DAY 13 ASSIGNMENT
BY
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9TH FEB 2022

Q1. Declare 2 dimensional array of size(2,2) and initialize using indexes and print the values using nested for loop

Code:

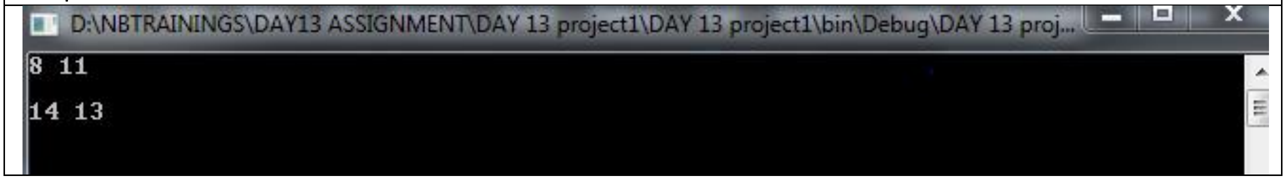
```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace DAY_13_project1
{
    internal class Program
    {
        static void Main(string[] args)
        {
            int[,] data = new int[2, 2];
            data[0, 0] = 8;
            data[0, 1] = 11;
            data[1, 0] = 14;
            data[1, 1] = 13;


            for (int i = 0; i < 2; i++)
            {
                for (int j = 0; j < 2; j++)
                {
                    Console.Write(data[i,j]+" ");
                }
                Console.WriteLine("\n");
            }
            Console.ReadLine();

        }
    }
```

Output:



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```
8 11

14 13
```

Q2.Declare a array of size (3,2) and initialize in the same line while declaring and print the value using nested for loop.

Code:

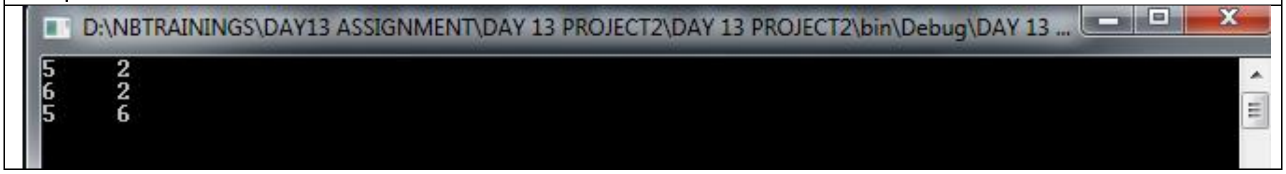
```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace DAY_13_PROJECT2
{
    internal class Program
    {
        static void Main(string[] args)
        {
            int[,] data = new[,] { { 5, 2 }, { 6, 2 }, { 5, 6 } };

            for (int i=0;i<3; i++)
            {
                for(int j=0;j<2; j++)
                {
                    Console.Write(data[i, j]+ "    ");
                }
                Console.Write("\n");
            }
            Console.ReadLine();

        }
    }
}
```

Output: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```
5     2
6     2
5     6
```

Q3Declare a 2-D array of size(3,3) and print race of the array

Code:

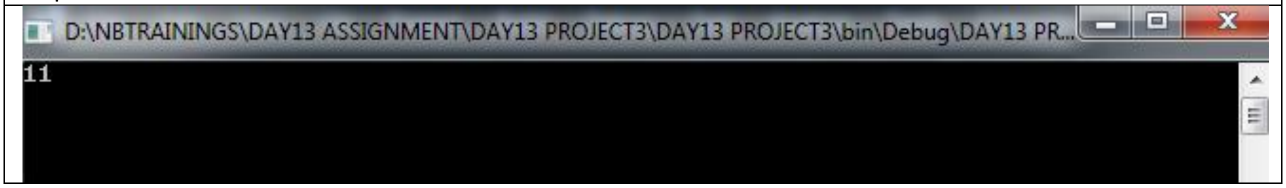
```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace DAY13_PROJECT3
{
    internal class Program
    {
        static void Main(string[] args)
        {
            int sum = 0;
            int [,] data = new [,] { { 1, 2, 3 }, { 2, 4, 5 }, {4, 6, 6 } };
            for (int i = 0; i < 3; i++)
            {
                for (int j = 0; j < 3; j++)
                {
                    if (i == j)
                        sum = sum + data[i, j];
                }

            }
            Console.WriteLine(sum);
            Console.ReadLine();


        }
    }
}
```

