KHULNA UNIVERSITY OF ENGINEERING AND TECHNOLOGY, KUET

SESSIONAL REPORT

Course No: CSE 2204

Department of: Computer Science and Engineering

Experiment No: **03**

Name of the Experiment: Developing a program that shows the grade of a given number

Remarks

Date of Performance: 19.04.21

Date of Submission: 21.04.21

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Year: 2nd

Semester: 2nd

No. of experiment: 03

Name of experiment: Developing a program that shows the grade of a given number in assembly language

Objectives:

1. To learn the comparison between two numbers using assembly language
2. To learn different types of jump instruction.
3. To have a clear idea about jump and others basic instructions by solving a problem.

Introduction:

In assembly language, the 'cmp' instruction is used to compare two operands. During comparison actually two operands are performing subtraction and set or reset carry flag. Using those

carry flag, we use conditional jump to obtain our necessary instruction in the code. In this experiment we used some conditional jump instructi 'je', 'jbe' 'jae', 'ja', 'jb' etc and also unconditional jump instruction 'jmp'.

We know if the given marks is greater than 80 then this should be considered as A+.

If the number is greater than equal 75 then A if marks $\geq$ 70 then A-, if greater than equal 65 then B+, if greater then equal 60 then B and so on.

Using conditional and unconditional jump operator we have to find out the grade for a given mark.

Apparatus required: emu 8086, laptop

Methodology:

Code:

```
org 100h
mov bx, 0h ; initially bx is assigned by zero(0).
mov al, 55d ; al is initialized with 55d which is our
              given mark.
mov bl, 80d; bL is assigned with 80d
cmp al, bl ; Comparing 80d and 55d using 'cmp'
jge p; if the value of al (i.e. 855d) is greater or
       equal the value of bl then go to
       'p' procedure.
mov bl, 75d; bl is assigned with 75d.
cmp al, bl ; Comparing the values stored in al and
             bl
jge q; if the value of al is greater than or equal
       the value of bl then go to 'q'.
mov bl, 70d; bL is assigned with 70d
cmp al, bl ; comparing the values of al and bl.
jge r ;      if the value of al is greater than or
             equal bl then go to 'r'.
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```
mov bl, 65d;     bl is assigned with 65d
cmp al, bl;      comparing the values of al and bl.
jge s            ; if satisfies then go to 's'.

mov bl, 60d;     bl is assigned with 60d
cmp al, bl ;     comparing the values of al and bl.
jge t            ; if al value is greater than or
                   equal bl then go to 't'.

mov bl, 55d;     bl is assigned with 55d.
cmp al, bl ;     comparing the values of al and
                 bl
jge u ;          if satisfies then jump to 'u'

mov bl, 50d ;    bl is assigned with 50d
cmp al, bl;      comparing values of al and bl
jge v;           if satisfies, then jump to v.

mov bl, 45d ;    bl is assigned with 45d
cmp al, bl ;     comparing the values of al and bl
jge w            ; if the values of al is greater
                   than equal bl then jump to 'w'.
```

```
mov bl, 40d; assigning bl with 40d.
cmp al, bl;  comparing the values of al and bl.
jge x;       if satisfies then jump to x

mov dl, 0fh; assinging '0fh' to indicate fail
             result in dl register
ret.

P:
mov dl, 0a1h; assigning '0a1h' to indicate
ret
             result A+ in dl register

q:
mov dl, 0ah ; assigning dl with '0ah' to indicate
            'A'
ret

n:
mov dl, 0a0h; assigning dl with '0Oh' to
ret         indicate 'A-'

s:
mov dl, 0b1h; assigning dl with '0b1h' to
ret         indicate 'B+'
```

t:
mov dl, 0bh ; assigning dl with '0bh' to indicate
ret 'B'

u:
mov dl, 0b0h ; assigning dl with '0b0h' to
ret indicate 'B-'

v:
mov dl, 0c1h ; assigning dl with '0c1h' to
ret indicate 'C+'

w:
mov dl, 0ch ; assigning dl with '0ch' to indicate
ret 'C'

x:
mov dl, 0d0h ; assigning dl with '0d0h' to indica
ret 'D-'

Result and Discussion: In the experiment, we took a number as input in al register and checked what type of grade the number is. Here in the program we used A+, A, A-, B+, B, B-, C, D and F grades. In this program we used jump instructions and cmp instruction. We used various inputs to ensure our expected result. Everytime we got our expected result. So eventually we can say that our experiment was perfect.

Conclusion: This experiment helps us to use properly jump instructions. This type of practical experiment is too much ~~used~~ useful for implementing jump instruction perfectly.

References:

1. Microprocessor and Interfacing - by D.V. Hall
2. emu 8086 / documentation . html.