

Dictionaries in VB

Create a VB project with the following code to set up a dictionary of Cities – in this case the city Name is a key to look up the country where the city is found.

```
Sub Main()  
    Dim Cities As New Dictionary(Of String, String)  
    Cities.Add("London", "England")  
    Cities.Add("Manchester", "England")  
    Cities.Add("Paris", "France")  
    Cities.Add("Birmingham", "England")  
    Cities.Add("Madrid", "Spain")  
End Sub
```

- Extend the code to add some cities and their corresponding countries through the console.
- Now try adding a new city, Birmingham, which is in the USA (Alabama, but there may be others?) What problem does this produce? Write a validation routine to prevent the program from crashing when an attempt is made to enter a new city.
- Now write some code to look up the country for a city in the directory. The TryGetValue method can be used to return the country as a reference parameter, for example:

```
Cities.TryGetValue(CityName, CountryName)
```

The 'Try' in the method name reflects the fact that this will not throw an error if the city does not exist. You may want to add your own code to report that the city is not in the dictionary.

- Next, output a list of all of the cities and their corresponding countries. This can be done with the following loop structure:

```
For Each City As KeyValuePair(Of String, String) In Cities  
    Console.WriteLine(City.Key)  
    Console.WriteLine(City.Value)  
Next
```

- The Remove method will delete an entry from the dictionary for the key passed as a parameter, e.g.:

```
Cities.Remove("London")
```

Extend the code to remove any city entered from the dictionary.