

1. Introduction to C# & .Net Framework



★ Csharp:

- csharp is an object oriented programming language.
- We use csharp to create applications, web development, web apps, desktop apps, VR games.
- csharp is type safe.

★ .Net Framework:

- It is a software for developing apps, web pages, which uses csharp language to develop a software.
- .net framework was introduced by microsoft in the year 2002.

★ C# syntax:

```
using system;  
namespace first
```

```
{  
class CsharpDemo
```

```
{  
    static void Main (string [] args)
```

```
{  
        Console.WriteLine ("Hey");
```

```
}
```

```
{
```

system : It is a package consist of pre-defined classes and methods. We can use system keyword by using 'using keyword'. We can include all the classes and methods through 'using' keyword. 'using' keyword is used to include methods and classes.

* namespace : It is used to identify the classes from different projects or files.

* console : It is a keyword which is in system package used to display the output.

e.g. `Console.WriteLine ("Diksha");`

* Data Types :

- A datatype is a specific type allocated to a variable.

e.g. int - 4 bytes

long - 8 bytes

short - 2 bytes

double - 8 bytes

float - 4 bytes

Boolean - 1 bit

char - 2 bytes

string - user defined

* keywords :

- Keywords are the preserved words used by the system. A user cannot use keywords in general code line. i.e. a keyword cannot be used as variable name or class name.

e.g. system

using

namespace

for

while

break

2/2/24

Page No.	
Date	

- 1] Write a C# program to find a number is even or odd:

```
using System;
namespace Diksha
class Diksha
{
    static void Main (string [] args)
    {
        int num = 10;
        if (num % 2 == 0):
        {
            Console.WriteLine ("Number is Even");
        }
        else:
        {
            Console.WriteLine ("Number is Odd");
        }
    }
}
```

- 2] Write a C# program to find factorial of 5 :

```
using System;
namespace Diksha
class Diksha
{
    static void Main (string [] args)
    {
        int num = 5;
        int fact = 1;
        for (int i = 1; i <= num; i++)
        {
            fact = i * fact;
        }
    }
}
```

Console.WriteLine("Factorial of 5 is :" + fact);

}

}

- 3] Write a program to find the largest digit in the number 7890:

using System;

namespace Diksha {

class Diksha {

static void Main (string [] args)

{

int num = 7890 ;

int rem = 0;

int max = 0;

for (int i=0; i <= 4; i++) :

{

 rem = num % 10;

 if (rem > max) :

{

 max = rem ;

{

 num = num / 10;

{

 Console.WriteLine (max);

{

{

- 4] Write a C# program to separate the digits in a number:

```

using System;
namespace Diksha {
    class Diksha {
        static void Main (String [] args) {
            int num = 789;
            int rem = 0;
            for (int i = 0; i <= 3; i++) {
                rem = num % 10;
                Console.WriteLine (rem);
                num = num / 10;
            }
        }
    }
}

```

5] Write a C# program to reverse a number:

```

using System;
namespace Diksha {
    class Diksha {
        static void Main (String [] args) {
            int num = 789;
            int rem = 0;
            int rev = 0;
            while (num != 0) {
                rem = num % 10;
                num = num / 10;
                rev = rev * 10 + rem;
            }
        }
    }
}

```

Console.WriteLine ("Reverse of 789 ! + rev);

}

??

