Bahria University,

Karachi Campus



COURSE: CSC-221 DATA STRUCTURES AND ALGORITHM

TERM: FALL 2019, CLASS: BSE- 3 (B)

Submitted By:

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Signed Remarks: Score:

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LAB EXPERIMENT NO.

\_\_\_01\_\_\_\_

LIST OF TASKS

|  |  |
| --- | --- |
| TASK NO | OBJECTIVE |
| QUESTION NO.1 | Create an array of length 10 of integers. Values ranging from 1 to 50.  1. Find all pair of elements whose sum is 25.  2. Find the number of elements of A which are even, and the number of elements of A which are odd.  3. Write a procedure which finds the average of the value of A.  4. Write a procedure which adds an element in an array at a given index. Take the value to add and the index from the user by using Shift down technique.   1. Write a procedure which looks for 2 numbers 45 and 14 in an array and delete them if they are present in the array by using Shift up technique. |
| QUESTION NO.2 | Write a program which input 2 matrix of user defined rows and columns and perform following operation  a. Display/Print as a Matrix  b. Addition of Matrix  c. Subtraction of Matrix  d. matrix multiplication  e. Determinant  f. Inverse |
| QUESTION NO.3 |  |
| QUESTION NO.4 |  |
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Submitted On:

\_\_\_18\_/ 09/2019\_\_\_

(Date: DD/MM/YY)

**QUESTION : 1** Create an array of length 10 of integers. Values ranging from 1 to 50.

1. Find all pair of elements whose sum is 25.

2. Find the number of elements of A which are even, and the number of elements of A which are odd.

3. Write a procedure which finds the average of the value of A.

4. Write a procedure which adds an element in an array at a given index. Take the value to add and the index from the user by using Shift down technique.

1. Write a procedure which looks for 2 numbers 45 and 14 in an array and delete them if they are present in the array by using Shift up technique.
2. **CODE:**

int[] arrayNumber=new int[10];

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

{

Console.WriteLine("Enter numbers");

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

if (arrayNumber[i] >= 50) {

Console.WriteLine("Out Of Range");

break;

}

}

int c = 0;

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

{

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

{

c = arrayNumber[i] + arrayNumber[j];

if (c == 25)

{

Console.WriteLine();

Console.WriteLine("Index Number" + i + " & " + j + "have sum

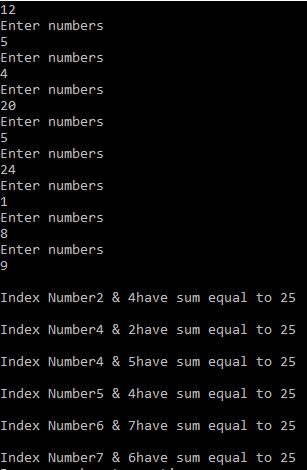
equal to " + c);

}

}

}

**run:**



1. **CODE:**

int[] evenOdd=new int[10];

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

{

Console.WriteLine("Enter the number of index {0} :",i);

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

}

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

{

if (evenOdd[i] % 2 == 0)

{

Console.WriteLine("Even value {0} is having index number {1}" , evenOdd[i] , i);

}

}

Console.WriteLine("\n");

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

{

if (evenOdd[j] % 2 != 0)

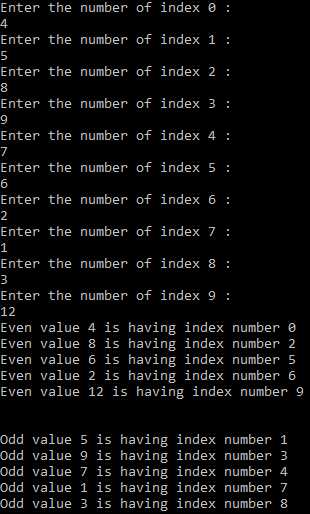
{

Console.WriteLine("Odd value {0} is having index number {1}", evenOdd[j],j);

}

}

**run:**



1. **CODE:**

int[] array = new int[10];

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

{

Console.Write("Enter the number's for making average on index [{0}] : ",i,"");

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

if (array[i]>50)

{

Console.WriteLine("Value oue of range");

break;

}

}

double c = 0 , d = 0;

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

{

c += array[i];

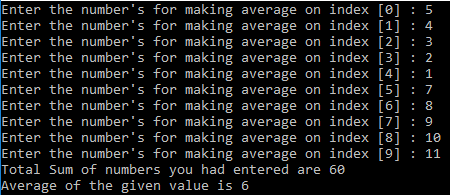
}

d += c / array.Length;

Console.WriteLine("Total Sum of numbers you had entered are {0}",c);

Console.WriteLine("Average of the given value is {0}", d);

**run:**



1. **CODE:**

int[] arr1 = new int[10];

int p = 0;

Console.Write("\n\nInsert New value in the sorted array :\n");

Console.Write("-----------------------------------------\n");

Console.Write("Input the size of array : ");

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

Console.Write("Input {0} elements in the array in ascending order:\n", n);

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

{

Console.Write("element - {0} : ", i);

arr1[i] = Convert.ToInt32(Console.ReadLine());

}

Console.Write("Input the value to be inserted : ");

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

Console.Write("The exist array list is :\n ");

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

Console.Write("{0} ", arr1[i]);

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

if (inval < arr1[i])

{

p = i;

break;

}

for (int i = n; i >= p; i--)

arr1[i] = arr1[i - 1];

arr1[p] = inval;

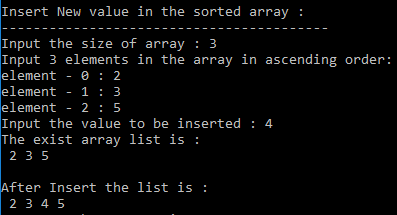
Console.Write("\n\nAfter Insert the list is :\n ");

