# Lab Sheet 2

1. Write a program to read the numbers until –1 is encountered. Also count the negative, positive, and zeros entered by the user.

Ans: using System;

namespace Question1

{

class Program

{

static void Main(string[] args)

{

Console.WriteLine("Enter the numbers");

int i=0, counter\_for\_zero=0,counter\_for\_plus=0, counter\_for\_nega=0;

while (i!=-1)

{

i = Convert.ToInt32(Console.ReadLine());

if (i==0)

{

counter\_for\_zero++;

}

else if (i>0)

{

counter\_for\_plus++;

}

else if(i<0 && i!=-1)

{

counter\_for\_nega++;

}

}

Console.WriteLine("Zeros:{0},Positives:{1},Negatives:{2}",counter\_for\_zero,counter\_for\_plus,counter\_for\_nega);

}

}

}

Output:

Enter the numbers

1

2

1

-12

0

0

0

90

-90

12

21

-9

-1

Zeros:3,Positives:6,Negatives:3

1. Write a program to read marks of 10 students in the range of 0–100. Then make 10 groups: 0–10, 10–20, 20–30, etc. Count the number of values that falls in each group and display the result.

Ans:

using System;

namespace Question2

{

class Program

{

static void Main(string[] args)

{

Console.WriteLine("Enter The Marks of 10 Students !");

int[] students = new int[10];

int[] category = { 0,0,0,0,0,0,0,0,0,0};

for (int i=0;i<10;i++)

{

students[i] = Convert.ToInt32(Console.ReadLine());

}

for (int i=0;i<students.Length;i++)

{

if (students[i] < 10 && students[i] >= 0)

{

category[0]++;

}

else if (students[i] >= 10 && students[i] < 20)

{

category[1]++;

}

else if (students[i] >=20 && students[i] < 30)

{

category[2]++;

}

else if (students[i] >=30 && students[i] < 40)

{

category[3]++;

}

else if (students[i] >= 40 && students[i] < 50)

{

category[4]++;

}

else if (students[i] >= 50 && students[i] < 60)

{

category[5]++;

}

else if (students[i] >= 60 && students[i] < 70)

{

category[6]++;

}

else if (students[i] >= 70 && students[i] < 80)

{

category[7]++;

}

else if (students[i] >= 80 && students[i] < 90)

{

category[8]++;

}

else if (students[i] >= 90 && students[i] <= 100)

{

category[9]++;

}

}

Console.WriteLine("There are {0} students in group 0-10",category[0]);

Console.WriteLine("There are {0} students in group 10-20", category[1]);

Console.WriteLine("There are {0} students in group 20-30", category[2]);

Console.WriteLine("There are {0} students in group 30-40", category[3]);

Console.WriteLine("There are {0} students in group 40-50", category[4]);

Console.WriteLine("There are {0} students in group 50-60", category[5]);

Console.WriteLine("There are {0} students in group 60-70", category[6]);

Console.WriteLine("There are {0} students in group 70-80", category[7]);

Console.WriteLine("There are {0} students in group 80-90", category[8]);

Console.WriteLine("There are {0} students in group 90-100", category[9]);

}

}

}

Output:

Enter The Marks of 10 Students !

0

10

20

99

100

90

89

45

34

20

There are 1 students in group 0-10

There are 1 students in group 10-20

There are 2 students in group 20-30

There are 1 students in group 30-40

There are 1 students in group 40-50

There are 0 students in group 50-60

There are 0 students in group 60-70

There are 0 students in group 70-80

There are 1 students in group 80-90

There are 3 students in group 90-100

1. Write a C# program to find the first 10 prime numbers and store it in an array. Display the values with proper messages.