Ouput: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```
11
```

Q4Declare a 2-D array of size (2,2) and read values from user and print the array value.

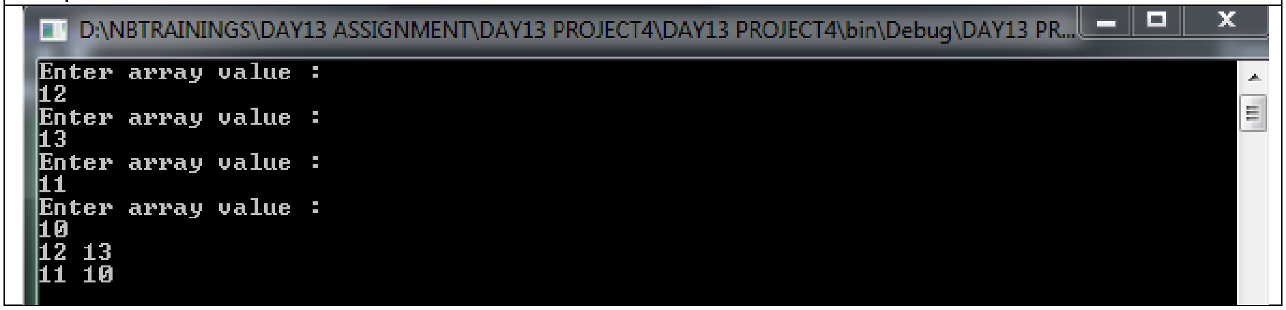
Code:

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace DAY13_PROJECT4
{
    internal class Program
    {
        static void Main(string[] args)
        {
            int[,] data = new int[2, 2];
            //read data from user
            for (int i = 0; i < 2; i++)
            {
                for (int j = 0; j < 2; j++)
                {
                    Console.WriteLine("Enter array value :");
                    data[i, j] = Convert.ToInt32(Console.ReadLine());
                }
            }
            //print data from user
            for (int i = 0; i < 2; i++)
            {
                for (int j = 0; j < 2; j++)
                {
                    Console.Write(data[i, j]+ " ");
                }
                Console.WriteLine();
            }
            Console.ReadLine();
        }

    }
}
```

Output: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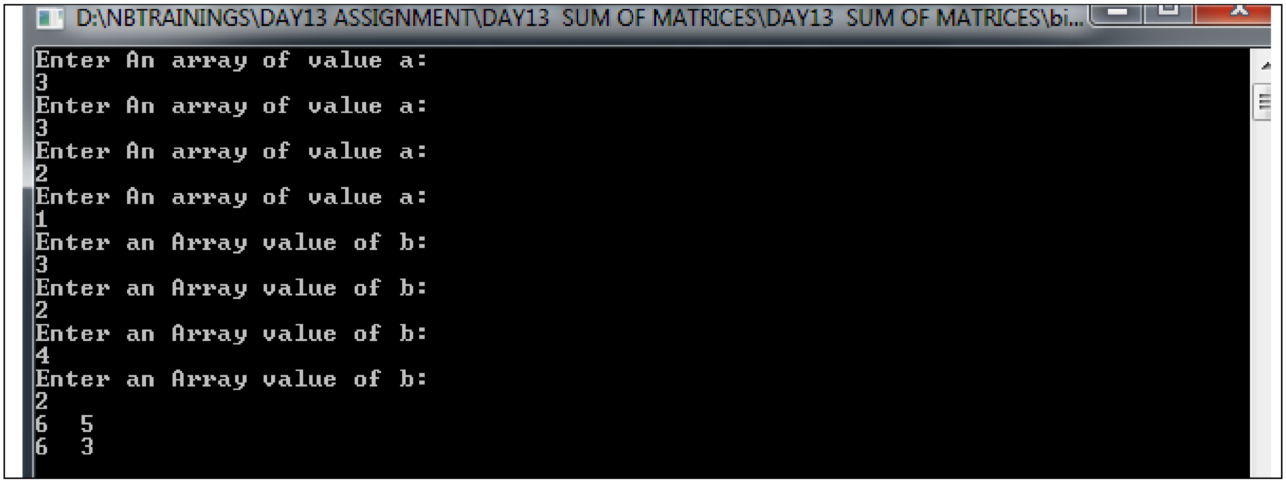
```
Enter array value :
12
Enter array value :
13
Enter array value :
11
Enter array value :
10
12 13
11 10
```