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

Console.Write("{0} ", arr1[i]);

Console.Write("\n");

**run:**



1. **CODE:**

int[] array = new int[10] {0,12,14,5,45,8,9,10,5,13};

int counter = 0;

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

{

Console.WriteLine(array[i]);

}

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

{

if ((array[i] != 14) && (array[i] != 45))

{

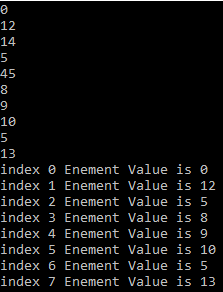
counter++;

Console.WriteLine("index {0} Enement Value is {1} ", counter - 1, array[i]);

}

}

**run:**



**QUESTION :**

Write a program which input 2 matrix of user defined rows and columns and perform following operation

a. Addition of Matrix

b. Subtraction of Matrix

c. matrix multiplication

d. Determinant

e. Inverse

1. **CODE:**

int[,] matrix1 = new int[2,2];

Console.WriteLine("MATRIX 1");

Console.WriteLine();

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

{

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

{

Console.WriteLine("Enter value for index :[{0},{1}]",i,j);

matrix1[i, j] = Convert.ToInt32(Console.ReadLine());

}

}

Console.WriteLine("\n");

Console.WriteLine("MATRIX 2");

Console.WriteLine();

int[,] matrix2 = new int[2, 2];

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

{

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

{

Console.WriteLine("Enter value for index :[{0},{1}]", i, j);

matrix2[i, j] = Convert.ToInt32(Console.ReadLine());

}

}

int[,] matrix3 = new int[2,2];

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

{

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

{

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

{

matrix3[i, j] += matrix1[i, k] \* matrix2[k, j];

}

}

}

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

{

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

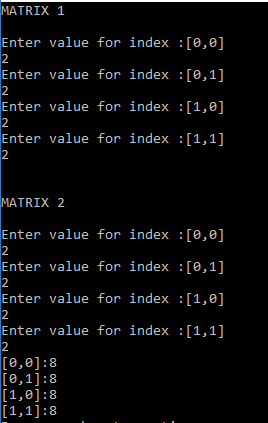
{

Console.WriteLine("[{0},{1}]:{2}",i,j, matrix3[i,j]);

}

}

**run:**



1. **CODE:**

int[,] matrix1 = new int[2,2];

Console.WriteLine("MATRIX 1");

Console.WriteLine();

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

{

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

{

Console.WriteLine("Enter value for index :[{0},{1}]",i,j);

matrix1[i, j] = Convert.ToInt32(Console.ReadLine());

}

}

Console.WriteLine("\n");

Console.WriteLine("MATRIX 2");

Console.WriteLine();

int[,] matrix2 = new int[2, 2];

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

{

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

{

Console.WriteLine("Enter value for index :[{0},{1}]", i, j);

matrix2[i, j] = Convert.ToInt32(Console.ReadLine());

}

}

int[,] matrix3 = new int[2,2];

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

{

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

{

matrix3[i, j] += matrix1[i,j] + matrix2[i, j];

}

}

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

{

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

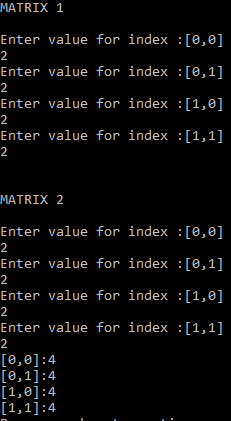
{

Console.WriteLine("[{0},{1}]:{2}",i,j, matrix3[i,j]);

}

}

**run:**



1. **CODE:**

int[,] matrix1 = new int[2,2];

Console.WriteLine("MATRIX 1");

Console.WriteLine();

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

{

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

{

Console.WriteLine("Enter value for index :[{0},{1}]",i,j);

matrix1[i, j] = Convert.ToInt32(Console.ReadLine());

}

}

Console.WriteLine("\n");

Console.WriteLine("MATRIX 2");

Console.WriteLine();

int[,] matrix2 = new int[2, 2];

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

{

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

{

Console.WriteLine("Enter value for index :[{0},{1}]", i, j);

matrix2[i, j] = Convert.ToInt32(Console.ReadLine());

}

}

int[,] matrix3 = new int[2,2];

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

{

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

{

matrix3[i, j] += matrix1[i,j] - matrix2[i, j];

}

}

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

{

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

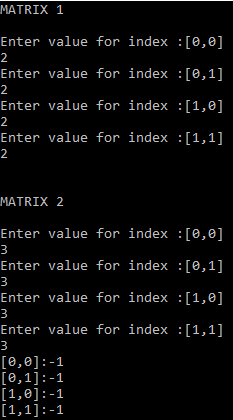
{

Console.WriteLine("[{0},{1}]:{2}",i,j, matrix3[i,j]);

}

}

**run:**



1. **CODE:**

double[,] matrix = new double[2, 2];

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

{

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

{

Console.WriteLine("Enter the Value for index [{0},{1}]", i, j);

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

}

}

double determinent = 0;

determinent += matrix[0, 0] \* matrix[1, 1] - matrix[0, 1] \* matrix[1, 0];

Console.WriteLine("Determinent is {0}", determinent);

double one=0;

double inverse = 0;

Console.WriteLine("Inverse is");

for (int i = 1; i >=0; i--)

{

for (int j = 1; j >=0 ; j--)

{

inverse = (1 / determinent) \* matrix[i, j];

Console.WriteLine(inverse);

}

}

**run:**

