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COLLEGE ON MICROPROCESSORS:

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ADDENDUM TO MPL COOKBOOK

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INPUT/OUTPUT IN MPL

Since there are no input/output statements in MPL, the only possibility we have to input or output a character is the use of assembly language routines. One could e.g. write an I/O driver routine and insert it into the MPL program with the "$" sign. Then however we risk to get a "MPL" program which consists of 90% of assembly language, which is not exactly what we want. A much better method is the use of the ROSY monitor which already contains almost all routines we need. These routines can be called with monitor calls (see course notes).
We write:

```
$       LDAA      ASNUM     NUMBER IN ASCII
$       SWI                 CALLS MONITOR
$       FCB       6
```

to output the contents of ASNUM which must be an ASCII character.

The most elegant method however is the following:
We write the necessary I/O routines as assembly language subroutines which can be called from MPL. In these subroutines we use the monitor calls of course. Since the parameter transfer to the monitor calls is done in the CPU registers we may transfer our parameters from MPL to the assembly language subroutines in the registers as well. We collect all the I/O routines we need in a file which may be called MPLIO. The assembler directive INSERT will insert that file into the compiled MPL program when we specify: ALIB=MPLIO either in MICMPL or in MICASM.
The same example as above becomes:

```
CALL OUTCH<ASNUM>       !TRANSFER ASNUM IN ACC. A
      .
      .
$    INSERT             !INSERTS MPLIO
END
```

(The subroutine OUTCH can be found in MPLIO).
When translating you type:

```
BEGIN,MICMPL,,S=MPLSRC,ALIB=MPLIO
```

In the file MPLIO we have the program:

```
OUTCH     SWI           CALL MONITOR ROUTINE 6
          FCB     6
          RTS           RETURN TO MPL PROGRAM
```

Of course now we can call OUTCH from the MPL program as often as we like and we can output any ASCII character:

e.g. OUTCH<'$'> will output a "$".