

National University of Computer and Emerging Sciences



Lab Manual 08 Computer Organization and Assembly Language Lab

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Lab Manual – TSRs

Task 1: Write a TSR to show a clock in the upper right corner of the screen in the format HH:MM:SS; where HH is hours in 24 hour format, MM is minutes, SS is seconds.

HINT: IBM PC uses a Real Time Clock (RTC) chip to keep track of time while switched off. It provides clock and calendar functions through its two I/O ports 70h and 71h. It is used as follows:

```
mov al, <command>
out 0x70, al ; command byte written at first port
jmp D1 ; waste one instruction time
D1: in al, 0x71 ; result of command is in AL now
```

Following are few **commands**:

- 00 Get current second
- 02 Get current minute
- 04 Get current hour

All numbers returned by RTC are in BCD. E.g. if it is 6:30 the second and third command will return 0x30 and 0x06 respectively in al