Subject: making a checkerboard array?
Posted by Mike[2] on Tue, 25 Sep 2007 16:27:17 GMT
View Forum Message <> Reply to Message

I'm trying to make a checkerboard mask for an array, but I'm missing something that is likely to be obvious to the IDL array masters. The following code makes a pattern like this (use a fixed width font):

```
++++++++++++++++++++++++++++++
++++++++++++++++++++++++++++++
++++++++++++++++++++++++++++++
00000+++++00000+++++00000+++++
00000+++++00000+++++00000+++++
00000+++++00000+++++00000+++++
++++++++++++++++++++++++++++++
++++++++++++++++++++++++++++++
++++++++++++++++++++++++++++++
00000+++++00000+++++00000+++++
00000+++++00000+++++00000+++++
00000+++++00000+++++00000+++++
++++++++++++++++++++++++++++++
++++++++++++++++++++++++++++++
++++++++++++++++++++++++++++++
00000+++++00000+++++00000+++++
00000+++++00000+++++00000+++++
00000+++++00000+++++00000+++++
```

Can anyone help me fill in the missing rectangles like this?

```
+++++00000+++++00000+++++00000
+++++00000+++++00000+++++00000
+++++00000+++++00000+++++00000
00000+++++00000+++++00000+++++
00000+++++00000+++++00000+++++
00000+++++00000+++++00000+++++
+++++00000+++++00000+++++00000
+++++00000+++++00000+++++00000
+++++00000+++++00000+++++00000
00000+++++00000+++++00000+++++
00000+++++00000+++++00000+++++
00000+++++00000+++++00000+++++
+++++00000+++++00000+++++00000
+++++00000+++++00000+++++00000
+++++00000+++++00000+++++00000
00000+++++00000+++++00000+++++
00000+++++00000+++++00000+++++
00000+++++00000+++++00000+++++
```

```
Nx=300
Ny=200
Nrects = 10
Xside = Nx/Nrects
Yside = Ny/Nrects
xs = [replicate(1,Xside), replicate(0,Xside)]
while n_elements(xs) lt Nx do xs = [xs, [replicate(1,Xside),
replicate(0,Xside)]]
xs = xs[0:Nx-1]
ys = [replicate(1,Yside), replicate(0,Yside)]
while n_elements(ys) lt Ny do ys = [ys, [replicate(1,Yside),
replicate(0,Yside)]]
ys = ys[0:Ny-1]
window, xsize=Nx, ysize=Ny
tvscl, xs # ys
```

Subject: Re: making a checkerboard array?
Posted by David Fanning on Tue, 25 Sep 2007 16:56:22 GMT
View Forum Message <> Reply to Message

Mike writes:

> I'm trying to make a checkerboard mask for an array, but I'm missing
> something that is likely to be obvious to the IDL array masters. The
> following code makes a pattern like this (use a fixed width font):

Here is my implementation:

```
  Function Checkerboard, xsize, ysize, white, black

  IF N_Elements(xsize) EQ 0 THEN xsize = 512
  IF N_Elements(ysize) EQ 0 THEN ysize = 512
  IF N_Elements(white) EQ 0 THEN white = 255
  IF N_Elements(black) EQ 0 THEN black = 0

  IF xsize MOD 2 NE 0 THEN $
    Message, 'The X size must be an even number.'
  IF ysize MOD 2 NE 0 THEN $
    Message, 'The Y size must be an even number.'

  horizontalBoard = FltArr(xsize, ysize)
  verticalboard =   FltArr(xsize, ysize)
  xhalfSize = xsize / 2
  x = IndGen(xhalfSize) * 2
  yhalfSize = ysize / 2
  y = IndGen(yhalfsize) * 2
```

```
  horizontalBoard[x,*] = 1
  verticalBoard[*,y] = 1
  verticalBoard = Temporary(verticalBoard) + horizontalBoard
  verticalBoard[Where(verticalBoard EQ 2)] = 0
  board = FltArr(xsize, ysize) + white
  board[Where(verticalBoard GT 0)] = black
  RETURN, board
  END
```

Are you working through Gonzales and Woods? My 3rd Edition just arrived yesterday! :-)

Cheers,

David
--
David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: http://www.dfanning.com/
Sepore ma de ni thui. ("Perhaps thou speakest truth.")

Subject: Re: making a checkerboard array?
Posted by JD Smith on Tue, 25 Sep 2007 21:34:54 GMT
View Forum Message <> Reply to Message

On Tue, 25 Sep 2007 09:27:17 -0700, Mike wrote:

> I'm trying to make a checkerboard mask for an array, but I'm missing
> something that is likely to be obvious to the IDL array masters.

