis@inf.ufrgs.br

China, Hong Kong
  3- Link Systems Pte Ltd.
  Room 801 Stone Plaza
  No 2 Haidian Street
  Beijing 100080 PR China
  Telephone: 8610-261-0161
  Fax: 8610-261-0163
  Contact: Qunli Ren
  email: linkbj@ox1.ios.ac.cn

Singapore
  3- Link Systems Pte Ltd.
  140 Robinson Road
  #05-03 Chow House
  Singapore 068907
  Telephone: 65 227-8671
  Fax: 65 227-8679
  Contact: Harry Lee
  email: zdlee@singnet.com.sg

France, Belgium
  Fast Parallel Solutions France
  1 Place Gustave Eiffel
  Silic 267
  94578 Rungis Cedex, France
  Telephone: 33 1 46 87 25 22
  Fax: 33 1 46 87 71 38
  Contact: Louis Tauziet
  email: 100347.1577@compuserve.com

Italy
  Alliant Computer Systems SRL
  Centro Direzionale Colleoni
  Palazzo Taurus
  Ingresso 3
  20041 Agrate Brianza MI, Italy
  Telephone: 39 39 6091766
  Fax: 39 39 6091779
  Contact: Chris Stuart & Alberto Meroni
  email: chris@specialnet.cmt.it

Japan
  Adam Net Ltd.
  Yushimadai Bldg. 2-31-27
  Yushima, Bunkyo-ku
  Tokyo, 113, Japan
  Telephone: 81 35802 2251
  Fax: 81 35802 2249
  Contact: Osamu Nakano
  email: nakano@adamnet.co.jp

Korea
  Intersys
  373-1 KuSung-Dong
  YuSung-Gu
  Tae Jun 305-701
  Korea
  Telephone: 82 42 869 4746

```
 Fax: 82 42 862 9239
 Contact:  Jong-Sik Yoon
 email: jsyoon@intersys.kaist.ac.kr
 
Spain
 Estudio Atlas
 Parque Tecnologico de Alava
 C/Tecnologico 11,40
 01510 Minano (Alava)
 Spain
 Telephone:  34 45 298 080
 Fax: 34 45 298 084
 Contact: Montserrat Bacaicoa
 email: estuds01@sarenet.es
 
Taiwan
 Concentrate Corporation
 5th Fl., No. 8, Lane 259
 Fu Kang Road
 Shihlin, Taipei
 Taiwan
 Telephone: 886 2 883 7752
 Fax: 886 2 881 7946
 Contact:  Peter Kang
 email: conce@ms2.hinet.net
 
United Kingdom
 Floating Point Systems UK Ltd.
 Ash Court
 23 Rose Street
 Wokingham
 Berks RG11 1XS
 United Kingdom
 Telephone: 44 1734 776333
 Fax: 44 1734 776433
 Contact:  Doug Wilson
 email: doug@floating.demon.co.uk
 </PRE>

<P>
<HR>
<A NAME="G03"></A></P>

<H3>G03. How do I get IDL?</H3>

<P>RSI's distribution scheme is unique in that all of the binaries
and IDL code needed are available via anonymous ftp. IDL binaries and
code are available at these sites:</P>
```

```
<PRE> gateway.rsinc.com (192.5.156.17)
    pub/idl
 boulder.colorado.edu (128.138.240.1)
    pub/idl
 ftp.Germany.EU.net (192.76.144.75)
    shop/CreaSo/IDL
 </PRE>
```

<P>The README file describes which files are needed, how to unpack them, and how to install them.</P>

<P>If you install IDL without a valid license, you will get IDL's 7 minute (10 minutes for Mac and PC) demo mode. This mode is designed for users who are considering buying the package.</P>

<P>To actually get IDL running for good, you must pay for a license from RSI and follow their instructions. You will be asked to fill out a form with information unique to your machine. RSI will create a license key which the license manager program (lmgrd) reads to validate your license.</P>

<P>As of release 3.1, upgrades to IDL are no longer free. For details about upgrades and support contracts, contact RSI.
<HR>
<A NAME="G04"></A></P>

<H3>G04. What is the current version of IDL?</H3>

<P>IDL 5.0 is the current version. It was released May 1997.
<HR>
<A NAME="G05"></A></P>

<H3>G05. On what systems does IDL run?</H3>

<P>The information below is from the IDL 5.0 Pre-Release Online Help, under the topics "What's New in IDL 5.0?", "Platforms Supported in this Release":</P>

<P>IDL supports the following Platforms and Operating System versions:</P>

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    </TD><TD>
      <P><CENTER><B>Vendor</B></CENTER>

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  <P><CENTER><B>Hardware</B></CENTER>
</TD><TD>
  <P><CENTER><B>Operating System</B></CENTER>
</TD><TD>
  <P><CENTER><B>Supported Versions</B></CENTER>
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      <P>Apple
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</TD><TD>
  <P>Motorola PowerPC
</TD><TD>
  <P>MacOS
</TD><TD>
  <P>7.1.2
</TD></TR>
```
</TABLE>In most cases, IDL will run under operating system version released later than the supported version listed above.</P>

<P>This is the final release of IDL for Macintosh on Motorola 680x0 processors.</P>

<P>
<HR>
<A NAME="G06"></A></P>

<H3>G06. What is PV~WAVE and how is it related to IDL?</H3>

<P>Around the time that the Unix version of IDL first became available (1988), Precision Visuals Inc. (PVI) entered into an agreement with RSI under which they enhanced and resold IDL under the name PV~WAVE. In September of 1990, they exercised an option in that agreement that resulted in the following:</P>

<P>- They received a copy of the IDL source code as it existed in September 1990 in return for a one-time payment to RSI.</P>

<P>- The connection between RSI and PVI was severed.</P>

<P>IDL and PV~WAVE are now on separate development tracks. Each company enhances, supports, and maintains its own product.</P>

<P>PVI has since merged with IMSL and is now Visual Numerics, Inc. (VNI).
<HR>
<A NAME="G07"></A></P>

<H3>G07. Are there anonymous FTP sites for IDL?</H3>

<P>The sites below contain public domain IDL code. See also the list of <A HREF="#G13">World Wide Web sites</A> under G13.</P>

<PRE>   <B>JHU/APL/S1R IDL library</B>
   fermi.jhuapl.edu [128.244.147.18]
      /pub/idl

   <B>Phil's IDL Library of Functions</B>

```
    irc.chmcc.org
       /pub/idl
 
   <B>David Fanning's Example IDL Programs</B>
   ftp.dfanning.com
       /pub/dfanning/outgoing/idl_examples/
 
   <B>Chris Chase's Emacs related IDL tools sites</B>
   fermi.jhuapl.edu [128.244.147.18]
       /pub/idl_emacs
   <B>Now maintained by Phil Williams at</B>
       ftp://irc.chmcc.org/pub/idl_emacs/
 
   <B>Research Systems, Inc. Emacs/Xemacs related IDL tools</B>
   rsinc.com [192.5.156.17]
       /pub/user_contrib/emacs

   <B>NASA IDL Astronomy User's Library</B>
   (VAX) uit.gsfc.nasa.gov [128.183.57.27]
   Username: idluser
   Password: (Contact landsman@stars.gsfc.nasa.gov for password)
   (Unix) idlastro.gsfc.nasa.gov [128.183.57.82]
        /

   <B>IUE RDAF library</B>
   iuesn1.gsfc.nasa.gov [128.183.57.16]
   cetus.colorado.edu [128.138.238.151]
       /pub

   <B>ICUR Spectral Analysis Software</B>
   ftp.astro.psu.edu [128.118.147.28]
       /pub/nefftp/icur

   <B>IDL ROSAT software</B>
   legacy.gsfc.nasa.gov  [128.183.8.233]
       rosat/software/idl
 
   <B>IDLmeteo library</B>
   ftp.sma.ch (141.249.3.33)
       /pub/idlmeteo
 
   <B>ESRG library</B>
   eos.crseo.ucsb.edu [128.111.228.1]
       /pub/idl
 </PRE>


<P>
<HR>
```

<A NAME="G08"></A></P>

<H3>G08. How can I get help?</H3>

<P>RSI has excellent telephone and email support. You can contact
them at:</P>

<PRE> Voice: (303) 786-9900
 Fax: (303) 786-9909

     Email:
  (Internet)
  <A HREF="mailto:info@rsinc.com">info@rsinc.com</A> # general questions
  <A HREF="mailto:support@rsinc.com">support@rsinc.com</A> # technical support

  (SPAN)
  ORION::IDL
 </PRE>

<P>Keep in mind, however, that RSI's technical support is for their
paying customers, i.e. those with current support contracts.
<HR>
<A NAME="G09"></A></P>

<H3>G09. Why are there two newsgroups for IDL?</H3>

<P>Unfortunately, there are two very different packages with the
abbreviation "IDL". The newsgroup comp.lang.idl is for the Interface
Definition Language. The newsgroup for discussing issues related to
RSI's IDL and VNI's PV~WAVE and IMSL/IDL is
<B>comp.lang.idl-pvwave</B>.
<HR>
<A NAME="G10"></A></P>

<H3>G10. Does anyone at RSI read this group? Is anyone there
listening?</H3>

<P>[This question was included at the request of RSI. The answer was
provided by Ali Bahrami. -pat]</P>

<BLOCKQUOTE><P>Yes, many of us do. We're naturally curious what
people think of our product. We make notes about what people like and
dislike and this influences our decisions.</P>

<P>However, you usually won't get a direct response from us from a
posting to this group. There are many reasons for this. Here are a
couple of the more important ones:</P>

<P>[] We believe that this group should belong solely to the user community, and should be free of vendor bias and marketing. It should be noted that both RSI and Visual Numerics (formerly PVI) have shown great restraint in this matter, and that this group is largely left to the actual users. (Long term readers will recall some notable exceptions to this, but in general it is true.)</P>

<P>It could be argued that as long as the topic stays technical, vendor postings are OK. The problem with this is that one persons technical posting is another's blatant product plug, and the line between them is not always obvious.</P>

<P>[] We provide support for our customers via the phone and email. If you would like an answer from us, you should call us directly. We have no objection to you sharing the information you get in this manner with the newsgroup as long as you quote us accurately and separate fact from conjecture.</P>

<P>In other words, you should view this newsgroup as a way to share questions and information with other users, not as a way to contact the vendor.</P></BLOCKQUOTE>

<P>
<HR>
<A NAME="G11"></A></P>

<H3>G11. When is the next version of IDL due out?</H3>

<UL>
  <LI>IDL 5.0, the current version of IDL, was released in May 1997.

  <LI>IDL 5.1 (?)
</UL>

<P>
<HR>
<A NAME="G12"></A></P>

<H3>G12. Are there training courses available for IDL?</H3>

<P>[This question included at the request of RSI.]</P>

<BLOCKQUOTE><P>RSI offers a number of IDL training courses for beginning, intermediate, and advanced IDL users. IDL courses are scheduled monthly at RSI's training facility in Boulder. On-site IDL courses are also available. Contact RSI at 303-786-9900 and ask for "training" or send e-mail to
<A HREF="mailto:training@rsinc.com">training@rsinc.com</A> for

complete scheduling and price information.</P>

<P>Fanning Software Consulting also offers completely customized
on-site IDL programming courses for beginning to advanced users. For
information, contact David Fanning at 970-221-0438 or at
<A HREF="mailto:davidf@dfanning.com">davidf@dfanning.com</A>.
Additional information about IDL training courses is available on the
Coyote's Guide to IDL Programming web page at
<A HREF="http://www.dfanning.com">http://www.dfanning.com</A>.</P>
</BLOCKQUOTE>

<P>
<HR>
<A NAME="G13"></A></P>

<H3>G13. Is there a World Wide Web server for IDL or IDL based
projects?</H3>

<P>See also the list of <A HREF="#G07">ftp sites</A> under G07.</P>

<DL>
  <DT><B>RSI has WWW pages on IDL in general:</B>

  <DD><A HREF="http://www.rsinc.com/">http://www.rsinc.com/</A>

  <P><B> </B></P>

  <DT><B>Coyote's Guide to IDL Programming:</B>

  <DD><A HREF="http://www.dfanning.com/">http://www.dfanning.com/</A>

  <P><B> </B></P>

  <DT><B>Pete Riley's IDL Home Page at the Lunar and Planetary
  Lab:</B>

  <DD><A HREF="http://xlr8.lpl.arizona.edu/idl.html">http://xlr8.lpl.arizona.edu/idl.html</A>

  <P><B> </B></P>

  <DT><B>Wayne Landsman's IDL Astronomy Library World Wide Web home
  page:</B>

  <DD><A
HREF="http://idlastro.gsfc.nasa.gov/homepage.html">http://idlastro.gsfc.nasa.gov/homepage.html
</A>

<P><B>&nbsp;</B></P>

<DT><B>The JHU/APL/S1R IDL library WWW page:</B>

<DD><A
HREF="http://fermi.jhuapl.edu/s1r/idl/idl.html">http://fermi.jhuapl.edu/s1r/idl/idl.html</A>

<P><B>&nbsp;</B></P>

<DT><B>University of Darmstadt, Germany, IDL page (in German):</B>

<DD><A
HREF="http://wwwpc.hrz.th-darmstadt.de/prog/grafik/idl-4_0.htm">http://wwwpc.hrz.th-darmstadt.
de/prog/grafik/idl-4_0.htm</A>

<P><B>&nbsp;</B></P>

<DT><B>Gary Kushner's IDL data acquisition web page:</B>

<DD><A HREF="http://casa.colorado.edu/~kushner/">http://casa.colorado.edu/~kushner/</A>

<P><B>&nbsp;</B></P>

<DT><B>R. Sterner's Color Shaded Releif Maps made by IDL:</B>

<DD><A
HREF="http://fermi.jhuapl.edu/states/states.html">http://fermi.jhuapl.edu/states/states.html</A>

<P><B>&nbsp;</B></P>

<DT><B>E. Loren Buhle, Jr. Ph.D. made a page on AVS IN MEDICAL
TREATMENT PLANNING which also discusses IDL:</B>

<DD><A HREF=" http://archive.xrt.upenn.edu/0h/buhle/manuscripts/avs94_pape r.html">
http://archive.xrt.upenn.edu/0h/buhle/manuscripts/avs94_pape r.html</A>

<P><B>&nbsp;</B></P>

<DT><B>Liam Gumley has several IDL related web pages:</B>

<DD>Frame Tools | Image Mapping Tool | HDF SDS Tool | Underground
Guide to IDL

<A
HREF="http://cimss.ssec.wisc.edu/~gumley/index.html">http://cimss.ssec.wisc.edu/~gumley/index
.html</A>

    <P><B> </B></P>

    <DT><B>Phil Williams' web page of IDL functions:</B>

    <DD><A
HREF="http://www.irc.chmcc.org/idl/philsIDL.html">http://www.irc.chmcc.org/idl/philsIDL.html</A>

</DL>

<P>
<HR>
<A NAME="G14"></A></P>

<H3>G14. How can I find if a routine to do what I want already
exists?</H3>

<P>One of the most useful tools to find an available routine is Pete
Riley's</P>

<BLOCKQUOTE><P><B><EM><A
HREF="http://www.lpl.arizona.edu/idl_sub/search_idl.cgi">Searchable
List of all IDL Routines</A></EM></B>.</P></BLOCKQUOTE>

<P>This list is available from Pete's IDL page at
<A HREF="http://xlr8.lpl.arizona.edu/idl.html">
<B>http://xlr8.lpl.arizona.edu/idl.html</A></B>.</P>

<P>If you would like to add your IDL library to Pete's list contact
him at
<B><A HREF="mailto:uk2@lpl.arizona.edu">uk2@lpl.arizona.edu</A></B>.
</P>

<P>
<HR>
<A NAME="G15"></A></P>

<H3>G15. Where can I find online manuals and tutorials?</H3>

<P><B>General</B></P>

<P><A HREF="http://www.dfanning.com/">http://www.dfanning.com/</A>

Coyote's Guide to IDL Programming. A growing list of tips and example programs.</P>

<P><A HREF="http://www.va.ucsf.edu/mrs/IDL/idl_docs.htm">http://www.va.ucsf.edu/mrs/IDL/idl_docs.htm/</A>

IDL Help for Advanced Users. A web page of helpful information by E. Scott Claflin.</P>

<P><B>Online IDL manuals in Postscript</B></P>

<P><A HREF="http://consult.ncsa.uiuc.edu/docs/viz/Idl/index.html#psdocs">http://consult.ncsa.uiuc.edu/docs/viz/Idl/index.html#psdocs</A>

National Center for Supercomputing Applications, University of Illinois.</P>

<P><A HREF="http://www.tac.dk:80/idl_manuals/">http://www.tac.dk:80/idl_manuals/</A>

The Astronomy Group, Institute of Physics and Astronomy, Aarhus University.</P>

<P><B>IDL graphics</B></P>

<P><A HREF="http://www.sljus.lu.se/stm/IDL/Surf_Tips/">http://www.sljus.lu.se/stm/IDL/Surf_Tips/</A>

Struan Gray's excellent tutorial on <EM>Extending IDL's Surface Plotting Routines</EM></P>

<P><B>Very brief IDL examples</B></P>

<P><A HREF="http://consult.ncsa.uiuc.edu/docs/viz/Idl/Training/">http://consult.ncsa.uiuc.edu/docs/viz/Idl/Training/</A>

National Center for Supercomputing Applications.</P>

<P><B>Selected topics</B></P>

<P><A HREF="ftp://gemsrws.med.ge.com//sageidl/window_resize">ftp://gemsrws.med.ge.com//sageidl/window_resize</A>

Tips on window resize by JBob Brown. Discusses how to resize widget

---

windows.</P>

<P><A
HREF="ftp://fermi.jhuapl.edu/www/s1r/idl/s1rlib/local_idl.html">ftp://fermi.jhuapl.edu/www/s1r/idl/s
1rlib/local_idl.html</A>

Tutorials on some of the JHU/APL/S1R IDL Library routines. Some of
these are pretty well up to date, some need a lot of work.</P>

<P><EM>Additions to this section are welcome</EM>

<HR>
</P>

<H2>TECHNICAL QUESTIONS:</H2>

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<HR>
</P>

<H3>Note for Sun users:</H3>

<P>There is a mini FAQ for Sun IDL in $IDL_DIR/notes, and the
following questions are answered in the file sun.doc:</P>

<OL>
  <LI>IDL complains about missing fonts when creating widgets.

  <LI>IDL complains about missing bitmap files when creating
  widgets.

  <LI>How to make IDL work with OpenWindows version 3.0.

  <LI>3-D appearance for OpenLook IDLwidgets.

  <LI>Why does one of the widgets appear red?

  <LI>Why does pressing the left button while pointing at a pulldown
  menu button cause the menu to pop up with the pushpin in? Older
  versions of IDL didn't to that.

  <LI>The font used by the list widget is much larger than it used
  to be, and I don't like the result on my program.

  <LI>Why do I get "Cannot allocate colormap entry" errors, and why
  do they kill IDL?

