**Assignment number: 7**

**Subject: MICROPROCESSOR LAB**

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Class: ***SECOND YEAR ENGINEERING***

Division: ***B***

Roll no: ***222008***

Batch: ***B1***

**PROBLEM STATEMENT:**

Write a Terminate but Stay Resident (TSR) program for a key-logger. The key-presses during the stipulated time need to be displayed at the center of the screen. **OR**

Write a TSR to generate the pattern of the frequency tones by reading the Real Time Clock (RTC). The duration of the each tone is solely decided by the programmer .

**Code:**

.model tiny

.code

org 100h

begin:jmp init\_port

oldip dw 00h

oldcs dw 00h

res\_port:push ax

push bx

push cx

push dx

push si

push di

push ss

push es

push ds

mov ax,0b800h ; base Address of Video Ram

mov es,ax

mov di,500h ; Cursor Position

mov ah,02h

int 1ah ; ch-hr, cl-min, dh-sec

mov bx,cx

mov cl,04h

mov ah,bh

and ah,0fh

and bh,0f0h

shr bh,cl

add bh,30h

mov byte ptr es:[di],bh

add di,02h

add ah,30h

mov byte ptr es:[di],ah

add di,02h

mov al,':'

mov byte ptr es:[di],al

add di,02h

mov bh,bl

mov ah,bh

and ah,0fh

and bh,0f0h

shr bh,cl

add bh,30h

mov byte ptr es:[di],bh

add di,02h

add ah,30h

mov byte ptr es:[di],ah

add di,02h

mov al,':'

mov byte ptr es:[di],al

add di,02h

mov bh,dh

mov ah,bh

and ah,0fh

and bh,0f0h

shr bh,cl

add bh,30h

mov byte ptr es:[di],bh

add di,02h

add ah,30h

mov byte ptr es:[di],ah

add di,02h

pop ds

pop es

pop ss

pop di

pop si

pop dx

pop cx

pop bx

pop ax

jmp dword ptr cs:oldip

init\_port:mov ah,35h ; Get Interrupt Address

mov al,08 ; s/w interrupt of MS-DOS forRTC

int 21h

mov word ptr cs:oldip,bx

mov word ptr cs:oldcs,es

mov ah,25h ; Set Interrupt Address

mov al,08

mov dx,offset res\_port

int 21h

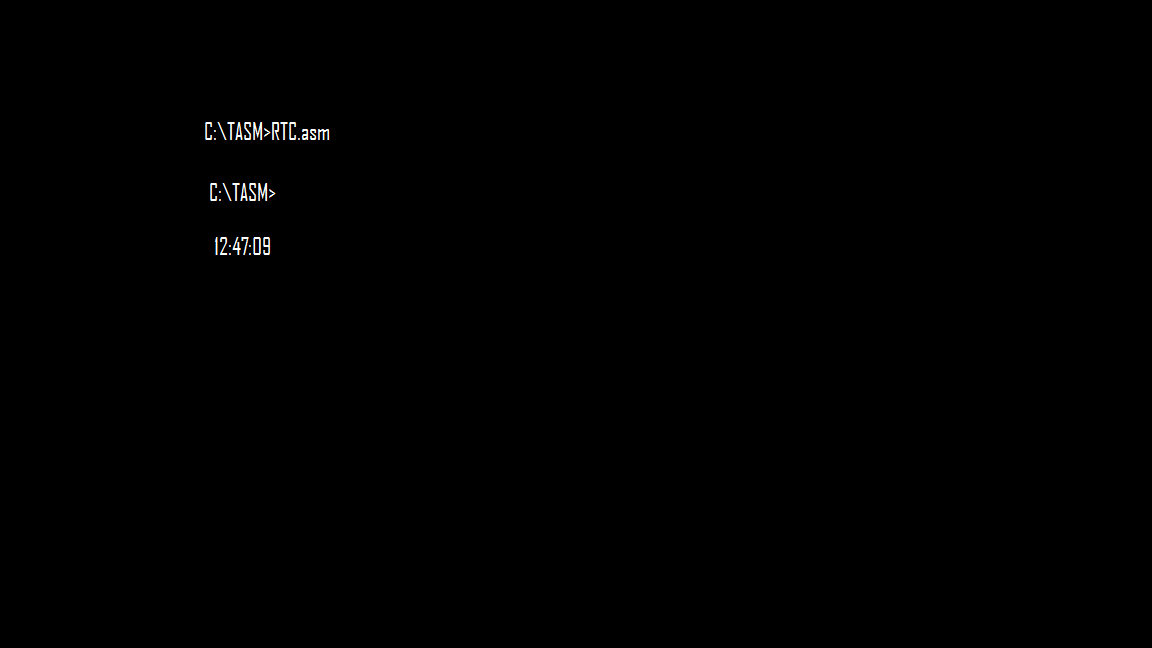
mov ah,31h ; Make Program Resident

mov dx,offset init\_port

int 21h

mov ah,4ch

int 21h

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