DAY 6 : Morning Assignment
By
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Assignment 1

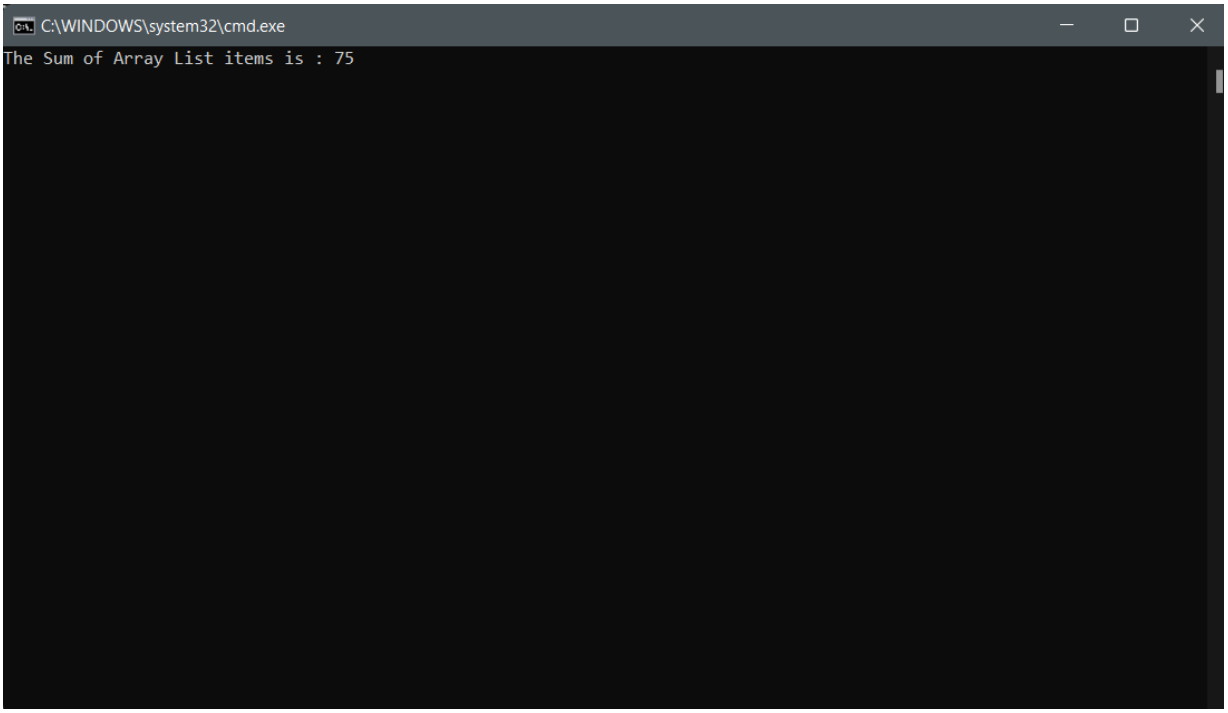
Write a C# program to create an array list with 5 items and find its sum

Code :

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

namespace arraylist_sum
{
    internal class Program
    {
        static void Main(string[] args)
        {
            ArrayList data = new ArrayList();
            int sum = 0;

            data.Add(5);
            data.Add(10);
            data.Add(15);
            data.Add(20);
            data.Add(25);

            foreach (var d in data)
            {
                sum = sum + (int)d;
            }
            Console.WriteLine("The Sum of Array List items is : {0}", sum);
            Console.ReadLine();
```

```
    }
  }
}
```

Output :



Assignment 2

Research and find how the values of an arraylist are stored in the memory

Answer :

ArrayList changes memory allocation as it grows.

- When a certain capacity is specified while initializing the ArrayList, the space is allocated to store objects up to that given capacity. Although the logical size of the ArrayList remains 0.
- When it is required that the capacity needs to be expanded then the larger array is created and the values are copied to it.
- The internal array of ArrayList is of object type, so every value type is essentially boxed and stored on the heap and every element of the ArrayList is a reference to a boxed value type.
- When the value type element is accessed, it is unboxed before being able to use it.

Output :

Assignment 3

What are the dis-advantages of arraylist (Collections ArrayList) ?

Answer :

The one most possible disadvantage of the ArrayList is that it only holds object types and none of the other primitive types (eg. int).

- If a data entry is added to or removed from an ArrayList, data needs to be shifted to update the list.
- Items in the Arraylist need to be unboxed everytime.
- It is definitely hard to maintain uniqueness of the

EXAMPLE :