Q5.Declare two 2-D arrays of size (2,2) and read values from user and print the sum of two matrices

Code

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace DAY13__SUM_OF_MATRICES
{
    internal class Program
    {
        static void Main(string[] args)
        {
            int[,] a = new int[2, 2];
            int[,] b = new int[2, 2];
            int[,] sum = new int[2, 2];
            //Read data fromuser a matrices
            for (int i = 0; i < 2; i++)
            {
                for (int j = 0; j < 2; j++)
                {
                    Console.WriteLine("Enter An array of value a:");
                    a[i, j] = Convert.ToInt32(Console.ReadLine());

                }
            }
            //Read data from user B matrices
            for (int i = 0; i < 2; i++)
            {
                for (int j = 0; j < 2; j++)
                {
                    Console.WriteLine("Enter an Array value of b:");
                    b[i, j] = Convert.ToInt32(Console.ReadLine());
                }

            }
            //Addition of two Matrices
            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(  );
            }

            Console.ReadLine();


        }

    }


}
```

Output: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```
Enter An array of value a:
3
Enter An array of value a:
3
Enter An array of value a:
2
Enter An array of value a:
1
Enter an Array value of b:
3
Enter an Array value of b:
2
Enter an Array value of b:
4
Enter an Array value of b:
2
6   5
6   3
```

Q7.Wha is jagged Array and What are the benefits of jagged Array

Jagged Array: It is a Dimension Array which size is different from Rows and Columns

Benefits:

- Array memory will not waste
- It makes things easy where there is a need to store data in a multi dimensional way using the same variable name.
- It makes the program to be executed very smoothly and fast

Q8.WACP to declare a jagged array and print values

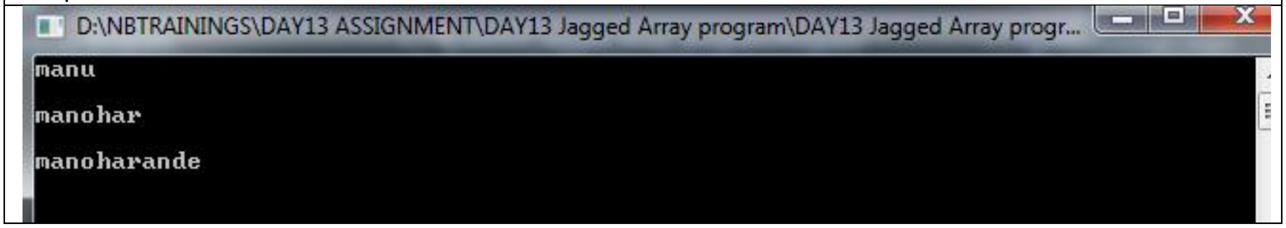
Code:

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace DAY13_Jagged_Array_program
{
    internal class Program
    {
        static void Main(string[] args)
        {
            char[][] names = new char[3][];
            names[0] = new char[] { 'm', 'a', 'n', 'u' };
            names[1] = new char[] { 'm', 'a', 'n', 'o', 'h', 'a', 'r' };
            names[2] = new char[] { 'm', 'a', 'n', 'o', 'h', 'a', 'r', 'a', 'n', 'd', 'e' };

            for (int i = 0; i < 3; i++)
            {
                for(int j =0;j<names[i].Length;j++)
                {
                    Console.Write(names[i][j]+"");
                }
                Console.WriteLine("\n");
            }
            Console.ReadLine();
        }
    }
}
```

Output:



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Q9.What is recursion?

- A function calling itself repeatedly until specified condition is satisfied is called Recursion

Q10.WACP to illustrate usage of recursion

Code:

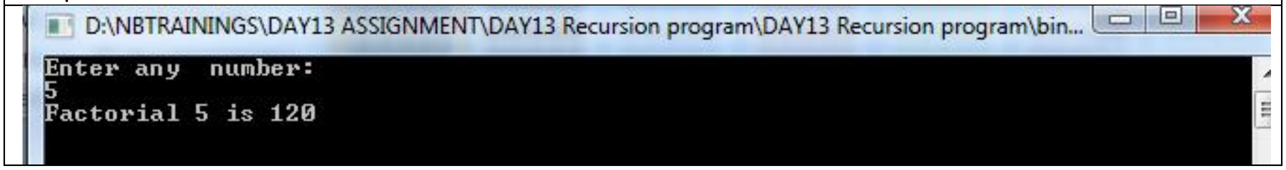
```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace DAY13_Recursion_program
{

