Decision Control Statements

1. Write a program to check whether a given number is positive or non-positive.

```c
#include <stdio.h>
int main()
{
    int n;
    printf("Enter a number : ");
    scanf("%d", &n);
    n > 0 ? printf("Positive") : printf("Non-positive");
    return 0;
}
```

```
Output:
Enter a number : 0
Non-positive
```

2. Write a program to check whether a given number is divisible by 5 or not

```c
#include <stdio.h>
int main()
{
    int n;
    printf("Enter a number : ");
    scanf("%d", &n);
    n % 5 == 0 ? printf("Divisible by 5") : printf("Not divisible by 5");
    return 0;
}
```

```
Output:
Enter a number : 10
Divisible by 5
```

3. Write a program to check whether a given number is an even number or an odd number.

```c
#include <stdio.h>
int main()
{
    int n;
    printf("Enter a number : ");
    scanf("%d", &n);
    n % 2 == 0 ? printf("Even number") : printf("Odd number");
    return 0;
}
```

```
Output:
Enter a number : 8
Even number
```

4. Write a program to check whether a given number is an even number or an odd number without using % operator.

```c
int main()
{
    int n, temp;
    printf("Enter a number : ");
    scanf("%d", &n);
    temp = n;
    temp = (temp / 2) * 2;
    temp == n ? printf("Even number") : printf("Odd number");
    return 0;
}
```

```
Output:
Enter a number : 53
Odd number
```

5. Write a program to check whether a given number is a three-digit number or not.

```
#include <stdio.h>
int main()
{
    int n;
    printf("Enter a number : ");
    scanf("%d", &n);
    if (n >= 100 && n <= 999)
    {
        printf("Three digit number");
    }
    else
    {
        printf("Not three digit number");
    }
    return 0;
}
```

```
Output:
Enter a number : 2356
Not three digit number
```

6. Write a program to print greater between two numbers. Print one number of both are the same.

```
#include <stdio.h>
int main()
{
    int a, b;
    printf("Enter two numbers : ");
    scanf("%d%d", &a, &b);
    if (a >= b)
    {
        printf("Greater is %d", a);
    }
    else
    {
        printf("Greater is %d", b);
    }
    return 0;
}
```

```
Output:
Enter two numbers : 5 5
Greater is 5
```

7. Write a program to check whether roots of a given quadratic equation are real & distinct, real & equal or imaginary roots

```
#include <stdio.h>
int main()
{
    int a, b, c, d = 0;
    printf("Enter three number for quadratic equation (a, b, c) : ");
    scanf("%d%d%d", &a, &b, &c);
    d = (b * b) - (4 * a * c);
    printf("D=%d\n", d);
    if (d > 0)
    {
        printf("Roots are real and distinct (unequal)");
    }
```

```
    else if (d == 0)
    {
        printf("Roots are real and equal (coincident)");
    }
    else if (d < 0)
    {
        printf("Roots are imaginary and unequal");
    }
    else
    {
        printf("Wrong Input");
    }

    return 0;
}
================================================================================
Output:
Enter a month number : 3 3 -10
D=129
Roots are real and distinct (unequal)
```

8. Write a program to check whether a given year is a leap year or not.

```
#include <stdio.h>
int main()
{
    int n;
    printf("Enter year to check leap year or not : ");
    scanf("%d", &n);
    if (n % 100)
    {
        printf(n % 4 ? "Not Leap Year" : "Leap Year");
    }
    else
    {
        printf(n % 400 ? "Not Leap Year" : "Leap Year");
    }

    return 0;
}
================================================================================
Output:
Enter year to check leap year or not : 1200
Leap Year
```

9. Write a program to find the greatest among three given numbers. Print number once if the greatest number appears two or three times.

```
#include <stdio.h>
int main()
{
    int a, b, c;
    printf("Enter three numbers : ");
    scanf("%d%d%d", &a, &b, &c);
    if (a >= b)
    {
        (a > c) ? printf("Greater is %d", a) : printf("Greater is %d", c);
    }
    else
    {
        (b >= c) ? printf("Greater is %d", b) : printf("Greater is %d", c);
    }
    return 0;
}
================================================================================
```

```
Output:
Enter three numbers : 25 24 89
Greater is 89
```

10. Write a program which takes the cost price and selling price of a product from the user. Now calculate and print profit or loss percentage.

```
#include <stdio.h>
int main()
{
    float cp, sp, p, l;
    printf("Enter cost price and selling price : ");
    scanf("%f%f", &cp, &sp);
    if (sp > cp)
    {
        p = sp - cp;
        printf("Profit Percentage : %f %c", ((p / cp) * 100), 37);
    }
    else
    {
        l = cp - sp;
        printf("Loss Percentage : %f %c", ((l / cp) * 100), 37);
    }
    return 0;
}
```

```
Output:
Enter cost price and selling price : 1500 1600
Profit Percentage : 6.666667 %
```

