Lists, Arrays & Dictionaries

Software Engineering 1

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University of Plymouth 2022
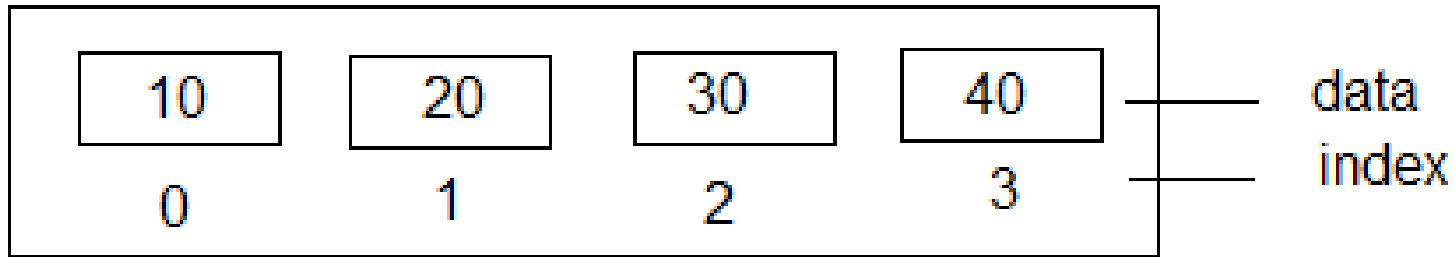
COMP 1000

Prep For Thursday:
- Come with questions!
- Work through the exercise during the session to get help.

COMP1000 Agenda This Week:
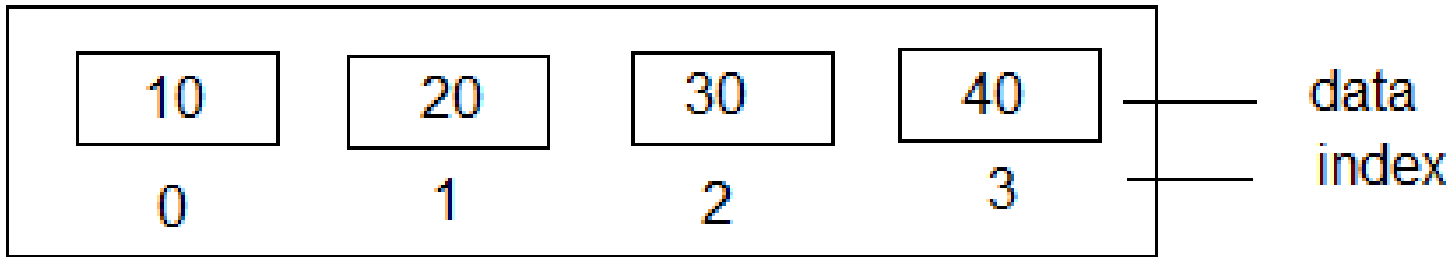
- Arrays

- Lists

- Dictionaries

- Q&A

Arrays

int[] array = new int[] {10, 20, 30, 40};

10	20	30	40	data
0	1	2	3	index

```
int[][] matrix = new int[5][];
foreach (int[] row in matrix)
{
    row = new int[5];
}
```

Arrays

int[] array = new int[] {10, 20, 30, 40};

10	20	30	40	— data
0	1	2	3	— index

```
int[][] matrix = new int[5][];
foreach (int[] row in matrix)
{
    row = new int[5];
}
```

```
int[][] matrix = new int[5][];
for (int x=0; x< matrix.Length;x++)
{
    matrix[x] = new int[5];
}
```
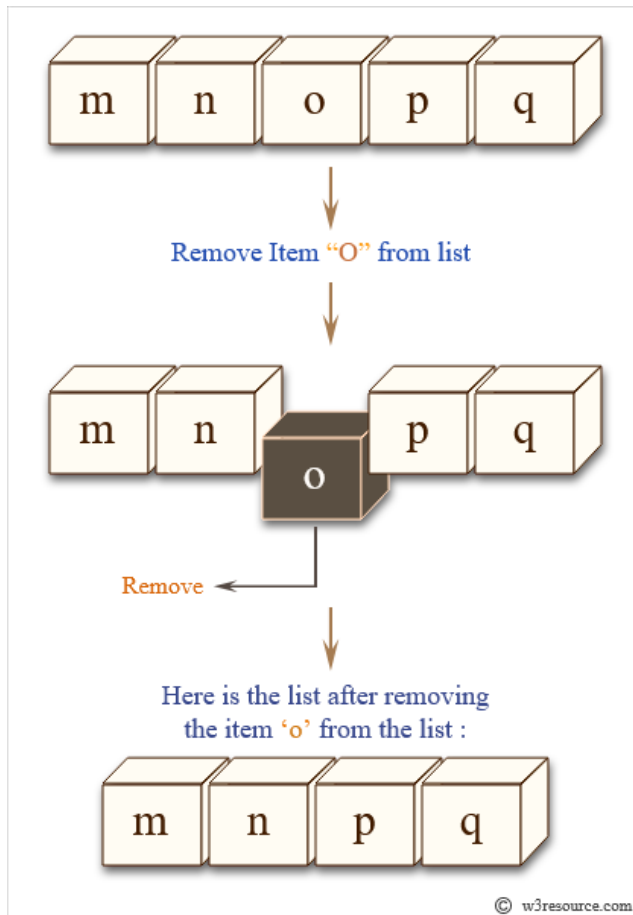
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List<T>