    internal class Program
    {
        static int Factorial(int n)
        {
            if(n==0)
            {
                return 1;
            }
            else
            {
                int fact = n * Factorial(n - 1);
                return fact;
            }
        }
        static void Main(string[] args)
        {
            Console.WriteLine("Enter any  number:");
            int n = Convert.ToInt32(Console.ReadLine());


            Console.WriteLine("Factorial {0} is {1}", n, Factorial(n));
            Console.ReadLine();
        }
    }
}
```

Output: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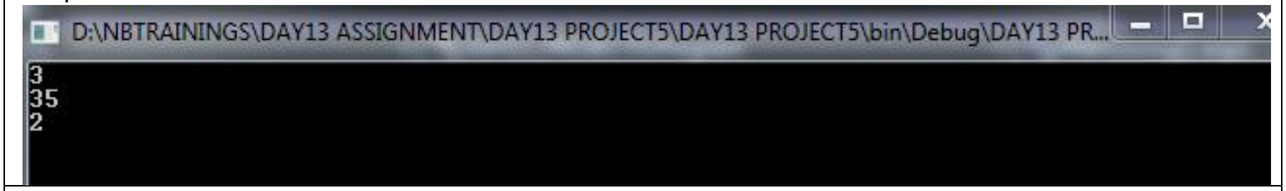
```
Enter any  number:
5
Factorial 5 is 120
```

Q11.WACP to illustrate stack and write points about it?

Code:

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace DAY13_PROJECT5
{
    internal class Program
    {
        static void Main(string[] args)
        {

            Stack<int>data= new Stack<int>();

            data.Push(15);
            data.Push(20);
            data.Push(35);
            {
                Console.WriteLine(data.Count);
                Console.WriteLine(data.Pop());
                Console.WriteLine(data.Count);


            }

            Console.ReadLine();

        }
    }
}
```

Output: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```
3
35
2
```

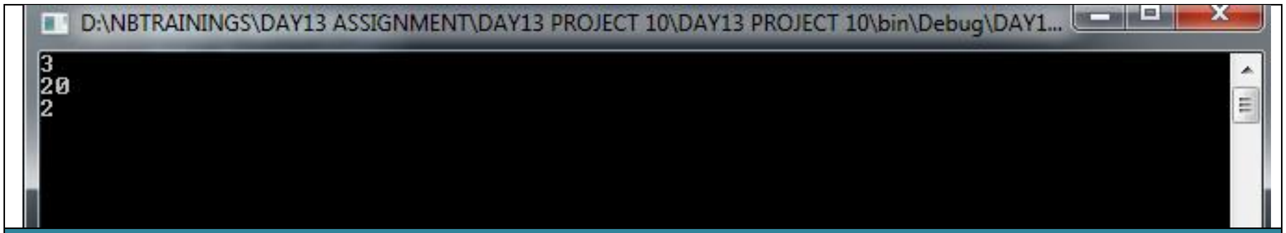
STACK:
1.This represents First in-Lastout
2.To remove the items we use Pop keyword
3.To reurn the item we use 'peek'

Q12.WACP to illustrate the QUEUE and also write points about it

Code:

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace DAY13_PROJECT_10
{
    internal class Program
    {
        static void Main(string[] args)
        {
            Queue<int> data = new Queue<int>();
            data.Enqueue(20);
            data.Enqueue(35);
            data.Enqueue(45);
            Console.WriteLine(data.Count);
            Console.WriteLine(data.Dequeue());
            Console.WriteLine(data.Count);



            Console.ReadLine();


        }
    }
}
```

OUTPUT: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```
3
20
2
```

QUEUE:This represents firs in -First out(FIFO)
1.To remove items we use Dequeue Keyword
2.To return item we use 'peek' keyword