Assignment 4 – Pabitra Pattanaik

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

Answer:

```c
#include <stdio.h>

#include <conio.h>

void main()

{

char ch;

printf("Enter any character: ");

scanf("%c", &ch);

if(ch=='a' || ch=='e' || ch=='i' || ch=='o' || ch=='u' ||

ch=='A' || ch=='E' || ch=='I' || ch=='O' || ch=='U')

{

printf("'%c' is Vowel.", ch);

}

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

{

printf("'%c' is Consonant.", ch);

}

else {

printf("'%c' is not an alphabet.", ch);

}

}
```
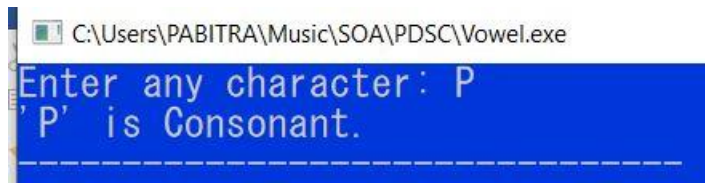
```
Enter any character: P
'P' is Consonant.
_____
```

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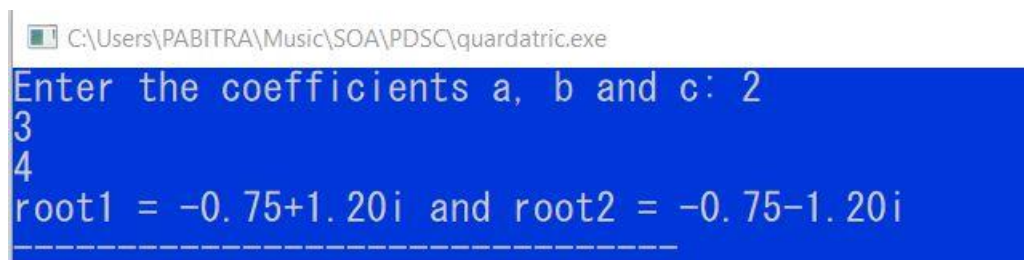
Answer:

#include <math.h>

#include <stdio.h>

void main()

{

double a, b, c, discriminant, r1, r2, real, imag;

// Here r1 is the frist root and r2 is the second root

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

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

discriminant = b * b - 4 * a * c;

if (discriminant > 0) {

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

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

printf("r1 = %.2lf and r2 = %.2lf", r1, r2);

}

else if (discriminant == 0)

{

r1 = r2 = -b / (2 * a);

printf("r1 = r2 = %.2lf;", r1);

}

else

```
{
real = -b / (2 * a);

imag = sqrt(-discriminant) / (2 * a);

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

}

}
```



```
C:\Users\PABITRA\Music\SOA\PDSC\quardatric.exe
Enter the coefficients a, b and c: 2
3
4
root1 = -0.75+1.20i and root2 = -0.75-1.20i
```

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

Answer:

```
#include<stdio.h>

#include<conio.h>

void main()

{

int year;

printf("Enter the year =");

scanf("%d",&year);

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

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

}

else {

printf("%d is not a leap year",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) ?
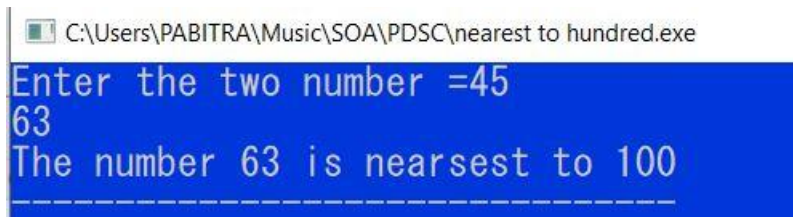
Answer :

#include <stdio.h>

#include <stdlib.h>

void main()

{

    int a,b,a1,b1;

    int n=100;

    printf("Enter the two number =");

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

    a1 = n - a;

    b1 = n - b;

    if(a1<b1)

    {

    printf("The number %d is nearsest to 100",a);

    }

    else if(b1<a1)

    {

