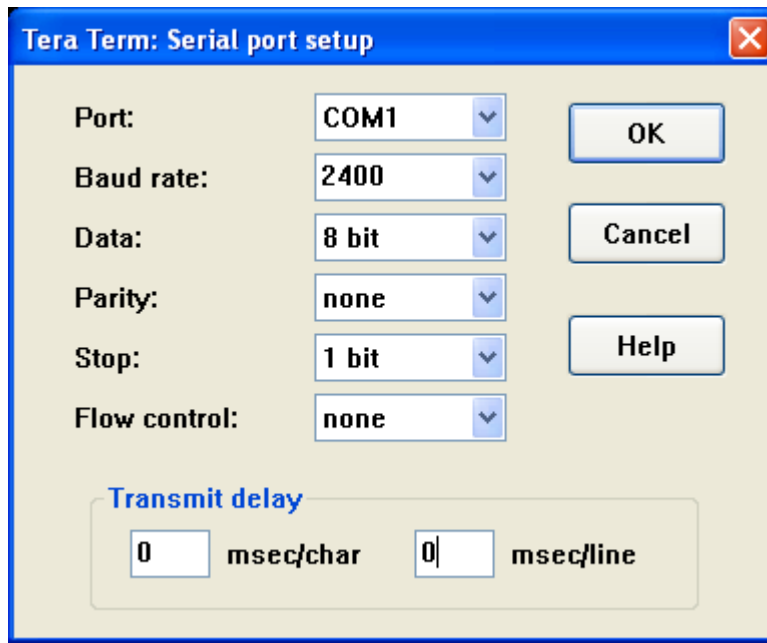
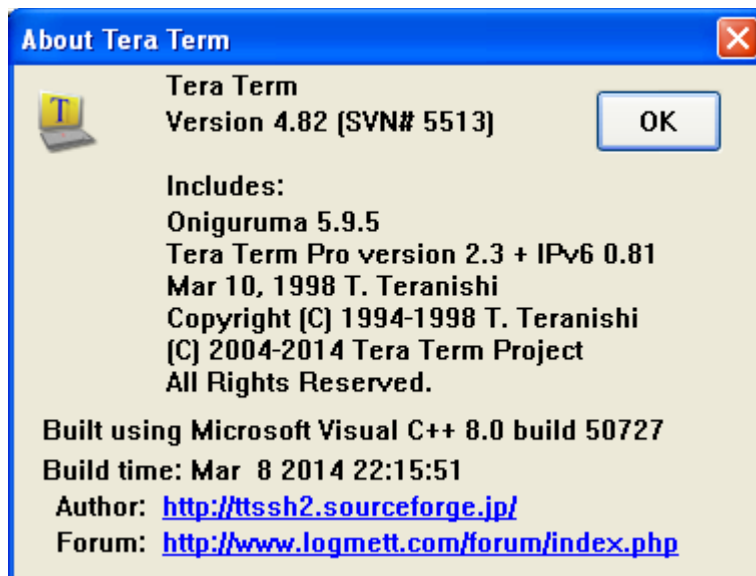


Using MIKBUG serial monitor with 6802 Kit

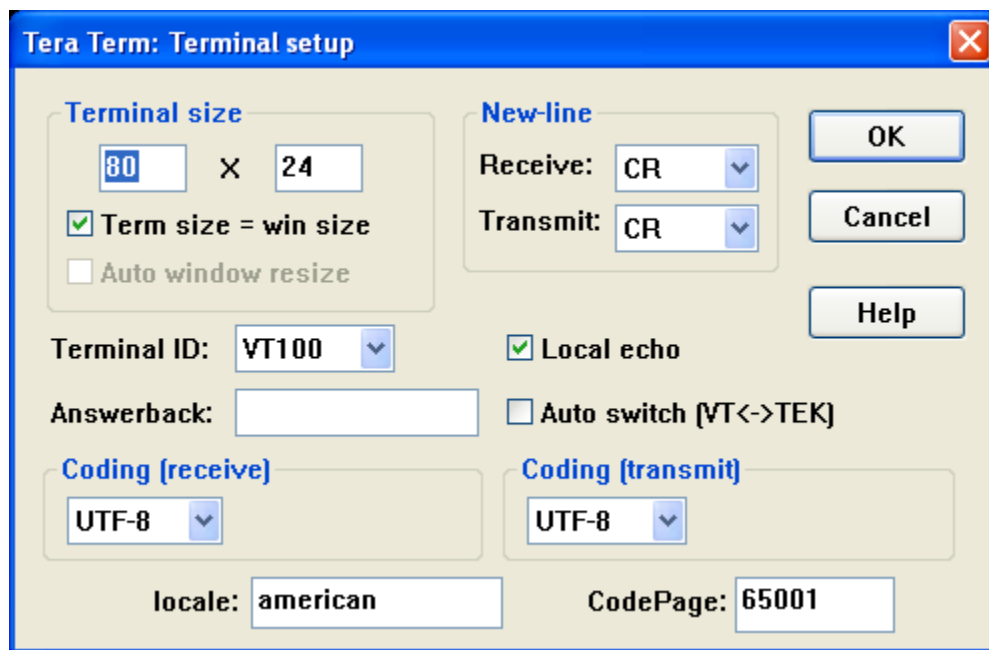
1. Connect the kit to terminal using RS232 cross cable.
2. Set terminal speed to 2400, 8 data bit no parity and one stop bit.



