Experiment Number : (7)

Loop Instruction & Counter

Object:

To study the loop instruction and know the facilities of the counter.

Theory:

The loop instruction is one of the important instructions which is control of the flow of the program, and to avoid repeated the instruction more than one. The register which is used to loop instruction is CX.

The loop procedure is:

1. **Put the value of the number of repeated instructions to the register CX.**
2. **Kept the address of the first instruction which is looped.**
3. **At the end of the looped instructions put LOOP Label, where Label is the address of the first looped instruction.**

The structure of the loop instruction is:

```
.CODE
  |
  |
  |
MOV CX, Number of Loop
  |
  |
  |
L1: MOV --------
  |
  |
  |
LOOP L1
  |
  |
  |
RET
```

Example1:

Write 8086 program to count from 0 to 15D.

```
.CODE
MOV CX, 000FH
MOV AL, 0
L1: INC AL
LOOP L1
RET
```

Or

```
.CODE
MOV CX, 000FH
MOV AL, 0
L1: ADD AL, 1
LOOP L1
RET
```

Procedure:

1. **Write 8086 program to fill the memory with (0A) starting at the physical address 10000H to the physical address 10010H.**

2. **Execute the program above and write the results.**

3. **Write a 8086 program to add (05) to the above memory locations (in step 1).**

Home Work:

1. **Write a 8086 program to store the number from 0 to 50D to the memory starting at the physical address 10000H**

2. **Write a 8086 program to store the number (0 – 20)D instep of 5 to the stack and then write the results.**

3. **Find the value of the registers SP & SS and then calculate the physical address of the stack at the end of stored data.**

4. **Write a 8086 program to store the number from (16 to 0)H to memory starting at the physical address 10000H.**