VU-FILE & VU-CALC appears to be a popular program owned by large
percentage of members, and requires further mention as they are
still giving problems with the transfer.
Two lessons are to be learned from this:
1. When LOADing CODE into Spectrum with a Microdrive, it is
   ESSENTIAL to always tag on the CODE START value. This
   applies to LOADing from Microdrive   OR   from   Tape.
2. DO check Length of YOUR version of programs being transferred
   as later versions of same program could possibly be different
   length. My VU-FILE is 5640 long. Some versions are 5888 long.
3. DO check that program on the tape actually works. (One member
   spent a whole day trying to transfer VU-FILE then later found
   problem was a faulty tape...I was caught-out like this with
   my Flight Simulator).
4. Useful tip from John Ledbury of London; Put a CAT 1 in line
   6000 of VU-FILE so that it'll print the File title available.

VU-CALC TO MICRODRIVE.
....

1.MERGE "VU-CALC" this loads in the Basic   part from tape
without it starting. Delete line 10 & change lines 1000 & 4000
to include the *"m";1; and put in line 1000 after the CODE the
true address of 30457. Save by: SAVE*"m";1;"VUB" LINE 3200
2.Clear out Spectrum, then LOAD "C" CODE 25232 to laod main code
from tape. Save by: SAVE*"m";1;"VUC" CODE 25232,5270
3.Make loader: 10 LOAD*"m";1;"VUC" CODE 25232: LOAD*"m";1;"VUB"
Save by: SAVE*"m";1;"VUCALC" LINE 10

   My Microdrive & Interface had to be returned to the Sinclair
Surgery for repair & has not yet been returned. ALL items except
the Chequered Flag routine had been checked prior to this.
....

HOOK CODE ERROR REPORT.

As we are only too well aware, a 48K Spectrum only really has
41780 Bytes available to the User (minus another 58 at least
when Microdrive connected. Also minus 168 Bytes for the User
Defined Graphics). BUT, the top of memory is also used to hold
the "Stack" information plus one or two other items. If on
LOADing you've had the message HOOK CODE ERROR, it is because
you have inadvertently overwritten part of the   "Stack"
information in the memory.
   Most machine-code games start by CLEAR xxxxx to set the
RAMTOP to a "safe" value......in most games this is unnecessary
as good programming prevents accidental overwriting of the
area and program isn't that long.
   Take JET-SET WILLY as an example: The machine code starts
at 32768 and is 32768 Bytes long. The last Byte is at location
65535. If we enter CLEAR 32767 (followed by pressing ENTER key),
this tells Spectrum to take top of memory (RAMTOP) as 32767 and
therefore the User Defined Graphics area & the "Stack" info
will be held BELOW 32767. The area above this still exists and
we can safely Load into it without fear of wiping-out any
useful Bytes. If using a Bytes-To-Microdrive Copier program it
doesn't give any problems as it auto relocates the program
whilst copying it to the Microdrive. For programs with only one
section of machine-code, it is just as easy to adjust RAMTOP to
be at least one Byte below the start address of the Code, LOAD
the code from tape, then SAVE to Microdrive. Remember that this
adjusting of RAMTOP is ONLY necessary if the CODE you are

CORRECTIONS TO SCRABBLE ROUTINE IN MICRODRIVE-EXCHANGE ISSUE 2.

On page 2. Delete the CLEAR 24399 in line 40. At end of line 40, just before the RANDOMIZE put NEXT J:

Change the CLEAR on line before last on this page to be CLEAR 24399

On page 3. First two lines should read:

LOAD "sc" CODE 24400. Already have the first 3000 Bytes, so Save by; CLEAR 27399
SAVE*"m";1;"SCRABBLE 2" CODE 27400,41135-3000

LOADing is going upto, or near the top of memory.....the RAMTOP is set at switch-on to be 65367. The next 168 Bytes are the UDG area, thus giving a physical RAMTOP of 65535. Later versions of the HOBBIT are over 40000 Bytes long and it is essential then to do a CLEAR xxxx before attempting to Load code from off the tape AND in these cases the original CLEAR must be left in the Basic. To transfer JET-SET WILLY machine-code section to Microdrive first CLEAR 32767. Then LOAD from tape as LOAD "" CODE 32768 Save to Microdrive by: SAVE*"m";1;"name" CODE 32768,32768

FIRST LINE IS NUMBERED 0

In most games it is easier to simply make-up your own Basic loader, but if you want to change the original Basic loader by using EDIT, you cannot EDIT a line 0. Solution is to change the line number to be other than zero. The location of the first line number depends if you are in Microdrive mode or not. Easiest way to ensure that you are is to enter a Microdrive command such as CAT 1. Now the first Byte of User Memory area will be 23813. ALL line numbers use two Bytes. If line number is 0 to 255, then it is the second Byte which holds the line number. In other words, locations 23813 & 23814 hold line number of the first line. Try this test. Enter a line thus:
  5 PRINT   Enter as direct command: PRINT PEEK 23814
This should print 5 on video. PRINT PEEK 23813 will print 0. Now enter POKE 23814,0 if you then LIST program you'll see that YOU have created a line zero. Now enter POKE 23813,1 LISTing will show line 256 since the first Byte of the line number holds multiples of 256. Try various values to prove this. If you POKE line number to be very high, say, 25000, screen will clear as Spectrum cannot display lines over 9999. (Actually it WILL display line but with weird line number if you POKE line to be 10000.....POKE 23813,39:POKE 23814,16)
SUMMARY: To change line 0 to be line 1, enter POKE 23814,1
....