```
printf("The number %d is nearsest to 100",b);

}

else

{

printf("The both number not nearsest to 100");

}

}
```

```
Enter the two number =45
63
The number 63 is nearsest to 100
```

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) ?

Answer:

```
#include<stdio.h>

#include<conio.h>

int main()

{

int a,b,c;

    printf("Enter the large ,medium and small element =");

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

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

    {

    if((a-b) == (b-c))

    {
```

```
            printf("True");

      }

}

   else

   {

            printf("False");

      }

 return(0);

}
```


C:\Users\PABITRA\Music\SOA\PDSC\Large_Medium_Small.exe
```
Enter the large ,medium and small element =6
5
4
True
```

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)?

Answer:

```c
#include<stdio.h>
#include<conio.h>
void main()
{
        int customer_id, unit;
        float electricity_charge,surcharge,total_amount;
        printf("Enter the Customer_id = ");
        scanf("%d",&customer_id);
        printf("Enter the Electricity Units that customer used = ");
        scanf("%d",&unit);

        if(unit>0 && unit<199)
   {
     electricity_charge = 1.20 * unit;
   }
   else if(unit>=200 && unit<400)
   {
     electricity_charge = 1.50 * unit;
   }
   else if(unit>=400 && unit<600)
   {
     electricity_charge = 1.80 * unit;
   }
   else
   {
     electricity_charge = 2.00 * unit;
```

```
        }


        if(electricity_charge > 400)

        {

    surcharge = electricity_charge * 0.15;

    total_amount  = electricity_charge + surcharge;

        }

        printf("\n Customer_id = %d",customer_id);

        printf("\n Electricity Bill Amount = Rs. %.2f", total_amount);

}
```

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

Answer:

#include <stdio.h>

```c
#include<conio.h>
void main()
{
float mark1,mark2,mark3,average;
printf("Enter the student Marks = ");
scanf("%f %f %f",&mark1,&mark2,&mark3);
average = (mark1+mark2+mark3)/3;
printf("Average mark of student is %f",average);
if(average>=90 && average<100)
   printf("\n Your Grade : A ");


  else if(average>=80 && average<89)
   printf("\n Your Grade : B");


   else if(average>=70 && average<79)
    printf("\n Your Grade : C");


     else if(average>=60 && average<69)
       printf("\n Your Grade : D");


        else if(average>=0 && average<59)
          printf("\n Your grade : F");


   else
    printf("\n Error! Entering mark is not correct");
}
```

```
C:\Users\PABITRA\Music\SOA\PDSC\mark.exe
Enter the student Marks = 55
85
79
Average mark of student is 73.000000
 Your Grade : C
```

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

Answer:

#include <stdio.h>

#include<conio.h>

void main()

{

int month;

   printf("Enter month number(1-12): ");

   scanf("%d", &month);

   switch(month)

   {

      case 1:

         printf("January month contain 31 days");

         break;

      case 2:

         printf("February month contain 28 common years and 29 days in leap year");

         break;

      case 3:

         printf("March month contain 31 days");

         break;

```c
case 4:
    printf("April month contain 30 days");
    break;
case 5:
    printf("May month contain 31 days");
    break;
case 6:
    printf("June month contain 30 days");
    break;
case 7:
    printf("July month contain 31 days");
    break;
case 8:
    printf("August month contain 31 days");
    break;
case 9:
    printf("September month contain 30 days");
    break;
case 10:
    printf("October month contain 31 days");
    break;
case 11:
    printf("November month contain 30 days");
    break;
case 12:
    printf("December month contain 31 days");
```
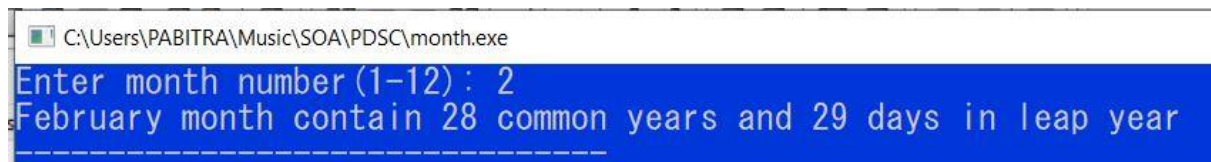
```
        break;
    default:
        printf("Invalid input! Please enter month number between 1-12");
    }
}
```