- 6] Write a C# program to find whether a number is Palindrome or not:

using System;

namespace Diksha {

class Diksha {

static void Main (String [] args)

}

int num = 16461;

int temp = num;

int rem = 0;

int rev = 0;

for (int i = 1; i < 6; i++)

{

rem = num % 10;

rev = rev * 10 + rem;

num = num / 10;

}

if (temp == rev) {

SOP ("Palindrome number");

}

else {

Console.WriteLine ("Not a Palindrome number");

}

}

7] Write a C# program to find whether a year is a leap year or not:

using System;

public class HelloWorld

{

 static void Main (string [] args)

{

 int year = 2024;

 if (year % 4 == 0) {

 if (year % 100 == 0) {

 if (year % 400 == 0) {

 Console.WriteLine ("Leap year");

 }

 else {

 Console.WriteLine ("Not a leap year");

 }

 else {

 Console.WriteLine ("Leap year");

 }

 else {

 Console.WriteLine ("Not a leap year");

 }

 }

}

8] Write a C# program to print fibonacci Series:

```

using System;
namespace Diksha {
    class Diksha {
        static void Main (String [] args)
        {
            int i = 0;
            int j = 1;
            Console.WriteLine (i);
            Console.WriteLine (j);
            int k = 0;
            for (int d = 1; d < 11; d++)
            {
                k = i + j;
                i = j;
                j = k;
                Console.WriteLine (k);
            }
        }
    }
}

```

9] Write a C# program to check whether a number is perfect or not:

```

using System;
namespace Diksha {
    class Diksha {
        static void Main (String [] args)
        {
            int num = 6;
            int sum = 0;
            for (int i = 1; i < 6; i++)
            {
                if (num % i == 0)
                    sum = sum + i;
            }
        }
    }
}

```

```

if (num == sum) {
    Console.WriteLine ("Perfect Number");
}
else {
    Console.WriteLine ("Not a perfect number");
}

```

10] Write a C# program to check whether a number is armstrong or not:

Using system;

namespace Diksha

class Diksha

```
static void Main (string [] args)
{
```

int num = 153;

int temp = num;

int rem = 0;

int armstrong = 0;

for (int i = 1; i <= 3; i++)

{

rem = num % 10;

armstrong = armstrong + (rem * rem * rem);

num = num / 10;

}

if (temp == armstrong)

Console.WriteLine ("Armstrong Number");

{

else

at a = Convert.ToInt32(Console.ReadLine());

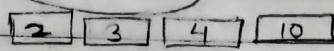
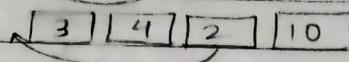
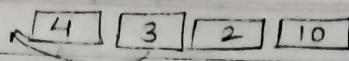
Page No.	
Date	

Console.WriteLine("Not an armstrong number");

}

}

1] Insertion sort:



✓ sorted array

using System;

class Program

{

```
static void Main(string[] args)
```

{

```
int[] array1 = {12, 11, 13, 5, 6};
```

```
int n = array1.Length; //n = 5
```

```
for (int i = 1; i < n; ++i)
```

{

```
    int key = array1[i]; //current element
```

```
    int j = i - 1; //iterate over elements left of current element
```

```
    while (j >= 0 && array1[j] > key)
```

{

```
        array1[j + 1] = arr[j]; //swapping
```

```
        j = j - 1;
```

{

```
        array1[j + 1] = key;
```

{

```
Console.WriteLine("Sorted array:");
```

```
foreach (var item in array1)
```

{

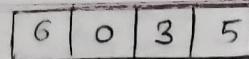
```
    Console.Write(item + " ");
```

{

{

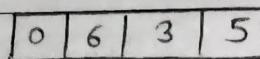
O/P → sorted array:

5 6 11 12 13



2] Bubble Sort!

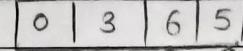
↑↑ swap



↑↑ swap

using System;

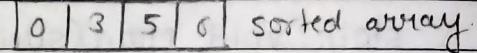
class BubbleSort {



↑↑ swap

static void Main(string[] args)

{



sorted array.

int[] arr = {64, 34, 25, 12, 22, 11, 90};

int n = arr.Length;

for (int i = 0; i < n - 1; i++) // controls no. of passes

{

through array

for (int j = 0; j < n - i - 1; j++) // swaps elements

{

if (arr[j] > arr[j + 1]) // indicates cur ele is greater than next element

{

int temp = arr[j];

arr[j] = arr[j + 1];

arr[j + 1] = temp;

?

