Write a C Program for the following problem statements

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

**Solution:-**

#include<stdio.h>

void main()

{

char ent;

printf("enter");

scanf("%c",&ent);

if(ent=='a'||ent=='e'||ent=='i'||ent=='o'||ent=='u')

printf("vowel");

if(ent !='a' && ent != 'e' && ent

!= 'i' && ent != 'o' && ent !='u')

printf("consonant");

}

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

Solution:-

#include <stdio.h>

#include <math.h>

void main()

{

int a,b,c,d;

float x1,x2;

printf("Input the value of a,b & c : ");

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

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

if(d==0)

{

printf("Both roots are equal.\n");

x1=-b/(2.0\*a);

x2=x1;

printf("First Root Root1= %f\n",x1);

printf("Second Root Root2= %f\n",x2);

}

else if(d>0)

{

printf("Both roots are real and diff-2\n");

x1=(-b+sqrt(d))/(2\*a);

x2=(-b-sqrt(d))/(2\*a);

printf("First Root Root1= %f\n",x1);

printf("Second Root root2= %f\n",x2);

}

else

printf("Root are imeainary;\nNo Solution. \n");

}

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

Solution :-

#include<stdio.h>

void main()

{

int a;

printf("enter");

scanf("%d",&a);

if(a%2==0)

printf("leap year");

else

printf("not 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)**

Solution:-

#include<stdio.h>

Void main()

{

int a,b,c,d;

printf("enter");

scanf("%d",&a);

printf("enter");

scanf("%d",&b);

c=100-a;

d=100-b;

if(a<b)

printf("%d nearer to 100",a);

else if(a>b)

printf("%d is nearer to 100",b);

else

printf("both are eaual ,so 0");

}

**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)**

Solution:-

#include <stdio.h>

int main()

{

int small,medium,large,a,b;

printf("enter small ");

scanf("%d",&small);

printf("enter medium ");

scanf("%d",&medium);

printf("enter small ");

scanf("%d",& large);

a=medium-small;

b=large-medium;

if(a==b)

printf("True");

else if(a>b)

printf("Difference is not equal");

else

printf("Difference is not equal");

return 0;

}

**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. 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 bill exceeds Rs. 400 then a surcharge of 15% will be charged and the minimum**

**bill should be of Rs. 100/- (Using else if ladder)**

Solution:-

#include<stdio.h>

void main()

{

int id;

char name[30];

float unit,bill;

printf("enter name");

scanf("%s",name);

printf("enter I'd ");

scanf("%d",&id);

printf("enter unit");

scanf("%f",&unit);

if(unit<=199)

{

bill=unit\*1.20;

if(bill>=400)

{

printf("\nName=%s",name);

printf("\nTotal=%.2f",bill\*15/100+bill);

printf("\nid=%d",id);

}

else if(bill<100)

{

printf("\nName=%s",name);

printf("\n total=100.00");

printf("\nid=%d",id);

}

else

{

printf("\nName=%s",name);

printf("\nid=%d",id);

printf("\nTotal =%.2f",bill);

}

}

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

{

bill=unit\*1.50;

if(bill>=400)

{

printf("\nName=%s",name);

printf("\nid=%d",id);

printf("\nTotal=%.2f",bill\*15/100+bill);

}

else if(bill<100)

{

printf("\nName=%s",name);

printf("\nid=%d",id);

printf("\nTotal=100.00");

}

else

{

printf("\nName=%s",name);

printf("\nid=%d",id);

printf("\nTotal =%.2f",bill);

}

}

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

{

bill=unit\*1.80;

if(bill>=400)

{

printf("\nName=%s",name);

printf("\nid=%d",id);

printf("\nTotal=%.2f",bill\*15/100+bill);

}

else if(bill<100)

{

printf("\nName=%s",name);

printf("\nid=%d",id);

printf("\nTotal=100.00");

}

else

{

printf("\nName=%s",name);

printf("\nid=%d",id);

printf("\nTotal =%.2f",bill);

}

}

else

{

bill=unit\*2.00;

if(bill>=400)

{

printf("\nName=%s",name);

printf("\nid=%d",id);

printf("\nTotal=%.2f",bill\*15/100+bill);

}

else if(bill<100)

{

printf("\nName=%s",name);

printf("\nid=%d",id);

printf("\nTotal=100.00");

