

TA: Jade Cheng
ICS 312
Homework Solution #12
Due Date: October 01, 2009

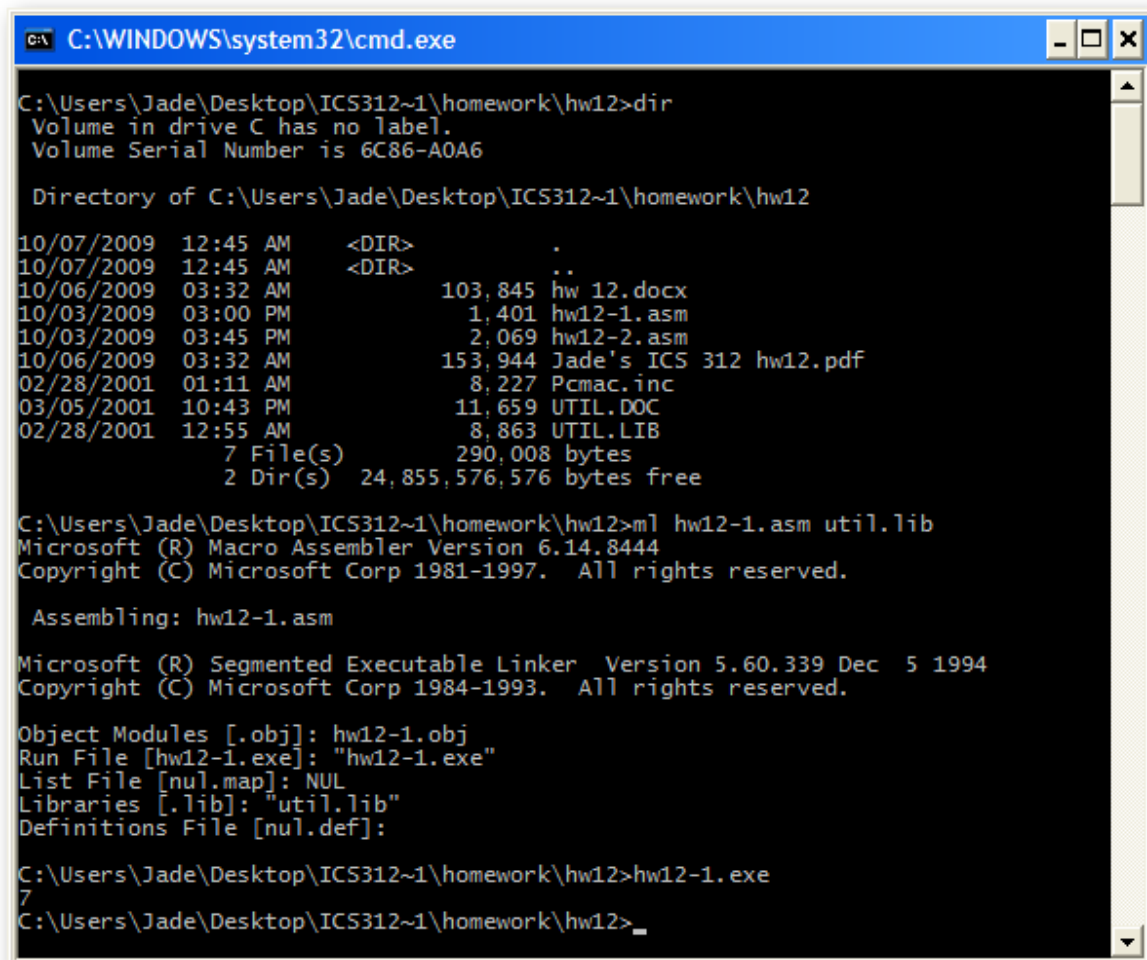
Part 1: Ex 17.1 (b), p504 Code

;; Ex. 17.1 (b) on p.504. Look for the index of the first entry of 123 in B
;; array, and set di to this index.

```
include pcmac.inc
.model small
.stack 100h
.data
B      dw      1, 2, 3, 4, 5, 6, 123, 8, 9, 10
.code
prog  proc
      extrn  putdec : near ; compile with util.lib.
      extrn  getdec : near
      mov   ax, @data
      mov   ds, ax
      mov   es, ax ; initialize es
      cld ; set df = 0
      lea  di, B ; destination
      mov  cx, 10 ; loop the length of the string, here is 10.
again:
      mov  ax, 123 ; look for 123
      repne scasw ; scan until found or the end of cx
      jne  not_found ; if scanning reaches the end, then not found
      mov  ax, 10 ; ax = 10
      sub  ax, cx ; ax = 10 - current iteration = index
      mov  di, ax ; set di = index
      jmp  done ; once found, jump end
not_found:
      mov  di, -1 ; if not found, set di to -1
done:
      mov  ax, di ; prints out the content of di.
      call putdec
      mov  ah, 4ch ; return code into ah
      int  21h ; function code for exit to os
```

```
prog    endp
        end        prog
```

Part 1: Ex 17.1 (b), p504 Program Output



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

C:\Users\Jade\Desktop\ICS312~1\homework\hw12>dir
Volume in drive C has no label.
Volume Serial Number is 6C86-A0A6

