Tech Info Library

Applesoft: 8 Bit Output (1 of 2)

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Security: Everyone

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For a number of reasons, AppleSoft "sets the eighth bit" of any data that it prints out--that is, it adds 128 to each ASCII value sent to the output device. A statement like

```
10 PRINT CHR$(76),
```

for example, doesn't really send ASCII 76 to the device; rather, it sends ASCII 204, or 76 + 128. This situation doesn't normally cause any problems--unless you're sending data to (1) a printer in "graphics" mode, (2) a printer in "custom character" mode, (3) any device that only uses ASCII values in the range of 0 to 255, (4) any device that expects byte-oriented data, or (5) any device that always needs the eighth bit clear, such as Hewlett-Packard devices. If the device you're sending Applesoft data to is one that needs the eight bit clear, you will see one or more of the following symptoms:

1. The device refuses to respond to commands;
2. The device refuses to print graphic characters;
3. In graphics mode, an extra dot or line appears periodically throughout the printout.

The following short machine language program allows you to have complete control over the eighth bit in output statements sent from Applesoft; this program works under either DOS 3.3 or ProDOS.

To run the program, first boot from a DOS 3.3 or ProDOS disk, and then type the following commands, following each with a carriage return.

NOTE: The indented material in CAPITAL letters below is what you should type (without the leading spaces, of course); the material in lowercase letters consistes of instructions and general information.

From Applesoft BASIC, type:

```
CALL-151
```

The system will respond with an * prompt. After the *, type:

```
  300:A9 4C 8D F5 03 A9 10 8D
```

Press RETURN; you'll then get a another * prompt. Repeat this process with each of the following lines:

```
  308:F6 03 A9 03 8D F7 03 60

  310:20 6D 03 20 E3 DF A0 00

  318:B1 83 F0 2E AA C8 B1 83

  320:85 5E C8 B1 83 85 5F A0

  328:00 B1 5E 20 ED FD C8 CA

  330:D0 F7 A0 00 B1 B8 C9 3A

  338:F0 10 C9 00 F0 0C C9 3B

  340:F0 11 20 7D E0 90 07 4C

  348:10 03 20 8E FD 60 A2 10

  350:4C 12 D4 20 59 03 4C 60

  358:03 E6 B8 D0 02 E6 B9 60

  360:B1 B8 C9 3A F0 E7 C9 00

  368:F0 E3 4C 10 03 A0 00 B1

  370:B8 D9 9F 03 D0 28 C8 C0

  378:02 D0 F4 68 68 20 86 03

  380:20 ED FD 4C 32 03 A9 02

  388:18 65 B8 85 B8 A9 00 65

  390:B9 85 B9 20 67 DD 20 FB

  398:E6 A5 A1 20 59 03 60 E7

  3A0:28
```

Now, to check your work, type:

```
  300.3A0
```

What you have typed up to this point will then be listed; it should look like the listing below. If any lines contain mistakes, simply retype the bad line and then repeat the last step (300.3A0). Repeat this process until your listing

exactly matches the one below.

```
  300 - A9 4C 8D F5 03 A9 10 8D
  308 - F6 03 A9 03 8D F7 03 60
  310 - 20 6D 03 20 E3 DF A0 00
  318 - B1 83 F0 2E AA C8 B1 83
  320 - 85 5E C8 B1 83 85 5F A0
  328 - 00 B1 5E 20 ED FD C8 CA
  330 - D0 F7 A0 00 B1 B8 C9 3A
  338 - F0 10 C9 00 F0 0C C9 3B
  340 - F0 11 20 7D E0 90 07 4C
  348 - 10 03 20 8E FD 60 A2 10
  350 - 4C 12 D4 20 59 03 4C 60
  358 - 03 E6 B8 D0 02 E6 B9 60
  360 - B1 B8 C9 3A F0 E7 C9 00
  368 - F0 E3 4C 10 03 A0 00 B1
  370 - B8 D9 9F 03 D0 28 C8 C0
  378 - 02 D0 F4 68 68 20 86 03
  380 - 20 ED FD 4C 32 03 A9 02
  388 - 18 65 B8 85 B8 A9 00 65
  390 - B9 85 B9 20 67 DD 20 FB
  398 - E6 A5 A1 20 59 03 60 E7
  3A0 - 28
```

When your listing contains no errors, type:

```
  BSAVE ASOFT8BIT,A$300,L$A1
```

The program is now available for your use. To use it inside your BASIC program, simply include a line like:

```
  10 PRINT CHR$(4);"BRUN ASOFT8BIT"
```

in your own program.

Apple Technical Communications

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