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;
}
```

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

```
#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;
}
```

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

```
#include <stdio.h>

int main()
{
    int year;

    printf("Enter year : ");
    scanf("%d", &year);

    if(((year % 4 == 0) && (year % 100 !=0)) || (year % 400==0))
    {
        printf("LEAP YEAR");
    }
    else
    {
        printf("COMMON YEAR");
    }

    return 0;
}
```

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>
#include<stdlib.h>
int main()
{
  int x, y;
int const n=100;
  printf("enter two integers:");
  scanf("%d %d",&x,&y);
int a = abs(x-100);
int b = abs(y-100);
if(x==y){
printf("0");
}
else{
if(a<b){
printf("%d",x);
return x;
}
else
printf("%d",y);
return y;
}
}
```

5) 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. 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

```
#include<stdio.h>
#include<string.h>
void 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<2000
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>400)
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("Surcharge Amount    :%8.2f\n",surchg);
printf("Net Amount Paid By the Customer  :%8.2f\n",netamt);
}
```

6) 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 m1, m2, m3, avg;
printf("enter the marks:");
```

```
scanf(%f%f%f",&m1,&m2,&m3);
avg=(m1+m2+m3)/3;
if(avg>=90 && avg<=100){
printf("grade:A");
}
else if(avg>=80 && avg<=89){
printf("grade:B");
}
else if(avg>=70 && avg<=79){
printf("grade:C");
}
else if(avg>=60 && avg<=69){
printf("grade:D");
}
else{
printf("grade:F");
}
return 0;
}
```

7) 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;
}
```

8) create Simple Calculator using switch case.

```
#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;
}
```

9) 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>
int main(){
char grade;
printf(“enter 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 grade”);
}
return 0;
}
```