TA: Jade Cheng
ICS 312
Homework Solution #3
Due Date: September 8, 2009

Program Code

```
;; program1.asm -- This program reads a character from the keyboard and
display
;; it at the beginning of the next line.

            .model small
            .stack 100

            .data
prompt      db          '?', 13, 10, '$'  ; the '?' to be displayed.
newline     db          13, 10, '$'       ; to move the cursor to a new line.

            .code
Prog        proc
            mov         ax, @data         ; print out prompt which is a '?'.
            mov         ds, ax
            mov         dx, offset prompt
            mov         ah, 9h
            int         21h
            mov         ah, 1h            ; read one character with echo to
            int         21h               ; the screen and store it in al.
            mov         bl, al            ; save the character in bl.
            mov         dx, ax            ; move the cursor to the next line
            mov         dx, offset newline
            mov         ah, 9h
            int         21h
            mov         dl, bl            ; display the character
            mov         ah, 2h
            int         21h
            mov         al, 0             ; return code of 0
            mov         ah, 4ch           ; function code for exit to os
            int         21h
prog        endp
            end         prog
```

Program Output

```
C:\WINDOWS\system32\cmd.exe

09/05/2009  07:43 PM              1,306 Jade's ICS 312 hw3.asm
09/06/2009  06:02 PM                215 Jade's ICS 312 hw3.obj
09/06/2009  06:01 PM                178 Jade'sICS312hw3.obj
09/05/2009  07:43 PM                201 test.obj
09/05/2009  08:21 PM              1,869 test2.asm
09/05/2009  08:20 PM                263 test2.obj
09/06/2009  05:41 PM                714 test3.asm
09/06/2009  05:41 PM                168 test3.obj
               8 File(s)          4,914 bytes
               2 Dir(s)   9,768,030,208 bytes free

C:\masm615\Programs\tests>rm *.obj

C:\masm615\Programs\tests>dir
 Volume in drive C has no label.
 Volume Serial Number is 6C86-A0A6

 Directory of C:\masm615\Programs\tests

09/06/2009  06:04 PM    <DIR>          .
09/06/2009  06:04 PM    <DIR>          ..
09/05/2009  07:43 PM              1,306 Jade's ICS 312 hw3.asm
09/05/2009  08:21 PM              1,869 test2.asm
09/06/2009  05:41 PM                714 test3.asm
               3 File(s)          3,889 bytes
               2 Dir(s)   9,768,030,208 bytes free

C:\masm615\Programs\tests>ml "Jade's ICS 312 hw3.asm"
Microsoft (R) Macro Assembler Version 6.14.8444
Copyright (C) Microsoft Corp 1981-1997.  All rights reserved.

 Assembling: Jade's ICS 312 hw3.asm

Microsoft (R) Segmented Executable Linker  Version 5.60.339 Dec  5 1994
Copyright (C) Microsoft Corp 1984-1993.  All rights reserved.

Object Modules [.obj]: Jade's ICS 312 hw3.obj
Run File [Jade's ICS 312 hw3.exe]: "Jade's ICS 312 hw3.exe"
List File [nul.map]: NUL
Libraries [.lib]:
Definitions File [nul.def]:

C:\masm615\Programs\tests>"Jade's ICS 312 hw3.exe"
?
r
r
C:\masm615\Programs\tests>"Jade's ICS 312 hw3.exe"
?
c
c
C:\masm615\Programs\tests>"Jade's ICS 312 hw3.exe"
?
f
f
C:\masm615\Programs\tests>
```