The example of terminal emulator program is TERA TERM version 4.82

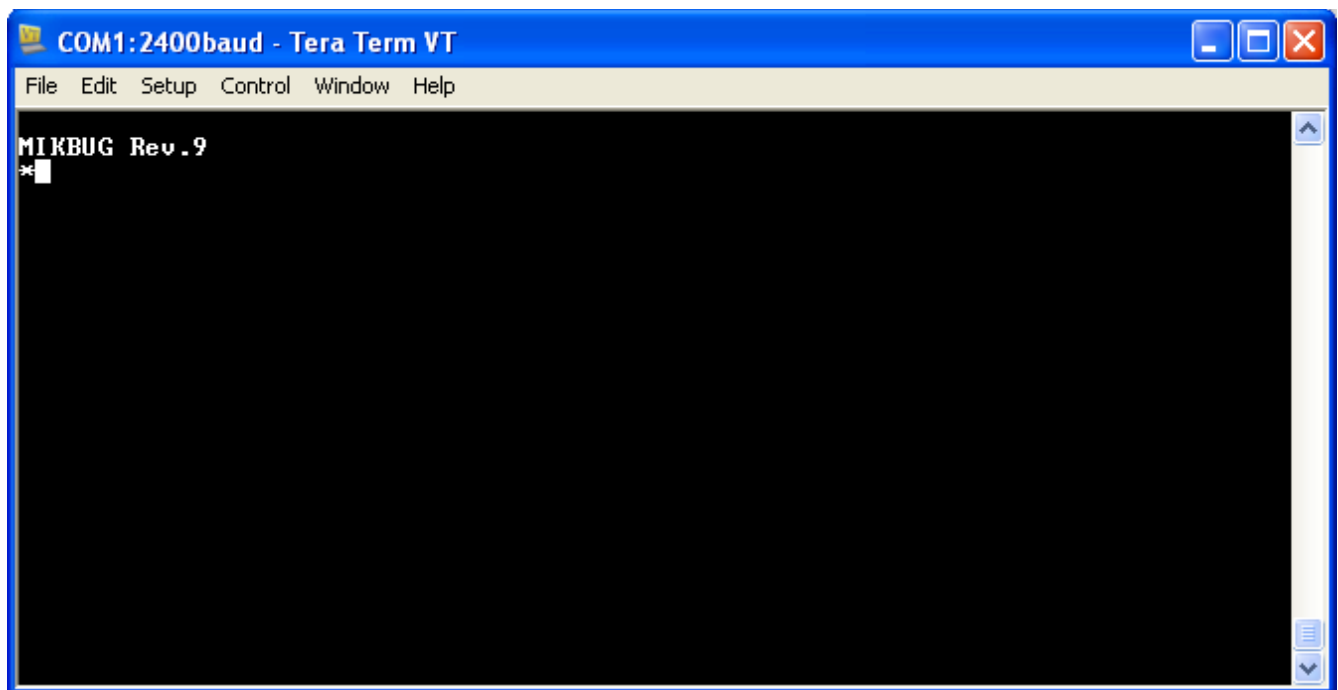


3. Set terminal with LOCAL ECHO

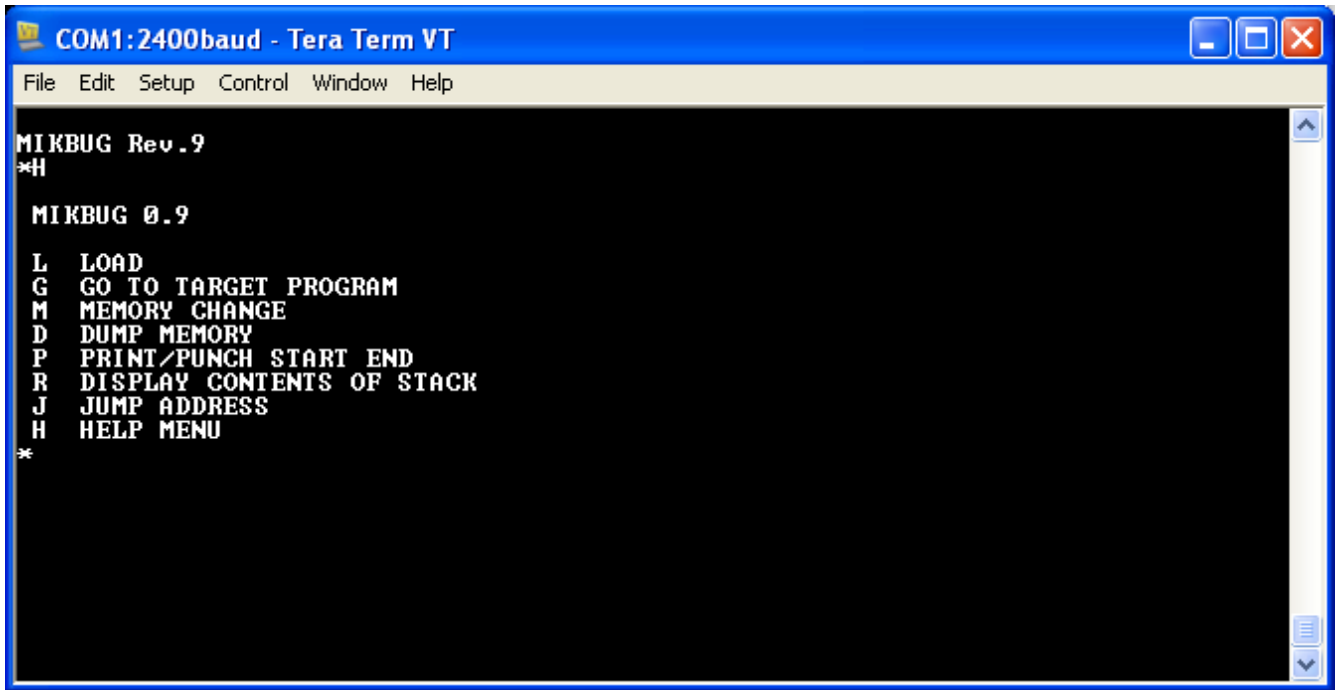


4. Set keyboard of the terminal to CAPS letter.

5. Hit ENTER key, the MIKBUG prompt will be printed.



5. Press key H for HELP menu.

A screenshot of a Tera Term VT window titled "COM1:2400baud - Tera Term VT". The window has a menu bar with "File", "Edit", "Setup", "Control", "Window", and "Help". The main text area displays the MIKBUG Rev. 9 help menu. The text is as follows:

```
MIKBUG Rev. 9
*H

MIKBUG 0.9

L  LOAD
G  GO TO TARGET PROGRAM
M  MEMORY CHANGE
D  DUMP MEMORY
P  PRINT/PUNCH START END
R  DISPLAY CONTENTS OF STACK
J  JUMP ADDRESS
H  HELP MENU
*
```

6. The MIKBUG commands are,

L LOAD
G GO TO TARGET PROGRAM
M MEMORY CHANGE
D DUMP MEMORY
P PRINT/PUNCH START END
R DISPLAY CONTENTS OF STACK
J JUMP ADDRESS
H HELP MENU

