ASSIGNMENT- 1

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1.Check Whether a Character is a Vowel or Consonant (Using if)

```
#include <stdio.h>
int main() {
   char c;
   int lowercase_vowel, uppercase_vowel;
   printf("Enter an alphabet: ");
   scanf("%c", &c);
   lowercase_vowel = (c == 'a' || c == 'e' || c == 'i' || c == 'o' || c == 'u');
   uppercase_vowel = (c == 'A' || c == 'E' || c == 'I' || c == 'O' || c == 'U');
   if (lowercase_vowel || uppercase_vowel)
      printf("%c is a vowel.", c);
   else
      printf("%c is a consonant.", c);
   return 0;
}
```

```
Enter an alphabet: d
d is a consonant.
```

2. Find Roots of a Quadratic Equation (Using else if ladder).

```
#include <stdio.h>
#include<math.h>
int main()
{
        float a, b, c;
        float root1, root2, imaginary, discriminant;

        printf("\n Please Enter values of a, b, c of Quadratic Equation :  ");
        scanf("%f%f%f", &a, &b, &c);

        discriminant = (b * b) - (4 * a *c);

        if(discriminant > 0)
        {
                root1 = (-b + sqrt(discriminant) / (2 * a));
                root2 = (-b - sqrt(discriminant) / (2 * a));
        printf("\n Two Distinct Real Roots Exists: root1 = %.2f and root2 = %.2f", root1, root2);
        }
        else if(discriminant == 0)
        {
                root1 = root2 = -b / (2 * a);
        printf("\n Two Equal and Real Roots Exists: root1 = %.2f and root2 = %.2f", root1, root2);
        }
        else if(discriminant < 0)
        {
                root1 = root2 = -b / (2 * a);
                imaginary = sqrt(-discriminant) / (2 * a);
        printf("\n Two Distinct Complex Roots Exists: root1 = %.2f+%.2f and root2 = %.2f-%.2f",
root1, imaginary, root2, imaginary);
```

```
        }

        return 0;
}
```

```
Please Enter values of a, b, c of Quadratic Equation :  4
3
1
 Two Distinct Complex Roots Exists: root1 = -0.38+0.33 and root2 = -0.38-0.33
```

3. Check Leap Year (Using if..else)

```
#include <stdio.h>
int main() {
  int year;
  printf("Enter a year: ");
  scanf("%d", &year);

  if (year % 400 == 0) {
    printf("%d is a leap year.", year);
  }
  else if (year % 100 == 0) {
    printf("%d is not a leap year.", year);
  }
  else if (year % 4 == 0) {
    printf("%d is a leap year.", year);
  }
  else {
    printf("%d is not a leap year.", year);
  }
  return 0;
}
```

```
Enter a year: 2000
2000 is a leap year.
```

4.check which number nearest to the value 100 among two given integers. Return 0 if the two numbers are equal. (Using nested if…else)

```
#include <stdio.h>
int main() {
   double n1, n2, n3;
   printf("Enter three numbers: ");
   scanf("%lf %lf %lf", &n1, &n2, &n3);
   if (n1 >= n2 && n1 >= n3)
      printf("%.2lf is the largest number.", n1);
   else if (n2 >= n1 && n2 >= n3)
      printf("%.2lf is the largest number.", n2);
   else
      printf("%.2lf is the largest number.", n3);
   return 0;
}
```

```
Enter three numbers: 55
88
44
88.00 is the largest number.
```

5.check three given integers (small, medium and large) and return true if the difference between small and medium and the difference between medium and large is same. (Using nested if…else)

```
#include <stdio.h>
#include <stdlib.h>
int main(void){
   printf("%d",test(4, 5, 6));
   printf("\n%d",test(7, 12, 13));
   printf("\n%d",test(-1, 0, 1));
   }
  int test(int x, int y, int z)
      {
        if (x > y && x > z && y > z) return x - y == y - z;
        if (x > y && x > z && z > y) return x - z == z - y;
        if (y > x && y > z && x > z) return y - x == x - z;
        if (y > x && y > z && z > x) return y - z == z - x;
        if (z > x && z > y && x > y) return z - x == x - y;
        return z - y == y - x;
      }
```

```
1
0
1
```