```
  <LI>I've changed my .Xdefaults file, but nothing different
  happened. Why?
</OL>
```

```
<P>
<HR>
<A NAME="T01"></A></P>
```

T01. Why doesn't polycontour fill open contours??

<P>This problem is described in the POLYCONTOUR manual page.</P>

```
<BLOCKQUOTE><P><B>RESTRICTIONS:</B></P>
```

<P>This routine will NOT draw open contours. To eliminate open contours in your dataset, surround the original array with a 1-element border on all sides. The border should be set to a value less than or equal to the minimum data array value.</P>

<P>For example, if A is an (N,M) array enter:</P>

```
<PRE> B = REPLICATE(MIN(A), N+2, M+2)  ;Make background
 B(1,1) = A     ;Insert original data
 CONTOUR, B, PATH=Filename ...   ;Create the contour file.
 </PRE></BLOCKQUOTE>
```

<P>[This problem was fixed in IDL 3.1.]</P>

```
<P>The following is from Ray Sterner at Johns Hopkins University:<BR>
```

Here is a very simple algorithm that might be a useful addition to the section of the FAQ on filled contours. It is for evenly spaced contours only.</P>

```
<PRE>  Z  is an array to be contoured,
  CI is the desired contour interval,
  C0 is the desired starting color index,
  D  is the desired step between colors.
 
 T = fix(Z/CI)
 M = T - smooth(T,3)
 F = (C0 + T*D)*(1-M)
   is an array with filled contours with the contours
   plotted with color 0.  For contours of a different color
   simply add M*CC where CC is the desired contour color index.
 </PRE>
```

```
<P>
```

```
<HR>
<A NAME="T02"></A></P>

<H3>T02. How do I increase the number of commands stored in the
history buffer?</H3>

<P>The system variable !EDIT_INPUT controls command recall. By
default, it is set to 1, causing the last 20 commands to be saved. If
it is 0, no commands are saved. To save more than 20 commands, just
put !EDIT_INPUT=50 (or other large number) in your startup file.</P>

<P>It is important to realize that IDL looks at the value of
!EDIT_INPUT the first time it reads anything from the keyboard, and
the size of the history buffer is fixed after that. Hence, the
command must be in a startup file because entering it at the keyboard
is too late.
<HR>
<A NAME="T03"></A></P>

<H3>T03. How do I get IDL to call routines in language X, running
under system Y?</H3>

<P>Jeff Valenti has written a sizable document about calling external
FORTRAN routines from IDL. You can find it at
<A HREF="ftp://eos.crseo.ucsb.edu:/pub/idl/">
<B>eos.crseo.ucsb.edu:/pub/idl/</A>idl-fortran.Z</B>.
<HR>
<A NAME="T04"></A></P>

<H3>T04. Why does XPALETTE edit my color table incorrectly?</H3>

<P>Here is the answer from RSI support:</P>

<BLOCKQUOTE><P>The color applications such as xpalette and xloadct
use a common block called "colors" to keep track of the color
vectors. When you call tvlct, your vectors are loaded into the
colormap, but they are not put into the colors common block.</P>

<P>When xpalette starts, it checks to see if the colors have been
defined in the common block and uses them if they have. Otherwise it
sets them to the standard black and white colormap, in which r,g,b
are each linear ramps. (The colors are as you expect because there is
only one colormap.)</P>

<P>Admittedly, this is not the most desirable situation. You would
like your colors which you loaded with TVLCT to be recognized by
xpalette. We modified xpalette (and xloadct) to use the current
colormap when they start up by getting the current vectors with
```

TVLCT.</P>

<P>Another alternative would be to use the following lines to define
the common block prior to calling your current version of xpalette.
</P>

<P>[assume here that you have a routine called "restore" which reads
colors from a file somewhere and creates vectors r, g, and b. -pat]
</P>

<PRE>
  IDL> restore, file='ryan.sav', r, g, b   ;get the vectors from somewhere
  IDL> tvlct, r, g, b
  IDL> common colors,r_orig,g_orig,b_orig,r_curr,g_curr,b_curr
  IDL> r_orig = r & r_curr = r
  IDL> g_orig = g & g_curr = g
  IDL> b_orig = b & b_curr = b
  IDL> xpalette
 </PRE></BLOCKQUOTE>

<P>
<HR>
<A NAME="T05"></A></P>

<H3>T05. Is there on-line help for IDL?</H3>

<P>Try ? at the IDL prompt.
<HR>
<A NAME="T06"></A></P>

<H3>T06. I run IDL under X in SunOS 4.x, and after I logout, the
screen becomes completely blank. Typing in login names and passwords
<EM>blindly</EM> logs you in again with the <EM>correct</EM> colors.
How to prevent this?</H3>

<P>[Note: This is only a problem under OpenWindows2. -pat]</P>

<P>Add the following to your .Xdefaults:</P>

<P>Idl*colors: -5</P>

<P>which reserves some colors for the colormap so that IDL does not
exhaust all the available colors. (For a nice summary of Sun IDL
interactions with OpenWindows, see $IDL_DIR/notes/sun.doc)</P>

<P>Another solution is to put a call to clear_colormap in your .login
file to be executed after OpenWindows start up.
<HR>

<A NAME="T07"></A></P>

T07. Sometimes my variables seem to disappear. Why is this?

<P>Quoting the IDL User's Guide, page 10-8:</P>

<BLOCKQUOTE><P>IDL users may find that all their variables have
seemingly disappeared after an error occurs inside a procedure or
function. The misunderstood subtlety is that after the error occurs,
IDL's context is inside the called procedure, not in the main level.
Typing RETALL or RETURN will make the lost variables reappear.</P>

<P>RETALL is best suited for use when an error is detected in a
procedure and it is desired to return immediately to the main program
level despite nested procedure calls. RETALL issues RETURN commands
until the main program level is reached.</P>

<P>The HELP command can be used to see the current call stack (i.e.,
which program unit IDL is in and which program unit called it).</P>
</BLOCKQUOTE>

<P>
<HR>
<A NAME="T08"></A></P>

T08. Are there any editors that support IDL programming?

<P>Yes. Emacs has a major mode for editing IDL code, idl.el, written
by Chris Chase. This is now maintained by Phil Williams
(williams@irc.chmcc.org), bug reports should be sent to him. The most
up to date version of idl.el may be obtained from Phil's ftp site at
</P>

<PRE><A
HREF="ftp://scuttle.chmcc.org/pub/idl_emacs/">ftp://irc.chmcc.org/pub/idl_emacs/</A></PRE>

<P>Other possible sources are</P>

<PRE><A HREF="ftp://eos.crseo.ucsb.edu/pub/idl/">ftp://eos.crseo.ucsb.edu/pub/idl/</A><A
HREF="ftp://fermi.jhuapl.edu/pub/idl_emacs/">
ftp://fermi.jhuapl.edu/pub/idl_emacs/</A> </PRE>

<P>Get the files: idl.el and idl-shell.el</P>

<P><CENTER>
<HR WIDTH="20%">
</CENTER></P>

<P>From John E. Davis, davis@space.mit.edu:</P>

<P>Also available is JED, an extensible programmer's editor that is
available for Unix, VMS, OS/2, MSDOS, and MS Windows. The size of the
executable is only slightly larger than vi. The extension language
resembles C. It provides emacs, EDT, wordstar, and brief editor
emulations (Many claim that JED's EDT emulation is the best around).
It is the only freely available editor that can perform color syntax
highlighting on ordinary character-cell color terminals (e.g.,
MS-Kermit, etc.) as well as under XWindows (Xjed). Currently
supported programming modes include: C, FORTRAN, (La)TeX and BiBTeX,
DCL, IDL, NROFF, SH, HTML, and SLANG. Other extensions include mail,
rmail, compile, as well as the ability to read GNU info files. It is
available from</P>

<PRE><A
HREF="ftp://space.mit.edu/pub/davis/jed/">ftp://space.mit.edu/pub/davis/jed/</A></PRE>

<P><A HREF="#A02">See Appendix A02 for details on using URLs</A>.
<HR>
<A NAME="T09"></A></P>

<H3>T09. How do I get 3-D widgets under OpenLook 3.0?</H3>

<P>This subject is discussed on page 53 of the OpenWindows Version 3
User's Guide Release Manual.</P>

<P>OpenWindows 3.0 added 3-D appearance for widgets. In order for the
3-D look to work, it must be enabled and the background color must be
a medium tone color such as "grey" or "wheat". Add the following
resources to your ~/.Xdefaults file:</P>

<PRE>   For plain IDL:

  Idl*threeD: TRUE
  Idl*background: PeachPuff2

 For IMSL/IDL:
  Imslidl*threeD: TRUE
  Imslidl*background: PeachPuff2
 </PRE>

<P>
<HR>
<A NAME="T10"></A></P>

<H3>T10. Why does one of the widgets appear red under OpenWindows?
</H3>

<P>This subject is discussed on page 53 of the OpenWindows Version 3 User's Guide Release Manual.</P>

<P>The OLIT widget toolkit, which is used by IDL, added the concept of "mouseless focus" under version 3.0. The red widget indicates where the current mouseless focus is. Use the arrow keys to traverse the widgets, and the spacebar to make a selection.
<HR>
<A NAME="T11"></A></P>

<H3>T11. Where are all the IDL routines and userlib procedures?</H3>

<P>The basic routines are not accessible, for obvious reasons. The userlib, statlib and widget procedures are in $IDL_DIR/lib/. The procedure XDL also displays the full pathname. The system variable !path also contains the directory names for all accessible IDL procedures.
<HR>
<A NAME="T12"></A></P>

<H3>T12. Does anybody know how to put multiple image plots on one page in PostScript?</H3>

<P>Because PostScript has scalable pixels, you must specify the xsize and ysize parameters, as well as the position parameter, in TV or TVSCL. I don't know about PV-Wave, but the following works in IDL:
</P>

