NAME atof -- ascii to floating

SYNOPSIS jsr r5,atof; subr

DESCRIPTION _atof_ will convert an ascii stream to a floating number returned in fr0. The subroutine _subr_ is called on r5 for each character of the ascii stream. _subr_ should return the character in r0. The first character not used in the conversion is left in r0. The floating point simulation should be active in either floating or double mode, but in single precision integer mode.

FILES kept in /etc/liba.a

SEE ALSO fptrap

DIAGNOSTICS

BUGS The subroutine _subr_ should not disturb any registers.

OWNER ken

NAME atoi -- ascii to integer

SYNOPSIS jsr r5,atoi; subr

DESCRIPTION •atoi will convert an ascii stream to a binary number returned in mq. The subroutine subr is called on r5 for each character of the ascii stream. subr should return the character in r0. The first character not used in the conversion is left in r0.

FILES kept in /etc/liba.a

SEE ALSO

DIAGNOSTICS

BUGS The subroutine subr should not disturb any registers.

OWNER ken

NAME ctime -- convert date and time to ASCII

SYNOPSIS

```
(move time to AC—MQ)
mov     $buffer,r0
jsr     pc,ctime
```

DESCRIPTION The buffer is 15 characters long. The time has the format

    Oct 9 17:32:24

The input time is in the AC and MQ registers in the form returned by <u>sys</u> time.

FILES kept in /etc/liba.a

SEE ALSO ptime, to print time; sys time

DIAGNOSTICS

BUGS The time is not taken modulo 1 year. (Jan 1 comes out Dec 32.) Also, the clock period is only a couple of years.

OWNER dmr

NAME exp -- exponential function

SYNOPSIS jsr r5,exp

DESCRIPTION The exponential of fr0 is returned in fr0. The floating point simulation should be active in either floating or double mode, but in single precision integer mode.

FILES kept in /etc/liba.a

SEE ALSO fptrap

DIAGNOSTICS

BUGS Large arguments will cause an overflow fault from the floating point simulator.

OWNER ken

NAME fptrap -- floating point simulator

SYNOPSIS sys 33.; fptrap

DESCRIPTION _fptrap_ is a program designed to pick up illegal instruction in order to simulate a sub—set of the 11/45 floating point hardware.

FILES kept in /etc/liba.a

SEE ALSO as, PDP—11/45 manual

DIAGNOSTICS none, hardware gives no diagnostics.

BUGS The simulation, if unsuccessful for any reason gives an lOT fault from inside the simulator. This should be handeled better.

OWNER ken, dmr

NAME ftoa -- floating to ascii conversion

SYNOPSIS jsr r5,ftoa; subr

DESCRIPTION ftoa will convert the floatin9 point number in fr0 into ascii in the form [-]d.ddddddde[-]dd*. The floating point simulator should be active in either floating or double mode, but in single integer mode. For each character generated by ftoa, the subroutine _subr_ is called on register r5 with the character in r0.

FILES kept in /etc/liba.a

SEE ALSO fptrap

DIAGNOSTICS

BUGS The subroutine _subr_ should not disturb any registers.

OWNER ken

NAME getw, getc, fopen -- buffered input

SYNOPSIS

```
mov     $filename , r0
jsr     r5,fopen; iobuf

jsr r5,getc; iobuf
(character in r0)

jsr     r5,getw; iobuf
(word in r0)
```

DESCRIPTION These routines are used to provide a buffered input facility. iobuf is the address of a 134(10) byte buffer area whose contents are maintamed by these routines. Its format is:

```
ioptr:          . =. +2      / file descriptor
          .=.+ 2             / characters left in buffer
          .=.+ 2             / ptr to next character
                 . = .+28.   / the buffer
```

fopen should be called initially to open the file. On return, the error bit (c—bit) is set if the open failed. If fopen is never called, get will read from the standard input file.

getc returns the .next byte from the file in r0. The error bit is set on end of file or a read error.

getw returns the next word in r0. getc and getw may be used alternately; there are no odd/even problems.

iobuf must be provided by the user; it must be on a word boundary.

