C# DAY_6
31/01/2022
Arrays, Array_Lists, Lists.

Q. In c# how the values in ArraryList are stored in the memory.

A. When we initialize the **Array List** , it allocates the enough memory to store the objects up to that capacity. So, the logical size remains **"0"** . When it's time to expand the size, a new large Array list is created. So, Arraylists are dynamic lives on the **live on heap** memory.

> **Q**. What are Advantages and Disadvantages of **Array List** .

A.

Advantages :

- ArrayLists are re-sizable. So, arrays lists are dynamic.
- ArrayLists overcome the problem of sequential memory.

Disadvantages :

- In arraylists the values are defaultly taken as super data type, called as object type.
- So we need to unbox it so, we need to explicit conversion or into non-copatible type (Like Convert.ToInt32, int.parse) method to perform arthematic operations.

Q. In c# write all data types with Alias names.

A.

Data type	Alias name
1. Byte	⟹ Byte
2. Ushort	⟹ uInt16
3. uint	⟹ uInt32
4. ulong	⟹ uInt64
5. sbyte	⟹ sByte
6. short	⟹ Int16
7. Int	⟹ Int32
8. float	⟹ Int64
9. Double	⟹ Single
10. Decimal	⟹ Double
11. Bool	⟹ Bool
12. Char	⟹ Char
13. string	⟹ string

Q. In c# write all data types with Alias names.

A. Differences b/w collections and generics.

	Collections	Generics
Name space	Using.System.Collections;	Using.System.Collections.Generic;
Element type	Object	Primitive data type
Type casting	Yes	No
Syntax	ArrayList array_list = new ArrayList();	Var my_list = new list<int> {};

Q. In c# how the values in List<T> are stored in the memory.

A. Lists can carry a large amount of data. Cause it dynamically grows, so it will create a new size. So they will be keep on addition of subsequent addition of elements until reaches the threshold value. So, lists will be living on the heap memory.
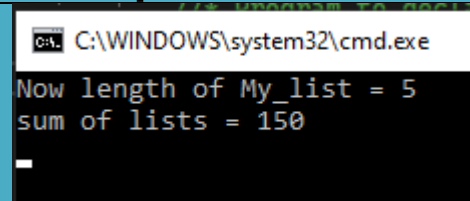
Declare a list and assign value and find sum.

Code:

```csharp
static void Main(string[] args)
    {
        //* variable declaration
        int sum =0;
        //* Program to declare a list and assign some values
        List<int> My_list  = new List<int>();
        //*  assigning values to "My_list
        My_list.Add(10);
        My_list.Add(20);
        My_list.Add(30);
        My_list.Add(40);
        My_list.Add(50);

        Console.WriteLine("Now length of My_list = "+My_list.Count());
        //SUM OF VALUES IN THE LIST
        for(int i = 0; i<My_list.Count; i++)
        {
            sum += My_list[i];
        }
        Console.WriteLine($"sum of lists = {sum}");
        Console.ReadLine();
    }
```

Output:


```
C:\WINDOWS\system32\cmd.exe
Now length of My_list = 5
sum of lists = 150
```

Declare a list assign value from user input and find sum with for, foreach loops and lambda expression.

Code:

```csharp
static void Main(string[] args)
    {
        //* variable Declaration
        int value,len_of_list;
        //* Program to declare a list and assign some values
        List<int> My_list = new List<int>();
        //length of My_list
        Console.Write("Enter your choice of length of list :");
        len_of_list = int.Parse(Console.ReadLine());
        //*  assigning values to "My_list with for loop
        for (int i = 1; i <= len_of_list; i++)
        {
            Console.Write(i+" Enter your Number :");
            value = int.Parse(Console.ReadLine());
            My_list.Add(value);
        }
        //*sum with for loop
        int sum1 =0;
        for (int i = 0; i < len_of_list; i++)
        {
            sum1 += My_list[i];
        }
        Console.WriteLine("Sum of values in the list with for loop :"+sum1);
        //*sum with foreach loop
        int sum2 = 0;
        foreach (var items in My_list)
        {
            sum2 += items;
        }
        Console.WriteLine("Sum of values in the list with foreach loop :" + sum1);
        //*sum with lambda expression
        int sum3 = 0;
        My_list.ForEach(p => sum3 += p) ;
        Console.WriteLine("Sum of values in the list with lambda expression : " +sum3);

        Console.Read();
    }
```

Output:

```
C:\WINDOWS\system32\cmd.exe

Enter your choice of length of list :3
1 Enter your Number :25
2 Enter your Number :50
3 Enter your Number :75
Sum of values in the list with for loop :150
Sum of values in the list with foreach loop :150
Sum of values in the list with lambda expression : 150
```

Declare a list assign value from user input and print values with for, for each loops and lambda expression..

Code:

```csharp
static void Main(string[] args)
    {
        //* variable Declaration
        int value, len_of_list;
        //* Program to declare a list and assign some values
        List<int> My_list = new List<int>();
        //length of My_list
        Console.Write("Enter your choice of length of list :");
        len_of_list = int.Parse(Console.ReadLine());
        //*  assigning values to "My_list with for loop
        for (int i = 1; i <= len_of_list; i++)
        {
            Console.Write(i + " Enter your Number :");
            value = int.Parse(Console.ReadLine());
            My_list.Add(value);
        }
        //*Print values with for loop
        Console.Write("values printed with for :");
        for (int i = 0; i < len_of_list; i++)
        {
            Console.Write(My_list[i] + ", ");
        }
        Console.WriteLine();
        //*Print values with foreach loop
        Console.Write("values printed with foreach :");
        foreach (var items in My_list)
        {
            Console.Write(items+", ");
        }
        Console.WriteLine();
        //*Print values with lambda expression
        Console.WriteLine("values printed with lambda Expressions :");
        My_list.ForEach(p => Console.Write(p+", "));

        Console.Read();
    }
```

Output:

Declare a arraylist assign value from user input and find sum.

Code:

```csharp
static void Main(string[] args)
    {
        //*Array_list declaring values and finding sum
        //*Variable declaration
        Console.Write("Enter your size of array_list : ");
        int size = Convert.ToInt32(Console.ReadLine());
        int sum =0;
        ArrayList arrayList = new ArrayList();
        //*values assigning
        Console.WriteLine("Enter your values for your arraylist  ");
        for(int i =1 ; i <= size; i++)
        {
            Console.Write(i+". Enter your value :");
            int Values = Convert.ToInt32(Console.ReadLine());
            arrayList.Add(Values);
        }
        //*sum of arraylist values
        foreach (var items in arrayList)
        {
            sum += (int)items;
        }
        Console.Write("sum of your list = "+sum);
        Console.WriteLine();
        Console.ReadLine();


    }
```

Output:

```
C:\WINDOWS\system32\cmd.exe

Enter your size of array_list : 3
Enter your values for your arraylist
1. Enter your value :24
2. Enter your value :44
3. Enter your value :54
sum of your list = 122
_
```

************************Thank_You************************