```
namespace CollectionDemo
{
  class Program
  {
    static void Main(string[] args)
    {
      ArrayList Numbers = new ArrayList(3);
      Numbers.Add(100);
      Numbers.Add(200);
      Numbers.Add(300);
      Numbers.Add(400);
      foreach(int Number in Numbers)
      {
        Console.Write(Number + "  ");
      }
      Console.ReadKey();
    }
  }
}
```

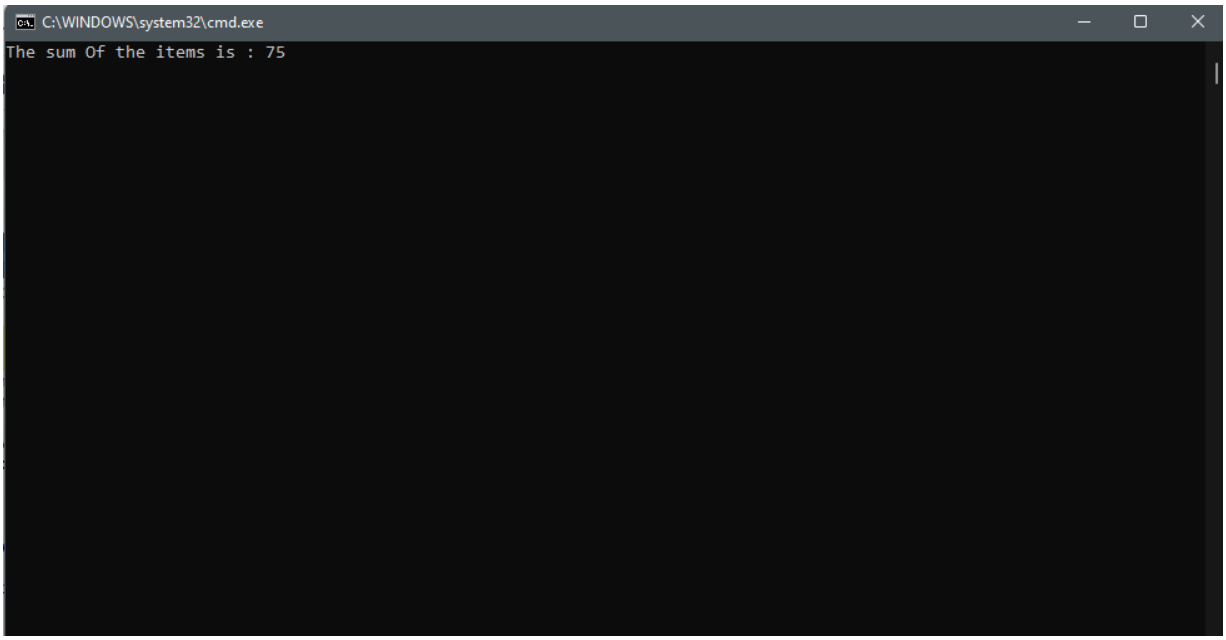
Assignment 4

Write a C# program to declare List<int> and assign some values and find its sum

Code :

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

namespace listint_findsum
{
    internal class Program
    {
        static void Main(string[] args)
        {
            List<int> data = new List<int>();
            int sum = 0;

            data.Add(5);
            data.Add(10);
            data.Add(15);
            data.Add(20);
            data.Add(25);

            foreach (int i in data)
            {
                sum = sum + i;
            }

            Console.WriteLine("The sum Of the items is : {0}", sum);
            Console.ReadLine();
        }
    }
}
```

Output :



Assignment 5

Write the difference between Collections and generics

Answer :

Collections	Generic
1. **namespace :** System.Collections	1. **namespace :** System.Collections.Generic
2. Every element is of object data type in collections.	2. Every element is of a specified datatype while initializing.
3. Type casting is required in collections.	3. Type casting is not required in Generics.
4. **Syntax :** ArrayList data = new ArrayList();	4. **Syntax :** List<type> data = new List<type>(); // (<type> => datatype)
5. **Example**	**5. Example**

```
// C# to illustrate the concept
// of non-generic collection using Queue
using System;
using System.Collections;

class GFG {

  // Driver code
  public static void Main()
  {

    // Creating a Queue
    Queue myQueue = new Queue();

    // Inserting the elements into the Queue
    myQueue.Enqueue("C#");
    myQueue.Enqueue("PHP");
    myQueue.Enqueue("Perl");
    myQueue.Enqueue("Java");
    myQueue.Enqueue("C");
```

```
// C# program to illustrate the concept
// of generic collection using List<T>
using System;
using System.Collections.Generic;

class Geeks {

  // Main Method
  public static void Main(String[] args)
  {

    // Creating a List of integers
    List<int> mylist = new List<int>();

    // adding items in mylist
    for (int j = 5; j < 10; j++) {
      mylist.Add(j * 3);
    }

    // Displaying items of mylist
    // by using foreach loop
    foreach(int items in mylist)
```

```
        // Displaying the count of elements
        // contained in the Queue
        Console.Write("Total number of elements present in the Queue are: ");

        Console.WriteLine(myQueue.Count);

        // Displaying the beginning element of Queue
        Console.WriteLine("Beginning Item is: " + myQueue.Peek());
    }
}
```

```
    {
        Console.WriteLine(items);
    }
  }
}
```