Command L, Load Motorola S record

Command G, Go to user code at the location stored at address 6048

Command M, Enter hex number to memory

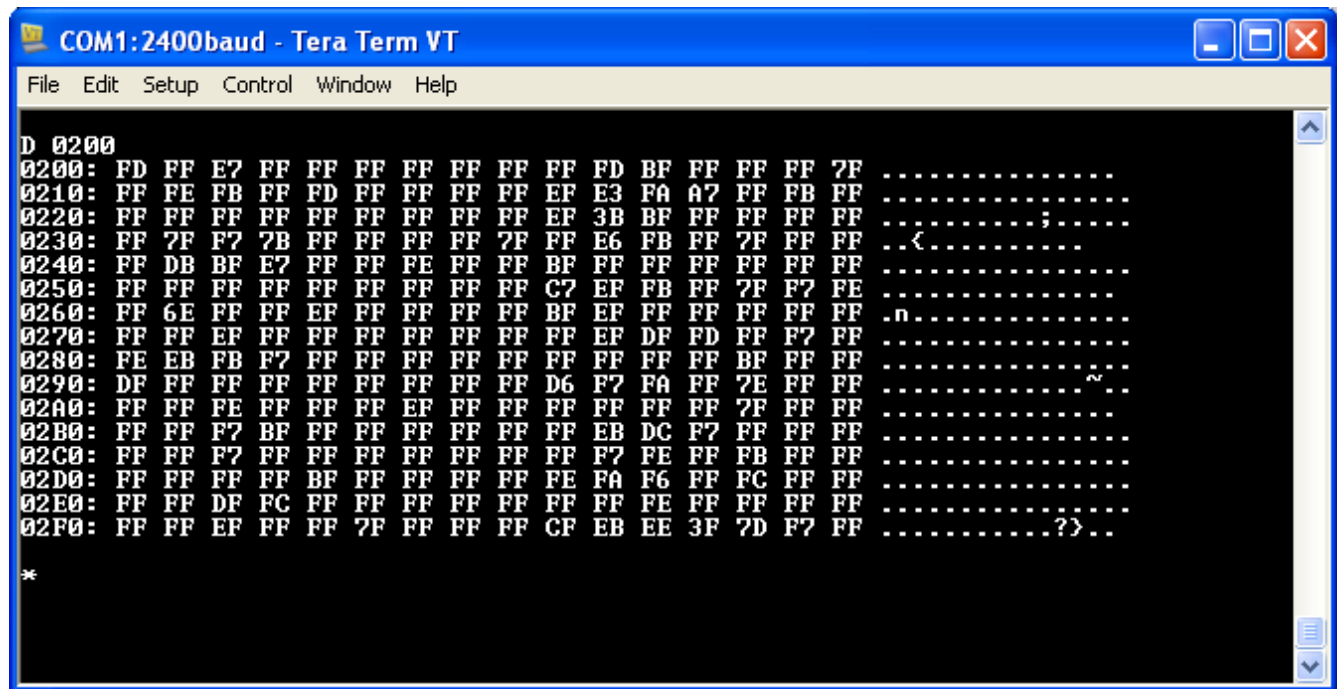
Command D, Dump memory

Command P, Print s record from start to end

Command R, Display content of Stack

Command J, Jump to address

7. Let us try dump the memory started at 0200, enter D 0200



8. Example program for testing command Load

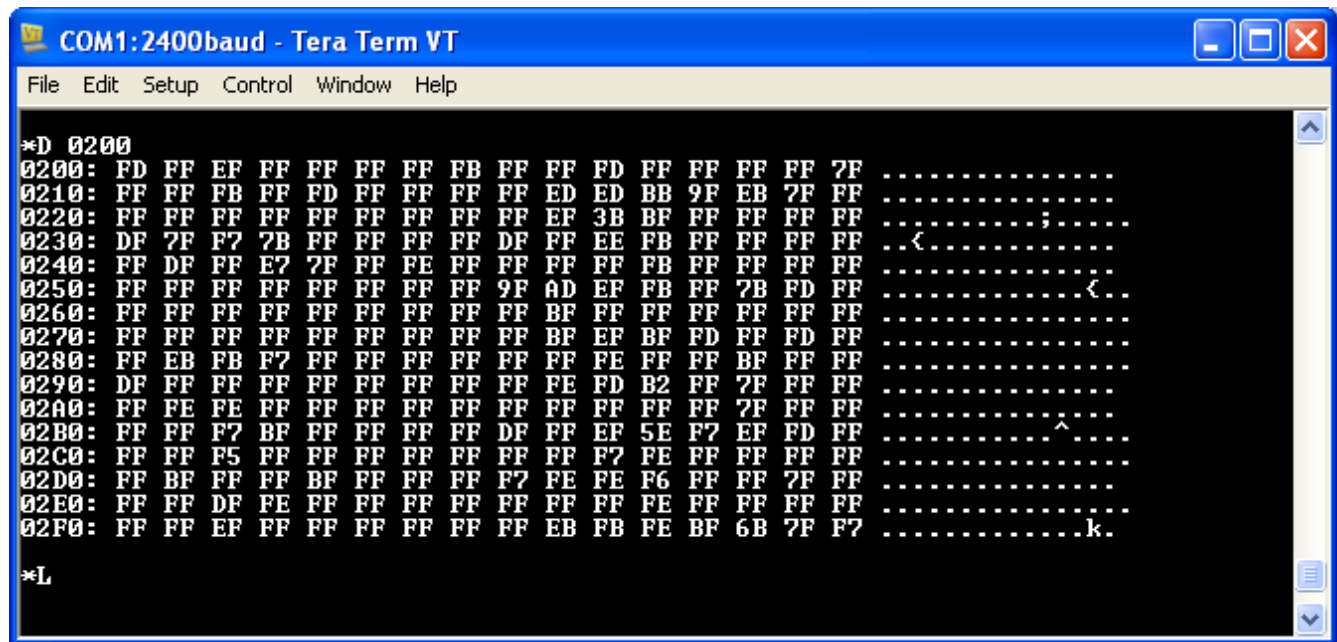
```
0001 0000
0002 0000          GPIO1  .EQU $8000
0003 0000
0004 0000
0005 0200          .ORG 200H
0006 0200
0007 0200 86 01          LDAA #1
0008 0202 B7 80 00      STAA GPIO1
0009 0205 3F          SWI
0010 0206
0011 0206          .END
tasm: Number of errors = 0
```

Test program Load Accumulator with 1 then write it to GPIO1 LED at location 8000, then return to monitor program with software interrupt.