Remove Item "O" from list
Remove
Here is the list after removing the item 'o' from the list :
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```csharp
List<float[]> weatherData = new List<float[]>();
for (int x=0;x<5;x++)
{
    float[] values = new float[5];
    values[0]=19.1f;
    values[1]=18.5f;
    weatherData.Add(values);
}
weatherData.First()[0]=69.69f;
```

https://www.w3resource.com/csharp-exercises

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List<T>

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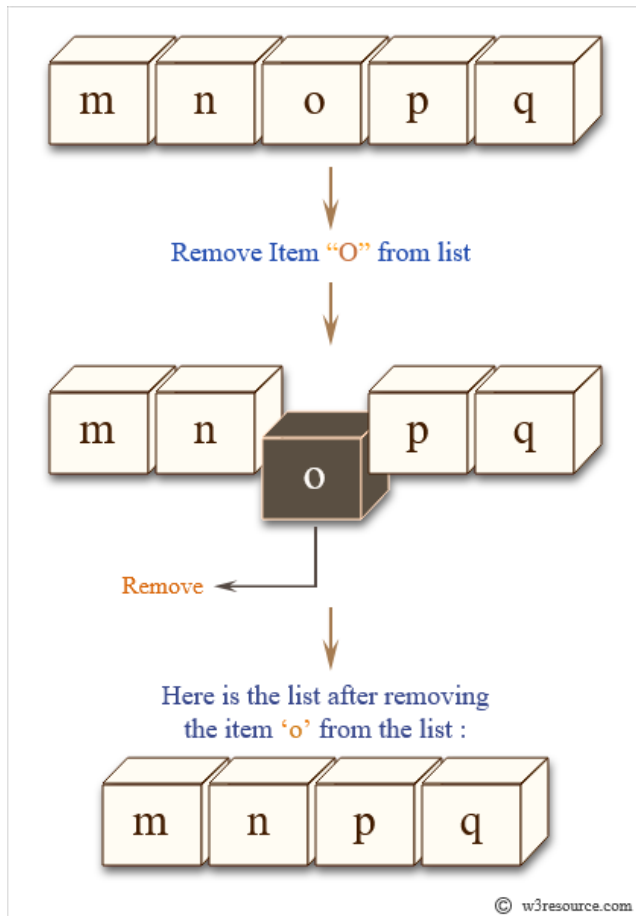
Dictionary<Key,Value>

Keys	Values
B	21
F	43
A	6
D	54
C	65
E	3

Keys	Values
A	6
B	21
C	65
D	54
E	3
F	43

```
Dictionary<int, string> phoneBook = new Dictionary<int, string>();
phoneBook.Add(666222, "Cab Service");
phoneBook.Add(999, "Emergency Hotline");
phoneBook.Add(2512, "Santa Box");
Console.WriteLine(phoneBook[2512]);
```

https://www.tutorialsteacher.com

https://producto-valvo.com/datatypes-in-c-and-net/

Data Types: Int, Char, Float & Arrays[1]

```csharp
string word = string.Empty;
char letter = 'A';
char[] letters = new char[5];
letters = new char[]{'a','b','c','d','e' };

for (int i = 0; i< letters.Length; i++)
{
    letters[i] = 'a';
}
word = new string(letters);

List<char> letterList = new List<char>();
foreach (char l in letters)
{
    letterList.Add(l);
}
```

Data Input/Output

```
Console.WriteLine("Move a Move: ");
ConsoleKeyInfo name = Console.ReadKey();
Console.WriteLine("You pressed {0}", name.KeyChar);
string message = Console.ReadLine();
```

File Input/Output

Buffered and Asynchronous Reading

https://www.csharp-examples.net/read-text-file/
https://www.tutorialspoint.com/csharp/csharp_text_files.htm

Simple Full File Reading

https://docs.microsoft.com/en-us/dotnet/api/system.io.file.readalltext