

week11

March 19, 2018

1 Loops

- Another Conditional Structure
 - Has condition and code block
- Repeats the code block while the condition is true
 - How is this different from an if statement?
 - When does execution stop?
- Most useful with collection, to perform same action on collection items

2 Loops in VB

- While Loops: If like condition checked before the start of any iteration (**what is an iteration?**)
- Do While loops: If like condition checked at the end of every iteration
- For Loops: Used with collections, condition is implicit, works on all items in a collection until all are exhausted
 - We will mainly use for loops

3 For Loops

- Used to iterate over collection items

```
Dim nameList As New List(Of String) From {"mohammed", "ali", "sara"}
```

```
For Each x in myList: ' Where is the condition?
```

```
    MsgBox(x)
```

```
Next 'end of the block
```

What is x? What is its type?

4 Another Kind of For Loops

- Used to repeat an action a specific number of times

```
Dim nameList As New List(Of String) From {"mohammed", "ali", "sara"}

For x = 0 to 10: ' Where is the condition?
    MsgBox(x)
Next 'end of the block
```

What is the difference from the previous for loop? Can we use this type to iterate over nameList?

5 Challenge

Create an application that: - Stores names of contacts - Allows user to capitalize all names - Allows user to remove names - Allows user to sort the names (use two different methods) - Allows the user to restore all the lost names and reset any changes done to the list

6 Useful Operations That Use Loops

- Counting
- Summing
- Find Min/Max
- Sorting
- Search/Filter

7 Counting

```
Dim myList As New List(Of Integer) From {5, 6, 72, 3}
Dim intCount As Integer = 0 'must have a counter initialized to zero

For Each x In myList
    intCount = intCount + 1
Next

MsgBox("Total count: " & intCount)
```

Can you modify to count only odd numbers?

8 Summing

```
Dim myList As New List(Of Integer) From {5, 6, 72, 3}
Dim intSum As Integer = 0 'must have a summation variable initialized to zero

For Each x In myList
    intSum = intSum + x
Next

MsgBox("Total count: " & intSum)
```

Can you modify to sum only even numbers? or numbers less than 10?

9 Shopping List Exercise

- Create a shopping list that you add items, their quantity, and unit price to the list
- User should be able to remove items from the list
- Include a stats button that shows the total price, total number of items, and average item price

10 Improved Shopping List

- Show only the list of items in a list box, quantity and unit price should not be shown in a ListBox
- Upon selecting an item show the quantity and total item price in a Label

11 Something to think about

- What happens if we sort the shopping list?