The s record generated from TASM assembler will be

```
S10902008601B780003FF7
S9030000FC
```

9. Run command L



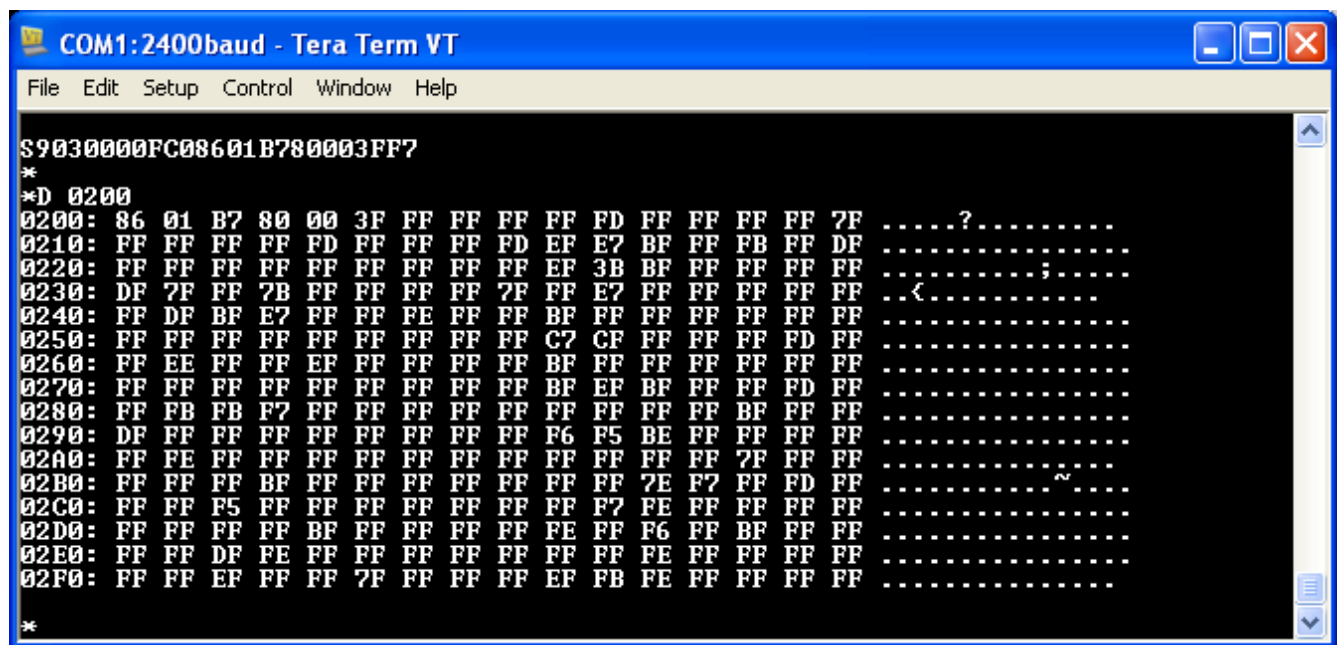
COM1:2400baud - Tera Term VT

File Edit Setup Control Window Help

```
*D 0200
0200: FD FF EF FF FF FF FF FB FF FF FD FF FF FF FF 7F .....
0210: FF FF FB FF FD FF FF FF FF ED ED BB 9F EB 7F FF .....
0220: FF FF FF FF FF FF FF FF FF EF 3B BF FF FF FF FF .....;.....
0230: DF 7F F7 7B FF FF FF FF DF FF EE FB FF FF FF FF ..<.....
0240: FF DF FF E7 7F FF FE FF FF FF FF FB FF FF FF FF .....
0250: FF FF FF FF FF FF FF FF 9F AD EF FB FF 7B FD FF .....<...
0260: FF FF FF FF FF FF FF FF BF FF FF FF FF FF FF .....
0270: FF FF FF FF FF FF FF FF BF EF BF FD FF FD FF .....
0280: FF EB FB F7 FF FF FF FF FF FE FF FF BF FF FF FF .....
0290: DF FF FF FF FF FF FF FF FE FD B2 FF 7F FF FF .....
02A0: FF FE FE FF FF FF FF FF FF FF FF FF FF 7F FF FF .....
02B0: FF FF F7 BF FF FF FF FF DF FF EF 5E F7 EF FD FF .....^.....
02C0: FF FF F5 FF FF FF FF FF FF FF F7 FE FF FF FF FF .....
02D0: FF BF FF BF BF FF FF FF F7 FE F6 FF FF 7F FF .....
02E0: FF FF DF FE FF FF FF FF FF FF FE FF FF FF FF .....
02F0: FF FF EF FF FF FF FF FF EB FB FE BF 6B 7F F7 .....k.

*L
```

