National University of Computer and Emerging Sciences

Lab - 08

For

Programming Fundamentals

Lab Instructor	Mughees Ismail
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FAST School of Computer Science

Instructions:

Make a word document with the naming convention "SECTION_LAB#_ROLLNO" and put all your source code and snapshots of its output in it. Make sure your word file is formatted properly.

Plagiarism is strictly prohibited.

Do not discuss solutions with one another.

Late submissions are not allowed.

Topic: While/Do While Loops

Syntax

Do While Loop

Here's the basic syntax for a do while loop:

```
do
{
    // body of the loop
}
while (condition);
```

Note that the test of the termination condition is made after each execution of the loop. This means that the loop will always be executed at least once, even if the condition is false in the beginning.
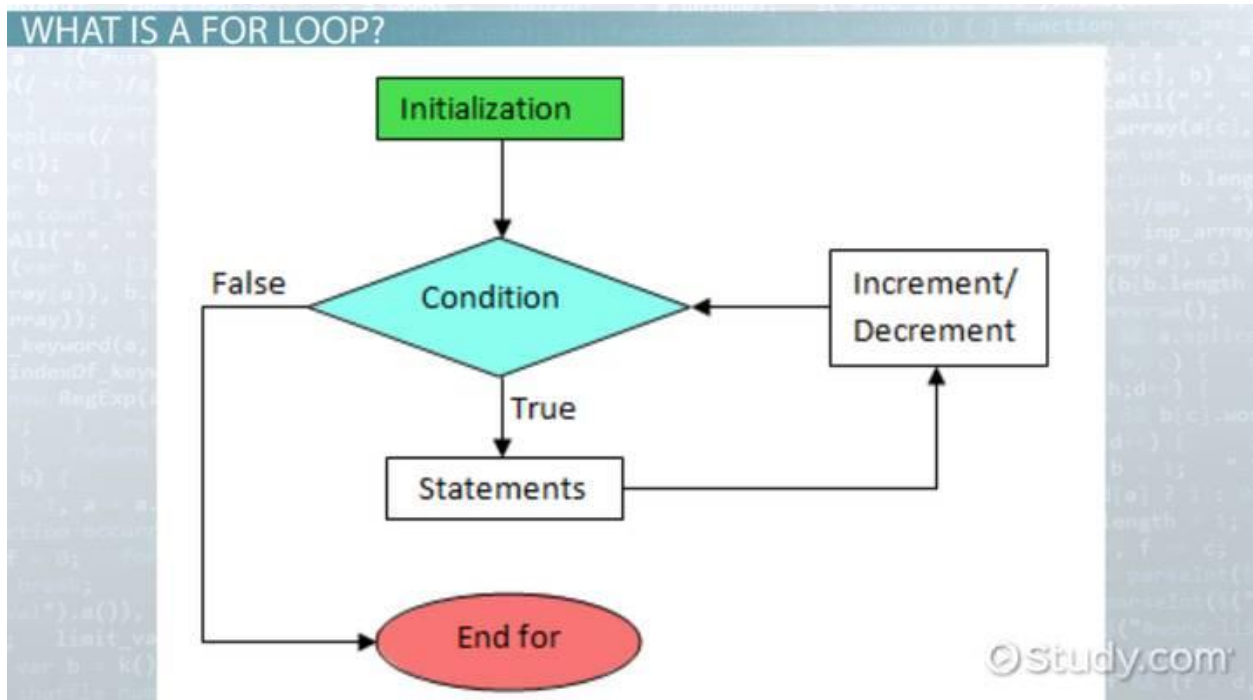
For Loop

In the syntax of for loop initialization and the updation expression are optional. Even condition expression is optional but it is not recommended because it makes it infinite loop even though break can be used to terminate the loop.

for(i=0; i<10 ;i++)

Here, i=0 is initialization

i<10 is condition expression

i++ is updation expression

Question#1

You are required to take one integer input in base 10, and give the user options to choose from:
1. Convert to base 2
2. Convert to base 8

After conversion your program would print the converted number on screen.

When given the choice to choose from the target number system, if given an incorrect choice the user would be required to take the input again.

Note: Its mandatory for you to solve the question using while loop(s), for input repetition you would use do while loop.

Sample Run:
Please enter your number in base 10: 9
Please enter 2 to convert to base 2, press enter 8 to convert to base 8: 4
Incorrect input, please enter again: 3
Incorrect input, please enter again: 2

You entered number was 9 and its equivalent in base 2 is 1001

Question#2

You are to take positive integers as input from the user, and ask the user to enter a sentinel value -1 to stop giving inputs. Your program would print the longest streak of non-decreasing inputs given by the user.

Sample
Please enter numbers, enter -1 to stop:
1. 3
2. 5
3. 6
4. 6
5. 89
6. 90
1. 23
2. 45
3. 56
4. 67
5. 68
6. 69
7. 70
8. 72
9. 77

10. 10000
1. 43
2. 32
3. 36
      -1

Output longest streak of non-decreasing numbers was 10 numbers

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Question#3

Ask the user to enter how many even numbers the user wants to enter, then take those many even integers as inputs from the user and calculate their sum, but ignore the multiples of 4 i.e., do not add them to the sum.
If during the inputs user enters any odd number the loop must terminate at once, and print that an odd number was encountered hence the loop was terminated. (The message should be printed outside the loop)

Note: Use of a for loop is mandatory for the above question.