```
<PRE>  ; Display four images in a 2x2 grid
  ; Assume data(x,y,4) = array containing the 4 images

  set_plot, 'ps'          ;request PostScript output
  device, ...             ;modify page size, orientation, etc. as desired
  ximsize = 0.5*!d.x_size  ;define output image size
  yimsize = 0.5*!d.y_size  ;note: 0.5 assumes 2x2 grid
  for i=0,3 do begin       ;display the 4 images, using i as position index
    tv, data(*,*,i), i, xsize=ximsize, ysize=yimsize
  endfor</PRE>
```

<P>
<HR>
<A NAME="T13"></A></P>

<H3>T13. Does case matter in IDL?</H3>

<P>No.</P>

<P>Compiled routines are case insensitive. The only catch is that, on
Unix systems, when executing a script via the .RUN command, the file
name argument must exactly match the file name as it appears on the
disk. Once the routines in the script are compiled, their names can
be written in any case. This is not a problem in operating systems
such as VMS that do not distinguish case for file names. This is
usually not a problem under Unix either since, by convention, most
people use lower case file names.</P>

<P>Sometimes.</P>
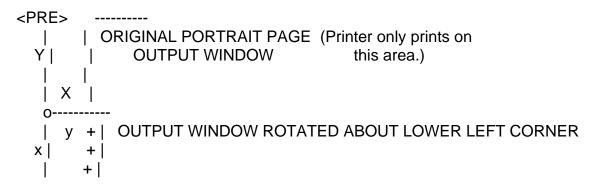
<P>Case matters when you are doing string comparisons. Comparing
"IDL" to "idl" will return a false.</P>

<P>
<HR>
<A NAME="T14"></A></P>

<H3>T14. How do I set up IDL to get precise control over plot window
and text positioning with either portrait or landscape page
orientation on a PostScript or HP-GL printer?</H3>

<P>(This answer only applies to PostScript and HP-GL printers --
other printers may differ in having the X and Y offsets measured from
the upper left corner of the portrait page instead of the lower left
corner.)</P>

<P>IDL uses portrait page orientation as a default. (The x axis is
along the shorter dimension of the paper.) In portrait orientation
the lower left corner of the page is the origin for the XOFFSET and
YOFFSET page offsetting keywords of the DEVICE command that determine
the origin (lower left corner) of the output window. (Normally one
uses XOFFSET=0 and YOFFSET=0 for portrait orientation.) Size of the
output window is determined by the XSIZE and YSIZE keywords of the
DEVICE command. The origin for graph positioning variables
!P.POSITION and !P.REGION is the output window origin. X and Y
coordinates for portrait page orientation are shown on the sketch
below as upper case X and Y.</P>

<PRE>   ----------
    | | ORIGINAL PORTRAIT PAGE (Printer only prints on
   Y | | OUTPUT WINDOW   this area.)
    | |
    | X |
    o-----------
    | y + | OUTPUT WINDOW ROTATED ABOUT LOWER LEFT CORNER
   x | + |
    | + |

```
       ------------
      ++++++++++   OUTPUT WINDOW RESIZED FOR LANDSCAPE ORIENTATION
        ^
        |   DIRECTION OF NEEDED OFFSET
 </PRE>
```

<P>If device,/landscape is specified, then the output window is
rotated 90 deg. clockwise about the lower left corner of the page. In
this condition nothing will be plotted on the page, since the
rotation has carried the output window entirely off the paper as
shown in the sketch above. To correct this mismatch, the rotated
output window must be offset. XOFFSET AND YOFFSET are still measured
in the X and Y coordinates of the portrait page, but now represent
the position of the lower left corner of the rotated (and resized)
output window (marked by an o above) with respect to the lower left
corner of the portrait (actual) page. Hence, one generally uses
XOFFSET=0 and YOFFSET=long_dimension_of_page for landscape
orientation.</P>

<P>In landscape orientation, the coordinates for graph positioning
variables !P.POSITION and !P.REGION are the lower case x and y
coordinates shown in the sketch above and having origin marked by the
letter o. Position of output window origin o on the page is, of
course, affected by the setting of XOFFSET and YOFFSET, as explained
before. The XSIZE and YSIZE (output window size) keywords of the
DEVICE command are also measured in the x and y directions when in
landscape orientation. The resizing of the landscape page generally
means interchanging the values of XSIZE and YSIZE appropriate for the
portrait page.</P>

<P>Example of settings for a portrait page:</P>

<PRE> XPAGE=8.5 & YPAGE=11. & XOFFS=0. & YOFFS=0. ;Inches
  DEVICE,/INCHES,XSIZE=XPAGE,YSIZE=YPAGE,XOFFSET=XOFFS,YOFFSET =YOFFS
 </PRE>

<P>Example of settings for a landscape page:</P>

<PRE> XPAGE=11. & YPAGE=8.5 & XOFFS=0. & YOFFS=XPAGE ;Inches
  DEVICE,/LANDSCAPE,/INCHES,XSIZE=XPAGE,YSIZE=YPAGE,XOFFSET=XO FFS, $
    YOFFSET=YOFFS
 </PRE>

<P>Example of setting position and size of a plot window:</P>

<PRE> X0=1.374 & Y0=1.283 & XLEN=3.622 & YLEN=6.157 ;Inches
  !P.POSITION=[X0/XPAGE,Y0/YPAGE,(X0+XLEN)/XPAGE,(Y0+YLEN)/YPA GE]
 </PRE>

<P>Example of setting position and orientation of a text string:</P>

<PRE> x0=.35 & y0=.37 ;Inches
  xyouts,x0/xpage,y0/ypage,!stime,orient=90,/normal   ;Date, time
 </PRE>

<P>
<HR>
<A NAME="T15"></A></P>

<H3>T15. I get the error message "Code Area Full". What do I do?
</H3>

<P>IDL sets aside a certain amount of memory area for compiling
programs. The current code and area sizes can be seen with the HELP
command, e.g.</P>

<PRE>   IDL> help
    % At $MAIN$.
    Code area used: 0% (0/16384), Symbol area used: 0% (2/4096)</PRE>

<P>These sizes can be increased with the .SIZE command. Quoting the
IDL User's Manual, page 2-11:</P>

<BLOCKQUOTE><P>These sizes represent a compromise between an
unlimited program space and conservation of memory. User procedures
and functions are compiled in this large program area. After
successful compilation, a new memory are of the required size is
allocated to contain the newly compiled program unit.</P>

<P>Resizing the code and data areas erases the currently compiled
main program and all mail program variables. For example, to extend
the code and data areas to 30000 and 5000 bytes respectively:</P>

<PRE>   .SIZE 30000 5000
 </PRE></BLOCKQUOTE>

<P>Getting "Code Area Full" is often an indication that the routine
is large, and would benefit by decomposition into
sub-procedures/functions. It's better to avoid use of .SIZE because
your code will always work on other systems where the users don't use
a large .SIZE setting.
<HR>
<A NAME="T16"></A></P>

<H3>T16. Sometimes I get the following error message:</H3>

```
<PRE>     % Unable to allocate memory: to make array.
     not enough core</PRE>
```

<P>RSI support replies:</P>

<BLOCKQUOTE><P>The circumstances described happen when memory becomes
fragmented. Unfortunately, there is nothing you can do except use
less memory in your application, or get more for the system to work
with.</P></BLOCKQUOTE>

<P>
<HR>
<A NAME="T17"></A></P>

<H3>T17. How can I set the cursor to a crosshair on my display?</H3>

<P>Ray Sterner of Johns Hopkins University has written a procedure
for managing this called <B>crossi</B>. It is in the usr.tar file of
the JHU/APL IDL library mentioned in question G07.</P>

<P>Joel Parker has written a procedure called <B>rdplot</B> which
manages this using an XOR graphics function and provides additional
functionality. It is located in the NASA IDL Astronomy User's Library
mentioned in question G07.
<HR>
<A NAME="T18"></A></P>

<H3>T18. How can I vectorize an equation of two different arrays?
</H3>

<DL>
  <DT>From the user community:

  <DD>I have two different arrays, (8) of float and (300,8) of
  float. I want to vectorize the equation and therefore I need to
  use both arrays in the same equation. For example :

  <P>newarray=cos(small_array)*sin(large_array)</P>

  <P>where I want the data in small_array to be used over and over
  300 times in this calculation.</P>

  <P> </P>

  <DT>From Dan Carr (dan@rsinc.com):

  <DD><CODE>IDL> arr1 = Findgen(8)

IDL> arr2 = Findgen(300, 8)

IDL> newarr = (Replicate(1.0, 300) # Cos(arr1)) * Sin(arr2)</CODE>

<P>&nbsp;</P>

<DT>From Dave Landers (landers@tsunami.dseg.ti.com)

<DD>to convert an array1(M) to array2(n,M) :

<CODE>array2 = array1(Lindgen(n,M) / n)</CODE>

or <CODE>array2 = replicate(1,n) # array1</CODE>

<P>to convert an array1(M) to array2(M,n) :

<CODE>array2 = array1(Lindgen(M,n) MOD M)</CODE>

or <CODE>array2 = array1 # replicate(1,n)</CODE></P>

<P>&nbsp;</P>

<DT>From Chris Chase (chase@grant.jhuapl.edu)

<DD>Instead of using matrix multiply, one can use REBIN:

<P>To make array1(M) to array2(M,n):

<CODE>array2 = rebin(array1,M,n,/samp)</CODE>

To make array1(M) to array2(n,M):

<CODE>array2 = rebin(reform(array1,1,M),M,n,/samp)</CODE>

</P>

<P>Note: use of /overwrite in REFORM avoids copying array1, but changes array1.</P>

<P>REBIN is a little faster than the matrix multiply method. The additional advantage of REBIN is that it will work with higher dimensions, e.g. to make array1(M,N) into array2(M,N,L):</P>

<P><CODE>array2 = rebin(array1,M,N,L,/samp)</CODE></P>
</DL>

<P>

```
<HR>
<A NAME="T19"></A></P>
```

```
<H3>T19. How can I get IDL and MacX to work without crashing?</H3>
```

```
<P>Using MacX v1.2 and IDL cause the Mac to crash quite often. This
happens especially during allocation of color resources or display
windows. You can get around the problem by downgrading to MacX v1.1.7
(apparently Apple will supply this if you can prove to them that you
rightfully own v1.2). Another solution is to purchase White Pine's
eXodus software. Rumors are that eXodus is an overall better product
than MacX. White Pine can be contacted at:</P>
```

```
<PRE>  White Pine Software
  40 Simon St. Suite 201 Nashua, NH 03060-3043
  phone: 603-886-9050 Fax: 603-886-9051</PRE>
```

```
<P>Note: MacX 1.5 works correctly with IDL. Also, Tenon Intersystems
&lt;<A HREF="http://www.tenon.com">http://www.tenon.com</A>&gt; makes
a very fast X Server called XTen, and a full UNIX implementation
which runs alongside MacOS called MachTen. MachTen includes the
functionality and speed of XTen.</P>
```

```
<P>
<HR>
<A NAME="T20"></A></P>
```

```
<H3>T20. How can I determine if a variable is defined?</H3>
```

```
<P>It is often useful to determine if an IDL variable is defined.
This is easily done using the <B><TT>n_elements</TT></B> function
which returns 0 if the given variable is undefined. This is
especially useful for setting defaults for keyword parameters. Here
are several examples:</P>
```

```
<P><TT>if n_elements(start) eq 0 then start=0</TT></P>
```

```
<P><TT>if n_elements(dir) eq 0 then cd, current=dir</TT>
<HR>
<A NAME="T21"></A></P>
```

```
<H3>T21. Why should KEYWORD_SET not be used to check if a variable is
defined?</H3>
```

