Looping Structure

Dept. of Computer Science
Faculty of Science and Technology

Lab No:	8	Week No:	9	Semester:	
Lecturer:	*Name & email*				

Lab Outline

➤ **A loop Is a sequence of instructions that is repeated.**

➤ **The number of times to repeat may be known in advance, or**
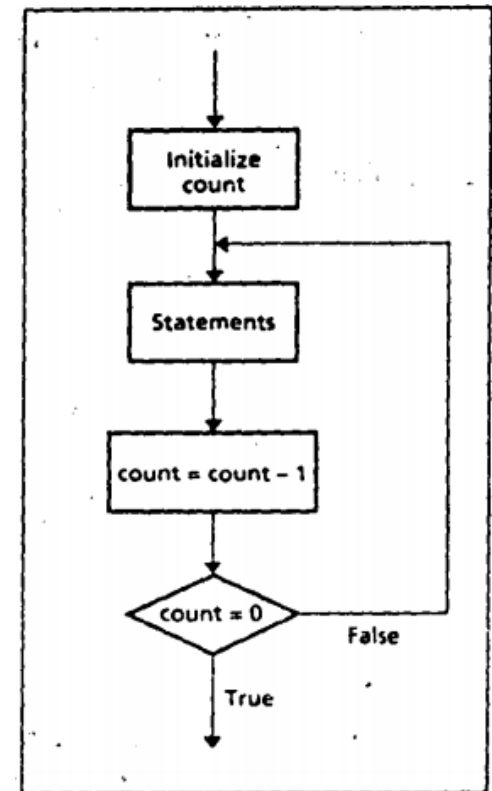
➤ **It may depend on conditions**

FOR LOOP

WHILE LOOP

REPEAT LOOP

FOR LOOP

➢ **The control is transferred to destination_label until CX becomes 0.**

➢ **A FOR LOOP can be implemented using the LOOP instruction:**

➢ **TOP:**

➢ **;initialize CX to loop_count**

➢ **;body of the loop**

➢ **LOOP TOP**

FOR LOOP-Example

Write a count-controlled loop to display a row of 80 stars:

FOR 80 times DO

display '*'

END_FOR

MOV CX,80

MOV AH,2

MOV DL, '*'

TOP:

INT 21H

LOOP TOP

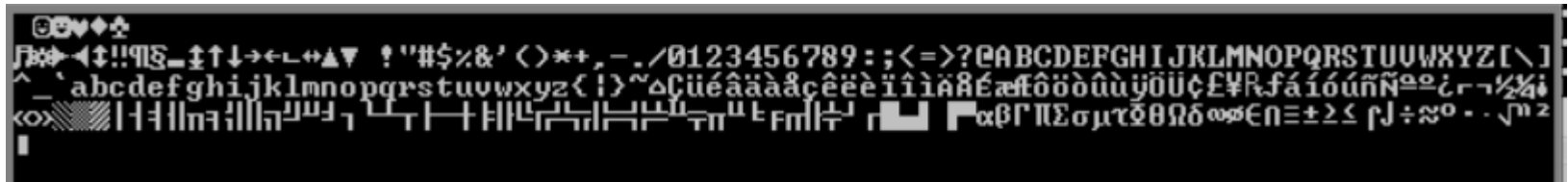# Lab Tasks

➢ Write an assembly probram to print all the ASCII code from 0 to 255. Hints: use **jnz** and **dec** instructions

Sample Output

Write some code to count the number of characters in 'n' input line.

Solution:

initialize count to o

read a character

WHILE character <> carriage_return DO

count = count + l

read a character

End_WHILE

Write some code to read characters until a blank is read.

Solution:

REPEAT

read a character

UNTIL character is a blank

2. Use a CASE structure to code the following:

   Read a character.

   If it's "A", then execute carriage return.

   If it's "B", then execute line feed.

   If it's any other character, then return to DOS.

```asm
.MODEL SMALL
.STACK 100H
.DATA
.CODE

MAIN PROC
  MOV AH,1
  INT 21H
  MOV BL,AL
    CMP BL,41H
  JE A
  CMP BL,42H
  JE B
  JMP O

A:

  MOV AH,2     ; CARRIAGE RETURN
  MOV DL,'C'
  INT 21H
  MOV DL,0AH
  INT 21H
B:
    MOV DL,0DH   ; LINE FEED
  INT 21H
O:
    MOV AH,04CH   ; RETURN TO DOS
  INT 21H
    MAIN ENDP
END MAIN
```

Put the sum of the first 50 terms of the arithmetic sequence
I, 5, 9, 13, … in DX. **Hints**: Employ LOOP instructions to do the following.

first we find how many loops needed:
(last term – first term)/ difference
(148 – 1)/3 = 49 loops
So put cx = 49

Lab Tasks

Put the sum 100 + 95 + 90 + … + 5 in AX. **Hints:** Employ LOOP instructions to do the following.

first we find how many loops needed:
(last term – first term)/ difference
(100 – 5)/5 = 19 loops
So put cx = 19

Lab Tasks

Read a character and display it **50** times on the next line. **Hints**:
use **LOOP** instructions and put **cx = 50**

Sample Output
Enter a character: d
Ddddddddddddddddddddddddddddddddddddddddddddd
ddddd

Thank you.

Write a program to display a "?", read two capital letters, and display them on the next line In alphabetical order. Hints: use **cmp**, **jg**, **xchg**

Sample Output
Enter character: CB
BC
Thank you.

- Assembly Language Programing and Organization of the IBM PC

Ytha Yu

Charles Marut

References