TO:          Distribution

SUBJECT:     UPDATED MEGAS LOADER

Attached is information about the universal megas downloader,
DLM for TSX systems.

The changes described allow the following features:

1) 24k to 32k megas - Banks 5, 6, D, E or F, 8, 9, A and B
2) error recovery   - Retry on download failure
3) new data format  - all informational messages in HEX ascii
4) memory examine and deposit

For more information and use of LOAD and SAVE for Mr/DrColor,
please refer to SDB-2 of Mar 24, 1983.

Programmer: Steve Field


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Downloading Megas

The general format for using DLM is:        (TSX prompt is '.')

        .dlm <cr>
            filename[/x] <cr>

    or

        .dlm filename[/x] <cr>

Filename is the name of an APH 1610 linked object file. '/x' refers
to an optional TSX line number. Please refer to SDB-2 for more
information.

When loading, DLM now displays the number of the bank currently being
accessed. The format of this informational is in hex ascii digits
following the load statement:

        loading... 56d9a

and so on. Also if an error is detected, DLM will attempt a number of
retrys to that location and if it still causes an error the message
that used to appear will be shown in the new format: eg.

        addr     file     megas     diff       ˙
        ea62     027a     037a      ff00
        9aae     0010     03ff      fcll

where ADDR is the address of the loacation at fault, FILE is the value
from the object file, MEGAS is the value returned from the megas and
DIFF is the difference ie. DIFF = FILE - MEGAS. If this type of message
appears often or at least many times at the same location, this might
indicate bad ram on the board as in the case of 9aae in the example.

After Loading

On completion of loading, DLM causes Intellivision reset and displays:

        <CR> or R[eset], D[eposit], E[xamine], Q[uit]
    dlm>

If the latter method of using the DLM command as described above is used
the TSX prompt '.' will also be displayed and control of the next entry
will be handled by TSX.

If the first method is used, DLM will now be waiting for input with the
cursor just past the 'dlm> ' prompt.

DLM commands

The chars between '[' and ']' are optional. To cause IV reset enter
one of the following at the dlm> prompt:

```
<CR>
R<cr>
r[eset]<cr>
```

and so on. The only way to exit dlm short of <ctrl>C is the quit command

```
Q<cr>
q[uit]<cr>
```

only the first character of any command is required. Any chars entered i
upper or lower case will be displayed in upper case only.

EXAMINE memory

The examine memory command has the format:

```
E[xamine],hexA[,.]
```

where hexA is the starting address to be examined. The data displyed is
in hex ascii decle format 8 items to a line:

```
addr / decl decl decl decl decl decl decl decl
```

```
dlm> E,5(DF<CR>
 50df / 03db 0000 0000 02a0 00al 00a2 03ff 0000
dlm>
```

The optional '.' parameter means to continue displaying memory until a '
is entered.  The cursor will be positioned just after the displayed line
waiting for input, any character other than '.' will cause the next 8
locations of memory to be displayed and so on until a '.' is entered:

```
dlm> E,6000,.<cr>
 6000 / 0000 0000 0000 001a 0000 0000 0000 0000 <cr>
 6008 / 0000 0000 0000 0000 0000 0000 0000 0000 .<cr>
dlm>
```

DEPOSIT command

the deposit memory command has the format:

```
    D[eposit],hexA[,.]
```

where hexA is the location to be changed. The information displayed is
the address and the CURRENT contents in hex ascii format. The cursor
will be just beyond the data waiting for input, '.' or <CR> will leave
the data UNchanged: eg

```
 addr / decle

dlm> D,6000<cr>
 6000 / 0000 [input]<cr>
dlm>
```

the '.' command works as above for EXAMINE. Lets say we wanted to change
the contents of loactions 6000-6007: (from E,6000 above)

```
dlm> D,6000,.<cr>
 6000 / 0000 2EF<cr>
 6001 / 0000 1<cr>
 6002 / 0000 <cr>
 6003 / 001a A1<cr>
 6004 / 0000 1A<cr>
 6005 / 0000 <cr>
 6006 / 0000 FF<cr>
 6007 / 0000 .<cr>
dlm>
```

The examine command would now reveal:

```
dlm> E,6000<cr>
 6000 / 02ef 0001 0000 00a1 001a 0000 00ff 0000
dlm>
```


Notes On K24 Configuration

Under the 24k-32k configuration software, downloading with DLM is the
same as always with the following exceptions. A user on any TSX line
accesses the megas in the slot number coresponding to his/her TSX line
number, eg: line5-slot5. Or as specified in the DLM command:

    User with line 3 wants to load slot 6.

    .dlm filename/6<cr>

The software ONLY allows user 5 or slot5 loads to access the second mega:
AND to insure some safety in the system NO ACCESS TO SLOT 6 is allowed

until an address in the range 8000-bfff is encountered from a slot5 load

CAUTION

Any object file that has both E000 and F000 addresses will yield
indeterminate results. Any object with an address in the range
8000 to BFFF loaded to slot-5 will attempt to also load slot-6.

As always, the user must determine that the linked object matches
the target megas Megas configuration.