Directory of C:\Users\Jade\Desktop\ICS312~1\homework\hw12

10/07/2009  12:45 AM    <DIR>          .
10/07/2009  12:45 AM    <DIR>          ..
10/06/2009  03:32 AM             103,845 hw 12.docx
10/03/2009  03:00 PM             1,401 hw12-1.asm
10/03/2009  03:45 PM             2,069 hw12-2.asm
10/06/2009  03:32 AM          153,944 Jade's ICS 312 hw12.pdf
02/28/2001  01:11 AM             8,227 Pcmac.inc
03/05/2001  10:43 PM          11,659 UTIL.DOC
02/28/2001  12:55 AM             8,863 UTIL.LIB
              7 File(s)          290,008 bytes
              2 Dir(s) 24,855,576,576 bytes free

C:\Users\Jade\Desktop\ICS312~1\homework\hw12>ml hw12-1.asm util.lib
Microsoft (R) Macro Assembler Version 6.14.8444
Copyright (C) Microsoft Corp 1981-1997. All rights reserved.

Assembling: hw12-1.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]: hw12-1.obj
Run File [hw12-1.exe]: "hw12-1.exe"
List File [nul.map]: NUL
Libraries [.lib]: "util.lib"
Definitions File [nul.def]:

C:\Users\Jade\Desktop\ICS312~1\homework\hw12>hw12-1.exe
7
C:\Users\Jade\Desktop\ICS312~1\homework\hw12>_
```

Part 2: Cmpsb Program Code

```
;; The program uses function 0ah to input a string S from the keyboard. Check
;; first that this string S is of the same length as 'shout', which is 12, and
;; if it is, use `rep cmpsb` to test whether the string S is identical to the
;; string 'shout'. If the lengths and contents match, output "It is a match",
;; else output "Sorry, try again".
```

```
include pcmac.inc
.model small
.stack 100h
.data
max      db      80
count    db      0
S        db      80 dup (?)
prompt   db      0ah, 0dh, 'Enter a string to compare with "Go Warriors!": $'
shout    db      'Go Warriors!'
confirm  db      0ah, 0dh, 'The string you have entered is the following: $'
match    db      0ah, 0dh, 'It is a match!$'
mismatch db      0ah, 0dh, 'Sorry, try again.$'

.code
prog     proc
extrn   putdec : near ; compile with util.lib
extrn   getdec : near
mov     ax, @data
mov     ds, ax

start:
    _putstr prompt ; prints a prompt for keyboard input
    mov     ah, 0ah ; call 0ah function
    lea     dx, max
    int     21h
    cmp     count, 12 ; compare the input length with 12
    jne     try_again ; try again if not the same
    push    ds
    pop     es ; initialize es
    cld ; set df = 0
    lea     si, shout ; source
```

```

    lea    di, S           ; destination
    mov    cx, 12         ; 12 bytes intotal to compare
    repe  cmpsb          ; repeat while string match
    jne   try_again      ; try again if mismatch is found
    _putstr match        ; otherwise print out math message and exit
    jmp   done

try_again:
    _putstr mismatch    ; print try again message and start over
    jmp   start

done:
    mov    ah, 4ch       ; return code into ah
    int    21h          ; function code for exit to os
prog     endp
end      prog

```

Part 2: Cmpsb Program Output

```
C:\WINDOWS\system32\cmd.exe
C:\Users\Jade\Desktop\ICS312~1\homework\hw12>dir
Volume in drive C has no label.
Volume Serial Number is 6C86-A0A6

Directory of C:\Users\Jade\Desktop\ICS312~1\homework\hw12
10/07/2009  12:47 AM    <DIR>          .
10/07/2009  12:47 AM    <DIR>          ..
10/07/2009  12:47 AM             101,349 hw 12.docx
10/03/2009  03:00 PM              1,401 hw12-1.asm
10/03/2009  03:45 PM              2,069 hw12-2.asm
10/06/2009  03:32 AM           153,944 Jade's ICS 312 hw12.pdf
02/28/2001  01:11 AM              8,227 Pcmac.inc
03/05/2001  10:43 PM             11,659 UTIL.DOC
02/28/2001  12:55 AM              8,863 UTIL.LIB
              7 File(s)          287,512 bytes
              2 Dir(s)    24,855,584,768 bytes free

C:\Users\Jade\Desktop\ICS312~1\homework\hw12>ml hw12-2.asm util.lib
Microsoft (R) Macro Assembler Version 6.14.8444
Copyright (C) Microsoft Corp 1981-1997. All rights reserved.

Assembling: hw12-2.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]: hw12-2.obj
Run File [hw12-2.exe]: "hw12-2.exe"
List File [nul.map]: NUL
Libraries [.lib]: "util.lib"
Definitions File [nul.def]:

C:\Users\Jade\Desktop\ICS312~1\homework\hw12>hw12-2.exe

Enter a string to compare with "Go Warriors!": this is a string
Sorry, try again.
Enter a string to compare with "Go Warriors!": this is another string
Sorry, try again.
Enter a string to compare with "Go Warriors!": Go Warriors!
It is a match!
C:\Users\Jade\Desktop\ICS312~1\homework\hw12>
```