> Can anyone help me fill in the missing rectangles like this?
>
> +++++00000+++++00000+++++00000
> +++++00000+++++00000+++++00000
> +++++00000+++++00000+++++00000
> 00000+++++00000+++++00000+++++
> 00000+++++00000+++++00000+++++
> 00000+++++00000+++++00000+++++
> +++++00000+++++00000+++++00000
> +++++00000+++++00000+++++00000
> +++++00000+++++00000+++++00000
> 00000+++++00000+++++00000+++++
> 00000+++++00000+++++00000+++++
> 00000+++++00000+++++00000+++++
> +++++00000+++++00000+++++00000
> +++++00000+++++00000+++++00000

> +++++00000+++++00000+++++00000
> 00000+++++00000+++++00000+++++
> 00000+++++00000+++++00000+++++
> 00000+++++00000+++++00000+++++

l=lindgen(nx,ny)
l=(l mod (xside*2) lt xside) XOR (l/nx mod (yside*2) ge yside)

JD

Subject: Re: making a checkerboard array?
Posted by David Fanning on Tue, 25 Sep 2007 21:52:33 GMT
View Forum Message <> Reply to Message

JD Smith writes:

>> I'm trying to make a checkerboard mask for an array, but I'm missing
>> something that is likely to be obvious to the IDL array masters.
>
> l=lindgen(nx,ny)
> l=(l mod (xside*2) lt xside) XOR (l/nx mod (yside*2) ge yside)

Well, uh, it's not obvious to me. :-(

Cheers,

David
--
David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: http://www.dfanning.com/
Sepore ma de ni thui. ("Perhaps thou speakest truth.")

Subject: Re: making a checkerboard array?
Posted by Jean H. on Tue, 25 Sep 2007 22:07:41 GMT
View Forum Message <> Reply to Message

David Fanning wrote:
> JD Smith writes:
>
>
>>> I'm trying to make a checkerboard mask for an array, but I'm missing
>>> something that is likely to be obvious to the IDL array masters.
>>
>> l=lindgen(nx,ny)

```
>> l=(l mod (xside*2) lt xside) XOR (l/nx mod (yside*2) ge yside)
>
>
> Well, uh, it's not obvious to me. :-(
>
> Cheers,
>
> David
IDL> nx=20
IDL> ny=20
IDL> l=lindgen(nx,ny)
IDL> l=(l mod (nx*2) lt nx) XOR (l/nx mod (ny*2) ge ny)
IDL> print,l
   1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
1  1  1
   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0  0
   1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
1  1  1
   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0  0
   1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
1  1  1
   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0  0
   1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
1  1  1
   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0  0
   1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
1  1  1
   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0  0
   1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
1  1  1
   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0  0
   1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
1  1  1
   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0  0
   1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
1  1  1
   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0  0
   1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1
1  1  1
   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
```

0 0 0
 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1
 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0

Subject: Re: making a checkerboard array?
Posted by David Fanning on Tue, 25 Sep 2007 22:59:57 GMT
View Forum Message <> Reply to Message

Jean H writes:

> IDL> nx=20
> IDL> ny=20
> IDL> l=lindgen(nx,ny)
> IDL> l=(l mod (nx*2) lt nx) XOR (l/nx mod (ny*2) ge ny)
> IDL> print,l

If there is a question in there, I think this is the answer:

```
IDL> nx=20
IDL> ny=20
IDL> l =lindgen(nx, ny)
IDL> l=(l mod (2) lt 1) XOR (l/nx mod (2) ge 1)
IDL> print, l
  1  0  1  0  1  0  1  0  1  0  1  0  1  0  1  0  1  0
1  0
  0  1  0  1  0  1  0  1  0  1  0  1  0  1  0  1  0  1
0  1
  1  0  1  0  1  0  1  0  1  0  1  0  1  0  1  0  1  0
1  0
  0  1  0  1  0  1  0  1  0  1  0  1  0  1  0  1  0  1
0  1
  1  0  1  0  1  0  1  0  1  0  1  0  1  0  1  0  1  0
1  0
  0  1  0  1  0  1  0  1  0  1  0  1  0  1  0  1  0  1
0  1
  1  0  1  0  1  0  1  0  1  0  1  0  1  0  1  0  1  0
1  0
  0  1  0  1  0  1  0  1  0  1  0  1  0  1  0  1  0  1
0  1
  1  0  1  0  1  0  1  0  1  0  1  0  1  0  1  0  1  0
1  0
  0  1  0  1  0  1  0  1  0  1  0  1  0  1  0  1  0  1
0  1
  1  0  1  0  1  0  1  0  1  0  1  0  1  0  1  0  1  0
1  0
```

```
  0  1  0  1  0  1  0  1  0  1  0  1  0  1  0  1  0  1
0  1
  1  0  1  0  1  0  1  0  1  0  1  0  1  0  1  0  1  0
1  0
  0  1  0  1  0  1  0  1  0  1  0  1  0  1  0  1  0  1
0  1
  1  0  1  0  1  0  1  0  1  0  1  0  1  0  1  0  1  0
1  0
  0  1  0  1  0  1  0  1  0  1  0  1  0  1  0  1  0  1
0  1
  1  0  1  0  1  0  1  0  1  0  1  0  1  0  1  0  1  0
1  0
  0  1  0  1  0  1  0  1  0  1  0  1  0  1  0  1  0  1
0  1
  1  0  1  0  1  0  1  0  1  0  1  0  1  0  1  0  1  0
1  0
  0  1  0  1  0  1  0  1  0  1  0  1  0  1  0  1  0  1
0  1
```