```
<P>From Bill Thompson:</P>
```

```
<P>The IDL function KEYWORD_SET() is only designed to be used with
logical variables, i.e. those which can be either True (usually
```

signalled with the value 1) or False (0). It has the property that if
a variable is undefined, then it returns False, so people often make
the mistake of using it to test whether a variable is defined or not.
</P>

<P>To test whether a variable is defined or not, use N_ELEMENTS()
instead. This will return 0 if a variable is undefined, or some
positive number otherwise. Only use KEYWORD_SET for truly Boolean
(True/False) variables.
<HR>
<A NAME="T22"></A></P>

<H3>T22. What is the undocumented routine TVRDC?</H3>

<P>From a <TT>comp.lang.idl-pvwave</TT> post by William Thompson:
</P>

<P>The reason that TVRDC is undocumented is because it's not needed
any more. It doesn't do anything that CURSOR doesn't do. TVRDC is
only retained for compatibility with older programs.</P>

<P>In the old days, before X-windows, CURSOR was used to read
coordinates off of line graphics terminals, and TVRDC was used to
read coordinates off of image display devices. With the advent of IDL
2.0, the distinctions between different kinds of graphics devices
were mostly removed, and both of these functions were merged into
CURSOR.
<HR>
<A NAME="T23"></A></P>

<H3>T23. How can IDL be used to generate dynamic GIFs for display on
the World Wide Web?</H3>

<P>By <A HREF="http://coney.gsfc.nasa.gov/Mathews/jason.html">Jason
Mathews</A>,
<A HREF="http://www.gsfc.nasa.gov/NASA_homepage.html">NASA</A>/
<A HREF="http://www.gsfc.nasa.gov/GSFC_homepage.html"> Goddard Space
Flight Center</A>:</P>

<P><A HREF="http://www.best.com/~hedlund/cgi-faq/">Common Gateway
Interface (CGI)</A>
<A HREF="http://coney.gsfc.nasa.gov/Mathews/perl.html">Perl</A>
scripts are invoked via submiting a
<A HREF="http://sunsite.unc.edu/boutell/faq/forms.html">HTML form</A>
, which execute IDL in batch mode, runs a IDL routine to make a plot
of the selected parameters, and writes the results to a GIF. The perl
program output is displayed on the
<A HREF="http://sunsite.unc.edu/boutell/faq/www_faq.html"> WWW</A>

browser as a HTML document with an inline GIF image.</P>

<P>The IDL program must use the 'Z' device and write the output
results to a GIF file as in the example below:</P>

<PRE>SET_PLOT, 'Z'   ; Select the Z buffer output device
PLOT, x, y, ...   ; Draw the plot
image = TVRD()   ; Copy the device contents into an image
WRITE_GIF, 'filename.gif', image ; Write image to a GIF file
EXIT   ; Exit IDL routine
 </PRE>

<P>Examples of various perl programs that use IDL on the web and the
corresponding HTML forms are available via the following URL:
<A HREF="http://coney.gsfc.nasa.gov/Mathews/misc/idl-www.html">
http://coney.gsfc.nasa.gov/Mathews/misc/idl-www.html</A></P>

<P>Some example WWW-based Data Browsing and Retrieval Systems using
IDL:</P>

<UL>
  <LI><EM>NSSDC OMNIWeb</EM>:
  <A HREF="http://nssdc.gsfc.nasa.gov/omniweb/ow.html">
  http://nssdc.gsfc.nasa.gov/omniweb/ow.html</A>

  <LI><EM>NSSDC COHOWeb</EM>:
  <A HREF="http://nssdc.gsfc.nasa.gov/cohoweb/cw.html">
  http://nssdc.gsfc.nasa.gov/cohoweb/cw.html</A>

  <LI><EM>WWW/IDL Interface Demo</EM>:
  <A HREF="http://www.gsfc.nasa.gov/idl/idl_web.html">
  http://www.gsfc.nasa.gov/idl/idl_web.html</A>
</UL>

<P>
<HR>
<A NAME="T24"></A></P>

<H3>T24. How can IDL be used to save an IDL window in a specified
graphics format file (GIF, TIFF, ...)?</H3>

<P>By Mark Rivers, CARS, Univ. of Chicago (slightly edited)</P>

<PRE>IDL> plot,x,y,title='This is my plot' ; Make a plot (or display an image).
IDL> image = tvrd()   ; Read image into an array.
IDL> tvlct, r, g, b, /get   ; Read color table.
IDL> write_gif, file, image, r, g, b   ; Save in a GIF image file.
 </PRE>

<P>This sequence should work on any windowing display (X, Windows, Mac). For better speed and more flexibility, first issue the command

<TT>SET_PLOT, 'Z'</TT>

to write to the Z-buffer pseudo-device. You can set its resolution, and its write and readback performance is very fast.</P>

<P>[Additional notes by editor] The screen image may be saved in other graphics formats by using the correct write routine. Some of the routines of interest are:

<TT>write_gif, tiff_write, write_jpeg, write_bmp, ...</TT>

Note the different name pattern for <TT>tiff_write</TT>, check the manuals for the calling syntax for each routine.</P>

<P>There are also corresponding routines to read the images back into IDL.</P>

<P>Which format is best? GIF images are compressed so take less space than uncompressed images. JPEG images are also compressed but with a lossy compression, that is, the image when read back into IDL is not identical to the image written. However JPEG images can look very good and also often can be more highly compressed than GIF. Some images may be larger (much larger) using JPEG as compared to GIF, try both and compare. GIF images are widely used on the World Wide Web, JPEG is also supported by some web browsers. TIFF may be needed for publishing purposes.
<HR>
<A NAME="T25"></A></P>

<H3>T25. Why don't my desktop PC applications recognize the preview portion of IDL EPSI files?</H3>

<P>By Troy Klein, Johns Hopkins Applied Physics Lab</P>

<P>Quoting the IDL version 4.0 online help for the PREVIEW keyword, "Set this keyword to add a 'device independent screen preview' to the PostScript output file, in encapsulated PostScript interchange format (<B>EPSI</B>). Use this keyword only with encapsulated output. Many, but certainly not all, desktop publishing and word processing programs will display this screen preview when the file is imported into a document."</P>

<P>The EPSI format is not compatible with some of the more popular

Windows and Macintosh applications. Windows applications expect the preview image to be in TIFF format and Macintosh applications expect the preview image to be in PICT format and in the resource fork of the EPS file. I have found the EPSI file to be compatable with Framemaker for UNIX/X windows.</P>

<P>There are two workarounds available for Mac users and two for Windows users, all are similar. If you are using IDL on a UNIX machine, there is a package available (as of 8/2/95) on the popular University of Michigan Mac shareware/freeware archive (use the mirror site at <B>ftp://mirrors.aol.com</B>) titled "<B>ps2epsmac</B>", which uses <B>Ghostscript</B> and <B>NetPBM</B> on a UNIX machine to interpret the postscript and create a new EPS file in Macbinary format with the PICT preview. There are several Mac programs available (<B>StuffitExpander</B>, <B>Fetch</B>, etc.) to interpret the Macbinary file. I have had great success in using this method to import IDL EPS files into Word, Powerpoint, and MacDraw Pro. There is a similar package at the archive titled "<B>ps2epsplus</B>" which does the same thing, but all on a Mac.</P>

<P>For UNIX IDL users trying to import IDL EPS files into Windows applications, there is a package called "<B>ps2epsf</B>" which can be located using an Archie search. This package essentially does the same thing as the UNIX/Mac package but produces an EPS file with a TIFF preview. The second solution for Windows users is the Windows applicationi <B>GSview</B> (which can also be found with archie). Version 1.2 claims to be capable of adding preview images to EPS files.
<HR>
<A NAME="T26"></A></P>

<H3>T26. How can I fix widgets that broke with IDL version 4.x.x?
</H3>

<P>In IDL version 4, the sizing and layout of IDL's Motif widgets changed in several ways. This can cause problems. Widget changes are discussed in a file available from RSI at</P>

<BLOCKQUOTE><P><B><EM><A
HREF="ftp://boulder.colorado.edu/pub/rsi/idl/notes/widgets.txt">ftp://boulder.colorado.edu/pub/rsi/idl/notes/widgets.txt</A></EM></B>.
</P></BLOCKQUOTE>

<P>
<HR>
<A NAME="T27"></A></P>

<H3>T27. Why is memory not released back to the operating system

after an array is deleted?</H3>

<P>By
<A HREF=" http://www.cs.indiana.edu/finger/mofo.ssl.berkeley.edu/korpe la/w">
Eric Korpela</A> of Berkeley</P>

<P>This is a result of IDL being written in C and using the C library
functions (malloc and free) for memory allocation. In most C
libraries, memory that is freed is NOT returned to the operating
system. The C program retains this memory and will reuse it for
future calls to malloc (assuming that the new allocation will fit in
the freed block).</P>

<P>Another way of considering it is in terms of how memory allocation
is done under UNIX. New memory is allocated using brk() or sbrk()
which control the size of the data segment. These routines are called
by malloc().</P>

<PRE>Suppose you allocate 3 1 MB regions of memory under C.

char *p1=(char *)malloc(3*1024*1024);
char *p2=(char *)malloc(3*1024*1024);
char *p3=(char *)malloc(3*1024*1024);

Here's what your data segment would look like assuming malloc had to call
sbrk().

 --- ---
prev stuff | overhead | 3MB | overhead | 3MB | overhead | 3MB |
 --- ---
               ^   ^   ^   ^
              p1   p2   p3   end of segment.

Now we free(p1).

 --- ----
prev stuff | overhead | free | overhead | 3MB | overhead | 3MB |
 --- ----
                          ^   ^   ^
                         p2   p3   end of segment
 </PRE>

<P>Notice that the free memory is still in the data segment. If free
had called brk to reduce the size of the segment, the 3MB pointed to
my p3 would be outside the data segment! SIGSEGV city! If free had
moved the allocated memory to lower addresses so the segment size
could be reduced without losing data, then p2 and p3 would point to
invalid addresses, and we'd be forced to use handles rather than

pointers and call GetPointerFromHandle() every time we wanted to access the memory. Ick! Just like Windows!</P>

<P>
<HR>
<A NAME="T28"></A></P>

<H3>T28. Why do color bars in PostScript not look as good as on the screen?</H3>

<P>By default IDL uses 4 bits per pixel when displaying images in PostScript. This gives only 16 possible gray shades or colors as may be seen by the following example commands:</P>

<PRE>a = rebin(bindgen(256),256,50)   ; Create a color bar.
set_plot,'ps'   ; Set PostScript mode.
device,/color   ; Specify color PostScript.
loadct,4   ; Load a color table.
tv,a,0,0,xs=12.8,ys=2.5,/centimeters ; Display bar.
device,/close   ; Close PostScript file (idl.ps).
$gs idl.ps   ; Send to a color PS printer or use
                        ; a PostScript viewer to see results.
 </PRE>

<P>Replace first call to device above by:</P>

<PRE>device,/color,bits_per_pixel=8
 </PRE>

<P>This simple change may fix a number of problems with color PostScript. By the way, you will need to use <B>/inches</B> or <B>/centimeters</B> on a <B>tv</B> or <B>tvscl</B> command to get the desired results. This applies to both the position and sizes of the image. By default these are in pixels and PostScript has a lot of pixels as may be seen by doing <B>help,/structure,!d</B> after <B>set_plot,'ps'</B>. Also try <B>help,/device</B> for other useful info when in PS mode.</P>

<P>
<HR>
<A NAME="T29"></A></P>

<H3>T29. Does anyone know how to ensure vector-drawn fonts look good (and similar) across different X11 servers?</H3>

<P>By Liam Gumley, Space Science and Engineering Center, University of Wisconsin-Madison</P>

<P>The fix I came up with goes as follows. Put the following commands in an IDL startup file (they must be executed immediately after IDL startup):</P>

<PRE>device,retain=2,pseudo=8   ; 8 bit display with backing store
window,/free,/pixmap,colors=-5   ; Create window to allocate colors
plot,[0]   ; Might not be needed, but won't hurt
wdelete,!d.window   ; Delete the window
device,set_character_size=[6,9] ; Set the vector font size
print, 'Number of colors allocated is ', !d.n_colors
 </PRE>

<P>If you use this in your startup file, then you should not need any entries in your $HOME/.Xdefaults file. The only command I have in $HOME/.Xdefaults is</P>

<PRE>Idl*fontlist: screen16
 </PRE>

<P>which sets the font used for widgets (unrelated to the graphics vector font).</P>

<P>As RSI technical support explained it to me, the default graphics vector font size is 6x9 at startup. However as soon as you open a graphics window, that font size may be changed (why, I don't know). So the only way to guarantee that you get 6x9 vector fonts is to use the commands above immediately after startup. Please note that you are not guaranteed to get 256 colors allocated to IDL 4.01 if you use the colors=-5 keyword (I usually get about 170 colors on my SGI). On SGI boxes with 24 bit graphics, setting colors=256 usually gets you 256 colors, but this won't work on all Unix boxes. The IDL 5.0 pre-release seems to be a bit smarter (at least on an SGI), and even if you set colors=-5, it allocates 256 colors.</P>

<P>
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</P>

<H2>APPENDIX</H2>

<P>
<HR>
<A NAME="A01"></A></P>

<H3>A01. Disclaimer:</H3>

<P>Questions and answers in this document are culled from the user community, except where noted otherwise. No warranty, express or

implied exists regarding this document. Permission to copy all or
part of this work is granted, provided that the copies are not made
or distributed for resale.
<HR>
<A NAME="A02"></A></P>

<H3>A02. Obtaining the latest IDL FAQ</H3>

<P>The current IDL FAQ may be accessed at
<B>http://ww2.sd.cybernex.net/</B> in directory <B>~mgs/</B></P>

<BLOCKQUOTE><P><B>HTML version</B>: idl_faq.html

The plain text version will be provided at a later time, or use your
browser to convert HTML to text.</P></BLOCKQUOTE>

<DL>
  <DT>The URL (Uniform Resource Locator) for this file is:

  <DD><A
HREF="http://ww2.sd.cybernex.net/~mgs/idl_faq.html">http://ww2.sd.cybernex.net/~mgs/idl_faq.h
tml</A>

</DL>

<P><B>How to interpret the URL</B></P>

<DL>
  <DT>Using a WWW (World Wide Web) Browser, for example netscape:

  <DD>netscape
  <A
HREF="http://ww2.sd.cybernex.net/~mgs/idl_faq.html">http://ww2.sd.cybernex.net/~mgs/idl_faq.h
tml</A>

  Save the file using the Save as ... option.

  <P> </P>

  <DT>Using anonymous ftp:

  <DD>Anonymous FTP is not currently available, but should be soon.
  Please <A HREF="mailto:mgs@sd.cybernex.net">email me</A> if you
  need other access.
</DL>

<P><B>Additions and Corrections</B></P>

<P>Send additions and corrections to:</P>

<BLOCKQUOTE><P><A HREF="http://ww2.sd.cybernex.net/~mgs/">Mike
Schienle</A></P>

<ADDRESS><A HREF="mailto:mgs@sd.cybernex.net">mgs@sd.cybernex.net</A>
</ADDRESS></BLOCKQUOTE>

<P>
<HR>
<A HREF="#A03"><A NAME="A03"></A></A></P>

<H3>A03. Many thanks to the following for their contributions</H3>

<PRE><EM>   black@breeze.rsre.mod.uk (John Black)
    claflin@claes.space.lockheed.com (Scott Claflin)
    edelsohn@npac.syr.edu (David Edelsohn)
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    kivory2@gwdg.de (Kevin Ivory)
    struan.gray@sljus.lu.se (Struan Gray)</EM>

 </PRE>

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</P>
```

Previous IDL FAQ maintainers:

```
<PRE><EM>     Patrick Ryan:  founded the IDL FAQ
    Mike Schienle: from 12/01/93 to 10/27/94
    Ray Sterner:   from 10/28/94 to 5/15/97</EM>
 
 </PRE>
```

```
<P>
<HR>
<A NAME="A04"></A></P>
```

A04. IDL FAQ Versions History

```
<PRE>Changes in version 3.21:
. Added Struan Gray's surface plotting tutorial to G15.
. Added a new question on vector-drawn fonts (T29).

Changes in version 3.20:
. Cleaned up T08 at Kevin Ivory's suggestion.
. Added Phil William's Emacs site to G07.
 
Changes in version 3.19:
. Corrected IDL 5 release date in G11.
. Updated the source site of the emacs major mode for editing IDL code
  in T08.
 
Changes in version 3.18:
. Added Phil's IDL Library of Functions to G13 and G07.
 
Changes in version 3.17:
. Added new question: Where can I find online manuals and tutorials?
  as G15
. Added Coyote's Guide to IDL Programming to questions G13 and G15.
. Added E. Scott Claflin's IDL Help for Advanced Users to G15
 
Changes in version 3.16:
. Added an explicit reference to Chris Chase's ftp directory on fermi
  in G07
. Added Research Systems ftp site in G07
. Added a pointer to the WWW site list under the ftp site question (G07)
. Added a pointer to the ftp site list under the WWW site question (G13)
 
Changes in version 3.15:
. Slightly modified Liam Gumley's web site address
```

and the description in G13
. Minor rewording for the VNI section of T08

Changes in version 3.14:
. Added a new web site in G13

Changes in version 3.13:
. Added a note to a non-working link in G13
. Added additional info from Chris Chase in T18.

Changes in version 3.12:
. Updated answers to G0, G05, and G11 with information from RSI.
. Added a new IDL web page to G13,submitted by Norbert Hahn.
  It is located at the University of Darmstadt, Germany, and is in German.
. Added a new question on color PostScript (T28).

Changes in version 3.11:
. Fixed the missing end of question T02.
. Added a new question on why memory is not released when an array is
  deleted (T27).

Changes in version 3.10:
. Updated RSI's home page in G13.
. Made a few minor changes in the URLs that point to fermi (the home site
  of the IDL FAQ).
. Fixed the broken link to Gary Kushner's IDL data acquisition web page in G13.

Changes in version 3.9:
. New question on how to find IDL routines (G14).
. New question on widgets breaking with IDL version 4 (T26).
. Minor change to G04.

Changes in version 3.8:
. New question on Encapsulated Postscript Previews (T25).
. Generalized question T08 to non-emacs editors
  that support IDL programming (first is JED from MIT).
. Minor addition to G11 When is the next
  version of IDL due out?

Changes since version 3.7:
. New question on screen save to a graphics format image (T24).

Changes since version 3.6:
. New question on using IDL to make WWW images (T23).
. IDL 4.0 release dates added (G04, G11).

Changes since version 3.5:
. Added question T22: What is the undocumented routine TVRDC?

. Added question T21: Why should KEYWORD_SET not be used to check if
  a variable is defined?

Changes since version 3.4:
. Added Pete Riley's IDL Home Page at LPL (G13).
. Added RSI's International Distributor Offices (G02).

Changes since version 3.3:
. Added Gary Kushner's IDL data acquisition WWW page (G13).
. Dropped Hal Mueller's U.S. map page (was out of service) (G13).
. Added R. Sterner's Color Shaded Relief Maps WWW page (G13).
. Added a new question on detecting undefined variables (T20).
. Added a hyperlink to the directory in question T03.