10. Click send File, select the object file, TEST.OBJ



COM1:2400baud - Tera Term VT

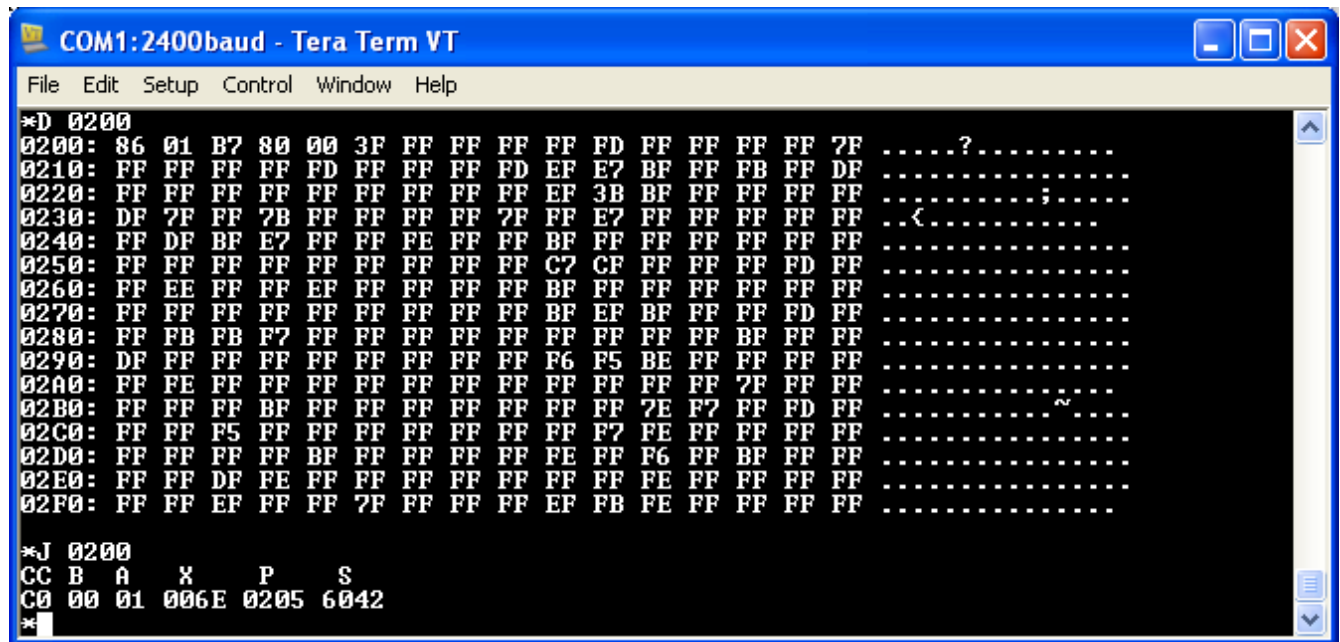
File Edit Setup Control Window Help

```
$9030000FC08601B780003FF7
*
*D 0200
0200: 86 01 B7 80 00 3F FF FF FF FF FD FF FF FF FF 7F .....?.....
0210: FF FF FF FF FD FF FF FF FD EF E7 BF FF FB FF DF .....
0220: FF FF FF FF FF FF FF FF EF 3B BF FF FF FF FF .....;.....
0230: DF 7F FF 7B FF FF FF FF 7F FF E7 FF FF FF FF ..<.....
0240: FF DF BF E7 FF FF FE FF BF FF FF FF FF FF FF .....
0250: FF FF FF FF FF FF FF C7 CF FF FF FF FD FF .....
0260: FF EE FF FF EF FF FF BF FF FF FF FF FF FF .....
0270: FF FF FF FF FF FF BF EF BF FF FF FD FF .....
0280: FF FB FB F7 FF FF FF FF FF FF FF BF FF FF FF .....
0290: DF FF FF FF FF FF F6 F5 BE FF FF FF FF .....
02A0: FF FE FF FF FF FF FF FF FF FF FF FF 7F FF FF .....
02B0: FF FF FF BF FF FF FF FF FF FF 7E F7 FF FD FF .....~.....
02C0: FF FF F5 FF FF FF FF FF F7 FE FF FF FF FF .....
02D0: FF FF FF BF FF FF FF FF FE FF F6 FF BF FF FF .....
02E0: FF FF DF FE FF FF FF FF FF FF FE FF FF FF FF .....
02F0: FF FF EF FF 7F FF FF EF FB FE FF FF FF FF .....

*
```

When loading complete, press command D 0200 to display memory. We will see the machine code of the test program are stored from location 0200: 86, 01, B7, 80, 00, 3F