```
■ C:\Users\PABITRA\Music\SOA\PDSC\month.exe
Enter month number(1-12): 2
February month contain 28 common years and 29 days in leap year
--------------------------------
```

9. create Simple Calculator using switch case ?

Answer:

```
#include <stdio.h>

void main()
{
    char operator;
    double first, second;
    printf("Enter any 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 '-':
```

```c
        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");

    }

}
```
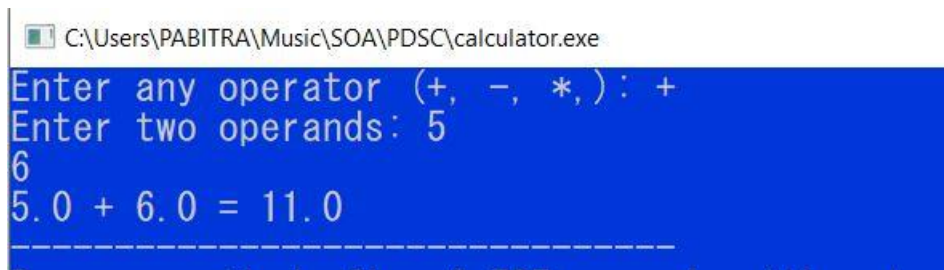
```
Enter any operator (+, -, *,): +
Enter two operands: 5
6
5.0 + 6.0 = 11.0
_____
```

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

Answer:

```c
#include<stdio.h>
#include<conio.h>
void main()
{
char ch;
printf("Enter the grade obtained =");
scanf("%c",&ch);
switch (ch)
    {
case 'A':
    printf("Excellent");
    break;
case 'B':
    printf("Good");
    break;
case 'C':
    printf("Average");
    break;
case 'E':
    printf("Deficient");
    break;
case 'F':
    printf("Failing");
    break;
default:
    printf("Error! Entering Grade is not correct");
```
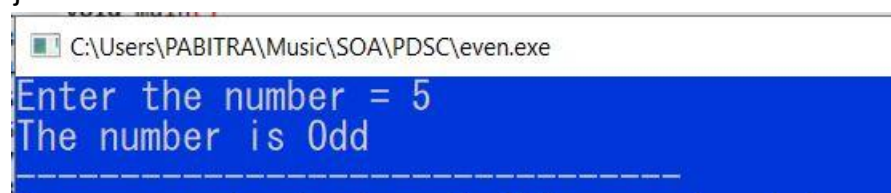
```
        }
}
```


C:\Users\PABITRA\Music\SOA\PDSC\Grade.exe

Enter the grade obtained =A
Excellent
_____

Practice Questions [Optional]:

11.   Check Whether a Number is Even or Odd ?

Answer :

```
#include<stdio.h>
void main()
{
int no;
printf("Enter the number = ");
scanf("%d",&no);
if(no%2==0)
{
printf("The number is Even");
}
else
{
printf("The number is Odd");
}
}
```


C:\Users\PABITRA\Music\SOA\PDSC\even.exe

Enter the number = 5
The number is Odd
_____

12.   Check Whether a Character is an Alphabet or not ?
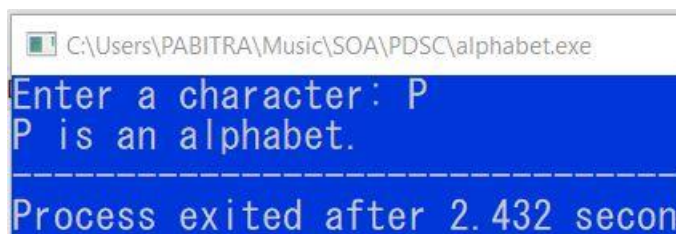
Answer :

