ASSIGNMENT - 04

Q1. Check whether a character is a vowel or constant.

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

OUTPUT :

enter an alphabet :A

A is vowel

Q2. Find roots of a quadratic equation.

```c
#include <math.h>
#include <stdio.h>
int main() {
double a, b, c, discriminant, root1, root2, realPart, imagPart;
printf("Enter coefficients a, b and c: ");
scanf("%lf %lf %lf", &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("root1 = %.2lf and root2 = %.2lf", root1, root2);    }
else if (discriminant == 0) {
root1 = root2 = -b / (2 * a);
printf("root1 = root2 = %.2lf;", root1);    }
  else {
realPart = -b / (2 * a);
 imagPart = sqrt(-discriminant) / (2 * a);
printf("root1 = %.2lf+%.2lfi and root2 = %.2f-%.2fi", realPart, imagPart, realPart, imagPart);    }
 return 0;}
```

OUTPUT :
Enter coefficients a, b and c: 3
4 6
root1 = -0.67+1.25i and root2
= -0.67-1.25i

Q3. Check leap year.

```c
#include <stdio.h>
int main()
{
int year;
printf("Enter a year :");
scanf("%d",&year);
if(((year%4==0) && (year%100!=0)) || (year%400==0))
{
printf("%d is a leap year",year);}
else{
printf("%d is not a leap year",year);}
return 0;}
```

OUTPUT :

Enter a year :2012

2012 is a leap year

Q4. Check which number nearest to the value 100 among two given integers . Return 0 if the two number are equal.

```c
#include <stdio.h>
int main() {
   int a,b;
  printf("Enter two numbers: ");
  scanf("%d %d", &a, &b);
if ((100-a) && (100-b))
  if(a<b)
printf("%d is the largest number.", b);
  else{
   printf("%d is the largest number.", a);    }
else{
 if return(a==b ? 0)}
return 0;}
```

OUTPUT :

Enter two numbers: 98 88

98 is the largest number.

Q5. Check three given integers (small ,medium , large) and return true if the difference between small and medium and difference between medium and large is same.

```c
#include <stdio.h>
int main() {
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;
   }
```

OUTPUT :

1

0

1

Q6. Calculate and print the electricity bill of a given customer. The customer id, name and unit consumed by the user should be taken from keyboard and display the total amt to pay to the customer. If bill exceeds Rs.400 then a surcharge of 15% will be charge and the minimum bill should be of Rs.100/-

```c
#include <stdio.h>
void main(){
int custid, unitc;
float chg, surchg=0, gramt,totalamt;
char cusname[25];
printf("Input Customer ID :");
scanf("%d",&custid);
printf("Input the name of the customer :");
scanf("%s",cusname);
printf("Input the unit consumed by the customer : ");
scanf("%d",&unitc);   if (unitc <200 ) chg = 1.20;   else
if (unitc>=200 && unitc<400) chg = 1.50;
else if (unitc>=400 && unitc<600)
chg = 1.80; else
chg = 2.00;
 gramt = unitc*chg;
```

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

Input Customer ID :1001

Input the name of the customer :sam

Input the unit consumed by the customer : 600

OUTPUT :

Electricity Bill

Customer IDNO   :1001

Customer Name   :sam

unit Consumed   :600

Amount Charges @Rs. 2.00 per unit : 1200.00

Surchage Amount   : 180.00

Total Amount Paid By the Customer   : 1380.00

Q7. The marks obtained by a student in 3 different subjects are inputs by the user. Your program should calculate the average of subjects. The student gets a grade as per the following rules.

```c
#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 && average <=100")
 {   printf("Grade A");   }
 else if ("average >=80 && average <=89")   {
 printf("Grade B");   }
 else if ("average >=70 && average <=79")   {
  printf("Grade c");   }
 else if ("average >=60 && average <=69")   {
 printf("Grade D");   } else   {
 printf("Grade F");   }return 0;}
```