11. Now test the code with command J 0200.



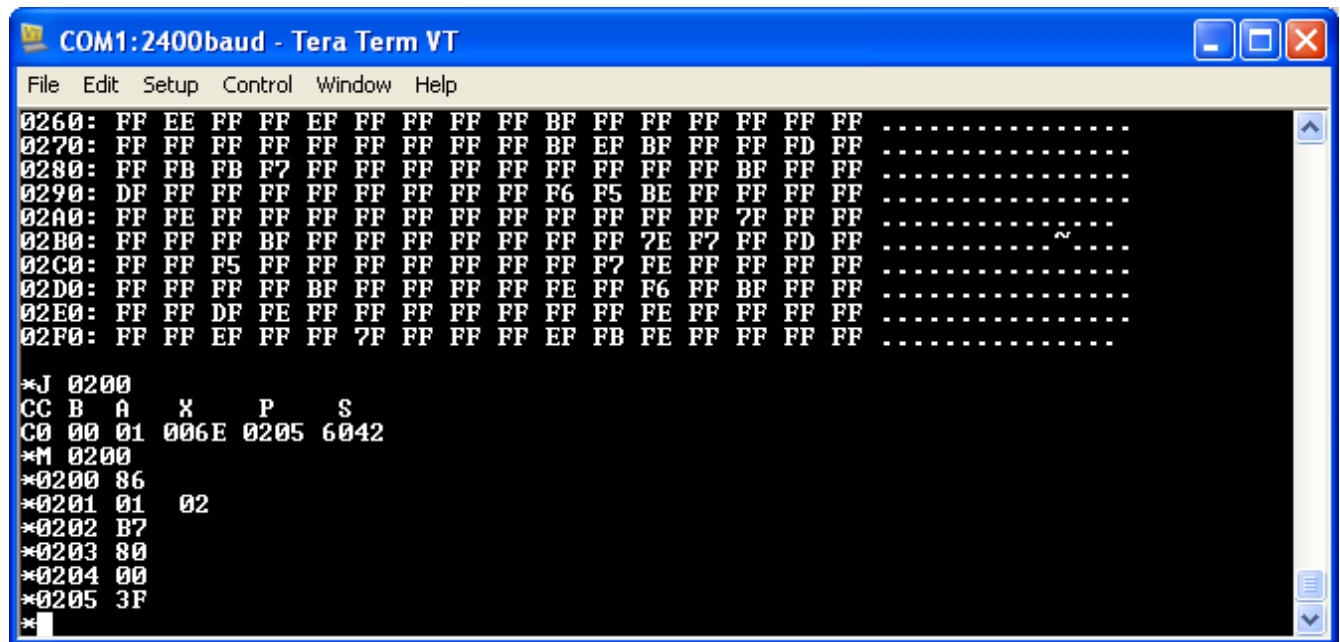
The screenshot shows a Tera Term VT window titled "COM1:2400baud - Tera Term VT". The menu bar includes File, Edit, Setup, Control, Window, and Help. The main display area shows a memory dump starting with the command *D 0200. The dump consists of 16 lines of hexadecimal data, each followed by a series of dots and a character. The characters include a question mark, a semicolon, a less-than sign, and a tilde. Below the memory dump, the command *J 0200 is entered, followed by the command CC B A X P S. The final line shows the command C0 00 01 006E 0205 6042, which is followed by a cursor.

```
*D 0200
0200: 86 01 B7 80 00 3F FF FF FF FF FD FF FF FF 7F .....?.....
0210: FF FF FF FF FD FF FF FF FD EF E7 BF FF FB FF DF .....
0220: FF FF FF FF FF FF FF FF EF 3B BF FF FF FF FF .....;.....
0230: DF 7F FF 7B FF FF FF FF 7F FF E7 FF FF FF FF FF ..<.....
0240: FF DF BF E7 FF FF FE FF FF BF FF FF FF FF FF FF .....
0250: FF FF FF FF FF FF FF FF C7 CF FF FF FF FD FF .....
0260: FF EE FF FF EF FF FF FF BF FF FF FF FF FF FF .....
0270: FF FF FF FF FF FF FF FF BF EF BF FF FF FD FF .....
0280: FF FB FB F7 FF FF FF FF FF FF FF FF BF FF FF FF .....
0290: DF FF FF FF FF FF FF FF F6 F5 BE FF FF FF FF .....
02A0: FF FE FF FF FF FF FF FF FF FF FF FF 7F FF FF .....
02B0: FF FF FF BF FF FF FF FF FF FF FF 7E F7 FF FD FF .....~.....
02C0: FF FF F5 FF FF FF FF FF FF F7 FE FF FF FF FF .....
02D0: FF FF FF BF FF FF FF FF FE FF F6 FF BF FF FF .....
02E0: FF FF DF FE FF FF FF FF FF FE FF FF FF FF .....
02F0: FF FF EF FF FF 7F FF FF EF FB FE FF FF FF FF .....

*J 0200
CC B A X P S
C0 00 01 006E 0205 6042
*
```

We will see the GPIO1 LED shows binary value 0000 0001. Accumulator A will be 01.