Output :

```
Total number of elements present in the Queue are: 5
Beginning Item is: C#
```

```
15
18
21
24
27
```

Assignment 6

Research and find how the values of List<T> are stored in the memory ?

Answer :

- In a List<T>, the memory to the store values is within the memory allocated for the system.
- Lists are stored in distinct chunks of memory which are linked together with pointers which enables efficient use of memory generally and does not require resizing.
- It also allows for easy and quick manipulation of pointers when transforming the list.
- It is non-contiguous memory and also a non-index based structure.

Output :

Assignment 7

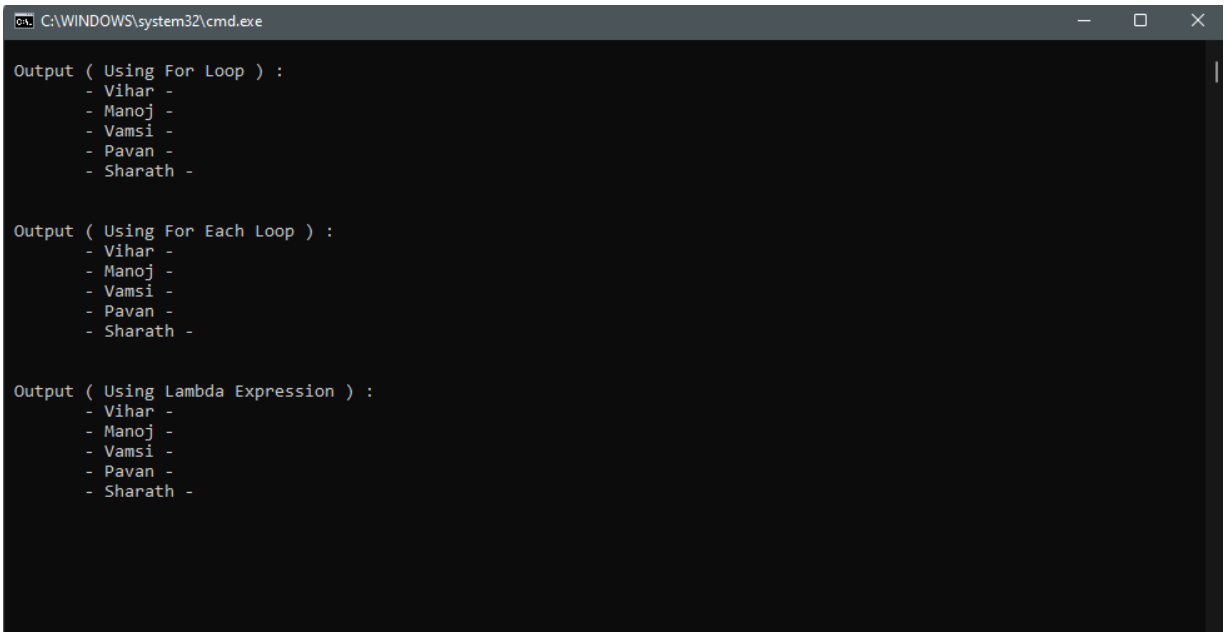
Write a C# program to declare a List<string> with 5 values from user and print using for, foreach & lambda expression loops types .

