**1. Check Whether a Character is a Vowel or Consonant.**

#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.**

#include <math.h>

#include <stdio.h>

int main() {

double a, b, c, D, root1, root2, realPart, imagPart;

printf("Enter coefficients a, b and c: ");

scanf("%lf %lf %lf", &a, &b, &c);

D = b \* b - 4 \* a \* c;

if (D > 0) {

root1 = (-b + sqrt(D)) / (2 \* a);

root2 = (-b - sqrt(D)) / (2 \* a);

printf("root1 = %.2lf and root2 = %.2lf", root1, root2);

}

else if (D == 0) {

root1 = root2 = -b / (2 \* a);

printf("root1 = root2 = %.2lf;", root1);

}

else {

realPart = -b / (2 \* a);

imagPart = sqrt(-D) / (2 \* a);

printf("root1 = %.2lf+%.2lfi and root2 = %.2f-%.2fi", realPart, imagPart, realPart, imagPart);

}

return 0;

}

**3. Check Leap Year.**

#include <stdio.h>

int main() {

int year;

printf("Enter a valid 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;

}

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

#include <stdio.h>

int main(void){

printf("%d",test(23, 89));

printf("\n%d",test(60, 60));

printf("\n%d",test(95, 65));

}

int test(int x, int y)

{

int n = 100;

int val = abs(x - n);

int val2 = abs(y - n);

return val == val2 ? 0 : (val < val2 ? x : y);

}

**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.**

#include <stdio.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;

}

**PROGRAM - 6**

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#include <stdio.h>

int main() {

int id, unit;

char name[20];

float charge, sur\_charge=0, amount, net\_amount;

printf("Input Customer ID :");

scanf("%d",&id);

printf("Input the name of the customer :");

scanf("%s",name);

printf("Input the unit consumed by the customer : ");

scanf("%d",&unit);

if (unit <200 )

charge = 1.20;

else if (unit>=200 && unit<400)

charge = 1.50;

else if (unit>=400 && unit<600)

charge = 1.80;

else

charge = 2.00;

amount = unit\*charge;

if (amount>300)

sur\_charge = amount\*15/100.0;

net\_amount = amount+sur\_charge;

if (net\_amount < 100)

net\_amount =100;

printf("\nElectricity Bill\n");

printf("Customer ID :%d\n",id);

printf("Customer Name :%s\n",name);

printf("unit Consumed :%d\n",unit);

printf("Amount Charges @Rs. %4.2f per unit :%8.2f\n",charge,amount);

printf("Surchage Amount :%8.2f\n",sur\_charge);

printf("Net Amount Paid By the Customer :%8.2f\n",net\_amount);

return 0;

}

**PROGRAM -7**

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#include<stdio.h>

void main()

{

int sub1, sub2, sub3, avg;

printf("Enter your mark in sub1: ");

scanf("%d",&sub1);

printf("Enter your mark in sub2: ");

scanf("%d",&sub2);

printf("Enter your mark in sub3: ");

scanf("%d",&sub2);

avg = (sub1+sub2+sub3) / 3;

if(avg<0 || avg>100)

{

printf("Wrong Entry");

}

else if(marks<60)

{

printf("Grade F");

}

else if(marks>=60 && marks<70)

{

printf("Grade D");

}

else if(marks>=70 && marks<80)

{

printf("Grade C");

}

else if(marks>=80 && marks<90)

{

printf("Grade B");

}

else if(marks>=90 && marks<100)

{

printf("Grade A");

}

else

{

printf("Grade A+");

}

}

**PROGRAM - 8 Print the total number of days in a month using switch case.**

#include <stdio.h>

int main()

{

int month;

/\* Input month number from user \*/

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;

}

**PROGRAM -9 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;

}

**PROGRAM - 10**

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#include <stdio.h>

int main() {

char grade;

printf("enter grade: ");

scanf("%c", &grade);

switch(grade){

case 'A' || 'a':

printf("Excellent");

break;

case 'B':

printf("Good");

break;

case 'C':

printf("Average");

break;

case 'D':

printf("Deficient");

break;

case 'E':

printf("Fail");

break;

}

return 0;

}