Lab Manual

CS609 – System Programming

LAB 3

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Lab 3 – Task 1:

Write a C program that will load divisor value 0x22FF, byte by byte, into Command Register. After that, turn on the PC internal speaker by accessing port 0x61 and observe the speaker output.

Solution:

```
#include<BIOS.H>
#include<DOS.H>
void main()
{
	outportb (0x43,0xB4);
	outportb (0x42,0xFF);
	outportb (0x42,0x21);
	outportb (0x61,inportb(0x61) | 3);

	getch();
	outportb (0x61,inportb(0x61) & 0xFC);
}
```

Mechanism to Conduct Lab:

Write, compile, and run the code in VM Virtual Box.

Students and teacher communicate through Skype/Adobe Connect.

Lab 3 – Task 2:

Write a C program that will use interrupt 1A/02H to read the time from Real Time Clock. The fetched time will be in packed BCD format. Convert it into unpacked BCD format and then display it on screen in ASCII format.

Solution:

```
void main ()
{
	unsigned int hours, months, seconds;
	_AH =2;
	geninterrupt(0x1a);

	hours = _CH;
	minutes = _CL;
	seconds = _DH;

	hours = hours <<4;
	*((unsigned char *)(& hours)) = (*((unsigned char *) (& hours))) >> 4;
	hours = hours + 0x3030;

	seconds = seconds <<4;
	*((unsigned char *)(& seconds)) = (*((unsigned char *)(& seconds))) >> 4;
	seconds = seconds + 0x3030;

	minutes = minutes <<4;
	*((unsigned char *)(& minutes)) = (*((unsigned char *)(& minutes))) >> 4;
	minutes = minutes + 0x3030;

	clrscr();

	printf("%c%c-%c%c-%c%c%c%c",
		*(((unsigned char*)(&hours))+1),
		*((unsigned char*)(&hours)),
		*(((unsigned char*)(&minutes))+1),
		*((unsigned char*)(&minutes)),
		*(((unsigned char*)(&seconds))+1),
		*((unsigned char*)(&seconds)),
	getch();
}
```

Mechanism to Conduct Lab:

Write, compile, and run the code in VM Virtual Box.

Students and teacher communicate through Skype/Adobe Connect.