Code :

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

namespace liststring3looptypes
{
    internal class Program
    {
        static void Main(string[] args)
        {
            List<string> data = new List<string>();
            data.Add("Vihar");
            data.Add("Manoj");
            data.Add("Vamsi");
            data.Add("Pavan");
            data.Add("Sharath");

            //Using For Loop-------------------------------------
            Console.WriteLine("\n Output ( Using For Loop ) : ");
            for (int i = 0; i < data.Count; i++)
            {
                Console.WriteLine("\t- {0} -", data[i]);
            }

            //Using For Each Loop--------------------------------
            Console.WriteLine("\n Output ( Using For Each Loop ) : ");
            foreach (var d in data)
```

```
        {
            Console.WriteLine("\t- {0} -", d);
        }

        //Using Lambda Expression-----------------------------
        Console.WriteLine("\n Output ( Using Lambda Expression ) : ");
        data.ForEach(d => Console.WriteLine("\t- {0} -", d));

        Console.ReadLine();
    }
  }
}
```

Output :



Assignment 8

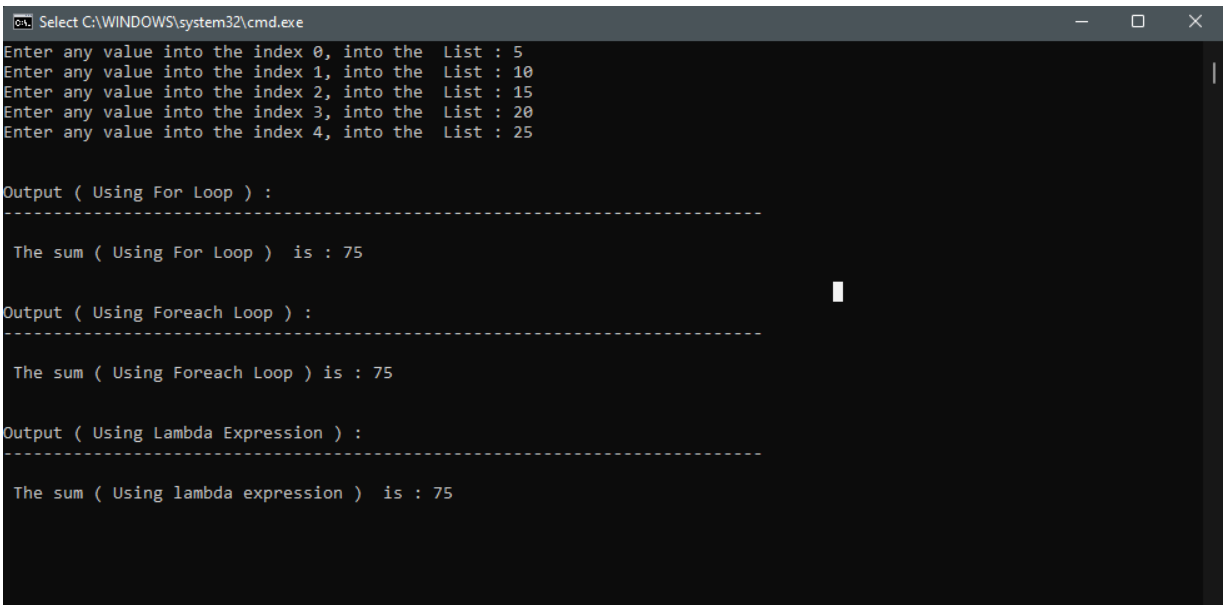
Write a C# program to declare a List<int> , read 5 values from the user and find the sum using for, foreach and lambda expression loop types

Code :

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

namespace listint3looptypes
{
    internal class Program
    {
        static void Main(string[] args)
        {
            List<int> data = new List<int>();
            int temp;
            int sum1 = 0, sum2 = 0, sum3 = 0;

            //Declaring Values to List-----------------------------------
            for (int i = 0; i <= 4; i++)
            {
                Console.Write("Enter any value into the index {0}, into the  List : ", i);
                temp = Convert.ToInt32(Console.ReadLine());
                data.Add(temp);
            }

            //Using For Loop-----------------------------------------------
            Console.WriteLine("\n\nOutput ( Using For Loop ) : ");
            Console.WriteLine("-------------------------------------------------------------------------");
            for (int i = 0; i < data.Count; i++)
            {
```

```
            sum1 = sum1 + data[i];
        }
        Console.WriteLine("\n The sum is : {0}", sum1);

        //Using Foreach Loop----------------------------------------
        Console.WriteLine("\n\nOutput ( Using Foreach Loop ) : ");
        Console.WriteLine("-------------------------------------------------------------------------------");
        foreach (var d in data)
        {
            sum2 = sum2 + d;
        }
        Console.WriteLine("\n The sum is : {0}", sum2);

        //Using Lambda Expression-----------------------------------
        Console.WriteLine("\n\nOutput ( Using Lambda Expression ) : ");
        Console.WriteLine("-------------------------------------------------------------------------------");
        data.ForEach(d => sum3 = sum3 + d);

        Console.WriteLine("\n The sum is : {0}", sum3);
        Console.ReadLine();
    }
  }
}
```

