programming and structures using c

Assignment 4

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

#include<stdio.h>

int main() {

char c;

printf("enter any alphabet :\n ");

scanf("%c", &c);

if(c=='a' || c=='e' || c=='i' || c=='o' || c=='u' || c=='A' || c=='E'|| c=='I' || c=='O' || c=='U')

{

printf("The alphabet %c is a vowel\n",c);

}

else

{

printf("The alphabe %c is a consonant",c);

}

return 0;

}

Output-

enter any alphabet :

g

The alphabe g is a consonant

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

#include<stdio.h>

#include<math.h>

int main()

{

int a,b,c,d;

float r1,r2;

printf("enter the value of a,b & c:\n ");

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

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

if(d==0)

{

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

r1=r2=-b/(2.0\*a);

printf("First Root Root1: %f\n",r1);

printf("Second Root Root2: %f\n",r2);

}

else if(d>0)

{

printf("Both roots are real and different.\n");

r1=(-b+sqrt(d))/(2\*a);

r2=(-b-sqrt(d))/(2\*a);

printf("First Root Root1: %f\n",r1);

printf("Second Root root2: %f\n",r2);

}

else

{

printf("Root are imaginary.\n");

}

return 0;

}

Output-

enter the value of a,b & c:

1 5 6

Both roots are real and different.

First Root Root1: -2.000000

Second Root root2: -3.000000

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

#include <stdio.h>

int main()

{

int year;

printf("Enter the year:\n");

scanf("%d",&year);

if(year%4==0) && (year%400==0)

{

printf("%d is a leap year", year);

}

else

{

printf("%d is not a leap year", year);

}

return 0;

}

Output-

Enter the year:

2000

2000 is a leap year

**4.check which number nearest to the value 100 among two given numbers.return 0 if the two numbers are equal.**

#include <stdio.h>

int main() {

int a,b,n1,n2;

printf("enter two numbers:\n");

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

n1=100-a;

n2=100-b;

if(n1<=n2)

{

if(n1==n2)

{

printf("both the numbers are nearest to 100 \n %d",(n1==n2)?0:1);

}

else{

printf("the number nearest to 100 is:%d",a);

}

}

else

{

printf("the number nearest to 100 is:%d",b);

}

    return 0;

}

Output-

enter two numbers:

97 97

both the numbers are nearest to 100

 0

**5.chec three given numbers small large and medium and return true if the difference between small and medium and medium large is same.**

#include <stdio.h>

int main() {

int a,b,c;

printf("enter three numbers:\n");

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

  if(a>=b && a>=c)

     {

        if(b>c)

        {

           printf(" the value for  medium (%d)-small(%d)==large(%d)-medium(%d)  is: %d",b,c,a,b, b-c==a-b);

         }

else {

printf(" the value for  medium (%d)-small(%d)==large(%d)-medium(%d)  is: %d",c,b,a,c, c-b==a-c);

         }

}

if(b>=a && b>=c)

{

 if(a>c)

{ printf(" the value for  medium (%d)-small(%d)==large(%d)-medium(%d)  is: t%d",a,c,b,a, a-c==b-a);

}

else {

printf(" the value for  medium (%d)-small(%d)==large(%d)-medium(%d)  is: %d ",c,a,b,c, c-a==b-c);

     }

}

if(c>=b && c>=a)

{

 if(a>b)

{

printf(" the value for  medium (%d)-small(%d)==large(%d)-medium(%d)  is: %d ",a,b,c,a, a-b==c-a);

}

else{

printf(" the value for  medium (%d)-small(%d)==large(%d)-medium(%d)  is: %d",b,a,c,b, b-a==c-b);

}

}

    return 0;

}

Output-

 enter three numbers:

7 9 8

the value for  medium (8)-small(7)==large(9)-medium(8)  is: 1

**6. Write a program in C to 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 follows:**

|  |  |
| --- | --- |
| **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 bill exceeds Rs. 400 then a surcharge of 15% will be charged and the minimum bill should be of Rs. 100/-(using if-else ladder).**