Changes since version 3.2:
. Updated IDL release dates.
. Added Wayne Landsman's IDL Astronomy Library WWW page.
. Added JHU/APL/S1R IDL Library WWW page.

Changes since version 3.1:
. Made it easier to find where to get the latest FAQ.
. Retroactively changed last version to 3.0, the first HTML version.

Changes since version 3.0:
. New FAQ maintainer.
. First HTML version.
. Added an Appendix for some previous material.

Changes since version 2.8:
. Added Power Macintosh to systems which IDL runs on.
. Updated "Training" contact information.

Changes since version 2.7:
. Updated information regarding next release dates.
. Changed reference to openwin3.doc to sun.doc.

Changes since version 2.6:
. New question T19 added regarding MacX and IDL.
. Updated information regarding current IDL versions.
. Reference to current IDL version changed from 3.5.1 to 3.6.1.

Changes since version 2.5:
. T18 responses corrected.

Changes since version 2.4:
. New question T18 added regarding vectorizing an equation.
. Address change for FAQ maintainer.
. Address change for FAQ location.

Changes since version 2.3:
. New question T17 added regarding cross-hair cursor.
. Additional info for NASA ftp site.
. Additional information provided for question T01 regarding contours.
. Question G09 referred to the "other" IDL as Interface Description
  Language, rather than the correct Interface Definition Language.

Changes since version 2.2:
. Question G13 regarding IDL World Wide Web info added.
. JHU/APL IDL library name changed from nansen to fermi. Nansen will
  still work for some time.
. Release dates for upcoming versions of IDL revised.

Changes since version 2.1:
. Due to resource problems, the lumpi.informatik.uni-dortmund.de site
  is no longer carrying IDL binaries. However, the distribution is now
  available from ftp.Germany.EU.net (192.76.144.75).
. Reference to current IDL version changed from 3.5 to 3.5.1.
. Mention of compressed version of FAQ included.
. Added ESRG to list of FTP sites.
 </PRE>

<P>
<HR>
</P>

<H6>The End</H6>

<P>
<HR>
</P>
</BODY>
</HTML>

--------------2781446B794B
Content-Type: text/plain; charset=us-ascii; name="idl_faq.html"
Content-Transfer-Encoding: 7bit
Content-Disposition: inline; filename="idl_faq.html"

IDL (Interactive Data Language) FAQ

Frequently Asked Questions about the
Interactive Data Language (IDL).
 -- ---------------
Archive-name: idl-faq
Last-modified: 1997 May 30
Version: 4.0

Latest IDL FAQ: See Appendix A02.
FAQ maintainer: Mike Schienle
Email: mgs@sd.cybernex.net

Changes in version 4.00:

    New FAQ Maintainer and FAQ Location - A02
    Updates to Introduction
    Change to email address for J-F Pitot de La Beaujardiere - A03
    Gary Kushner's IDL data acquisition web page location update - G13
    Change to current version of IDL - G04
    Change to next version of IDL - G11
    Added David Fanning's FTP site - G07
    Added David Fanning's training info - G12
    Clarification to "Does case matter" - T13

Previous changes may be found in Appendix A04.
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Introduction

This is a list of Frequently Asked Questions about the Interactive Data
Language or IDL. These questions pop up fairly regularly in the newsgroup
comp.lang.idl-pvwave. This list is an attempt to cut down on net traffic
regarding commonly asked questions. Users are encouraged to read through
this list before posting a query to the newsgroup.

As of 1997 May 15 Mike Schienle has been maintaining the IDL FAQ. Ray
Sterner was handling this previously, and Mike Schienle before him and
Patrick Ryan before him; much of the material and many of the comments here
were compiled by them.

A Note from the editor about PV~WAVE:
    I have nearly as much experience with PV~WAVE as I do with IDL, and was
    maintaing the PV-WAVE FAQ at one time. I felt obligated to cease
    maintaining the PV-WAVE FAQ when I began some contract work for RSI. I
    will try to minimize comments which appear to favor one package or the
    other. If someone is interested in maintaing the PV-WAVE FAQ please
    contact me.

Contents

This list is roughly divided into two categories: general questions and
technical questions. General question numbers are prefixed with a G and
technical ones with a T

General questions

* G01. What is IDL?
* G02. Where can I contact them?
* G03. How do I get IDL?
* G04. What is the current version of IDL?
* G05. On what systems does IDL run?
* G06. What is PV~WAVE and how is it related to IDL?
* G07. Are there anonymous FTP sites for IDL?
* G08. How can I get help?
* G09. Why are there two newsgroups for IDL?
* G10. Does anyone at RSI read this group? Is anyone there listening?
* G11. When is the next version of IDL due out?
* G12. Are there training courses available for IDL?
* G13. Is there a World Wide Web server for IDL or IDL based projects?
* G14. How can I find if a routine to do what I want already exists?
* G15. Where can I find online manuals and tutorials?

Technical questions

* T01. Why doesn't polycontour fill open contours?
* T02. How do I increase the number of commands stored in the history
  buffer?
* T03. How do I get IDL to call routines in language X, running
* T04. Why does XPALETTE edit my color table incorrectly?
* T05. Is there on-line help for IDL?
* T06. I run IDL under X in SunOS 4.x, and after I logout, the screen
* T07. Sometimes my variables seem to disappear. Why is this?
* T08. Are there any editors that support IDL programming?
* T09. How do I get 3-D widgets under OpenLook 3.0?
* T10. Why does one of the widgets appear red under OpenWindows?
* T11. Where are all the IDL routines and userlib procedures?
* T12. Does anybody know how to put multiple image plots on one page in
  PostScript?
* T13. Does case matter in IDL?
* T14. How do I set up IDL to get precise control over plot window and
  text positioning with either portrait or landscape page orientation on
  a PostScript or HP-GL printer?
* T15. I get the error message "Code Area Full". What do I do?
* T16. Sometimes I get the following error message: % Unable to allocate
  memory: to make array. not enough core
* T17. How can I set the cursor to a crosshair on my display?
* T18. How can I vectorize an equation of two different arrays?
* T19. How can I get IDL to work with MacX?
* T20. How can I determine if a variable is defined?
* T21. Why should KEYWORD_SET not be used to check if a variable is
  defined?
* T22. What is the undocumented routine TVRDC?
* T23.How can IDL be used to generate dynamic GIFs for display on the

World Wide Web?
* T24.How can IDL be used to save an IDL window in a specified graphics format file (GIF, TIFF, ...)?
* T25.Why don't my desktop PC applications recognize the preview portion of IDL EPSI files?
* T26.How can I fix widgets that broke with IDL version 4.x.x?
* T27.Why is memory not released back to the operating system after an array is deleted?
* T28.Why do color bars in PostScript not look as good as on the screen?
* T29.Does anyone know how to ensure vector-drawn fonts look good (and similar) across different X11 servers?

Appendix

* A01. Disclaimer
* A02. Obtaining the latest IDL FAQ
* A03. Acknowledgements
* A04. Previous version history

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GENERAL QUESTIONS:

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G01. What is IDL?

IDL is the Interactive Data Language. It is a product of Research Systems, Inc. (RSI).

The following is quoted from the README file at rsinc.com:/pub/idl/README. As such, it describes IDL's capabilities in an understandably subjective manner. ;-)

IDL, Interactive Data analysis Language, is a complete package for the interactive reduction, analysis, and visualization of scientific data and images. Optimized for the workstation environment, IDL integrates a responsive array oriented language with numerous data analysis methods and an extensive variety of two and three dimensional displays into a powerful tool for researchers.

IDL supports an extensive data import capability, publication quality hard copy output, and user-defined Motif graphical user interfaces.

Users can create complex visualizations in hours instead of weeks with the aid of IDL's high level capabilities and interactive

environment.

IDL is useful in physics, astronomy, image and signal processing, mapping, medical imaging, statistics, and other technical disciplines requiring visualization of large amounts of data.

Here is a short history of RSI:
[attributed to ali@rsinc.com (Ali Bahrami)]

IDL is a product of Research Systems, Inc., founded in 1977 by David Stern. The origins of IDL were developed at the Laboratory for Atmospheric and Space Physics (LASP) at the University of Colorado. David was one of the people involved in efforts to make computers easier to use for the physicists at the Lab. The first program in the evolutionary chain to IDL was named Rufus (named after Dave's dog). Rufus was a very simple vector oriented calculator that ran on the PDP-12. It accepted 2 letter codes that specified (1) An arithmetic operation (2) The input registers to serve as operands, and (3) the destination register. The next version was the Mars Mariner Spectrum Editor (MMED) which was a version of Rufus that ran on the PDP-8.

The next program in this line was named SOL, and it also ran on the PDP-8. Unlike its predecessors, SOL was a real computer language with a real syntax (no more 2 letter codes). It was an APL influenced array oriented language with some primitive graphics capabilities. The resemblance to IDL was there, but very faintly.

In 1977, Dave left LASP to start Research Systems Inc. (RSI) with the intention of building on the ideas contained in SOL. The initial result of this endeavor was PDP-11 IDL, which was much more capable than SOL. Graphics was usually done on Tektronix terminals and outboard raster graphics displays. I used this version at LASP in 1981 on a PDP11/34 under RSX-11M in 1981 (I worked as a student at LASP from 1981 to 1987). I didn't use it for very long though, because 1981 was the year that Dave released the VAX/VMS version of IDL. This version, which was written in VAX-11 MACRO and FORTRAN, took advantage of the VAX virtual memory and 32-bit address space, and was a huge step beyond the PDP-11 version. It used essentially the same sort of graphics hardware as the PDP-11.

In 1987, Dave decided that Unix workstations were the direction in which IDL should progress, but porting the current VAX IDL to Unix didn't make much sense because of its MACRO and FORTRAN implementation. I had just finished my Masters degree and was looking for work. Dave hired me and together we wrote the current

version of IDL for Unix on the Sun 3 taking advantage of the
re-write to extend and improve the language. Since then, we've
ported it to many Unix machines and moved it back to VMS. RSI has
many other employees now, but our focus is still the continued
development of IDL. Recently, IDL was ported to PC class systems
running Microsoft Windows.

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G02. Where can I contact them?

Their address is:

        Research Systems, Inc.
        2995 Wilderness Place
        Boulder, CO 80301
        (303) 786-9900   (Voice)
        (303) 786-9909   (Fax)

        Email:

          info@rsinc.com or support@rsinc.com

      World Wide Web
        http://www.rsinc.com/

Research Systems' Inc., International Distributor Offices

Austria, Germany, Lichtenstein, Luxembourg,
Switzerland, The Netherlands
  CREASO, GmbH
  Talhof Str. 30
  D82205 Gilching
  Germany
  Telephone: 49 8105 25055
  Fax: 49 8105 25623
  Contact: Bernhard Kortmann
  email: 100137.2421@compuserve.com

Brazil
  SulSoft
  Rua Dom Pedro II, 1220 cj 515
  90550-141 Porto Alegre - RS
  Brazil
  Telephone/Fax   55 51 337 38 91
  Contact: Michael Steinmayer
  email: mis@inf.ufrgs.br

China, Hong Kong
  3- Link Systems Pte Ltd.
  Room 801 Stone Plaza
  No 2 Haidian Street
  Beijing 100080 PR China
  Telephone: 8610-261-0161
  Fax: 8610-261-0163
  Contact: Qunli Ren
  email: linkbj@ox1.ios.ac.cn

Singapore
  3- Link Systems Pte Ltd.
  140 Robinson Road
  #05-03 Chow House
  Singapore 068907
  Telephone: 65 227-8671
  Fax: 65 227-8679
  Contact: Harry Lee
  email: zdlee@singnet.com.sg

France, Belgium
  Fast Parallel Solutions France
  1 Place Gustave Eiffel
  Silic 267
  94578 Rungis Cedex, France
  Telephone: 33 1 46 87 25 22
  Fax: 33 1 46 87 71 38
  Contact: Louis Tauziet
  email: 100347.1577@compuserve.com

Italy
  Alliant Computer Systems SRL
  Centro Direzionale Colleoni
  Palazzo Taurus
  Ingresso 3
  20041 Agrate Brianza MI, Italy
  Telephone: 39 39 6091766
  Fax: 39 39 6091779
  Contact: Chris Stuart & Alberto Meroni
  email: chris@specialnet.cmt.it

Japan
  Adam Net Ltd.
  Yushimadai Bldg. 2-31-27
  Yushima, Bunkyo-ku
  Tokyo, 113, Japan
  Telephone: 81 35802 2251

Fax: 81 35802 2249
Contact: Osamu Nakano
email: nakano@adamnet.co.jp

Korea
  Intersys
  373-1 KuSung-Dong
  YuSung-Gu
  Tae Jun 305-701
  Korea
  Telephone: 82 42 869 4746
  Fax: 82 42 862 9239
  Contact: Jong-Sik Yoon
  email: jsyoon@intersys.kaist.ac.kr

Spain
  Estudio Atlas
  Parque Tecnologico de Alava
  C/Tecnologico 11,40
  01510 Minano (Alava)
  Spain
  Telephone: 34 45 298 080
  Fax: 34 45 298 084
  Contact: Montserrat Bacaicoa
  email: estuds01@sarenet.es

Taiwan
  Concentrate Corporation
  5th Fl., No. 8, Lane 259
  Fu Kang Road
  Shihlin, Taipei
  Taiwan
  Telephone: 886 2 883 7752
  Fax: 886 2 881 7946
  Contact: Peter Kang
  email: conce@ms2.hinet.net

United Kingdom
  Floating Point Systems UK Ltd.
  Ash Court
  23 Rose Street
  Wokingham
  Berks RG11 1XS
  United Kingdom
  Telephone: 44 1734 776333
  Fax: 44 1734 776433
  Contact: Doug Wilson
  email: doug@floating.demon.co.uk

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G03. How do I get IDL?

RSI's distribution scheme is unique in that all of the binaries and IDL code
needed are available via anonymous ftp. IDL binaries and code are available
at these sites:

        gateway.rsinc.com (192.5.156.17)
            pub/idl
        boulder.colorado.edu (128.138.240.1)
            pub/idl
        ftp.Germany.EU.net (192.76.144.75)
            shop/CreaSo/IDL

The README file describes which files are needed, how to unpack them, and
how to install them.

If you install IDL without a valid license, you will get IDL's 7 minute (10
minutes for Mac and PC) demo mode. This mode is designed for users who are
considering buying the package.

To actually get IDL running for good, you must pay for a license from RSI
and follow their instructions. You will be asked to fill out a form with
information unique to your machine. RSI will create a license key which the
license manager program (lmgrd) reads to validate your license.

As of release 3.1, upgrades to IDL are no longer free. For details about
upgrades and support contracts, contact RSI.
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G04. What is the current version of IDL?

IDL 5.0 is the current version. It was released May 1997.
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G05. On what systems does IDL run?

