BCA 115: LAB I (C Programming)

Assignment 2

Assignment 2: Decision mal ing statements(if and if-else)

You should read following topics before starting this exercise

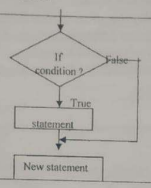
1. Different types of decision-making statements available in C.
2. Syntax for the statements.

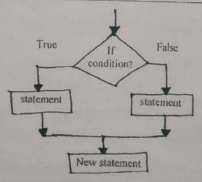
During problem solving, we come across situations when we have to choose one of the alternative paths depending upon the result of some condition. Condition is an expression evaluating to true or false. This is known as the Branching or decision-making statement. Several forms of If and else constructs are used in C to support decision-making.

1) if statements
2) if –else
3) Nested if

Note: If there are more than one statement in the if or else part, they have to be enclosed in { } braces

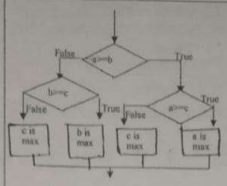
Sr. No	Statement Syntax	Flowchart	Example

1.	**ifstatement**
	
	if(condition)
	{
	statement;
	}
			if(n > 0)
			printf("Number is positive");

2.	**if - else statement**
	
	if (condition)
	{
	statement;
	}
	else
	{
	statement;
	}
			if(n % 2 == 0)
			printf("Even");
			else
			printf("Odd");

3. **Nested if**

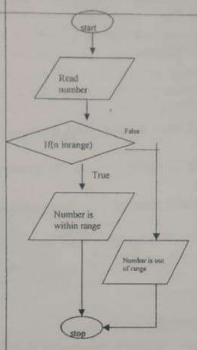
```
if (condition)
 {
   if (condition)
   {  statement;}
else
{statement;}

}
else
{
  if (condition)
  {  statement; }
else
{ statement; }

}
```




```
If ( a >= b)
 { if ( a >= c)
   printf(" %d is maximum",a);
  else
printf(" %d is maximum",c);
}
else
{
if ( b >= c)
   printf(" %d is maximum",b);
  else
printf(" %d is maximum",c);
}
```

4. Sample program- to check whether a number is within range.

Step 1: Writing the Algorithm	Step 2 : Draw the flowchart	Step 3 : Writing Program

1. Start
2. Accept the number
3. Check if number is within range
4. If true
print "Number is within range "
otherwise
print "number is out of range".
5. Stop
		/* Program to check range */
		
		#include <stdio.h>
		main( )
		{ /* variable declarations */
		int n;
		int llimit=50, ulimit = 100;
		/* prompting and accepting input */
		printf("Enter the number");
		scanf("%d",&n);
		if(n>=llimit && n <= ulimit)
		printf("Number is within range");
		else
		printf("Number is out of range");
		}

Set A: Apply all the three program development steps for the following examples.

1. Accept an integer and display the message as "Positive Number", "Negative Number" or "Zero value" depending on value of given number. Use ternary operator.
2. Write a program to accept three numbers and check whether the first is between the other two numbers. Ex: Input 20 10 30. Output: 20 is between 10 and 30.
3. Acceptacharacterasinputandcheckwhetherthecharacterisadigit.(Checkifitisinthe range '0' to '9' both inclusive)

4. Write a program to accept a number and check if it is divisible by 5 and 7.
5. Write a program, which accepts annual basic salary of an employee and calculates and displays the Income tax as per the following rules.

Basic :< 1, 50,000	Tax =0
1, 50,000to3, 00,000	Tax =20%
>3, 00,000	Tax =30%

6. Acceptalowercasecharacterfromtheuserandcheckwhetherthecharacterisavowelor consonant. (Hint: a,e,i,o,u are vowels)
7. Accept a character. Check if it is uppercase & if yes then converts it into lowercase and vice versa.

Signature of Instructor [ ] Date [/ /]

Set B: Apply all the three program development steps for the following examples.

1. Write a program to check whether given character is a digit or a character in lower case or uppercase alphabet. (Hint ASCII value of digit is between 48 to 57 and Lowercase characters have ASCII values in the range of 97 to 122, upper case is between 65 and 90)
2. Accept the time as hour, minute and seconds and check whether the time is valid. (Hint: 0<=hour<24, 0<=minute <60, 0<=second <60)
3. Accept any year as input through the keyboard. Write a program to check whether the year is a leap year or not. (Hint leap year is divisible by 4 and not by100 or divisible by 400)
4. Accept 2 sides of rectangular shape & check whether it is a square or rectangle. Display its area.
5. Accept the x and y coordinate of a point and find the quadrant in which the point lies.
6. Accept 3 numbers. Subtract middle number from others and then find the greatest among 3 numbers.
7. Accept 4 integers from user and display their smallest.

Signature of instructor [ ] Date [/ /]

Set C: Write programs to solve the following problems

1. Write a program to accept marks for three subjects and find the total marks secured, average and also display the class obtained. (Class I – above %, class II –% to _%, pass class –_% to_% and fail otherwise)

Assignment Evaluation

0: Not Done [ ]	1: Incomplete [ ]	2: Late Complete [ ]
3: Needs Improvement [ ]	4: Complete [ ]	5: Well Done [ ]