Ans:

using System;

namespace Question3

{

class Program

{

static void Main(string[] args)

{

int numbers= 2, j = 0;

int[] a = new int[10];

Console.WriteLine("The First 10 Primes Are :");

while (j<10)

{

if (test\_prime(numbers))

{

a[j] = numbers;

j++;

}

numbers++;

}

for (int i=0;i<10;i++)

{

Console.WriteLine(a[i]);

}

}

static Boolean test\_prime(int number)

{

for (int i=2;i<number;i++)

if (number % i == 0)

return false;

return true;

}

}

}

Output:

The First 10 Primes Are :

2

3

5

7

11

13

17

19

23

29

1. Create a two-dimensional array which represents two matrices, find the sum, difference and product of these two matrices.

Ans:

using System;

namespace Question4

{

class Program

{

static void Main(string[] args)

{

int[,] a = new int[2,2];

int[,] b = new int[2,2];

Console.WriteLine("Enter The Elements of First Matrix ");

for (int i=0;i<2;i++)

{

for (int j = 0; j <2; j ++)

{

a[i,j] = Convert.ToInt32(Console.ReadLine());

}

}

Console.WriteLine("Enter The Elements of Second Matrix ");

for (int i = 0; i <2; i++)

{

for (int j = 0; j < 2; j++)

{

b[i,j] = Convert.ToInt32(Console.ReadLine());

}

}

Console.WriteLine("The Sum :");

sum(a,b);

Console.WriteLine("The Difference :");

diff(a,b);

Console.WriteLine("The Product :");

multiply(a, b);

}

static void multiply(int[,] a, int[,] b)

{

int[,] prdt = new int[2,2];

for (int i=0;i<2;i++)

{

for (int j = 0; j < 2; j++)

{

prdt[i, j] = 0;

for (int z=0;z<2;z++)

{

prdt[i, j] +=a[i,z]\*b[z,j];

}

}

}

show(prdt);

}

static void show(int [,]a)

{

for (int i = 0; i < 2; i++)

{

for (int j = 0; j < 2; j++)

{

Console.Write(a[i, j]+" ");

}

Console.WriteLine();

}

}

static void sum(int[,] a,int [,]b)

{

int[,] sum = new int[2,2];

for (int i=0;i<2;i++)

{

for (int j=0;j<2;j++)

{

sum[i,j] = a[i,j] + b[i,j];

Console.Write(sum[i,j]+" ");

}

Console.WriteLine();

}

}

static void diff(int[,] a, int[,] b)

{

int[,] diff = new int[2, 2];

for (int i = 0; i < 2; i++)

{

for (int j = 0; j < 2; j++)

{

diff[i, j] = a[i, j] - b[i, j];

Console.Write(diff[i, j] + " ");

}

Console.WriteLine();

}

}

}

}

Output:

Enter The Matrix A

12

90

119

90

Enter The Matrix B

0

89

-19

-90

The Sum :

12 179

100 0

The Difference :

12 1

138 180

The Product :

-1710 -7032

-1710 2491

5) Create a Jagged array to hold question numbers answered by the students of your class in a quiz competition. The program should have options to see the status of all the students.

Ans:

using System;

namespace Question5

{

class Program

{

static void Main(string[] args)

{

int[][] questions = new int[5][];

questions[0] =new int[]{ 1,2,9};

questions[1] = new int[] { 1, 2, 10 };

questions[2] = new int[] { 1, 2, 3,2,5,10 };

questions[3] = new int[] { 1, 2, 3,4,5,6,7,10 };

questions[4] = new int[] { 1, 2, 3, 2, 5,7,8,9, 10 };

Console.WriteLine("1)All Students\n2)Individual Details");

int choice = Convert.ToInt32(Console.ReadLine());

switch (choice)

{

case 1:

for (int i=0; i<questions.Length;i++)

{

Console.WriteLine("Roll Number {0} attended {1} Questions.",+1+i,questions[i].Length);

}

break;

case 2:

Console.WriteLine("RollNumber :");

int roll = Convert.ToInt32(Console.ReadLine())-1;

if (roll>4)

{

Console.WriteLine("Only Five Students !");