Cheers,

David
--
David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: http://www.dfanning.com/
Sepore ma de ni thui. ("Perhaps thou speakest truth.")

Subject: Re: making a checkerboard array?
Posted by Mike[2] on Wed, 26 Sep 2007 14:46:07 GMT
View Forum Message <> Reply to Message

On Sep 25, 5:34 pm, JD Smith <jdsm...@as.arizona.edu> wrote:
>
> l=lindgen(nx,ny)
> l=(l mod (xside*2) lt xside) XOR (l/nx mod (yside*2) ge yside)

I'm speachless - thanks!

Mike

Subject: Re: making a checkerboard array?
Posted by Mike[2] on Wed, 26 Sep 2007 15:02:07 GMT
View Forum Message <> Reply to Message

On Sep 25, 12:56 pm, David Fanning <n...@dfanning.com> wrote:

> Are you working through Gonzales and Woods? My 3rd Edition just
> arrived yesterday! :-)

No - I'm making an image fuser that might work better than alpha blending for pairs of PET images. Your solution almost works. If I congrid it to make the squares bigger, it is just right. But JD's is ... well ... I have no idea how a mind just pops that out!

Mike

P.S. Someone who is happy to get his new image processing book may appreciate the quiz that is going around the lab here: http://www.nerdtests.com/ft_nq.php ;-)

Subject: Re: making a checkerboard array?
Posted by Bruce Bowler on Wed, 26 Sep 2007 15:19:36 GMT
View Forum Message <> Reply to Message

> http://www.nerdtests.com/ft_nq.php ;-)

Arghhhhhh 91. I didn't think I was *that* nerdy :-)

--
+------------------+------------------------------------ ----------+
Bruce Bowler | Those who cast the votes decide nothing. Those who
1.207.633.9600 | count the votes decide everything. - Anon
bbowler@bigelow.org |
+------------------+------------------------------------ ----------+

Subject: Re: making a checkerboard array?
Posted by David Fanning on Wed, 26 Sep 2007 15:28:10 GMT
View Forum Message <> Reply to Message

Bruce Bowler writes:

> Arghhhhhh 91. I didn't think I was *that* nerdy :-)

Are you available for some map documentation translation work?

Cheers,

David
--

David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: http://www.dfanning.com/
Sepore ma de ni thui. ("Perhaps thou speakest truth.")

Subject: Re: making a checkerboard array?
Posted by David Fanning on Wed, 26 Sep 2007 15:29:25 GMT
View Forum Message <> Reply to Message

Bruce Bowler writes:

> Arghhhhhh 91. I didn't think I was *that* nerdy :-)

Let's just say in college I was an English major and
let it go at that. :-(

Cheers,

David
--
David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: http://www.dfanning.com/
Sepore ma de ni thui. ("Perhaps thou speakest truth.")

Subject: Re: making a checkerboard array?
Posted by Allan Whiteford on Wed, 26 Sep 2007 16:37:24 GMT
View Forum Message <> Reply to Message

Bruce Bowler wrote:
>> http://www.nerdtests.com/ft_nq.php ;-)
>
>
> Arghhhhhh 91. I didn't think I was *that* nerdy :-)
>

The test is scoring people too highly... I don't deserve the 94 I got.
Maybe a few years ago, but not now... surely not now!?!

Maybe it's just English majors bringing the average down ;).

I could tell I was heading for a high score when there wasn't an option
to pick "None of the above, it should be a lower case 'c'" which is what
I really wanted to answer.

Thanks,

Allan

Subject: Re: making a checkerboard array?
Posted by R.G.Stockwell on Wed, 26 Sep 2007 16:44:17 GMT
View Forum Message <> Reply to Message

"Bruce Bowler" <bbowler@bigelow.org> wrote in message
news:pan.2007.09.26.15.19.33@bigelow.org...
>> http://www.nerdtests.com/ft_nq.php ;-)
>
> Arghhhhhh 91. I didn't think I was *that* nerdy :-)

OHOH!

