

Computer System and Programming in C (RCS101)

Assignment 3.1

Decision Making And Branching -If

Theory Questions:

1. What are various decision making or branching statements provided in C?
[Hint: if, switch, ?: , goto]
2. What are the four variants of **if** statement?
3. Explain **if** statement along with syntax and example?
4. Explain **if-else** statement along with syntax and example?
5. Explain **if-else-if** statement along with the syntax and example?
6. What is the difference between **if-else** and **if-else-if** statements?
7. Explain **nested if** statement along with syntax and example?
8. Compare **if** and **if-else-if** statements. If you are given multiple conditions, which one will you prefer.
9. When do we use { } (curly braces) after **if** or **else**?
10. Explain ternary operator (?:) along with syntax and example.
11. Ternary Operator is equivalent to which **if** variant and why?
[Hint: if-else]
12. Explain **switch** statement along with syntax and example.
13. Write a short note on **goto** statement.

Programming Questions:

1. What will be output when you will execute following c code?

```
#include<stdio.h>
void main()
{
    int a=100;
    if(a>10)
        printf("M.S. Dhoni");
    else if(a>20)
        printf("M.E.K Hussey");
    else if(a>30)
        printf("A.B. de villiers");
}
```

The output will be:

- (a) M.S. Dhoni
- (b) A.B. de villiers
- (c) M.S Dhoni
M.E.K Hussey
A.B. de Villiers

- (d) Compilation error: More than one conditions are true
(e) None of the above
[Ans. b]

2. What will be output when you will execute following c code?

```
#include<stdio.h>
void main()
{
    if(34)
        printf("Barack Obama\n");
    if(-1)
        printf("Hu Jintao\n");
    if(.92)
        printf("Nicolas Sarkozy\n");
    if(0)
        printf("Ben Bernanke\n");
    if('W')
        printf("Vladimir Putin\n");
}
```

Choose the correct option:

- (a) It will print nothing
(b) Barack Obama
Hu Jintao
Nicolas Sarkozy
Vladimir Putin
(c) Barack Obama
Hu Jintao
Nicolas Sarkozy
Ben Bernanke
Vladimir Putin
(d) Hu Jintao
Nicolas Sarkozy
Vladimir Putin
(e) Compilation error

[Ans. b]

[Hint: 0 represents False; anything other than 0 represents True]

3. What will be the output of following code

```
#include<stdio.h>
void main()
{
    int a,b;
    a=9;
    b=9;
```

```

if(!(a==b))
printf("Success\n");
else
printf("Failure\n");
}

```

[**Ans.** Failure. Logical Not reverses the given condition. It converts true into false and false into true. 0 into 1 and anything other than 0 into 0]

4. WAP to find out whether a given number is a multiple of 11 or not.
[**Hint:** The question is same as whether a number is divisible by 11 or not]
5. WAP to take three angles of a triangle as input and find out whether the triangle formed is a valid triangle or not.
[**Hint:** Sum of 3 angles must be 180]
6. WAP to solve the roots of a quadratic equation. Roots are given by
$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Check if the term $b^2 - 4ac < 0$ then roots are imaginary. Display appropriate message on the screen. Otherwise find the roots and display them to the user.
7. WAP in C to read an integer number from keyboard, add 1 to it if the number read is even, again add 1 to it if the number is less than 20, otherwise keep the number unchanged and print the final result.
[**Hint:** You have to use nested if]
8. WAP to calculate hospital bill according to following conditions:

a. If age ≤ 10	No charge
b. If age ≥ 11 and age ≤ 40	100 Rs
c. If age ≥ 41 and age ≤ 60	75 Rs
d. If age ≥ 61	50 Rs
9. WAP using switch statement to calculate area of circle, rectangle and triangle. You must ask the user for a choice e.g., 1 for area of circle, 2 for area of rectangle and 3 for area of a triangle. Based on the choice of the user, you must perform the necessary operation.