}

else

{

Console.WriteLine("Roll Number {0} Attended The Following Questions",roll+1);

for (int i=0;i<questions[roll].Length;i++)

{

Console.WriteLine(questions[roll][i]);

}

}

break;

default:

Console.WriteLine("Wrong Selection !");

break;

}

}

}

}

Output:

\*\*\*\*\*\*\*Quiz Results\*\*\*\*\*\*\*

1)Details of All Students

2)Show Individual Details

2

RollNumber :

5

Roll Number 5 Attended The Following Questions

1

2

3

2

5

7

8

9

10

6) Create a class Person with data members FirstName, LastName, Age. Write the proper constructor function to initialize it with proper values. In constructor without parameter initialize the names with null and age with 0. Add a method to receive the information from the user and another method to display the details of the person. Test the class in Main function.

Ans: using System;

namespace Question6

{

class Person

{

int age;

String firstName, lastName;

public Person()

{

firstName = null;

lastName = null;

age = 0;

}

public void getInfo(String fn,String ln,int a)

{

firstName = fn;

lastName = ln;

age = a;

}

public String put\_info()

{

return firstName+ " " + lastName;

}

public int put\_age()

{

return age;

}

static void Main(string[] args)

{

Person person = new Person();

person.getInfo("Elon","Musk",48);

Console.WriteLine("Hello,"+person.put\_info()+", You Must Be "+person.put\_age()+" years old !");

}

}

}

Output:

Hello,Elon Musk, You Must Be 48 years old !

7) Value types differ from reference types in that variables of the value types directly contain their data, whereas variables of the reference types store references to objects.

Create a C# program with a class, (other than the class containing Main method) which has a public data member. Then declare and initialize one variable of value types and reference types (objects of the above class) in the Main method. Create a second variable of value type and reference type with the already existing first variables. (Hint: Assign the first to the second during declaration) then print the variables. Then change the value of the first variables and print the second variables. What difference you see in the behavior of value types and reference types? Why?

Ans: The Value Data Types Store The Data directly in the variables, eg of the value type is int, char , double, float etc. While Reference types store the reference of the value type or in other words, they store addresses of the variables.

Program:

using System;

namespace Question7

{

class Program

{

static void change(Class1 class1)

{

class1.SomeData = 200;

Console.WriteLine("Changed: "+class1.SomeData);

}

static void Main(string[] args)

{

Class1 class1 = new Class1();

Class1 class2 = new Class1();

class2 = class1;

Console.WriteLine("Second Variable Assigned :"+class2.SomeData);

change(class2);

Console.WriteLine("First Variable:");

Console.WriteLine("Original :"+class1.SomeData);

change(class1);

}

}

}

using System;

using System.Collections.Generic;

using System.Text;

namespace Question7

{

class Class1

{

public int SomeData = 10;

}

}

Output:

Second Variable Assigned :10

Changed: 200

First Variable:

Original :200

Changed: 200

8) Create a class ‘ClassTime’ with the private members Year; Month; Date; Hour; Minute; Second;. Create a member function ‘public void DisplayTime( ) to display the time. The Time object needs to be created with the Current time (Use a constructor). Test the class in main function.

Ans:

using System;

namespace Question8

{

class ClassTime

{

private int date, month, year, hour, seconds, minutes;

public ClassTime()

{

date = DateTime.Now.Day;

month = DateTime.Now.Month;

year = DateTime.Now.Year;

hour = DateTime.Now.Hour;

seconds = DateTime.Now.Second;

minutes=DateTime.Now.Minute;

}

public String Display()

{

return "Date: " + date + "/" + month + "/" + year + "\nTime:" + seconds + ":" +minutes+":"+hour;

}

static void Main(string[] args)

{

ClassTime time = new ClassTime();

Console.WriteLine(time.Display());

}

}

}

Output:

Curent Date: 26/8/2020

Current Time:10:10:53