#include <stdio.h>

#include <string.h>

int main()

{

int customer\_id, n;

float charge, surcharge=0,amt, netamt;

char name[25];

printf("enter Customer-ID,name:\n");

scanf("%d%s",&customer\_id,name);

printf("enter the unit consumed by the customer:\n ");

scanf("%d",&n);

if(n<200)

{

charge = 1.20;

}

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

{

charge = 1.50;

}

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

{

charge = 1.80;

}

else

{

charge = 2.00;

}

amt = n\*charge;

if(amt>400)

{

surcharge = netamt\*15/100;

netamt = amt+surcharge;

}

else if(amt<100){

netamt =100;

}

else

{

netamt=amt;

}

printf("\nElectricity Bill\n");

printf("Customer-ID:%d",customer\_id);

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

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

printf("Net Amount to be paid:\t%.3f",netamt);

return 0;

}

Output-

enter Customer-ID,name:

1234 sagarika

enter the unit consumed by the customer:

300

Electricity Bill

Customer-ID:1234

Customer Name:sagarika

unit Consumed:300

Net Amount to be paid:517.500

**7. The marks obtained by a student in 3 different subjects are input by the user. Your program should calculate the average of subjects and display the grade. The student gets a grade as per the following rules:**

|  |  |
| --- | --- |
| **Average** | **Grade** |
| **90-100** | **A** |
| **80-89** | **B** |
| **70-79** | **C** |
| **60-69** | **D** |
| **0-59** | **F** |
| #include <stdio.h>  int main()  {  int m1, m2, m3;  float avg;  printf("Enter marks obtained in subject 1:\n");  scanf("%d", &m1);  printf("Enter marks obtained in subject 2:\n");  scanf("%d", &m2);  printf("Enter marks obtained in subject 3:\n");  scanf("%d", &m3);  avg = (m1 + m2 + m3) / 3;  printf("Average : %f\n", avg);  if (avg >= 90)  {  printf("Grade A");  }  else if (avg >= 80)  {  printf("Grade B");  }  else if (avg >= 70)  {  printf("Grade C");  }  else if (avg >= 60)  {  printf("Grade D");  }  else  {  printf("Grade F");  }  return 0;  }  Output-  Enter marks obtained in subject 1:78  Enter marks obtained in subject 2: 87  Enter marks obtained in subject 3: 90  Average : 85  Grade B |  |

**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): 7

31 days

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

#include <stdio.h>

int main() {

char operator;

int op1, op2;

printf("Enter an operator (+, -, \*, / )for calculation:\n ");

scanf("%c",&operator);

printf("Enter two operands:");

scanf("%d%d",&op1,&op2);

switch(operator)

{

case '+':

printf("%d+%d=%d",op1,op2,op1+op2);

break;

case '-':

printf("%d-%d=d",op1,op2,op1-op2);

break;

case '\*':

printf("%d\*%d=%d",op1,op2,op1\*op2);

break;

case '/':

printf("%d/%d=%d",op1,op2,op1/op2);

break;

default:

printf("Error! operator is not correct");

}

return 0;

}

Output-

Enter an operator (+, -, \*, / )for calculation:

+

Enter two operands: 4 2

4-2=2

**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** | **Meaning** |
| **A** | **Excellent** |
| **B** | **Good** |
| **C** | **Average** |
| **D** | **Deficient** |
| **F** | **Failing** |

#include<stdio.h>

int main()

{

char grade;

printf("Enter grade (A, B, C, D, F):\n");

scanf("%c",&grade);

switch(grade)

{

case 'A':

printf("Meaning : Excellent");

break;

case 'B':

printf("Meaning : Good");

break;

case 'C':

printf("Meaning : Average");

break;

case 'D':

printf("Meaning : Deficient");

break;

case 'F':

printf("Meaning : Failing");

default:

printf("error");

}

return 0;

}

Output-

Enter grade (A, B, C, D, F):

G

error