12. Try command M to modify the byte



The screenshot shows a Tera Term VT window titled "COM1:2400baud - Tera Term VT". The window contains a memory dump of 16 lines, each starting with an address followed by 16 hexadecimal bytes and a series of dots. The addresses range from 0260 to 02F0. Below the memory dump, several commands are entered and executed:

```
*J 0200
CC B A X P S
C0 00 01 006E 0205 6042
*M 0200
*0200 86
*0201 01 02
*0202 B7
*0203 80
*0204 00
*0205 3F
*
```

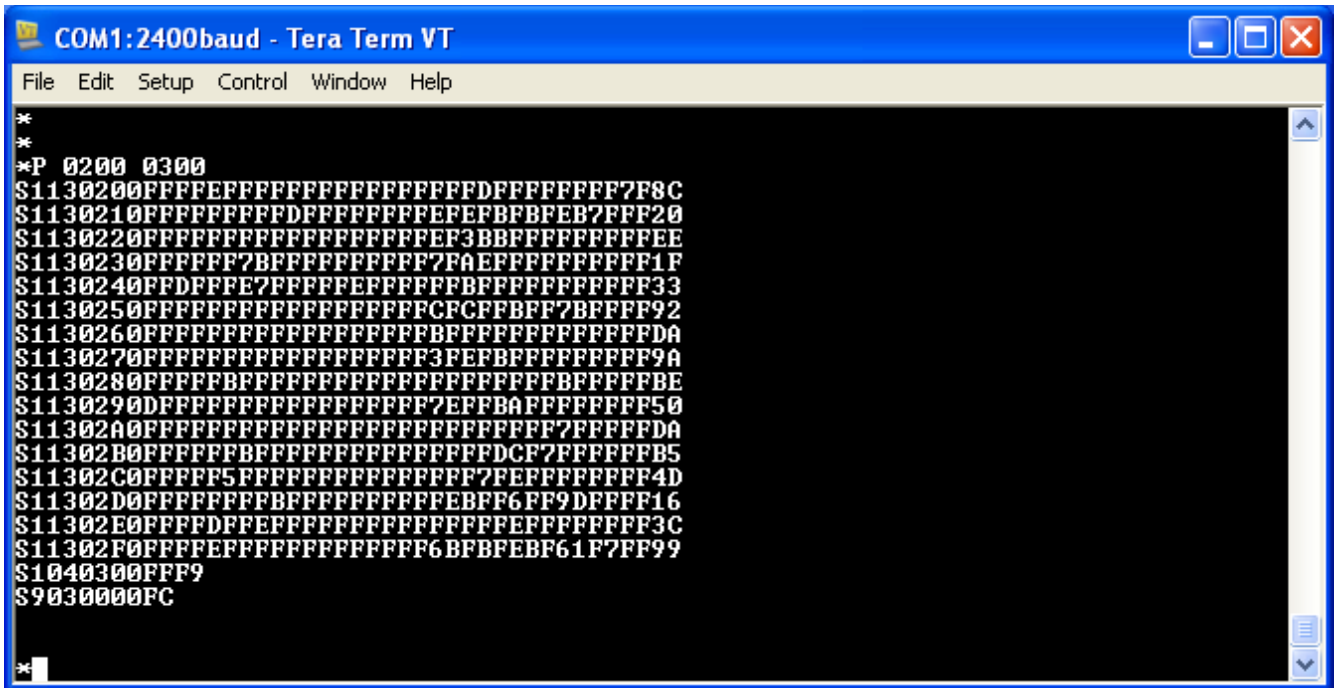
Enter M 0200

Modify the byte at 0201 from 01 to 02

When complete, Run command J 0200 again. We will see the binary data 0000 0010 on GPIO1 LED

13. Command P is for printing the s record.

For example, P 0200 0300, print s record from address 0200 to 0300.



```
COM1:2400baud - Tera Term VT
File Edit Setup Control Window Help
*
*
*P 0200 0300
$1130200FFFFFFFFFFFFFFFFFFFFDFFFFFFFF7F8C
$1130210FFFFFFFFFDFDFFFFFFFFFEFEBFBFB7FFF20
$1130220FFFFFFFFFFFFFFFFFFFFEF3BBFFFFFFFFFEE
$1130230FFFFFFF7BFFFFFFFFF7FAEFFFFFFFFF1F
$1130240FFDFFFE7FFFFFFFFFFFFBFFFFFFFFFFFF33
$1130250FFFFFFFFFFFFFFFFFFFFCFCFFBFF7BFFFF92
$1130260FFFFFFFFFFFFFFFFFFFFBFFFFFFFFFFFFDA
$1130270FFFFFFFFFFFFFFFFFFFF3FEFBFFFFFFFFF9A
$1130280FFFFFFBFFFFFFFFFFFFFFFFFFFFBFFFFFFBE
$1130290DFFFFFFFFFFFFFFFFFFFF7EFFFBAFFFFFFF50
$11302A0FFFFFFFFFFFFFFFFFFFFFFFFFFFF7FFFFDA
$11302B0FFFFFFFBFFFFFFFFFFFFFFFFFDCF7FFFFFFB5
$11302C0FFFFF5FFFFFFFFFFFFFFFFF7FEFFFFFFF4D
$11302D0FFFFFFFFFBFFFFFFFFFFFFEBFF6FF9DFFFF16
$11302E0FFFFDFFEFFFFFFFFFFFFFFFFFEFFFFFFF3C
$11302F0FFFFFEFFFFFFFFFFFFF6BFBFB61F7FF99
$1040300FFF9
$9030000FC
*
```

This printing can be saved for later use by using Log command on the terminal.