}

else

{

printf("\nName=%s",name);

printf("\nid=%d",id);

printf("\nTotal =%.2f",bill);

}

}

}

**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**

**Solution :-**

**#i**nclude<stdio.h>

void main()

{

int a,b,c;

float d,e;

printf("enter PDSC mark out of 100");

scanf("%d",&a);

printf("enter DBMS mark out of 100");

scanf("%d",&b);

printf("enter English mark out of 100");

scanf("%d",&c);

d=a+b+c;

e=d/300\*100;

if(e>=90)

printf("Grade A");

else if(e>=80)

printf("grade B");

else if(e>=70)

printf("Grade c");

else if(e>=60)

printf("Grade D");

else

printf("Grade F");

}

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

Solution:-

#include<stdio.h>

void main()

{

int a,b;

printf("enter month");

scanf("%d",&a);

printf("enter year");

scanf("%d",&b);

switch (a)

{

case 1:

printf("31 days");

break;

case 2:

if(b%2==0)

printf("29 days");

else

printf("28 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("not valid month");

}

}

**9. create Simple Calculator using switch case.**

Solution:- #include<stdio.h>

void main()

{

int a,b,c;

printf("enter number");

scanf("%d",&a);

printf("enter 1 for +,2 for-,3 for ×,4 for / ");

scanf("%d",&b);

printf("enter number");

scanf("%d",&c);

switch (b)

{

case 1:

printf("sum=%d",a+c);

break;

case 2:

printf("subtraction=%d",a-c);

break;

case 3:

printf("multiplication=%d",a\*c);

break;

case 4:

printf("division=%d",a/c);

break;

default:

printf("invalid operator");

}

}

**10. Prompts the user to enter grade. Your program should display the corresponding**

**meaning of grade as per the following table (Using Switch Case)**

**Grade and Meaning**

**A Excellent**

**B Good**

**C Average**

**D Deficient**

**F Failing**

Solution:-

#include<stdio.h>

void main()

{

char a;

printf("enter grade in uppercase=");

scanf("%c",&a);

switch(a)

{

case 'A':

printf("Excellent");

break;

case 'B':

printf("Good");

break;

case 'C':

printf("Average");

break;

case 'D':

printf("Deficient");

break;

case 'E':

printf("failing");

break;

default:

printf("invalid grade");

}

}

**Practice Questions [Optional]:**

**11. Check whether a triangle is Equilateral, Isosceles or Scalene.**

Solution:-

#include <stdio.h>

int main()

{

int sidea, sideb, sidec;

printf("Input three sides of triangle: ");

scanf("%d %d %d", &sidea, &sideb, &sidec);

if(sidea==sideb && sideb==sidec)

{

printf("This is an equilateral triangle.\n");

}

else if(sidea==sideb || sidea==sidec || sideb==sidec) //check whether two sides are equal

{

printf("This is an isosceles triangle.\n");

}

else

{

printf("This is a scalene triangle.\n");

}

return 0;

}

**12. Check Whether a Number is Even or Odd**

Solution :-

#include<stdio.h>

void main()

{

int a;

printf("enter number");

scanf("%d",&a);

if(a%2==0)

printf("Even number");

else

printf("Odd number");

}

**13. Check Whether a Character is an Alphabet or not.**

Solution:-

#include<stdio.h>

void main()

{

char ch;

printf("Enter any character ");

scanf("%c", &ch);

if((ch >= 'a' && ch <= 'z' )||(ch >= 'A' && ch <= 'Z'))

printf("%c is a character", ch);

else

printf("%c is not a character", ch);

}

**14. Find the Largest Number Among Three Numbers.**

Solution:-

#include<stdio.h>

void main()

{

int a,b,c;

printf("enter number");

scanf("%d",&a);

printf("enter number");

scanf("%d",&b);

printf("enter number");

scanf("%d",&c);

if(a>b)

if(a>c)

printf("%d is the greatest num",a);

else

printf("%d is the greatest num",c);

else if(b>c)

printf("%d is the greatest num",b);

else

printf("%d is the greatest num",c);

}

**19. print day of week name using switch case.**

**Solution:-**

#include <stdio.h>

main()

{

int a;

printf("enter day number");

scanf("%d",&a);

switch(a)

{

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 number");

}

}