

CS401 – Computer Architecture and Assembly Language Programming

Lab Exercise – Week 11

Write an Assembly program to underline each character of the screen font using BIOS video services.

```
; put underlines on screen font
[org 0x0100]
jmp start

font: times 256*16 db 0 ; space for font
start: mov ax, 0x1130 ; service 11/30 - get font info
mov bx, 0x0600 ; ROM 8x16 font
int 0x10 ; bios video services
mov si, bp ; point si to rom font data
mov di, font ; point di to space for font
mov cx, 256*16 ; font size
push ds
push es
pop ds ; ds:si to rom font data
pop es ; es:di to space for font
cld ; auto increment mode
rep movsb ; copy font

push cs
pop ds ; restore ds to data segment
mov si, font-1 ; point si before first char
mov cx, 0x100 ; total 256 characters
change: add si, 16 ; one character has 16 bytes
mov byte [si], 0xFF ; change last line to all ones
loop change ; repeat for each character
mov bp, font ; es:bp points to new font
mov bx, 0x1000 ; bytes per char & block number
mov cx, 0x100 ; number of characters to change
xor dx, dx ; first character to change
mov ax, 0x1110 ; service 11/10 - load user font

int 0x10 ; bios video services

mov ax, 0x4c00 ; terminate program
int 0x21
```

Mechanism to Conduct Lab:

Students and teacher communicate through Skype/Adobe Connect. Students will write code using Notepad or Programmer's Notepad and will share code and screen output.

Nasm: <https://vulms.vu.edu.pk/Courses/CS401/Downloads/AssmSoft.zip>

DosBOX: <http://sourceforge.net/projects/dosbox/files/dosbox/0.74-2/DOSBox0.74-2-win32-installer.exe/download>

Programmers Notepad: <https://github.com/simonsteele/pn/releases/download/v2.4.2/portable-pn2421440.zip>