{takes test results, prints them to printer, and burns them! Pleasantly
dreams of
scoring only 91}

Subject: Re: making a checkerboard array?
Posted by JD Smith on Wed, 26 Sep 2007 17:27:37 GMT
View Forum Message <> Reply to Message

On Tue, 25 Sep 2007 15:52:33 -0600, David Fanning wrote:

> JD Smith writes:
>
>>> I'm trying to make a checkerboard mask for an array, but I'm missing
>>> something that is likely to be obvious to the IDL array masters.
>>
>> l=lindgen(nx,ny)
>> l=(l mod (xside*2) lt xside) XOR (l/nx mod (yside*2) ge yside)
>
> Well, uh, it's not obvious to me. :-(

Well, l mod (xside*2) produces a horizontal ramp from 0... xside*2,
repeating over and over, the same for each row (as long as the array
width is an even multiple of xside). Comparing this ramp to xside,
ala (ramp lt xside) produces alternating vertical bars of width xside.
Similarly for l/nx (the row number), producing alternating horizontal
bars of height yside. Put them on top of each other and you have a
lovely quilt pattern. But we don't want a quilt, we want a

checkerboard, i.e. we want only those spots where the two bar patterns
don't overlap, hence the exclusive or (XOR).

In case that wasn't clear, here it is dfanning style ;)

```
theRamp = LINDGEN( theNumberofXPixels , theNumberofYPixels )
theCheckerBoardHorizontalPeriod = 2 * theCheckWidth
theHorizontalRamp = theRamp MOD theCheckerBoardHorizontalPeriod
theHorizontalBands = theHorizontalRamp LT theCheckWidth

theRowNumbers = theRamp/theNumberofXPixels
theCheckerBoardVerticalPeriod = 2 * theCheckHeight
theVerticalRamp = theRowNumbers MOD theCheckerBoardVerticalPeriod
theVerticalBands = theVerticalRamp GE theCheckHeight

theCheckerBoard = theHorizontalBands XOR theVerticalBands
```

JD

Subject: Re: making a checkerboard array?
Posted by James Kuyper on Wed, 26 Sep 2007 17:29:33 GMT
View Forum Message <> Reply to Message

Allan Whiteford wrote:
> Bruce Bowler wrote:
>>> http://www.nerdtests.com/ft_nq.php ;-)
>>
>>
>> Arghhhhhh 91. I didn't think I was *that* nerdy :-)
>>
>
> The test is scoring people too highly... I don't deserve the 94 I got.
> Maybe a few years ago, but not now... surely not now!?!

I got a 97. That seems a bit high, but I'm not inclined to dispute it.

Subject: Re: making a checkerboard array?
Posted by David Fanning on Wed, 26 Sep 2007 17:39:12 GMT
View Forum Message <> Reply to Message

JD Smith writes:

> In case that wasn't clear, here it is dfanning style ;)
>
> theRamp = LINDGEN(theNumberofXPixels , theNumberofYPixels)

> theCheckerBoardHorizontalPeriod = 2 * theCheckWidth
> theHorizontalRamp = theRamp MOD theCheckerBoardHorizontalPeriod
> theHorizontalBands = theHorizontalRamp LT theCheckWidth
>
> theRowNumbers = theRamp/theNumberofXPixels
> theCheckerBoardVerticalPeriod = 2 * theCheckHeight
> theVerticalRamp = theRowNumbers MOD theCheckerBoardVerticalPeriod
> theVerticalBands = theVerticalRamp GE theCheckHeight
>
> theCheckerBoard = theHorizontalBands XOR theVerticalBands

Oh, hell. I think I'm going back to all lowercase. :-(

Cheers,

David

--
David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: http://www.dfanning.com/
Sepore ma de ni thui. ("Perhaps thou speakest truth.")

Subject: Re: making a checkerboard array?
Posted by edward.s.meinel@aero. on Thu, 27 Sep 2007 14:54:43 GMT
View Forum Message <> Reply to Message

On Sep 26, 12:44 pm, "R.G. Stockwell" <noem...@please.com> wrote:
> "Bruce Bowler" <bbow...@bigelow.org> wrote in message
>
> news:pan.2007.09.26.15.19.33@bigelow.org...
>
>>> http://www.nerdtests.com/ft_nq.php;-)
>
>> Arghhhhhh 91. I didn't think I was *that* nerdy :-)
>
> OHOH!
>
> {takes test results, prints them to printer, and burns them! Pleasantly
> dreams of
> scoring only 91}

99! No, that doesn't mean 'factorial'... Oooo, Agent 99, yowza!

Bruce, why are you so surprised? You're posting on comp.lang.idl-
pvwave, for crying out loud!

Ed "supreme nerd god" Meinel