The information below is from the IDL 5.0 Pre-Release Online Help, under the
topics "What's New in IDL 5.0?", "Platforms Supported in this Release":

IDL supports the following Platforms and Operating System versions:

Platform Vendor	Hardware	Operating System	Supported Versions
VMS DEC	Alpha AXP	VMS	6.2

```
VMS      DEC   VAX           VMS           6.2
Unix     DEC   Alpha         Digital UNIX    4.0
         HP    PaRisc        HP-UX           10.1
         IBM   RS/6000       AIX             4.1
         Intel Intel x86     Linux           2.0
         SGI   R4000 and up  Irix            5.3 / 6.2
         SUN   Sparc         Solaris1 (SunOS)  4.1.3
         SUN   Sparc         Solaris 2       2.5
         SUN   Intel x86     Solaris 2       2.5
Windows  Intel Intel x86     Windows         3.11
         Intel Intel x86     Windows 95
         Intel Intel x86     Windows NT      3.51, 4.0
         DEC   Alpha AXP     Windows NT      3.51, 4.0
Macintosh Apple Motorola 680x0   MacOS          7.1.2
         Apple Motorola PowerPC  MacOS          7.1.2
```

In most cases, IDL will run under operating system version released later
than the supported version listed above.

This is the final release of IDL for Macintosh on Motorola 680x0 processors.

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G06. What is PV~WAVE and how is it related to IDL?

Around the time that the Unix version of IDL first became available (1988),
Precision Visuals Inc. (PVI) entered into an agreement with RSI under which
they enhanced and resold IDL under the name PV~WAVE. In September of 1990,
they exercised an option in that agreement that resulted in the following:

- They received a copy of the IDL source code as it existed in September
1990 in return for a one-time payment to RSI.

- The connection between RSI and PVI was severed.

IDL and PV~WAVE are now on separate development tracks. Each company
enhances, supports, and maintains its own product.

PVI has since merged with IMSL and is now Visual Numerics, Inc. (VNI).
  -- ---------------

G07. Are there anonymous FTP sites for IDL?

The sites below contain public domain IDL code. See also the list of World
Wide Web sites under G13.

   JHU/APL/S1R IDL library
   fermi.jhuapl.edu [128.244.147.18]
     /pub/idl

Phil's IDL Library of Functions
irc.chmcc.org
   /pub/idl

David Fanning's Example IDL Programs
ftp.dfanning.com
   /pub/dfanning/outgoing/idl_examples/

Chris Chase's Emacs related IDL tools sites
fermi.jhuapl.edu [128.244.147.18]
   /pub/idl_emacs
Now maintained by Phil Williams at
   ftp://irc.chmcc.org/pub/idl_emacs/

Research Systems, Inc. Emacs/Xemacs related IDL tools
rsinc.com [192.5.156.17]
   /pub/user_contrib/emacs

NASA IDL Astronomy User's Library
(VAX) uit.gsfc.nasa.gov [128.183.57.27]
Username: idluser
Password: (Contact landsman@stars.gsfc.nasa.gov for password)
(Unix) idlastro.gsfc.nasa.gov [128.183.57.82]
   /

IUE RDAF library
iuesn1.gsfc.nasa.gov [128.183.57.16]
cetus.colorado.edu [128.138.238.151]
   /pub

ICUR Spectral Analysis Software
ftp.astro.psu.edu [128.118.147.28]
   /pub/nefftp/icur

IDL ROSAT software
legacy.gsfc.nasa.gov [128.183.8.233]
   rosat/software/idl

IDLmeteo library
ftp.sma.ch (141.249.3.33)
   /pub/idlmeteo

ESRG library
eos.crseo.ucsb.edu [128.111.228.1]
   /pub/idl

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G08. How can I get help?

RSI has excellent telephone and email support. You can contact them at:

        Voice: (303) 786-9900
        Fax: (303) 786-9909

        Email:
                (Internet)
                info@rsinc.com   # general questions
                support@rsinc.com   # technical support

                (SPAN)
                ORION::IDL

Keep in mind, however, that RSI's technical support is for their paying
customers, i.e. those with current support contracts.
--- ---------------

G09. Why are there two newsgroups for IDL?

Unfortunately, there are two very different packages with the abbreviation
"IDL". The newsgroup comp.lang.idl is for the Interface Definition Language.
The newsgroup for discussing issues related to RSI's IDL and VNI's PV~WAVE
and IMSL/IDL is comp.lang.idl-pvwave.
--- ---------------

G10. Does anyone at RSI read this group? Is anyone there listening?

[This question was included at the request of RSI. The answer was provided
by Ali Bahrami. -pat]

    Yes, many of us do. We're naturally curious what people think of
    our product. We make notes about what people like and dislike and
    this influences our decisions.

    However, you usually won't get a direct response from us from a
    posting to this group. There are many reasons for this. Here are a
    couple of the more important ones:

    [] We believe that this group should belong solely to the user
    community, and should be free of vendor bias and marketing. It
    should be noted that both RSI and Visual Numerics (formerly PVI)
    have shown great restraint in this matter, and that this group is
    largely left to the actual users. (Long term readers will recall

some notable exceptions to this, but in general it is true.)

It could be argued that as long as the topic stays technical,
vendor postings are OK. The problem with this is that one persons
technical posting is another's blatant product plug, and the line
between them is not always obvious.

[] We provide support for our customers via the phone and email.
If you would like an answer from us, you should call us directly.
We have no objection to you sharing the information you get in
this manner with the newsgroup as long as you quote us accurately
and separate fact from conjecture.

In other words, you should view this newsgroup as a way to share
questions and information with other users, not as a way to
contact the vendor.

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G11. When is the next version of IDL due out?

  * IDL 5.0, the current version of IDL, was released in May 1997.
  * IDL 5.1 (?)

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G12. Are there training courses available for IDL?

[This question included at the request of RSI.]

RSI offers a number of IDL training courses for beginning,
intermediate, and advanced IDL users. IDL courses are scheduled
monthly at RSI's training facility in Boulder. On-site IDL courses
are also available. Contact RSI at 303-786-9900 and ask for
"training" or send e-mail to training@rsinc.com for complete
scheduling and price information.

Fanning Software Consulting also offers completely customized
on-site IDL programming courses for beginning to advanced users.
For information, contact David Fanning at 970-221-0438 or at
davidf@dfanning.com. Additional information about IDL training
courses is available on the Coyote's Guide to IDL Programming web
page at http://www.dfanning.com.

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G13. Is there a World Wide Web server for IDL or IDL based projects?

See also the list of ftp sites under G07.

RSI has WWW pages on IDL in general:
   http://www.rsinc.com/

Coyote's Guide to IDL Programming:
   http://www.dfanning.com/

Pete Riley's IDL Home Page at the Lunar and Planetary Lab:
   http://xlr8.lpl.arizona.edu/idl.html

Wayne Landsman's IDL Astronomy Library World Wide Web home page:
   http://idlastro.gsfc.nasa.gov/homepage.html

The JHU/APL/S1R IDL library WWW page:
   http://fermi.jhuapl.edu/s1r/idl/idl.html

University of Darmstadt, Germany, IDL page (in German):
   http://wwwpc.hrz.th-darmstadt.de/prog/grafik/idl-4_0.htm

Gary Kushner's IDL data acquisition web page:
   http://casa.colorado.edu/~kushner/

R. Sterner's Color Shaded Releif Maps made by IDL:
   http://fermi.jhuapl.edu/states/states.html

E. Loren Buhle, Jr. Ph.D. made a page on AVS IN MEDICAL TREATMENT PLANNING
which also discusses IDL:
    http://archive.xrt.upenn.edu/0h/buhle/manuscripts/avs94_pape r.html

Liam Gumley has several IDL related web pages:
  Frame Tools | Image Mapping Tool | HDF SDS Tool | Underground Guide to
  IDL
  http://cimss.ssec.wisc.edu/~gumley/index.html

Phil Williams' web page of IDL functions:
  http://www.irc.chmcc.org/idl/philsIDL.html

-- ---------------

G14. How can I find if a routine to do what I want already exists?

One of the most useful tools to find an available routine is Pete Riley's

  Searchable List of all IDL Routines.

This list is available from Pete's IDL page at
http://xlr8.lpl.arizona.edu/idl.html.

If you would like to add your IDL library to Pete's list contact him at
uk2@lpl.arizona.edu.

-- ---------------

G15. Where can I find online manuals and tutorials?

General

http://www.dfanning.com/
Coyote's Guide to IDL Programming. A growing list of tips and example
programs.

http://www.va.ucsf.edu/mrs/IDL/idl_docs.htm/
IDL Help for Advanced Users. A web page of helpful information by E. Scott
Claflin.

Online IDL manuals in Postscript

http://consult.ncsa.uiuc.edu/docs/viz/Idl/index.html#psdocs
National Center for Supercomputing Applications, University of Illinois.

http://www.tac.dk:80/idl_manuals/
The Astronomy Group, Institute of Physics and Astronomy, Aarhus University.

IDL graphics

http://www.sljus.lu.se/stm/IDL/Surf_Tips/
Struan Gray's excellent tutorial on Extending IDL's Surface Plotting
Routines

Very brief IDL examples

http://consult.ncsa.uiuc.edu/docs/viz/Idl/Training/
National Center for Supercomputing Applications.

Selected topics

ftp://gemsrws.med.ge.com//sageidl/window_resize
Tips on window resize by JBob Brown. Discusses how to resize widget windows.

ftp://fermi.jhuapl.edu/www/s1r/idl/s1rlib/local_idl.html
Tutorials on some of the JHU/APL/S1R IDL Library routines. Some of these are
pretty well up to date, some need a lot of work.

Additions to this section are welcome
 --- ---------------

TECHNICAL QUESTIONS:

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Note for Sun users:

There is a mini FAQ for Sun IDL in $IDL_DIR/notes, and the following
questions are answered in the file sun.doc:

  1. IDL complains about missing fonts when creating widgets.
  2. IDL complains about missing bitmap files when creating widgets.
  3. How to make IDL work with OpenWindows version 3.0.
  4. 3-D appearance for OpenLook IDLwidgets.
  5. Why does one of the widgets appear red?
  6. Why does pressing the left button while pointing at a pulldown menu
     button cause the menu to pop up with the pushpin in? Older versions of
     IDL didn't to that.
  7. The font used by the list widget is much larger than it used to be, and
     I don't like the result on my program.
  8. Why do I get "Cannot allocate colormap entry" errors, and why do they
     kill IDL?
  9. I've changed my .Xdefaults file, but nothing different happened. Why?

 --- ---------------

T01. Why doesn't polycontour fill open contours??

This problem is described in the POLYCONTOUR manual page.

    RESTRICTIONS:

    This routine will NOT draw open contours. To eliminate open
    contours in your dataset, surround the original array with a
    1-element border on all sides. The border should be set to a value
    less than or equal to the minimum data array value.

    For example, if A is an (N,M) array enter:

    B = REPLICATE(MIN(A), N+2, M+2) ;Make background
    B(1,1) = A   ;Insert original data
    CONTOUR, B, PATH=Filename ...   ;Create the contour file.

[This problem was fixed in IDL 3.1.]

The following is from Ray Sterner at Johns Hopkins University:
Here is a very simple algorithm that might be a useful addition to the
section of the FAQ on filled contours. It is for evenly spaced contours
only.

 Z is an array to be contoured,
 CI is the desired contour interval,
 C0 is the desired starting color index,
 D is the desired step between colors.

 T = fix(Z/CI)
 M = T - smooth(T,3)
 F = (C0 + T*D)*(1-M)
  is an array with filled contours with the contours
  plotted with color 0. For contours of a different color
  simply add M*CC where CC is the desired contour color index.

 --- ---------------

T02. How do I increase the number of commands stored in the history buffer?

The system variable !EDIT_INPUT controls command recall. By default, it is
set to 1, causing the last 20 commands to be saved. If it is 0, no commands
are saved. To save more than 20 commands, just put !EDIT_INPUT=50 (or other
large number) in your startup file.

It is important to realize that IDL looks at the value of !EDIT_INPUT the
first time it reads anything from the keyboard, and the size of the history
buffer is fixed after that. Hence, the command must be in a startup file

because entering it at the keyboard is too late.
 -- ---------------

T03. How do I get IDL to call routines in language X, running under system
Y?

Jeff Valenti has written a sizable document about calling external FORTRAN
routines from IDL. You can find it at
eos.crseo.ucsb.edu:/pub/idl/idl-fortran.Z.
 -- ---------------

T04. Why does XPALETTE edit my color table incorrectly?

Here is the answer from RSI support:

    The color applications such as xpalette and xloadct use a common
    block called "colors" to keep track of the color vectors. When you
    call tvlct, your vectors are loaded into the colormap, but they
    are not put into the colors common block.

    When xpalette starts, it checks to see if the colors have been
    defined in the common block and uses them if they have. Otherwise
    it sets them to the standard black and white colormap, in which
    r,g,b are each linear ramps. (The colors are as you expect because
    there is only one colormap.)

    Admittedly, this is not the most desirable situation. You would
    like your colors which you loaded with TVLCT to be recognized by
    xpalette. We modified xpalette (and xloadct) to use the current
    colormap when they start up by getting the current vectors with
    TVLCT.

    Another alternative would be to use the following lines to define
    the common block prior to calling your current version of
    xpalette.

    [assume here that you have a routine called "restore" which reads
    colors from a file somewhere and creates vectors r, g, and b. -pat
    ]

    IDL> restore, file='ryan.sav', r, g, b   ;get the vectors from somewhere
    IDL> tvlct, r, g, b
    IDL> common colors,r_orig,g_orig,b_orig,r_curr,g_curr,b_curr
    IDL> r_orig = r & r_curr = r
    IDL> g_orig = g & g_curr = g
    IDL> b_orig = b & b_curr = b
    IDL> xpalette

-- ---------------

T05. Is there on-line help for IDL?

Try ? at the IDL prompt.
-- ---------------

T06. I run IDL under X in SunOS 4.x, and after I logout, the screen becomes completely blank. Typing in login names and passwords blindly logs you in again with the correct colors. How to prevent this?

[Note: This is only a problem under OpenWindows2. -pat]

Add the following to your .Xdefaults:

Idl*colors: -5

which reserves some colors for the colormap so that IDL does not exhaust all the available colors. (For a nice summary of Sun IDL interactions with OpenWindows, see $IDL_DIR/notes/sun.doc)

Another solution is to put a call to clear_colormap in your .login file to be executed after OpenWindows start up.
-- ----------------

T07. Sometimes my variables seem to disappear. Why is this?

Quoting the IDL User's Guide, page 10-8:

   IDL users may find that all their variables have seemingly
   disappeared after an error occurs inside a procedure or function.
   The misunderstood subtlety is that after the error occurs, IDL's
   context is inside the called procedure, not in the main level.
   Typing RETALL or RETURN will make the lost variables reappear.