OUTPUT :
Enter marks obtained in subject 1
                :88
Enter marks obtained in subject 2
                :67
Enter marks obtained in subject 3
                :75
          Average : 76.67
               Grade A

Q8. Print total number of days in a month using switch case.

```c
#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:
```

```c
    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;}}
```

OUTPUT :
 Enter month number(1-12):
                8
            31 days

Q9. Create simple calculator using switch case.

```c
#include <stdio.h>
int main(){
     char operator;
     double first, second;
     printf("Enter an operator (+, -, *): ");
     scanf("%c", &operator);
    printf("Enter two operands: ");
     scanf("%lf %lf", &first, &second);
     switch (operator) {
case '+':
    printf("%.1lf + %.1lf = %.1lf", first, second, first + second);        break;
case '-':
    printf("%.1lf - %.1lf = %.1lf", first, second, first - second);       break;
case '*':
    printf("%.1lf * %.1lf = %.1lf", first, second, first * second);       break;
case '/':
    printf("%.1lf / %.1lf = %.1lf", first, second, first / second);       break;
default:
    printf("Error! operator is not correct");    }
 return 0;}
```

OUTPUT :
Enter an operator (+, -, *,):
*
Enter two operands: 5
9
5.0 * 9.0 = 45.0

Q10. Prompts the user to enter grade . Your program should display the corresponding meaning of grade as per the following table.

```c
#include <stdio.h>
int main() {
     char grade;
     printf("Enter the grade :");
     scanf("%c",  &grade);
     switch (grade)      {
case 'A':
       printf("Excellent");
        break;
case 'B':
       printf("Good");
        break;
case 'C':
        printf("Average ");
      break;
case 'D':
     printf("Deficient");
     break;
case 'F':
      printf("Failing");
       break;
default:
      printf("Invalid input");        }
  return 0;}
```

OUTPUT :
Enter the grade :B
Good

PRACTICE QUESTION

Q12. Check whether a number is even or odd.

```c
#include <stdio.h>
int main() {
int num;
printf("Enter a number :");
scanf("%d", &num);
if (num % 2==0)    {
printf("%d no.is even", num);    }
else    {
printf("%d no. is odd", num);    }
return 0;}
```

OUTPUT :

Enter a number :9

no. is odd

Q13.Check whether a character is an alphabet or not.

```c
#include <stdio.h>
int main() {
char c;
printf("Enter a character :");
scanf("%c", &c);
if ((c>='a' && c<='z') || (c>='A' && c<='Z'))
  {
printf("%c is an alphabet", c);    }
else    {
printf("%c is not an alphabet", c);    }
return 0;
}
```

OUTPUT :
Enter a character :z
is an alphabet

Q17. Read temperature in centigrade and display a suitable message according to temperature state below.

```c
#include <stdio.h>
int main() {
int temp;
printf("enter temperature : ");
scanf("%d", &temp);   if(temp<0)
printf("Freezing weather.\n");
else if(temp<10)
printf("Very cold weather.\n");
else if(temp<20)
printf("Cold weather.\n");
else if(temp<30)
printf("Normal in temp.\n");
else if(temp<40)
printf("Its Hot.\n");
else
printf("Its very hot.\n");
}
```

OUTPUT : enter temperature : 5
Very cold weather.

Q19. Print day of week name using switch case.

```c
#include <stdio.h>
int main() {
 int week;
 printf("Enter week number(1-7): ");
scanf("%d", &week);
switch(week)   {
 case 1:
 printf("Monday");          break;
  case 2:
  printf("Tuesday");          break;
 case 3:
  printf("Wednesday");          break;
  case 4:
 printf("Thursday");          break;
case 5:
 printf("Friday");      break;
  case 6:
 printf("Saturday");      break;
case 7:
printf("Sunday");      break;
default:
printf("Invalid input! Please enter week number between 1-7.");   }
return 0;}
```

OUTPUT :

Enter week number(1-7): 6
Saturday