Context:

This document contains assignments to be completed as part of the hands-on for the Collections day1 topic.

Assignment 1: Working with Arraylist

Estimated time: 20 Mins

Problem description:

1) Create code to accept user input as given below:

```
bool acceptFlag=false;
while(!acceptFlag)
{
    Console.WriteLine("Enter some integer");
    int i = int.Parse(Console.ReadKey().ToString());
    Console.WriteLine("Do you want to continue? Y/N");
    char accept= char.Parse(Console.ReadKey().ToString().ToUpper());

    if(accept=='Y')
    {
    acceptFlag=true;
    }
    else
    {
    acceptFlag=false;
    }
}
```

2) Integer values entered by user have to be saved in an arraylist
3) Display the number of integers in the arraylist.
   Hint: Use 'Count' property of arraylist
4) Take average of all integer values. Insert the value at middle position of the arraylist. Display the complete list on console.
   Hint: Use 'Insert' method. If arraylist has even number of items, take middle position as (itemnumber/2)+1
5) Remove an item from 2nd position of arraylist. Hint: Use 'Remove' method
6) Remove the 'average value' item inserted in the arraylist.
   Hint: Use 'RemoveAt' method
   Display the modified arraylist
7) Now can you tell the difference between 'Remove' and 'RemoveAt' method

Assignment 2: Working with objects in arraylist

Estimated time: 25 Mins

Problem description: Given a class ClsPerson having property 'Name' of string type. Create objects of the class having various names and add the objects to an arraylist.

Traverse the arraylist to display person names on console.

How many ways can you traverse the arraylist?

Assignment 3: Working with Stack

Estimated time: 15 Mins

Problem description: Create a stack object. Add below string objects to the stack:

- string1
- string2
- string4
- string5

Traverse through the stack object to get all the string values on console. Did you get 'string1' as the first output on console or 'string5'

Insert "string3" between "string2" and "string4".

How will you read only the topmost item from the stack without removing it.

Assignment 4: Working with Queue

Estimated time: 15 Mins

Problem description: Create a queue object. Add below string objects to the queue:

- string1
- string2
- string4
- string5

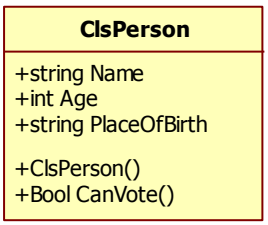
Traverse through the queue object to get all the string values on console. Did you get 'string1' as the first output on console or 'string5'

Insert "string3" between "string2" and "string4".
Traverse through the queue object to get all the string values on console. Is the sequence that you got earlier similar to the one you get this time?

Assignment 5: Working with HashTable

Estimated time: 20 Mins

Problem description: Create class ClsPerson as shown in figure below:



**Public Attributes represent properties in the class diagram*

Method 'CanVote' returns true if Age >=18

Constructor of the class assigns default values to all properties.

Create objects of person class with following properties:

Name	Age	PlaceOfBirth
John	16	Chennai
Smita	22	Delhi
Vincet	25	Bangalore
Jyothi	10	Bangalore

Add the objects to a hashtable with key as Person Name.

Can you add 1 more person object with Name="Jyothi" to the hashtable?
Can you add 1 more person object with Age=10 to the hashtable?

Iterate through the hashtable object to print Name and whether the person can vote or not.

Assignment 6: Working with SortedList

Estimated time: 10 Mins

Problem description: For the above example, add the person objects to a sorted list.

Can you add 1 more person object with Name="Jyothi" to the sortedlist?
Can you add 1 more person object with Age=10 to the sortedlist?

Iterate through the sortedlist object to print Name,Age and whether the person can vote or not.

What is the sequence in which objects are displayed? Is it similar to the sequence displayed by hashtable in the previous question? What is the difference?

Summary of assignments:

You have learnt

- How to use Arraylist
- How to use stack
- How to use queue
- How to use hashtable
- How to use sortedlist