Chapter 24: Generics

Section 24.1: Create a generic class

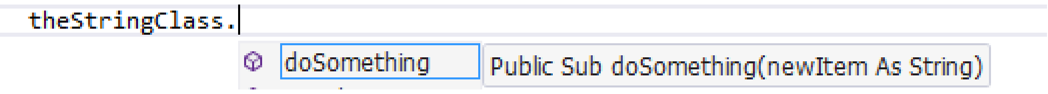
A generic type is created to adapt so that the same functionallity can be accessible for different data types.

```
Public Class SomeClass(Of T)
    Public Sub doSomething(newItem As T)
        Dim tempItem As T
        ' Insert code that processes an item of data type t.
    End Sub
End Class
```

Section 24.2: Instance of a Generic Class

By creating an instance of the same class with a different type given, the interface of the class changes depending on the given type.

```
Dim theStringClass As New SomeClass(Of String)
Dim theIntegerClass As New SomeClass(Of Integer)
```



```
theStringClass.
```

doSomething — Public Sub doSomething(newItem As String)

Section 24.3: Define a 'generic' class

A generic class is a class who adapts to a later-given type so that the same functionality can be offered to different types.

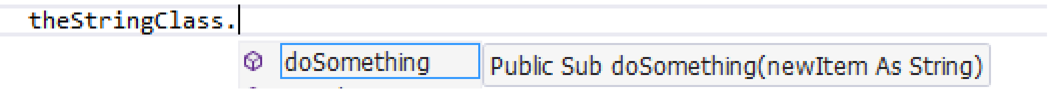
In this basic example a generic class is created. It has a sub who uses the generic type T. While programming this class, we don't know the type of T. In this case T has all the characteristics of Object.

```
Public Class SomeClass(Of T)
    Public Sub doSomething(newItem As T)
        Dim tempItem As T
        ' Insert code that processes an item of data type t.
    End Sub
End Class
```

Section 24.4: Use a generic class

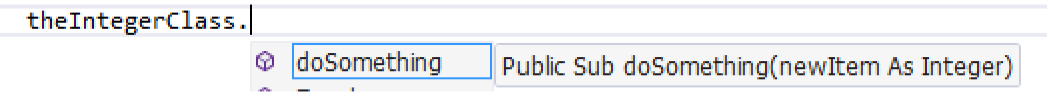
In this example there are 2 instances created of the SomeClass Class. Depending on the type given the 2 instances have a different interface:

```
Dim theStringClass As New SomeClass(Of String)
Dim theIntegerClass As New SomeClass(Of Integer)
```



```
theStringClass.
```

doSomething — Public Sub doSomething(newItem As String)



```
theIntegerClass.
```

doSomething — Public Sub doSomething(newItem As Integer)

The most famous generic class is List(of)

Section 24.5: Limit the possible types given

The possible types passed to a new instance of SomeClass must inherit SomeBaseClass. This can also be an interface. The characteristics of SomeBaseClass are accessible within this class definition.

```
Public Class SomeClass(Of T As SomeBaseClass)
    Public Sub DoSomething(newItem As T)
        newItem.DoSomethingElse()
        ' Insert code that processes an item of data type t.
    End Sub
End Class

Public Class SomeBaseClass
    Public Sub DoSomethingElse()
    End Sub
End Class
```

Section 24.6: Create a new instance of the given type

Creating a new intance of a generic type can be done/checed at compile time.

```
Public Class SomeClass(Of T As {New})
    Public Function GetInstance() As T
        Return New T
    End Function
End Class
```

Or with limited types:

```
Public Class SomeClass(Of T As {New, SomeBaseClass})
    Public Function GetInstance() As T
        Return New T
    End Function
End Class

Public Class SomeBaseClass
End Class
```

The baseClass (if none given it is Object) must have a parameter less constructor.

This can also be done at runtime through reflection