   RETALL is best suited for use when an error is detected in a
   procedure and it is desired to return immediately to the main
   program level despite nested procedure calls. RETALL issues RETURN
   commands until the main program level is reached.

   The HELP command can be used to see the current call stack (i.e.,
   which program unit IDL is in and which program unit called it).

-- ----------------

T08. Are there any editors that support IDL programming?

Yes. Emacs has a major mode for editing IDL code, idl.el, written by Chris
Chase. This is now maintained by Phil Williams (williams@irc.chmcc.org), bug
reports should be sent to him. The most up to date version of idl.el may be
obtained from Phil's ftp site at

ftp://irc.chmcc.org/pub/idl_emacs/

Other possible sources are

ftp://eos.crseo.ucsb.edu/pub/idl/
ftp://fermi.jhuapl.edu/pub/idl_emacs/

Get the files: idl.el and idl-shell.el

From John E. Davis, davis@space.mit.edu:

Also available is JED, an extensible programmer's editor that is available
for Unix, VMS, OS/2, MSDOS, and MS Windows. The size of the executable is
only slightly larger than vi. The extension language resembles C. It
provides emacs, EDT, wordstar, and brief editor emulations (Many claim that
JED's EDT emulation is the best around). It is the only freely available
editor that can perform color syntax highlighting on ordinary character-cell
color terminals (e.g., MS-Kermit, etc.) as well as under XWindows (Xjed).
Currently supported programming modes include: C, FORTRAN, (La)TeX and
BiBTeX, DCL, IDL, NROFF, SH, HTML, and SLANG. Other extensions include mail,
rmail, compile, as well as the ability to read GNU info files. It is
available from

ftp://space.mit.edu/pub/davis/jed/

See Appendix A02 for details on using URLs.
 -- ----------------

T09. How do I get 3-D widgets under OpenLook 3.0?

This subject is discussed on page 53 of the OpenWindows Version 3 User's
Guide Release Manual.

OpenWindows 3.0 added 3-D appearance for widgets. In order for the 3-D look
to work, it must be enabled and the background color must be a medium tone
color such as "grey" or "wheat". Add the following resources to your
~/.Xdefaults file:

        For plain IDL:

```
        Idl*threeD:    TRUE
        Idl*background: PeachPuff2


    For IMSL/IDL:
        Imslidl*threeD:    TRUE
        Imslidl*background: PeachPuff2
```

-- ---------------

T10. Why does one of the widgets appear red under OpenWindows?

This subject is discussed on page 53 of the OpenWindows Version 3 User's
Guide Release Manual.

The OLIT widget toolkit, which is used by IDL, added the concept of
"mouseless focus" under version 3.0. The red widget indicates where the
current mouseless focus is. Use the arrow keys to traverse the widgets, and
the spacebar to make a selection.

-- ---------------

T11. Where are all the IDL routines and userlib procedures?

The basic routines are not accessible, for obvious reasons. The userlib,
statlib and widget procedures are in $IDL_DIR/lib/. The procedure XDL also
displays the full pathname. The system variable !path also contains the
directory names for all accessible IDL procedures.

-- ---------------

T12. Does anybody know how to put multiple image plots on one page in
PostScript?

Because PostScript has scalable pixels, you must specify the xsize and ysize
parameters, as well as the position parameter, in TV or TVSCL. I don't know
about PV-Wave, but the following works in IDL:

```
 ; Display four images in a 2x2 grid
 ; Assume data(x,y,4) = array containing the 4 images

 set_plot, 'ps'          ;request PostScript output
 device, ...             ;modify page size, orientation, etc. as desired
 ximsize = 0.5*!d.x_size  ;define output image size
 yimsize = 0.5*!d.y_size  ;note: 0.5 assumes 2x2 grid
 for i=0,3 do begin       ;display the 4 images, using i as position index
   tv, data(*,*,i), i, xsize=ximsize, ysize=yimsize
 endfor
```

-- ---------------

T13. Does case matter in IDL?

No.

Compiled routines are case insensitive. The only catch is that, on Unix
systems, when executing a script via the .RUN command, the file name
argument must exactly match the file name as it appears on the disk. Once
the routines in the script are compiled, their names can be written in any
case. This is not a problem in operating systems such as VMS that do not
distinguish case for file names. This is usually not a problem under Unix
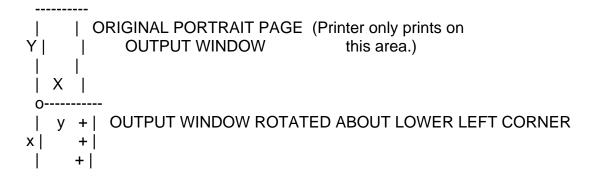either since, by convention, most people use lower case file names.

Sometimes.

Case matters when you are doing string comparisons. Comparing "IDL" to "idl"
will return a false.

```
 --------------------------------------------------------- ----------------
```

T14. How do I set up IDL to get precise control over plot window and text
positioning with either portrait or landscape page orientation on a
PostScript or HP-GL printer?

(This answer only applies to PostScript and HP-GL printers -- other printers
may differ in having the X and Y offsets measured from the upper left corner
of the portrait page instead of the lower left corner.)

IDL uses portrait page orientation as a default. (The x axis is along the
shorter dimension of the paper.) In portrait orientation the lower left
corner of the page is the origin for the XOFFSET and YOFFSET page offsetting
keywords of the DEVICE command that determine the origin (lower left corner)
of the output window. (Normally one uses XOFFSET=0 and YOFFSET=0 for
portrait orientation.) Size of the output window is determined by the XSIZE
and YSIZE keywords of the DEVICE command. The origin for graph positioning
variables !P.POSITION and !P.REGION is the output window origin. X and Y
coordinates for portrait page orientation are shown on the sketch below as
upper case X and Y.

```
    ----------
   |      |   ORIGINAL PORTRAIT PAGE  (Printer only prints on
  Y |     |        OUTPUT WINDOW              this area.)
   |      |
   |  X   |
   o-----------
   |   y  + |  OUTPUT WINDOW ROTATED ABOUT LOWER LEFT CORNER
  x |      + |
   |      + |
```

```
------------
++++++++++   OUTPUT WINDOW RESIZED FOR LANDSCAPE ORIENTATION
   ^
   |   DIRECTION OF NEEDED OFFSET
```

If device,/landscape is specified, then the output window is rotated 90 deg.
clockwise about the lower left corner of the page. In this condition nothing
will be plotted on the page, since the rotation has carried the output
window entirely off the paper as shown in the sketch above. To correct this
mismatch, the rotated output window must be offset. XOFFSET AND YOFFSET are
still measured in the X and Y coordinates of the portrait page, but now
represent the position of the lower left corner of the rotated (and resized)
output window (marked by an o above) with respect to the lower left corner
of the portrait (actual) page. Hence, one generally uses XOFFSET=0 and
YOFFSET=long_dimension_of_page for landscape orientation.

In landscape orientation, the coordinates for graph positioning variables
!P.POSITION and !P.REGION are the lower case x and y coordinates shown in
the sketch above and having origin marked by the letter o. Position of
output window origin o on the page is, of course, affected by the setting of
XOFFSET and YOFFSET, as explained before. The XSIZE and YSIZE (output window
size) keywords of the DEVICE command are also measured in the x and y
directions when in landscape orientation. The resizing of the landscape page
generally means interchanging the values of XSIZE and YSIZE appropriate for
the portrait page.

Example of settings for a portrait page:

  XPAGE=8.5 & YPAGE=11. & XOFFS=0. & YOFFS=0. ;Inches
  DEVICE,/INCHES,XSIZE=XPAGE,YSIZE=YPAGE,XOFFSET=XOFFS,YOFFSET =YOFFS

Example of settings for a landscape page:

  XPAGE=11. & YPAGE=8.5 & XOFFS=0. & YOFFS=XPAGE ;Inches
  DEVICE,/LANDSCAPE,/INCHES,XSIZE=XPAGE,YSIZE=YPAGE,XOFFSET=XO FFS, $
    YOFFSET=YOFFS

Example of setting position and size of a plot window:

  X0=1.374 & Y0=1.283 & XLEN=3.622 & YLEN=6.157 ;Inches
  !P.POSITION=[X0/XPAGE,Y0/YPAGE,(X0+XLEN)/XPAGE,(Y0+YLEN)/YPA GE]

Example of setting position and orientation of a text string:

```
x0=.35  &  y0=.37  ;Inches
xyouts,x0/xpage,y0/ypage,!stime,orient=90,/normal     ;Date, time
```

-- ---------------

T15. I get the error message "Code Area Full". What do I do?

IDL sets aside a certain amount of memory area for compiling programs. The
current code and area sizes can be seen with the HELP command, e.g.

```
IDL> help
% At $MAIN$  .
Code area used: 0% (0/16384),  Symbol area used: 0% (2/4096)
```

These sizes can be increased with the .SIZE command. Quoting the IDL User's
Manual, page 2-11:

   These sizes represent a compromise between an unlimited program
   space and conservation of memory. User procedures and functions
   are compiled in this large program area. After successful
   compilation, a new memory are of the required size is allocated to
   contain the newly compiled program unit.

   Resizing the code and data areas erases the currently compiled
   main program and all mail program variables. For example, to
   extend the code and data areas to 30000 and 5000 bytes
   respectively:

```
.SIZE 30000 5000
```

Getting "Code Area Full" is often an indication that the routine is large,
and would benefit by decomposition into sub-procedures/functions. It's
better to avoid use of .SIZE because your code will always work on other
systems where the users don't use a large .SIZE setting.

-- ---------------

T16. Sometimes I get the following error message:

```
% Unable to allocate memory: to make array.
  not enough core
```

RSI support replies:

   The circumstances described happen when memory becomes fragmented.
   Unfortunately, there is nothing you can do except use less memory
   in your application, or get more for the system to work with.

--- ----------------

T17. How can I set the cursor to a crosshair on my display?

Ray Sterner of Johns Hopkins University has written a procedure for managing
this called crossi. It is in the usr.tar file of the JHU/APL IDL library
mentioned in question G07.

Joel Parker has written a procedure called rdplot which manages this using
an XOR graphics function and provides additional functionality. It is
located in the NASA IDL Astronomy User's Library mentioned in question G07.
 --- ----------------

T18. How can I vectorize an equation of two different arrays?

From the user community:
    I have two different arrays, (8) of float and (300,8) of float. I want
    to vectorize the equation and therefore I need to use both arrays in
    the same equation. For example :

    newarray=cos(small_array)*sin(large_array)

    where I want the data in small_array to be used over and over 300 times
    in this calculation.

From Dan Carr (dan@rsinc.com):
    IDL> arr1 = Findgen(8)
    IDL> arr2 = Findgen(300, 8)
    IDL> newarr = (Replicate(1.0, 300) # Cos(arr1)) * Sin(arr2)

From Dave Landers (landers@tsunami.dseg.ti.com)
    to convert an array1(M) to array2(n,M) :
    array2 = array1(Lindgen(n,M) / n)
    or array2 = replicate(1,n) # array1

    to convert an array1(M) to array2(M,n) :
    array2 = array1(Lindgen(M,n) MOD M)
    or array2 = array1 # replicate(1,n)

From Chris Chase (chase@grant.jhuapl.edu)
    Instead of using matrix multiply, one can use REBIN:

To make array1(M) to array2(M,n):
array2 = rebin(array1,M,n,/samp)
To make array1(M) to array2(n,M):
array2 = rebin(reform(array1,1,M),M,n,/samp)

Note: use of /overwrite in REFORM avoids copying array1, but changes array1.

REBIN is a little faster than the matrix multiply method. The additional advantage of REBIN is that it will work with higher dimensions, e.g. to make array1(M,N) into array2(M,N,L):

array2 = rebin(array1,M,N,L,/samp)

-- ---------------

T19. How can I get IDL and MacX to work without crashing?

Using MacX v1.2 and IDL cause the Mac to crash quite often. This happens especially during allocation of color resources or display windows. You can get around the problem by downgrading to MacX v1.1.7 (apparently Apple will supply this if you can prove to them that you rightfully own v1.2). Another solution is to purchase White Pine's eXodus software. Rumors are that eXodus is an overall better product than MacX. White Pine can be contacted at:

  White Pine Software
  40 Simon St. Suite 201 Nashua, NH 03060-3043
  phone: 603-886-9050 Fax: 603-886-9051

Note: MacX 1.5 works correctly with IDL. Also, Tenon Intersystems <http://www.tenon.com> makes a very fast X Server called XTen, and a full UNIX implementation which runs alongside MacOS called MachTen. MachTen includes the functionality and speed of XTen.

-- ---------------

T20. How can I determine if a variable is defined?

It is often useful to determine if an IDL variable is defined. This is easily done using the n_elements function which returns 0 if the given variable is undefined. This is especially useful for setting defaults for keyword parameters. Here are several examples:

if n_elements(start) eq 0 then start=0

if n_elements(dir) eq 0 then cd, current=dir
-- ---------------

T21. Why should KEYWORD_SET not be used to check if a variable is defined?

From Bill Thompson:

The IDL function KEYWORD_SET() is only designed to be used with logical variables, i.e. those which can be either True (usually signalled with the value 1) or False (0). It has the property that if a variable is undefined, then it returns False, so people often make the mistake of using it to test whether a variable is defined or not.

To test whether a variable is defined or not, use N_ELEMENTS() instead. This will return 0 if a variable is undefined, or some positive number otherwise. Only use KEYWORD_SET for truly Boolean (True/False) variables.

 -- ---------------

T22. What is the undocumented routine TVRDC?

From a comp.lang.idl-pvwave post by William Thompson:

The reason that TVRDC is undocumented is because it's not needed any more. It doesn't do anything that CURSOR doesn't do. TVRDC is only retained for compatibility with older programs.

In the old days, before X-windows, CURSOR was used to read coordinates off of line graphics terminals, and TVRDC was used to read coordinates off of image display devices. With the advent of IDL 2.0, the distinctions between different kinds of graphics devices were mostly removed, and both of these functions were merged into CURSOR.

 -- ---------------

T23. How can IDL be used to generate dynamic GIFs for display on the World Wide Web?

By Jason Mathews, NASA/ Goddard Space Flight Center:

Common Gateway Interface (CGI) Perl scripts are invoked via submiting a HTML form , which execute IDL in batch mode, runs a IDL routine to make a plot of the selected parameters, and writes the results to a GIF. The perl program output is displayed on the WWW browser as a HTML document with an inline GIF image.