6.Calculate and print the Electricity bill of a given customer. The customer id., name and unit consumed by the user should be taken from the keyboard and display the total amount to pay to the customer.

```
#include <stdio.h>
#include <string.h>
Int main()
{
  int custid, conu;
  float chg, surchg=0, gramt,netamt;
  char connm[25];

  printf("Input Customer ID :");
  scanf("%d",&custid);
  printf("Input the name of the customer :");
  scanf("%s",connm);
  printf("Input the unit consumed by the customer : ");
  scanf("%d",&conu);
  if (conu <200 )
          chg = 1.20;
  else    if (conu>=200 && conu<400)
                  chg = 1.50;
          else if (conu>=400 && conu<600)
                          chg = 1.80;
                  else
                          chg = 2.00;
```

```
  gramt = conu*chg;
  if (gramt>300)
        surchg = gramt*15/100.0;
  netamt = gramt+surchg;
  if (netamt  < 100)
        netamt =100;
  printf("\nElectricity Bill\n");
  printf("Customer IDNO                :%d\n",custid);
  printf("Customer Name                :%s\n",connm);
  printf("unit Consumed                :%d\n",conu);
  printf("Amount Charges @Rs. %4.2f  per unit :%8.2f\n",chg,gramt);
  printf("Surchage Amount              :%8.2f\n",surchg);
  printf("Net Amount Paid By the Customer    :%8.2f\n",netamt);

}
```

```
Input Customer ID :2222
Input the name of the customer :devid
Input the unit consumed by the customer : 43636

Electricity Bill
Customer IDNO                :2222
Customer Name                :descg
unit Consumed                :43636
Amount Charges @Rs. 2.00  per unit :87272.00
Surchage Amount              :13090.80
Net Amount Paid By the Customer    :100362.80
```

7. The marks obtained by a student in 3 different subjects are input by the user. Your program should calculate the average of subjects.

```
#include <stdio.h>
int main()
{
   float marks1, marks2, marks3, average;
   printf("Enter marks obtained in subject 1 :");
   scanf("%f", &marks1);
   printf("Enter marks obtained in subject 2 :");
   scanf("%f", &marks2);
   printf("Enter marks obtained in subject 3 :");
   scanf("%f", &marks3);
   average = (marks1 + marks2 + marks3) / 3;
   printf("Average : %0.2f\n", average);
   if (average >= 90)
   {
      printf("Grade A");
   }
   else if (average >= 80)
   {
      printf("Grade B");
   }
   else if (average >= 70)
   {
```

```
    printf("Grade C");
  }
  else if (average >= 60)
  {
    printf("Grade D");
  }
  else
  {
    printf("Grade F");
  }
  return 0;
}
```

```
Enter marks obtained in subject 1 :67
Enter marks obtained in subject 2 :87
Enter marks obtained in subject 3 :98
Average : 84.00
Grade B
```

8. print total number of days in a month using switch case.

```
#include <stdio.h>
int main()
{
  int month;
  printf("Enter month number(1-12): ");
  scanf("%d", &month);
switch(month)
  {
    case 1:
      printf("31 days");
      break;
    case 2:
      printf("28/29 days");
      break;
    case 3:
      printf("31 days");
      break;
    case 4:
      printf("30 days");
      break;
    case 5:
      printf("31 days");
      break;
    case 6:
      printf("30 days");
      break;
    case 7:
      printf("31 days");
      break;
    case 8:
      printf("31 days");
      break;
```

```
      case 9:
         printf("30 days");
         break;
      case 10:
         printf("31 days");
         break;
      case 11:
         printf("30 days");
         break;
      case 12:
         printf("31 days");
         break;
      default:
         printf("Invalid input! Please enter month number between 1-12");
   }
   return 0;
}
```

```
Enter month number(1-12): 5
31 days
```

9. create Simple Calculator using switch case.

```
#include <stdio.h>
int main()
{
   int a, b;
   char choice;
   printf("Enter your choice\n");
   printf("a. Addition\nb. Subtraction\nc. Multiplication\nd. Division\n");
   scanf("%c", &choice);
  printf("Enter 2 integer numbers\n");
  scanf("%d %d", &a, &b);
   switch(choice)
   {
      case 'a': printf("%d + %d = %d\n", a, b, (a+b));
            break;

      case 'b': printf("%d - %d = %d\n", a, b, (a-b));
            break;

      case 'c': printf("%d x %d = %d\n", a, b, (a*b));
            break;

      case 'd': if( b != 0)
               printf("%d / %d = %d\n", a, b, (a/b));
            else
               printf("Number can't be divided by 0\n");
            break;

      default: printf("You entered wrong choice\n");
            break;
   }
```

```
    return 0;
}
```

```
Enter your choice
a. Addition
b. Subtraction
c. Multiplication
d. Division
c
Enter 2 integer numbers
5
10
5 x 10 = 50
```

10. Prompts the user to enter grade. Your program should display the corresponding meaning of grade as per the following table (Using Switch Case)

```
#include <stdio.h>
#include <ctype.h>
#include <string.h>
int main()
{
    char notes[15];
    char grd;
    printf("Input the grade :");
    scanf("%c", &grd);
    grd = toupper(grd);
    switch(grd)
    {
    case 'A':
        strcpy(notes, " Excellent");
        break;
    case 'B':
        strcpy(notes, " Good");
        break;
    case 'C':
        strcpy(notes, " Average ");
        break;
    case 'D':
        strcpy(notes, " Deficient");
        break;
    case 'F':
        strcpy(notes, " Fails");
        break;
    default :
        strcpy(notes, "Invalid Grade Found. \n");
        break;
    }
    printf("You have chosen  : %s\n", notes);
}
```

```
Input the grade :B
You have chosen  :  Good
```