}

// swapping

Console.WriteLine("Sorted array!");

foreach (var item in arr)

{

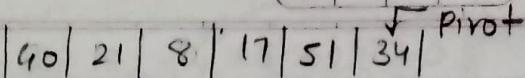
Console.WriteLine(item + " ");

?

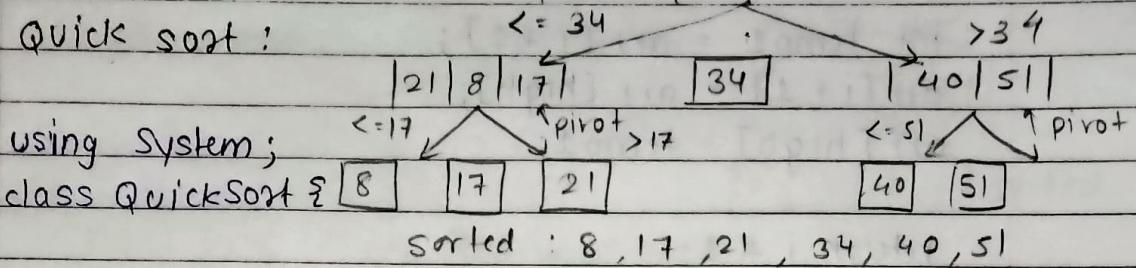
?

O/P → Sorted array:

11 12 22 25 34 64 90



3) Quick sort :



using System;

class Quicksort {

sorted : 8, 17, 21, 34, 40, 51

```
static void Main (string[] args) {
```

```
int[] arr = { 64, 34, 25, 12, 22, 11, 90 };
```

```
Quicksort1 (arr, 0, arr.Length - 1);
```

```
Console.WriteLine (" sorted array:");
```

```
foreach (var item in arr) {
```

```
Console.Write (item + " ");
```

}

}

```
static void Quicksort1 (int[] arr, int low, int high) {
```

```
if (low < high) {
```

```
int parindex = Partition (arr, low, high);
```

```
Quicksort1 (arr, low, parindex - 1);
```

```
Quicksort1 (arr, parindex + 1, high);
```

}

}

```
static int Partition (int[] arr, int low, int high) {
```

```
int pivot = arr [high];
```

```
int i = low - 1;
```

```
for (int j = low; j < high; j++) {
```

```
if (arr [j] < pivot) {
```

```
i ++;
```

```
int temp = arr [i];
```

```
arr [i] = arr [j];
```

```
arr [j] = temp;
```

g

g

```
int temp1 = arr[i + 1];
arr[i + 1] = arr[high];
arr[high] = temp1;
```

```
return i + 1;
```

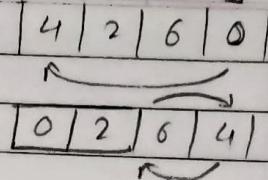
?

3

O/P → Sorted array :

11 12 22 25 34 64 90

4] Selection sort:



using System;

```
class Selectionsort {
```

```
    static void Main (String [] args)
{
```

```
        int [] arr = { 64, 25, 12, 22, 11 };
```

```
        for (int i=0; i<arr.length - 1; i++)
```

```
            int minindex = i;
```

```
            for (int j=i+1; j<arr.length; j++)
```

```
{
```

```
                if (arr [j] < arr [minindex])
```

```
{
```

```
                    minindex = j;
```

```
}
```

```
                int temp = arr [minindex];
```

```
                arr [minindex] = arr [i];
```

```
                arr [i] = temp;
```

```
}
```

```
                Console.WriteLine ("sorted array: ");
```

```
                foreach (int num in arr)
```

```
{
```

```
                    Console.WriteLine (num + " ");
```

```
{
```

```
g
```

O/P → sorted array:

11 12 22 25 64