```
#include <stdio.h>

void main()
```

```c
{
    char ch;
    printf("Enter a character: ");
    scanf("%c", &ch);
    if ((ch >= 'a' && ch <= 'z') || (ch >= 'A' && ch <= 'Z'))
        printf("%c is an alphabet.", ch);
    else
        printf("%c is not an alphabet.", ch);
}
```



```
C:\Users\PABITRA\Music\SOA\PDSC\alphabet.exe
Enter a character: P
P is an alphabet.
--------------------------------------
Process exited after 2.432 secon
```

13.   Find the Largest Number Among Three Numbers ?
Answer :

```c
#include <stdio.h>
void main()
{
    int a, b, c;
    printf("Enter three numbers: ");
    scanf("%d %d %d", &a, &b, &c);

    if (a >= b)
        {
        if (a >= c)
            printf("%d is the largest number.", a);
        else
```
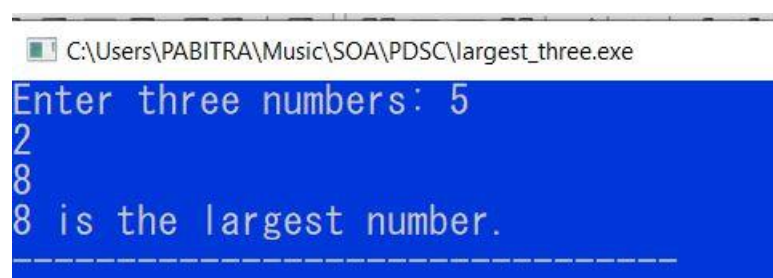
```
        printf("%d is the largest number.", c);
    }
        else
        {
    if (b >= c)
        printf("%d is the largest number.", b);
    else
        printf("%d is the largest number.", c);
    }
}
```

```
Enter three numbers: 5
2
8
8 is the largest number.
```

14.   check whether a number is positive, negative or zero using switch case ?

Answer :

```c
#include <stdio.h>
void main()
{
int num;
printf("Enter any number: ");
scanf("%d", &num);
switch (num > 0)
{
case 1:
```

```
    printf("%d is positive.", num);

break;

case 0:

switch (num < 0)

{

case 1:

        printf("%d is negative.", num);

break;

case 0:

        printf("%d is zero.", num);

break;

}

break;

}

}
```


C:\Users\PABITRA\Music\SOA\PDSC\positive.exe

Enter any number: -6
-6 is negative.

15.   Read temperature in centigrade and display a suitable message according to temperature state below :

Temp < 0 then Freezing weather

Temp 0-10 then Very Cold weather

Temp 10-20 then Cold weather

Temp 20-30 then Normal in Temp

Temp 30-40 then Its Hot

Temp >=40 then Its Very Hot ?

Answer:

```c
#include<stdio.h>
void main()
{
int temp;
printf("Enter the Tempreature ");
scanf("%d",&temp);
if(temp < 0)
printf("\n Freezing Weather ");
else if(temp>=0 && temp<10)
printf("\n Very cold Weather");
else if(temp>=10 && temp <20)
printf("\n Cold Weather");
else if(temp >=20 && temp <30)
printf("\n Normal in Tempreature");
else if(temp >=30 && temp <40)
printf("\n Hot Teampreature");
else if(temp >= 40)
printf("\n Very Hot");
else
printf("\n Error! Entering Teampreature is not correct");
```

}

```
Enter the Tempreature 28

 Normal in Tempreature
 _____
```