**PRACTICAL # 12**

**OBJECT:**

Drawing pixels with mouse.

**THEORY:**

Mouse is a very useful device for GUI applications. In assembly, we can interact with mouse more easily using the DOS interrupt number 13h. There are different mouse functions available under interrupt number 33h. The program below shows a working example where mouse draws pixels on the screen.

**Program:**

This is a simple mouse drawing program that draws pixels on the screen following the mouse cursor. It draws pixel only at the point where left mouse button is clicked.

; mouse drawing program.

.model small

.stack 100h

.data

.code

main proc

; set screen to 256 colors, 320x200 pixels.

mov ah, 00

mov al, 13h

int 10h

; reset mouse and get its status:

mov ax, 0 ; (AX=FFFFh if mouse is installed, 0000 if not, DX - number of mouse buttons)

int 33h

check\_mouse\_button:

mov ax, 3 ;Get Mouse Position and Button Status

int 33h

;CX = horizontal (X) position (0..639), ;DX = vertical (Y) position (0..199),

;BX = button status:

shr cx, 1 ; x/2 - in this mode the value of CX is doubled.

cmp bx, 1 ; if 1, left mouse button clicked

jne check\_mouse\_button; if left button is not clicked again check mouse button status

jmp draw\_pixel ; if clicked draw pixel at that point

; draw a pixel where left mouse button clicked

draw\_pixel:

mov ah, 0ch ; set pixel

int 10h

jmp check\_mouse\_button ;again goto check mouse button status

mov ah, 4ch

int 21h

main endp

end main

Above program starts with initializing the video mode since mouse is available in graphics mode. Next, program initializes and resets the mouse. The program enters the loop checking the mouse left button click status and position and drawing the pixels at the position of the cursor. This loop continues unconditionally.

**ACTIVITIES**

**Activity 1**

Rewrite about program that stops executing when ESC key is pressed.

Hint: In the continuous loop, check for the ESC key ASCII code (which is 27), when it is there, break out of the loop. To check keyboard key use

mov dl, 255

mov ah, 6

int 21h

**Activity 1**

Write a mouse program that draws pixel only when the right mouse button is pressed.

**Activity 2**

Write a mouse program that draws pixel only when the left mouse button is pressed and stops when right mouse button is pressed.

**REVIEW QUESTIONS**

1. In which mode is the mouse available to use?
2. Which interrupt is dedicated for mouse functions in DOS?
3. What is the use of interrupt handler number 3 (mov ah, 3) in int 33H?
4. Why did we divided CX register after calling int 33h with ah=3 (mov ah, 3) ?
5. What is the key code for ESC character?