***ASSIGNMENT-4***

**Q1. Check Whether a Character is a Vowel or Consonant (Using if)**

#include <stdio.h>

int main() {

char c;

int a,b ;

printf("Enter an alphabet:");

scanf("%c", &c);

(c == 'a' || c == 'e' || c == 'i' || c == 'o' || c == 'u');

(c == 'A' || c == 'E' || c == 'I' || c == 'O' || c == 'U');

if (a || b)

printf("%c is a vowel.", c);

printf("%c is a consonant.", c);

return 0;

}

**Output**

Enter an alphabet:

h is a consonant.

**Q2. 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;

}

**Output**

Enter coefficients a, b and c: 5 6 7

root1 = -0.60+1.02i and root2 = -0.60-1.02i

**Q3**. **Check Leap Year (Using if..else)**

#include <stdio.h>

int main(){

int year;

printf("enter year:");

scanf("%d",&year);

if((year%400==0)||(year%4==0)&&(year%100!=0))

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

else

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

return 0;

}

**Output**

enter year:1600

1600 is a leap year

**Q4. CHECK WHICH NUMBER NEAREST TO THE VALUE 100 AMOUNG TWO GIVEN INTEGERS.RETURN 0 IF THE TWO NUMBERS ARE EQUAL.(USING NESTED IF…ELSE)?**

#include <stdio.h>

int main()

{

int num1,num2,var1,var2;

printf("enter two numbers:");

scanf("%d%d",&num1,&num2);

var1=100-num1;

var2=100-num2;

if(var1<=var2){

if(var1==var2){

printf("return 0");

}

else{

printf("num1 is nearest");

}

}

else{

printf("num2 is nearest");

}

return 0;

}

**OUTPUT**

enter two numbers:76 86

num2 is nearest

**Q5. CHECK THREE GIVEN INTEGERS (SMALL,MEDIUM AND LARGE)AND RETURN TRUE IF THE DIFFERENCE BETWEEN SMALL AND MIDIUM AND THE DIFFERENCE BETWEEN MEDIUM AND LARGE IS SAME.(USING NESTED IF ELSE)**

#include <stdio.h>

int main()

{

int s,m,l;

printf("enter three number:");

scanf("%d%d%d",&s,&m,&l);

if(s<m&&m<l){

if(m-s==l-m){

printf("return true");

}else{

printf("difference between them is possible to equal");

}

}

else{

printf("three numbers are may or may not equal");

}

return 0;

}

**OUTPUT**

enter three number:20 40 60

return true

**Q6. CALCULATE AND PRINT THE ELECTRICITY BILL OF 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 BILL EXCEEDS RS.400 THEN A SURCHANGE OF 15% WILL BE CHARGED AND MINIMUM BILL SHOULD BE OF RS 100/-(USING ELSE IF LADDER)**

#include <stdio.h>

int main()

{

char name;

int id,unit;

float bill;

float u1=1.20,u2=1.50,u3=1.80,u4=2.00,sc=0.15;

printf("enter customer name:");

scanf("%s",&name);

printf("enter customer id:");

scanf("%ld",&id);

printf("customer consumed unit:");

scanf("%d",&unit);

if(unit<=199){

bill=unit\*u1;

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

bill=unit\*u2;

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

bill=unit\*u3;

}else if(unit>=600){

bill=unit\*u4;

}

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**

/tmp/pdhbQ2vOnq.o

enter customer name: sonali

enter customer id:444768

customer consumed unit:450

your unit is 450 and bill is 931.5

**Q7. THE MARK OBTAINED BY A STUDENT IN 3 DIFFERENT SUBJECTS ARE INPUT BY USERS.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()

{

int mark1,mark2,mark3,total,avg;

printf("enter mark1 mark2 mark3:");

scanf("%d%d%d",&mark1,&mark2,&mark3);

total=mark1+mark2+mark3;

printf("total secured mark is:%d\n",total);

avg=total/3;

printf("avg mark is:%d\n",avg);

if(avg>=90&&avg<=100){

printf("secured A grade");

}else if(avg>=80&&avg<=89){

printf("secured B grade") ;

}else if(avg>=70&&avg<=79){

printf("secured c grade");

}else if(avg>=60&&avg<=69){

printf("secured D grade");

}else if(avg>=0&&avg<=59){

printf("secured F grade");

}

return 0;

}

**OUTPUT**

enter mark1 mark2 mark3:75 80 95

total secured mark is:250

avg mark is:83

secured B grade

**Q8. PRINT TOTAL NUMBER OF DAYS IN A MONTH USING SWITCH CASE?**

#include <stdio.h>

int main()

{

int month;

printf("Enter Month No: ");

scanf("%d",&month);

switch (month)

{

case 1:

printf("Month no is :%d\nDays:31\nMonth name : January ",month);

break;

case 2:

printf("Month no is: %d\nDays:28 0r 29\nMonth name : February" ,month);

break;

case3:

printf("Month no is :%d\nDays are 31 days\nmonth name : March ",month);

break;

case 4:

printf("Month no is :%d\nDays are 30 days\nMonth name : April ",month);

break;

case 5:

printf("Month no is :%d\nDays31\nMonth name : May ",month);

break;

case 6:

printf("Month no is :%d\nDays:30\nMonth name : June ",month);

break;

case 7:

printf("Month no is :%d\nDays:31\nMonth name : July ",month);

break;

case 8:

printf("Month no is:%d\nDays:31\nMonth nam : August ",month);

break;

case 9:

printf("Month no is :%d\nDays:30\nMonth name: September ",month);

break;

case 10:

printf("Month no is: %d\nDays:31\nMonth name : October ",month);

break;

case 11:

printf("Month no is: %d\nDays:30\nMonth name : November ",month);

break;

case 12:

printf("Month no is:%d\nDays:31\nMonth name : December" ,month);

default:

printf("error please input valid month");

}

return 0;

}

**OUTPUT**

Enter Month No: 2

Month no is: 2

Days:28 0r 29

Month name : February

**Q9. SIMPLE CALCULATOR USING SWITCH CASE?**

#include <stdio.h>

#include<math.h>

int main()

{

int num1,num2,add,sub,div,mul;

char operator;

printf("Enter operator:");

scanf ("%c",&operator);

printf("Enter Number1 : ");

scanf("%d",&num1);

printf("Enter Number2 : ");

scanf("%d",&num2);

switch(operator){

case'+':

add=num1+num2;

printf("Addition of%dand%d is:%d",num1,num2,add);

break;

case '-':

sub= num1-num2;

printf("Substraction of%dand%d is:%d",num1,num2,sub);

break;

case '/':

div=(num1/num2);

printf("division of%dand%d is:%d",num1,num2,div);

break;

case '\*':

mul=(num1\*num2);

printf("multiplication of%dand%d is:%d",num1,num2,mul);

break;

default :

printf("invalid! please input valid operator");

}

return 0;

}

**OUTPUT**

Enter operator: +

Enter Number1 : 95

Enter Number2 : 95

**Q.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("Please 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;

}

return 0;

}

**OUTPUT**

Please Enter Grade : A

Excellent

**OPTIONAL QUESTIONS :-**

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

#include <stdio.h>

int main()

{

int s1,s2,s3;

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

scanf("%d%d%d", &s1,&s2,&s3);

if(s1==s2&&s2==s3) {

printf("Equilateral triangle");

}else if(s1==s2||s1==s3||s2==s3){

printf("Isosceles triangle");

}else{

printf("Scalene triangle");

}

return 0;

}

**OUTPUT**

Enter three sides of triangle: 8 10 12

Scalene triangle