1.Check wheather a character is a Vowel or Consonant(Using if).

```
#include <stdio.h>
int main() {
   char sp;
   int flag=0;
   printf("Enter the character:");
   scanf("%c",&sp);
   if(sp=='a' || sp=='A'){flag=1;
   printf("You entered vowel");}
   if(sp=='e' || sp=='E'){flag=1;
   printf("You entered vowel");}
   if(sp=='i' || sp=='I'){flag=1;
   printf("You entered vowel");}
   if(sp=='o' || sp=='O'){flag=1;
   printf("You entered vowel");}
   if(sp=='u' || sp=='U'){flag=1;
   printf("You entered vowel");}

   if(flag==0)
   printf("You entered consonant");
   return 0;
}
```

Output:

Enter the character:s

You entered consonant

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

```
#include<stdio.h>
#include<math.h>
int main()
{
float a,b,c,r1,r2,d,imag;
printf("Enter the value of a:");
scanf("%f",&a);
printf("Enter the value of b:");
scanf("%f",&b);
printf("Enter the value of c:");
scanf("%f",&c);
d=(b*b)-4*a*c;
if(d>0)
{
r1= (-b+sqrt(d))/2*a;
r2= (-b-sqrt(d))/2*a;
printf("Quadratric equation has two roots\n");
printf("two roots are r1= %g & r2= %g",r1,r2);
}
else if(d==0)
{
r1=r2=(-b/2*a);
printf("two roots are equal\n");
printf("r1= %g & r2= %g",r1,r2);
}
else if (d<0)
{
```

```
r1=r2=(-b/2*a);
imag= sqrt(-d)/2*a;
printf("two roots are imaginary= %g\n",imag);
}
return 0;
}
```

Output:

Enter the value of a : 2

Enter the value of b : 3

Enter the value of c : -6

Quadratic equation has two roots

Two roots are r1 =4.54983 & r2 = -10.5498

3.Check Leap Year(Using if else).

```
#include <stdio.h>
#include<math.h>
int main() {
   int y;
 printf("Enter the year to check leap year:");
 scanf("%d",&y);
 if(y%4==0)
 printf("leap year");
 else
 printf("not leap year");
  return 0;
}
```

Output:

Enter the year to check leap year:2010

not leap year

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

```
#include<stdio.h>
int main()
{
   int a,b,sn1,sn2;
   printf("enter a:");
   scanf("%d",&a);
   printf("enter b:");
   scanf("%d",&b);
   sn1=100-a;
   sn2=100-b;
   if(sn1<=sn2){
      if(sn1==sn2){
         printf("a%d is equal b%d",a,b);}
      else{
         printf("a%d is nearest to 100.",a);}}
      else{
         printf("b%d is nearest to 100.",b);}
         return 0;
}
```

Output:

enter a:90

enter b:75

a 90 is nearest to 100.

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>
int main() {
   int sma,med,lar;
   printf("Enter 1st no:");
   scanf("%d",&sma);
   printf("Enter 2nd no:");
   scanf("%d",&med);
   printf("Enter 3rd no:");
   scanf("%d",&lar);

if((sma<med&&med<lar)||(med<sma&&sma<lar)||(lar<med&&med<sma)||(lar<sma&&sma<med)||(
med<lar&&lar<sma)){
      if((med-sma==lar-med)||(sma-med==lar-sma)||(med-lar==sma-med)||(sma-lar==med-sma)||(lar-
med==sma-lar)){
   printf("Difference in between small and medium  and medium and large is same.");
      }
      else{
         printf("Difference in between small and medium  and medium and large is not same.");
      }}
      else
      printf("all the entered no are same.");
      return 0;
}
```

Output:

Enter 1st no : 8

Enter 2nd no : 12

Enter 3rd no : 16

Difference in between small and medium and medium and large is same.

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 keyboardand display the total amount to pay to the customer. The charge are as follow:

Unit	**Charge/unit**
Upto 199	**@1.20**
200 and above but less than 400	**@1.50**
400 and above but less than 600	**@1.80**
600 and above	**@2.00**

If the billexceed Rs.400than a surcharge of 15% will be charged and the minimum bill should be os Rs. 100/- (Using else if ladder).

```
#include <stdio.h>
#include<string.h>
int main() {
   char name[10];
   int id;
   int unit;
   float bill;
   float cr1=1.20,cr2=1.50,cr3=1.80,cr4=2.00,sc=0.15;
   printf("Enter Customer Name:");
   scanf("%s",&name);
   printf("Enter Customer id:");
   scanf("%d",&id);
   printf("Enter the electricity units:");
   scanf("%d",&unit);
   if(unit<=199){
```

```
    bill=unit*cr1;
  }
  else if(unit>=200&&unit<400){
    bill=400*cr2;
  }
  else if(unit>=400&&unit<400){
    bill=unit*cr3;
  }
  else if(unit>=600){
    bill=600*cr4;
  }
  if(bill>400)
  {
    bill=bill + (bill*sc);
  }
  if(bill<100)
  {
    bill=100;
  }
  printf("Your unit is %d. and bill is %g",unit,bill);
  return 0;
}
```

Output:

Enter Customer Name : sinu

Enter Customer id : 102

Enter the electricity units : 300

Your units is 300. and bill is 517.5.

7.The Marks obtained by a student in 3 different subjects are input by the user. Your program should calculate the average of subjects. The student gets a grade as per the following rules:(Using else if ladder).

Average	grade
90-100	A
80-89	B
70-79	C
60-69	D
0-59	F

```
#include <stdio.h>
int main() {
   float mar1,mar2,mar3,total;
   float avg;
printf("Enter mark1:");
scanf("%f",&mar1);
printf("Enter mark2:");
scanf("%f",&mar2);
printf("Enter mark3:");
scanf("%f",&mar3);
total = (mar1+mar2+mar3);
printf("Total marks obtained is :%g\n",total);
avg = (total/3);
printf("average mark is :%g\n",avg);
if(avg>=90&&avg<100){
printf("secured\"A\"grade");
}
else if(avg>=80&&avg<90){
printf("secured\"B\"grade");
}
```

```
else if(avg>=70&&avg<80){
printf("secured\"C\"grade");
}
else if(avg>=60&&avg<70){
printf("secured\"D\"grade");
}
else if(avg>=0&&avg<60){
printf("secured\"F\"grade");
 }
   return 0;
}
```

Output:

Enter mark1 : 60

Enter mark2 : 75.2

Enter mark3 : 89.5

Total marks obtained is : 224.7

Average mark is : 74.66

Secured “C” grade

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;
}
```

Output:

Enter month number(1-12):2

28/29 days

9.Create Simple Calculate using switch case.

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

Output:

Enter an operator(+, -, *, /):

Enter two operands: 3.5 4.5

2.5*1.5 = 3.7

10.Prompts the user to enter grade. Your program should display the corresponding meaning of grade as per the followimg table (Using switch case).

Grade	Meaning
A	Excellent
B	Good
C	Average
D	Deficient
F	Failing

```
#include <stdio.h>
int main() {
   char grade;
   printf("please Enter  Grade:");
   scanf("%c",&grade);
   switch(grade)
   {
      case'a':
      case'A':
      printf("Excellent");
      break;
      case'b':
      case'B':
      printf("Good");
```

```
        break;
        case'c':
        case'C':
        printf("Average");
        break;
        case'd':
        case'D':
        printf("Deficient");
        break;
        case'f':
        case'F':
        printf("Failing");
        break;
        default:
        printf("wrong grade!!!");
    }
    return 0;
}
```

Output:

please Enter Grade:c

Average