SCRABBLE ONTO MICRODRIVE

The problem with Scrabble is it is too long. To put onto the microdrive we first need to split the main section into two. Next we arrange to put part onto the video (yes, it will look a mess), and the other part into correct location. Finally we "pull" the part on video to correct locations, do a CLS, then Start Scrabble. End result is Scrabble LOADed in about 15 seconds compared to about 4 minutes. The ONLY facility you will not have if the SAVE/LOAD a part played game.
    BASIC LOADER.
```
10 CLEAR 27399
20 LOAD*"m";1;"SCRABBLE 1" CODE 16384
30 LOAD*"m";1;"SCRABBLE 2" CODE 27400
40 CLEAR 24399: DATA 17,80,95,33,0,64,
   1,184,11,237,176,195,80,95: FOR J=
   23296 TO 23309: READ A: POKE J,A:
   RANDOMIZE USR 23296
```
This Loader has the values for the "NEWS-FLASH" Block move ready calculated and the JUMP to program Start built-in.

Save to Microdrive by: SAVE*"m";1;"SCRABBLE" LINE 10

To make SCRABBLE 1 section, LOAD from tape by entering:
LOAD "sc" CODE 16384   then Play the tape. This will Load on the video showing weird pattern. As soon as the colours start to appear, STOP the tape. Now can SAVE to Microdrive, but to avoid problems due to last two lines on video "dissappearing" we only SAVE first 3000 Bytes....SAVE*"m";1;"SCRABBLE 1" CODE 16384,3000 then rewind the tape ready for next action.
Clear Spectrum by RANDOMIZE USR 0 then enter CLEAR 23999 since we are going to LOAD all last section in one lump by:

LOAD "sc" CODE 24000. Already have the first 3000 Byes, so Save
by: SAVE*"m";1;"SCRABBLE 2" CODE 27000,41135-3000
NOTE: End of line 40 DATA is 195,80,95 This is machine-code JUMP
to 24400. The 195 is the JUMP to address formed by next 2 Btyes.
This machine-code Jump is essential since Scrabble didn't like
returning to Basic to do the RANDOMIZE USR xxxxx to start it!
****
This method will NOT work with Chequered Flag as Flag actually
checks the bottom corner of video is correct colour or it will
*crash..... you could have fun trying the Scrabble method but *
*would need to LOAD the screen carefully as well!   *
****
Scrabble transfer method derived by J.Coxhead of St Albans,Herts

     Several members have said they succeeded in transferring
JETPAC using the Newsflash method! This I cannot get to do
successfully. Could there be two versions of JETPAC? There are
two versions of Timegate, Hobbit AND it appears, VU-FILE. Each
version performs the same but are of different lengths. (Note
that if your VU-FILE is 5888 Bytes long, then the line 100 of
its needs ONLY the INK 7 of it to be changed to be CLS##).

J.G.Fountain of York discovered that ALL of Jetpac is offset by
4 Bytes, then 2nd section of program, which loads into the print
buffer, moves everything back by 4 bytes. Also, the last two
sections are only Loading a few Bytes & it is simpler to replace
these sections with a few POKEs added to basic part...this
applies to most of programs Loading 1,2 or 3 Bytes at the end.
The CODE start addresses ARE correct as the modifier program has
been altered to allow for it. Type-in following Basic Loader:

```
10 CLEAR 32767                    Lines 50 & 60 replace the
20 LOAD*"m";1;"jpsp" SCREEN$      Bytes 2 & 3 of program on
30 LOAD*"m";1;"jp0" CODE 32768    the tape, this speeds-up
40 LOAD*"m";1;"jpl" CODE 23424    LOADing time.
50 POKE 23728,233:                Note that it IS safe to
60 POKE 23672,65:POKE 23673,131   use a 2nd CLEAR as this
70 CLEAR 24575:PRINT USR 32768    ONLY affects RAMTOP value
```

(Version sent in actually included BEEPs and a Loading message).
Save to microdrive by   SAVE*"m";1;"JETPAC" LINE 10
If using MDSPY cassette, simply play in first three Bytes progs
and change names as necessary, then Copy to microdrive. If doing
manually, the Load from Tape & save to Microdrive is:-
1. LOAD "jpsp" SCREEN$: SAVE*"m";1;"jpsp" SCREEN$
2. LOAD "0" CODE 32768: SAVE*"m";1;"jp0" CODE 32768,8192
3. LOAD "1" CODE 32768: POKE 32770,128: SAVE "jpl" CODE 32768,15
 Basically J.G.Fountain solved problem with one simple POKE.