FILES kept in /etc/liba.a

SEE ALSO sys open, sys read; putc, putw, fcreat

DIAGNOSTICS c—bit set on EOF or error

BUGS for greater speed, the buffer should be 512 bytes long. Unfortunately, this will cause several existing programs to stop working.

OWNER dmr

NAME itoa -- integer to ascii conversion

SYNOPSIS jsr r5,itoa; subr

DESCRIPTION itoa will convert the number in r0 into ascii decimal possibly preceded by a — sign. For each character generated by itoa, the subroutine subr is called on register r5 with the character in r0.

FILES kept in /etc/liba.a

SEE ALSO

DIAGNOSTICS

BUGS The subroutine _subr_ should not disturb any registers.

OWNER ken

NAME log -- logarithm base e

SYNOPSIS jsr r5,log

DESCRIPTION The logarithm base e of fr0 is returned in fr0. The floating point simulation should be active in either floating or double mode, but in single precision integer mode.

FILES kept in /etc/liba.a

SEE ALSO fptrap

DIAGNOSTICS The error bit (c—bit) is set if the input argument is less than or equal to zero.

BUGS

OWNER ken

NAME mesg -- write message on typewriter

SYNOPSIS jsr r5,mesg; <Now is the time\0>; .even

DESCRIPTION *mesg* writes the string immediately following its call onto the standard output file. The string is terminated by a 0 byte.

FILES kept in /etc/liba.a, standard output file

SEE ALSO

DIAGNOSTICS

BUGS

OWNER ken, dmr

NAME ptime -- print date and time

SYNOPSIS

```
(move time to ac—mq)
mov file,r0
jsr pc,ptime
```

DESCRIPTION _ptime_ prints the date and time in the form

Oct 9 17:20:33

on the file whose file descriptor is in r0. The string is 15 characters long. The time to be printed is placed in the AC and MQ registers in the form returned by _sys_ _time_.

FILES kept in /etc/liba.a

SEE ALSO sys time, ctime (used to do the conversion)

DIAGNOSTICS

BUGS see ctime

OWNER dmr, ken

NAME putc, putw, fcreat, flush -- buffered output

SYNOPSIS

```
may     $filename , r0
jsr     r5,fcreat; iobuf

(get byte in r0)
jsr r5,putc; iobuf

(get word in r0)
jsr r5,putw; iobuf

jsr r5,flush; iobuf
```

DESCRIPTION _fcreat_ creates the given file (mode 17) and sets up the buffer iohuf (size 134(10) bytes); putc and putw write a byte or word respectively onto the file; _flush_ forces the contents of the buffer to be written, but does not close the file. The format of the buffer is:

```
iobuf:  .=.+2           / file descriptor
        .=.+2           / characters unused in buffer
        .=.+ 2          / ptr to next free character
        .=.+128.        / buffer
```

fcreat sets the error bit (c—bit) if the file creation failed; none of the other routines return error information.

Before terminating, a program should call _flush_ to force out the last of the output.

The user must supply iohuf, which should begin on a word boundary.

FILES kept in/etc/liba.a

SEE ALSO sys creat; sys write; getc, getw, fopen

DIAGNOSTICS error bit possible on fcreat call

BUGS buffers should be changed to 512 bytes.

OWNER dmr

NAME sin, cos -- sine cosine

SYNOPSIS jsr r5,sin (cos)

DESCRIPTION The sine (cosine) of fr0 (radians) is returned in fr0. The floating point simulation should be active in either floating or double mode, but in single precision integer mode. All floating registers are used.

FILES kept in /etc/liba.a

SEE ALSO fptrap

DIAGNOSTICS

BUGS Size of the argument should be checked to make sure the result is meaningful

OWNER ken, dmr

NAME switch -- switch on value

SYNOPSIS

```
(switch value in r0)
jsr r5,switch; swtab
(not—found return)

            swtab: val1; lab1;

valn; labn
..; 0
```

DESCRIPTION <u>switch</u> compares the value of r0 against each of the vali; if a match is found, control is transferred to the corresponding lab. (after popping the stack once). If no match has been found by the time a null labi occurs, <u>switch</u> returns.

FILES kept in /etc/liba.a

SEE ALSO

DIAGNOSTICS

BUGS

OWNER ken, dmr