The IDL program must use the 'Z' device and write the output results to a GIF file as in the example below:

```
SET_PLOT, 'Z'              ; Select the Z buffer output device
PLOT, x, y, ...            ; Draw the plot
image = TVRD()             ; Copy the device contents into an image
```

WRITE_GIF, 'filename.gif', image ; Write image to a GIF file
EXIT   ; Exit IDL routine

Examples of various perl programs that use IDL on the web and the
corresponding HTML forms are available via the following URL:
http://coney.gsfc.nasa.gov/Mathews/misc/idl-www.html

Some example WWW-based Data Browsing and Retrieval Systems using IDL:

  * NSSDC OMNIWeb: http://nssdc.gsfc.nasa.gov/omniweb/ow.html
  * NSSDC COHOWeb: http://nssdc.gsfc.nasa.gov/cohoweb/cw.html
  * WWW/IDL Interface Demo: http://www.gsfc.nasa.gov/idl/idl_web.html

 -- ---------------

T24. How can IDL be used to save an IDL window in a specified graphics
format file (GIF, TIFF, ...)?

By Mark Rivers, CARS, Univ. of Chicago (slightly edited)

IDL> plot,x,y,title='This is my plot' ; Make a plot (or display an image).
IDL> image = tvrd()   ; Read image into an array.
IDL> tvlct, r, g, b, /get   ; Read color table.
IDL> write_gif, file, image, r, g, b   ; Save in a GIF image file.

This sequence should work on any windowing display (X, Windows, Mac). For
better speed and more flexibility, first issue the command
SET_PLOT, 'Z'
to write to the Z-buffer pseudo-device. You can set its resolution, and its
write and readback performance is very fast.

[Additional notes by editor] The screen image may be saved in other graphics
formats by using the correct write routine. Some of the routines of interest
are:
write_gif, tiff_write, write_jpeg, write_bmp, ...
Note the different name pattern for tiff_write, check the manuals for the
calling syntax for each routine.

There are also corresponding routines to read the images back into IDL.

Which format is best? GIF images are compressed so take less space than
uncompressed images. JPEG images are also compressed but with a lossy
compression, that is, the image when read back into IDL is not identical to
the image written. However JPEG images can look very good and also often can
be more highly compressed than GIF. Some images may be larger (much larger)
using JPEG as compared to GIF, try both and compare. GIF images are widely

used on the World Wide Web, JPEG is also supported by some web browsers. TIFF may be needed for publishing purposes.

 -- ----------------

T25. Why don't my desktop PC applications recognize the preview portion of IDL EPSI files?

By Troy Klein, Johns Hopkins Applied Physics Lab

Quoting the IDL version 4.0 online help for the PREVIEW keyword, "Set this keyword to add a 'device independent screen preview' to the PostScript output file, in encapsulated PostScript interchange format (EPSI). Use this keyword only with encapsulated output. Many, but certainly not all, desktop publishing and word processing programs will display this screen preview when the file is imported into a document."

The EPSI format is not compatible with some of the more popular Windows and Macintosh applications. Windows applications expect the preview image to be in TIFF format and Macintosh applications expect the preview image to be in PICT format and in the resource fork of the EPS file. I have found the EPSI file to be compatable with Framemaker for UNIX/X windows.

There are two workarounds available for Mac users and two for Windows users, all are similar. If you are using IDL on a UNIX machine, there is a package available (as of 8/2/95) on the popular University of Michigan Mac shareware/freeware archive (use the mirror site at ftp://mirrors.aol.com) titled "ps2epsmac", which uses Ghostscript and NetPBM on a UNIX machine to interpret the postscript and create a new EPS file in Macbinary format with the PICT preview. There are several Mac programs available (StuffitExpander, Fetch, etc.) to interpret the Macbinary file. I have had great success in using this method to import IDL EPS files into Word, Powerpoint, and MacDraw Pro. There is a similar package at the archive titled "ps2epsplus" which does the same thing, but all on a Mac.

For UNIX IDL users trying to import IDL EPS files into Windows applications, there is a package called "ps2epsf" which can be located using an Archie search. This package essentially does the same thing as the UNIX/Mac package but produces an EPS file with a TIFF preview. The second solution for Windows users is the Windows applicationi GSview (which can also be found with archie). Version 1.2 claims to be capable of adding preview images to EPS files.

 -- ----------------

T26. How can I fix widgets that broke with IDL version 4.x.x?

In IDL version 4, the sizing and layout of IDL's Motif widgets changed in several ways. This can cause problems. Widget changes are discussed in a file available from RSI at

ftp://boulder.colorado.edu/pub/rsi/idl/notes/widgets.txt.

-- ---------------

T27. Why is memory not released back to the operating system after an array is deleted?

By Eric Korpela of Berkeley

This is a result of IDL being written in C and using the C library functions (malloc and free) for memory allocation. In most C libraries, memory that is freed is NOT returned to the operating system. The C program retains this memory and will reuse it for future calls to malloc (assuming that the new allocation will fit in the freed block).

Another way of considering it is in terms of how memory allocation is done under UNIX. New memory is allocated using brk() or sbrk() which control the size of the data segment. These routines are called by malloc().

Suppose you allocate 3 1 MB regions of memory under C.

char *p1=(char *)malloc(3*1024*1024);
char *p2=(char *)malloc(3*1024*1024);
char *p3=(char *)malloc(3*1024*1024);

Here's what your data segment would look like assuming malloc had to call sbrk().

```
     ------------------------------------------------------ ---
     prev stuff | overhead | 3MB | overhead | 3MB | overhead | 3MB |
     ------------------------------------------------------ ---
                  ^            ^            ^    ^
                  p1           p2           p3   end of segment.
```

Now we free(p1).

```
     ------------------------------------------------------- ----
     prev stuff | overhead | free | overhead | 3MB | overhead | 3MB |
     ------------------------------------------------------- ----
                              ^            ^    ^
                              p2           p3   end of segment
```

Notice that the free memory is still in the data segment. If free had called brk to reduce the size of the segment, the 3MB pointed to my p3 would be outside the data segment! SIGSEGV city! If free had moved the allocated memory to lower addresses so the segment size could be reduced without

losing data, then p2 and p3 would point to invalid addresses, and we'd be forced to use handles rather than pointers and call GetPointerFromHandle() every time we wanted to access the memory. Ick! Just like Windows!

--- ---------------

T28. Why do color bars in PostScript not look as good as on the screen?

By default IDL uses 4 bits per pixel when displaying images in PostScript. This gives only 16 possible gray shades or colors as may be seen by the following example commands:

```
a = rebin(bindgen(256),256,50)        ; Create a color bar.
set_plot,'ps'                    ; Set PostScript mode.
device,/color                     ; Specify color PostScript.
loadct,4                     ; Load a color table.
tv,a,0,0,xs=12.8,ys=2.5,/centimeters  ; Display bar.
device,/close                     ; Close PostScript file (idl.ps).
$gs idl.ps                    ; Send to a color PS printer or use
                         ; a PostScript viewer to see results.
```

Replace first call to device above by:

```
device,/color,bits_per_pixel=8
```

This simple change may fix a number of problems with color PostScript. By the way, you will need to use /inches or /centimeters on a tv or tvscl command to get the desired results. This applies to both the position and sizes of the image. By default these are in pixels and PostScript has a lot of pixels as may be seen by doing help,/structure,!d after set_plot,'ps'. Also try help,/device for other useful info when in PS mode.

--- ---------------

T29. Does anyone know how to ensure vector-drawn fonts look good (and similar) across different X11 servers?

By Liam Gumley, Space Science and Engineering Center, University of Wisconsin-Madison

The fix I came up with goes as follows. Put the following commands in an IDL startup file (they must be executed immediately after IDL startup):

```
device,retain=2,pseudo=8        ; 8 bit display with backing store
window,/free,/pixmap,colors=-5   ; Create window to allocate colors
plot,[0]                    ; Might not be needed, but won't hurt
```

```
wdelete,!d.window              ; Delete the window
device,set_character_size=[6,9]  ; Set the vector font size
print, 'Number of colors allocated is ', !d.n_colors
```

If you use this in your startup file, then you should not need any entries
in your $HOME/.Xdefaults file. The only command I have in $HOME/.Xdefaults
is

Idl*fontlist: screen16

which sets the font used for widgets (unrelated to the graphics vector
font).

As RSI technical support explained it to me, the default graphics vector
font size is 6x9 at startup. However as soon as you open a graphics window,
that font size may be changed (why, I don't know). So the only way to
guarantee that you get 6x9 vector fonts is to use the commands above
immediately after startup. Please note that you are not guaranteed to get
256 colors allocated to IDL 4.01 if you use the colors=-5 keyword (I usually
get about 170 colors on my SGI). On SGI boxes with 24 bit graphics, setting
colors=256 usually gets you 256 colors, but this won't work on all Unix
boxes. The IDL 5.0 pre-release seems to be a bit smarter (at least on an
SGI), and even if you set colors=-5, it allocates 256 colors.

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APPENDIX

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A01. Disclaimer:

Questions and answers in this document are culled from the user community,
except where noted otherwise. No warranty, express or implied exists
regarding this document. Permission to copy all or part of this work is
granted, provided that the copies are not made or distributed for resale.
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A02. Obtaining the latest IDL FAQ

The current IDL FAQ may be accessed at http://ww2.sd.cybernex.net/ in
directory ~mgs/

    HTML version: idl_faq.html
    The plain text version will be provided at a later time, or use
    your browser to convert HTML to text.

The URL (Uniform Resource Locator) for this file is:
    http://ww2.sd.cybernex.net/~mgs/idl_faq.html

How to interpret the URL

Using a WWW (World Wide Web) Browser, for example netscape:
    netscape http://ww2.sd.cybernex.net/~mgs/idl_faq.html
    Save the file using the Save as ... option.

Using anonymous ftp:
    Anonymous FTP is not currently available, but should be soon. Please
    email me if you need other access.

Additions and Corrections

Send additions and corrections to:

    Mike Schienle

    mgs@sd.cybernex.net

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A03. Many thanks to the following for their contributions

    black@breeze.rsre.mod.uk (John Black)
    claflin@claes.space.lockheed.com (Scott Claflin)
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Previous IDL FAQ maintainers:

    Patrick Ryan: founded the IDL FAQ
    Mike Schienle: from 12/01/93 to 10/27/94
    Ray Sterner: from 10/28/94 to 5/15/97

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A04. IDL FAQ Versions History

Changes in version 3.21:
. Added Struan Gray's surface plotting tutorial to G15.
. Added a new question on vector-drawn fonts (T29).

Changes in version 3.20:
. Cleaned up T08 at Kevin Ivory's suggestion.
. Added Phil William's Emacs site to G07.

Changes in version 3.19:
. Corrected IDL 5 release date in G11.
. Updated the source site of the emacs major mode for editing IDL code
  in T08.

Changes in version 3.18:
. Added Phil's IDL Library of Functions to G13 and G07.

Changes in version 3.17:
. Added new question: Where can I find online manuals and tutorials?
  as G15
. Added Coyote's Guide to IDL Programming to questions G13 and G15.
. Added E. Scott Claflin's IDL Help for Advanced Users to G15

Changes in version 3.16:
. Added an explicit reference to Chris Chase's ftp directory on fermi
  in G07
. Added Research Systems ftp site in G07
. Added a pointer to the WWW site list under the ftp site question (G07)
. Added a pointer to the ftp site list under the WWW site question (G13)

Changes in version 3.15:
. Slightly modified Liam Gumley's web site address
  and the description in G13
. Minor rewording for the VNI section of T08

Changes in version 3.14:
. Added a new web site in G13

Changes in version 3.13:
. Added a note to a non-working link in G13
. Added additional info from Chris Chase in T18.

Changes in version 3.12:
. Updated answers to G0, G05, and G11 with information from RSI.
. Added a new IDL web page to G13,submitted by Norbert Hahn.
  It is located at the University of Darmstadt, Germany, and is in German.
. Added a new question on color PostScript (T28).

Changes in version 3.11:
. Fixed the missing end of question T02.
. Added a new question on why memory is not released when an array is
  deleted (T27).

Changes in version 3.10:
. Updated RSI's home page in G13.
. Made a few minor changes in the URLs that point to fermi (the home site
  of the IDL FAQ).
. Fixed the broken link to Gary Kushner's IDL data acquision web page in G13.

Changes in version 3.9:
. New question on how to find IDL routines (G14).
. New question on widgets breaking with IDL version 4 (T26).
. Minor change to G04.

Changes in version 3.8:
. New question on Encapsulated Postscript Previews (T25).
. Generalized question T08 to non-emacs editors
  that support IDL programming (first is JED from MIT).
. Minor addition to G11 When is the next
  version of IDL due out?

Changes since version 3.7:
. New question on screen save to a graphics format image (T24).

Changes since version 3.6:
. New question on using IDL to make WWW images (T23).
. IDL 4.0 release dates added (G04, G11).

Changes since version 3.5:
. Added question T22: What is the undocumented routine TVRDC?
. Added question T21: Why should KEYWORD_SET not be used to check if
  a variable is defined?

Changes since version 3.4:
. Added Pete Riley's IDL Home Page at LPL (G13).
. Added RSI's International Distributor Offices (G02).

Changes since version 3.3:
. Added Gary Kushner's IDL data acquisition WWW page (G13).
. Dropped Hal Mueller's U.S. map page (was out of service) (G13).
. Added R. Sterner's Color Shaded Relief Maps WWW page (G13).
. Added a new question on detecting undefined variables (T20).
. Added a hyperlink to the directory in question T03.

Changes since version 3.2:
. Updated IDL release dates.
. Added Wayne Landsman's IDL Astronomy Library WWW page.
. Added JHU/APL/S1R IDL Library WWW page.

Changes since version 3.1:
. Made it easier to find where to get the latest FAQ.
. Retroactively changed last version to 3.0, the first HTML version.

Changes since version 3.0:
. New FAQ maintainer.
. First HTML version.
. Added an Appendix for some previous material.

Changes since version 2.8:
. Added Power Macintosh to systems which IDL runs on.
. Updated "Training" contact information.

Changes since version 2.7:
. Updated information regarding next release dates.
. Changed reference to openwin3.doc to sun.doc.

Changes since version 2.6:
. New question T19 added regarding MacX and IDL.
. Updated information regarding current IDL versions.

. Reference to current IDL version changed from 3.5.1 to 3.6.1.

Changes since version 2.5:
. T18 responses corrected.

Changes since version 2.4:
. New question T18 added regarding vectorizing an equation.
. Address change for FAQ maintainer.
. Address change for FAQ location.

Changes since version 2.3:
. New question T17 added regarding cross-hair cursor.
. Additional info for NASA ftp site.
. Additional information provided for question T01 regarding contours.
. Question G09 referred to the "other" IDL as Interface Description
  Language, rather than the correct Interface Definition Language.

Changes since version 2.2:
. Question G13 regarding IDL World Wide Web info added.
. JHU/APL IDL library name changed from nansen to fermi. Nansen will
  still work for some time.
. Release dates for upcoming versions of IDL revised.

Changes since version 2.1:
. Due to resource problems, the lumpi.informatik.uni-dortmund.de site
  is no longer carrying IDL binaries. However, the distribution is now
  available from ftp.Germany.EU.net (192.76.144.75).
. Reference to current IDL version changed from 3.5 to 3.5.1.
. Mention of compressed version of FAQ included.
. Added ESRG to list of FTP sites.

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The End

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