11. Write a program to take marks of 5 subjects from the user. Assume marks are given out of 100 and passing marks is 33. Now display whether the candidate passed the examination or failed.

```
#include <stdio.h>
int main()
{
    int h, e, m, p, c;
    printf("Enter 5 subjects marks : ");
    scanf("%d%d%d%d%d", &h, &e, &m, &p, &c);
    if (h > 100 || e > 100 || m > 100 || p > 100 || c > 100)
    {
        printf("Wrong Input");
    }
    else if (h >= 33 && e >= 33 && m >= 33 && p >= 33 && c >= 33)
    {

        printf("Pass");
    }
    else
    {
        printf("Failed");
    }

    return 0;
}
```

```
Output:
Enter 5 subjects marks : 33 25 36 98
55
Failed
```

12. Write a program to check whether a given alphabet is in uppercase or lowercase.

```
#include <stdio.h>
int main()
```

```
{
    char a;
    printf("Enter a alphabet to check uppercase or lowercase : ");
    scanf("%c", &a);
    printf((a >= 65 && a <= 90) ? "uppercase" : "lowercase");

    return 0;
}
================================================================================
Output:
Enter a alphabet to check uppercase or lowercase : Z
uppercase
```

13. Write a program to check whether a given number is divisible by 3 and divisible by 2.

```
#include <stdio.h>
int main()
{
    int a;
    printf("Enter a number to check given number is divisible by 3 and
divisible by 2: ");
    scanf("%d", &a);
    if (a % 2 == 0 && a % 3 == 0)
    {
        printf("Divisible by 2 and 3");
    }
    else
    {
        printf("Not divisible by 2 and 3");
    }

    return 0;
}
================================================================================
Output:
Enter a number to check given number is divisible by 3 and divisible by 2: 12
Divisible by 2 and 3
```

14. Write a program to check whether a given number is divisible by 7 or divisible by 3.

```
#include <stdio.h>
int main()
{
    int a;
    printf("Enter a number to check given number is divisible by 3 or
divisible by 7: ");
    scanf("%d", &a);
    if (a % 3 == 0 || a % 7 == 0)
    {
        printf("Divisible by 3 or 7");
    }
    else
    {
        printf("Not divisible by 3 or 7");
    }

    return 0;
}
================================================================================
Output:
Enter a number to check given number is divisible by 3 or divisible by 7: 11
Not divisible by 3 or 7
```

15. Write a program to check whether a given number is positive, negative or zero.

```c
#include <stdio.h>
int main()
{
    int n;
    printf("Enter a number to check positive, negative or zero : ");
    scanf("%d", &n);
    if (n >= 0)
    {
        printf(n > 0 ? "Positive" : "Zero");
    }
    else
    {
        printf("Negative");
    }

    return 0;
}
```

```
Output:
Enter a number to check positive, negative or zero : 0
Zero
```

16. Write a program to check whether a given character is an alphabet (uppercase), an alphabet (lower case), a digit or a special character.

```c
#include <stdio.h>
int main()
{
    char a;
    printf("Enter a character : ");
    scanf("%c", &a);
    if (a >= 65 && a <= 90)
    {
        printf("Uppercase");
    }
    else
    {
        if (a >= 97 && a <= 122)
        {
            printf("Lowercase");
        }
        else
        {
           (a >= 48 && a <= 57) ? printf("Digit") : printf("Special
Character");
        }
    }

    return 0;
}
```

```
Output:
Enter a character : $
Special Character
```

17. Write a program which takes the length of the sides of a triangle as an input. Display whether the triangle is valid or not.

```c
#include <stdio.h>
int main()
{
    int a, b, c;
    printf("Enter three sides of triangle : ");
    scanf("%d%d%d", &a, &b, &c);
```

```
    if (a + b > c && b + c > a && c + a > b)
    {
        printf("The triangle is valid");
    }
    else
    {
        printf("The triangle is not valid");
    }

    return 0;
}
```

```
Output:
Enter three sides of triangle : 3 5 20
The triangle is not valid
```

18. Write a program which takes the month number as an input and display number of days in that month.

```
#include <stdio.h>
int main()
{
    int a;
    printf("Enter a month number : ");
    scanf("%d", &a);
    if (a == 1 || a == 3 || a == 5 || a == 7 || a == 8 || a == 10 || a == 12)
    {
        printf("31 Days");
    }
    else
    {
        if (a == 4 || a == 6 || a == 9 || a == 11)
        {
            printf("30 Days");
        }
        else if (a == 2)
        {
            printf("28 or 29 Days");
        }
        else
        {
            printf("Invalid Input");
        }
    }

    return 0;
}
```

```
Output:
Enter a month number : 8
31 Days
```