LAB 3

1. Write two programs which execute a division by zero, one program which uses integer variables and one using float variables. See what happens when the programs are run.
2. Write a program to evaluate the following expressions and display the same. Assume the following values for the variables to be used in the program: a=0 , b=1, c=-1, x=2.5, y=0.0.

   a) a&&b

   b) a<b &&c<b

   c) b+c || !a

   d) x*5 &&5 ||(b/c)

   e) a<=10 && x>=1 &&b

   f) !x || !c || b+c

   g) x * y < a+b ||c

   h) (x>y) + !a || c++

3.

   a) Compile the following code and observe the output

```c
#include <stdio.h>

main()
{

   int a = 60;        /* 60 = 0011 1100 */
   int b = 13;        /* 13 = 0000 1101 */
   int c = 0;

   c = a & b;       /* 12 = 0000 1100 */
   printf("Line 1 - Value of c is %d\n", c );

   c = a | b;       /* 61 = 0011 1101 */
   printf("Line 2 - Value of c is %d\n", c );

   c = a ^ b;       /* 49 = 0011 0001 */
   printf("Line 3 - Value of c is %d\n", c );

   c = a << 2;     /* 240 = 1111 0000 */
   printf("Line 5 - Value of c is %d\n", c );

   c = a >> 2;     /* 15 = 0000 1111 */
   printf("Line 6 - Value of c is %d\n", c );
}
```

   b) Now give different values for a and b and perform the above operations. Modify the program such that user enters the inputs.

4. Type and compile the following code:

```c
#include <stdio.h>

main()
{
   int a = 21;
   int c ;

   c =  a;
   printf("Line 1 - =  Operator Example, Value of c = %d\n", c );

   c +=  a;
   printf("Line 2 - += Operator Example, Value of c = %d\n", c );

   c -=  a;
   printf("Line 3 - -= Operator Example, Value of c = %d\n", c );

   c *=  a;
   printf("Line 4 - *= Operator Example, Value of c = %d\n", c );

   c /=  a;
   printf("Line 5 - /= Operator Example, Value of c = %d\n", c );

   c  = 200;
   c %=  a;
   printf("Line 6 - %= Operator Example, Value of c = %d\n", c );

   c <<=  2;
   printf("Line 7 - <<= Operator Example, Value of c = %d\n", c );

   c >>=  2;
   printf("Line 8 - >>= Operator Example, Value of c = %d\n", c );

   c &=  2;
   printf("Line 9 - &= Operator Example, Value of c = %d\n", c );

   c ^=  2;
   printf("Line 10 - ^= Operator Example, Value of c = %d\n", c );

   c |=  2;
   printf("Line 11 - |= Operator Example, Value of c = %d\n", c );

}
```

Observe the nature of output.

5. Write a program to swap two numbers with and without temporary variable.
6. Write a program to find the sum of the digits of a three digit number entered by the user.
7. Write a program to display the largest of three numbers.
8. Write a program to read three numbers & calculate their sum & average. If sum is in the range of 100 & 200, print the message, “Sum is in the allowed range”. If the sum is above 200, print the message, “Sum has exceeded the range”; else print “Sum is below the range”.
9. Accept a three digit number from the user. If the least significant digit is 5, calculate the sum of the digits.
10. Get the marks (an integer) from the user as input and output the grades along with the number of conditional expressions executed for determining the grades.

Input format :

Enter the marks :

Output format :

Grade :

Give the grades according to the following table
A+ : 100- 95
A : 90-95
A- : 80 - 90
B : 75 -80
B- : 70 - 75
C : 60 - 70
C- : 50-60
D : 40- 50
F : below 40

11. Accept a number between 1 & 7. Depending on the number, display the name of the corresponding day of the week. Use switch-case.
12. Using switch case, display the vowel entered by the user. Check for the invalid entry.
13. Write a program to carry out the arithmetic operations +,-,* and %. Use switch case.