The Richard Shepherd "Cash Controller" maintains his standards
by having the program autostart by FORMATting your cartridge.
Too bad if anything else on it! B.J.Castle of Isle Of Wight
suggests changing the FORMAT in line 9575 to be ERASE & also to
change the name "cash" to "run" (so can simply enter RUN to Load
cartridge).He also prefers to have a PAUSE 50 between ERASE line
9575 & the SAVE line 9577. Useful advice to "Cash Controllers"

W.J.Ashplant of Enfield, Middx, couldn't get his Spectrum to
SAVE address 65368. As this is start of UDG area, he solved the
problem by instead using: SAVE*"m";1;"name" CODE USR "a",168 or
whatever length is. Spectrum knows CODE USR "a" is address 65368
This was when transferring "Go To Jail" to microdrive.

Alan Fortune of Nuneaton sent in a list of programs he
transferred to MD easily:Masterfile,Dlan,Shifty,Paintbox,Tasword

Picturesque's Monitor 16/48K, Melbourne Draw, CRL Stargaze after several pages of "rules" deleted from the Basic. VU-3D need all the numbers to be VALed to save Bytes. (Changing a GO TO 1000 to be GO TO VAL "1000" saves three Bytes. VAL is keyword on J Key). VU-CALC but only by moving parts onto video whilst doing any LOAD/SAVEs. Could there be two versions of VU-CALC?

....

CHEQUERED FLAG TO MICRODRIVE

Martin Howell of Chorley appears to have made a very close study of this program and has found areas which are totally blank and/or hold parts of screen not important. Very crafty use of these areas means he has shortened program by saving bits he chops off in these areas INCLUDING a Block Move program (any Block move program will look similar to the "Newsflash"). After eventually Loading from Microdrive, he "calls" the Block Move program he has put into it to relocate all program as per original, then it autostarts. Since my Microdrive is currently being useds as a doorstop at Sinclair Research, I could not check-out this routine, but I did check contents of the areas used and DO expect this routine to work. It is necessary to Load then Save sections to Tape before it can be put on Microdrive. Do follow the steps precisely as below:

1. Enter CLEAR 23999:LOAD "c" CODE 24000   All main part loaded.
2. Save two small areas to Tape by entering:
   SAVE "d" CODE 24000,390: SAVE "e" CODE 24512,128
3. Shift these areas to new positions by reloading as follows:
   LOAD "d" CODE 29100,390: LOAD "e" CODE 29800,128
4. Type in this short program, then RUN and enter these values:
   10 FOR J=31634 TO 31655
   20 INPUT A: POKE J,A   17,192,95,33,104,116,1,128,0,237,176,
   30 PRINT J;"=";PEEK J   17,192,93,33,172,113,1,134,1,237,176
   40 NEXT J
5. Now Save to TAPE by: SAVE "FLAGCODE" CODE 24641,40495
6. Do a RANDOMIZE USR 0 to clear memory, then type in:
   10 CLEAR 24640: LOAD*"m";1;"FLAGCODE" CODE 24641:RUN USR 31634
Now save this to microdrive by: SAVE*"m";1;"FLAGBASIC" LINE 10
7. Load the long tape you've just made, and save to Micodrive:
CLEAR 24640:LOAD "FLAGCODE" CODE 24641   Save it to Microdrive:
      SAVE*"m";1;"FLAGCODE" CODE 24641,40495
The RUN USR 31634 IS CORRECT (bypasses the "colour checker").
NOTE: I would suspect that at action 5 above, we should be able to save a step by Saving directly to Microdrive at this point.

Tip from Martin Howell of Chorley. Always add the keyword CODE to any Bytes programs so that a CAT 1 tells you it IS Bytes.

Tip from Michael Scott of Gateshead. On all cartridges put an Index program called RUN so can easily see cartridge content.

In next issue of MICRODRIVE-EXCHANGE....How to make very simple modifications to your Microdrive unit to ensure Formats 99-100K.

IN NEXT ISSUE A ROUTINE TO TOTALLY WIPE OUT ALL THE EXTRA BYTES USED BY MICRODRIVE WILL BE PRINTED. THIS WILL MEANS GAMES SUCH AS ATIC ATTACK CAN BE RAN. (And possibly Business programs by carefully shifting to/from video when Loading/Saving).

NOTE: JUST TRIED ON MICRODRIVE
Changes are as follows:
1.After Step 4, delete all lines one at a time.
2.Areas are NOT "free" so CANNOT use Car No.1.