Output :


Select C:\WINDOWS\system32\cmd.exe
Enter any value into the index 0, into the List : 5
Enter any value into the index 1, into the List : 10
Enter any value into the index 2, into the List : 15
Enter any value into the index 3, into the List : 20
Enter any value into the index 4, into the List : 25
Output (Using For Loop) :
The sum (Using For Loop) is : 75
Output (Using Foreach Loop) :
The sum (Using Foreach Loop) is : 75
Output (Using Lambda Expression) :
The sum (Using lambda expression) is : 75

Assignment 9

In a tabular format , write all data types in C# and write the respective alias names

Answer :

Datatype	Alias Name	Class Name
byte	Byte	System.Byte
ushort	Uint16	System.Uint16
uint	Uint32	System.Uint32
ulong	Uint64	System.Uint64
sbyte	SByte	System.Sbyte
short	Int16	System.Int16
int	Int32	System.Int32
long	Int64	System.Int64
float	Single	System.Single
double	Double	System.Double
decimal	Decimal	System.Decimal
bool	Boolean	System.Boolean
char	Char	System.Char
string	String	System.String

Output :

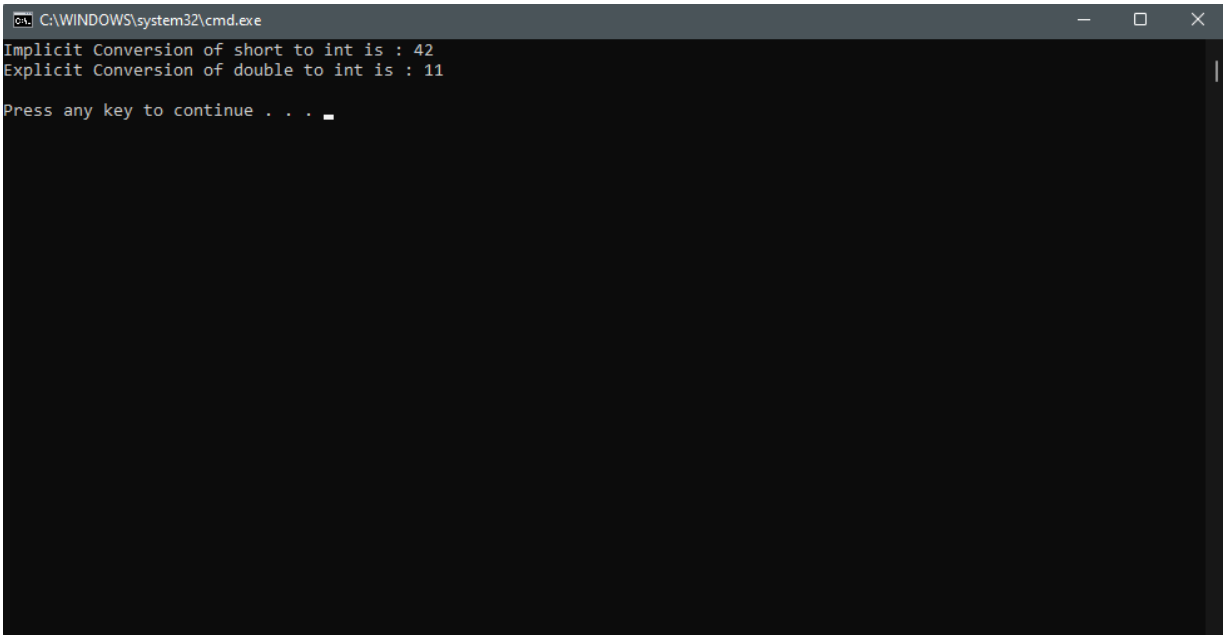
Assignment 10

Write a C# program for implicit and explicit type casting

Code :

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

namespace imp_exp_conversion
{
   internal class Program
   {
      static void Main(string[] args)
      {
         // implicit conversion
         // Type Casting short to int

         short newShort = 8;
         int newInt1 = newShort;

         Console.WriteLine("Implicit Conversion of short to int is : {0}", newInt1);

         // Explicit Conversion
         // Type
Casting double to int

         double newDouble = 11.23;
         int newInt2 = (int)newDouble;
         Console.WriteLine("Explicit Conversion of double to int is : {0}", newInt2);
         Console.ReadLine();
      }
   }
}
```

Output :


C:\WINDOWS\system32\cmd.exe
Implicit Conversion of short to int is : 42
Explicit Conversion of double to int is : 11
Press any key to continue . . .