
Subject: Re: converting ieee-float-format to pw-wave-float-format

Posted by [grunes](#) on Fri, 26 Aug 1994 13:51:38 GMT

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I was wrong: 8 bit exponent.

If you understand Fortran, these routines, which haven't been completely tested, might help:

```
C-----
      function FromVaxR4(x)
C Function to convert Vax real*4 number to local floating point.
C Cannot handle NaNs or numbers which are too small or too large.
C By mitchell r grunes.
```

```
      integer*4  x,y,i          ! Really Vax real*4--but
                                ! must be kept in integers
                                ! so won't be "normalized".
```

```
      character*1 a(4)
      equivalence (y,a)
      parameter (Mask23=2**23-1)
      parameter (ioffset=128+24)
```

```
      y=x
      i=      iand(ichar(a(2)),255)
      i=ior(ishft(i,8),iand(ichar(a(1)),255))
      i=ior(ishft(i,8),iand(ichar(a(4)),255))
      i=ior(ishft(i,8),iand(ichar(a(3)),255))
```

```
      iexponent=iand(ishft(i,-23),255)-ioffset
      mantissa=iand(i,Mask23)
```

```
      if(i.eq.0)then
        FromVaxR4=0
      else
        mantissa=ior(ishft(1,23),mantissa)
        if(i.gt.0)then
          FromVaxR4= mantissa*2.**iexponent
        else
          FromVaxR4=-mantissa*2.**iexponent
        endif
      endif
      end
```

```
C-----
      function FromIEEER4(x)
C Function to convert IEEE real*4 number to local floating point.
C Assumes number written on a "most significant byte first" machine like
C a Sun or SGI workstation.
```

c Cannot handle NaNs or numbers which are too small or too large.

c By mitchell r grunes.

```
integer*4 x,y,i      ! Really IEEE real*4--but
                    ! must be kept in integers
                    ! so won't be "normalized".
```

```
character*1 a(4)
equivalence (y,a)
parameter (Mask23=2**23-1)
parameter (ioffset=128+22)
```

```
y=x
i=      iand(ichar(a(1)),255)
i=ior(ishft(i,8),iand(ichar(a(2)),255))
i=ior(ishft(i,8),iand(ichar(a(3)),255))
i=ior(ishft(i,8),iand(ichar(a(4)),255))

iexponent=iand(ishft(i,-23),255)-ioffset
mantissa=iand(i,Mask23)
```

```
if(i.eq.0)then
  FromIEEEER4=0
else
  mantissa=ior(ishft(1,23),mantissa)
  if(i.gt.0)then
    FromIEEEER4= mantissa*2.**iexponent
  else
    FromIEEEER4=-mantissa*2.**iexponent
  endif
endif
end
```

C-----

```
function FromRIEEER4(x)
```

c Function to convert IEEE real*4 number to local floating point.

c Assumes number written on a "least significant byte first" machine like

c a PC.

c Cannot handle NaNs or numbers which are too small or too large.

c By mitchell r grunes.

```
integer*4 x,y,i      ! Really IEEE real*4--but
                    ! must be kept in integers
                    ! so won't be "normalized".
```

```
character*1 a(4)
equivalence (y,a)
parameter (Mask23=2**23-1)
parameter (ioffset=128+22)
```

```
y=x
i=      iand(ichar(a(4)),255)
i=ior(ishft(i,8),iand(ichar(a(3)),255))
```

```
i=ior(ishft(i,8),iand(ichar(a(2)),255))
i=ior(ishft(i,8),iand(ichar(a(1)),255))

iexponent=iand(ishft(i,-23),255)-ioffset
mantissa=iand(i,Mask23)

if(i.eq.0)then
  FromRIEEER4=0
else
  mantissa=ior(ishft(1,23),mantissa)
  if(i.gt.0)then
    FromRIEEER4= mantissa*2.**iexponent
  else
    FromRIEEER4=-mantissa*2.**iexponent
  endif
endif
end
```
