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**04 Generics**

**Test your Knowledge**

1.Describe the problem generics address.

Allows a class or method to be used with any data type.

2.How would you create a list of strings, using the generic List class?

List<string> list = new List<string>()

3.How many generic type parameters does the Dictionary class have?

2

4.True/False. When a generic class has multiple type parameters, they must all match.

False.

5.What method is used to add items to a List object?

Add(T item)

6.Name two methods that cause items to be removed from a List.

Remove(T item)

RemoveAt(int index)

7.How do you indicate that a class has a generic type parameter?

Class className<T>

8.True/False. Generic classes can only have one generic type parameter.

False

9.True/False. Generic type constraints limit what can be used for the generic type.

True

10.True/False. Constraints let you use the methods of the thing you are constraining to.

True

**Practice working with Generics**

**1.**Create a custom Stack class MyStack<T> that can be used with any data type which has following methods:

1. int Count()
2. T Pop()
3. Void Push()

**2.**Create a Generic List data structure MyList<T> that can store any data type.

Implement the following methods:

1. void Add (T element)
2. T Remove (int index)
3. bool Contains (T element)
4. void Clear ()
5. void InsertAt (T element, int index)
6. void DeleteAt (int index)
7. T Find (int index)

**3.**Implement a GenericRepository<T> class that implements IRepository<T> interface that will have common /CRUD/ operations so that it can work with any data source such as SQL Server, Oracle, In-Memory Data etc. Make sure you have a type constraint on T were it should be of reference type and can be of type Entity which has one property called Id. IRepository<T> should have following methods:

1. void Add(T item)
2. void Remove(T item)
3. Void Save()
4. IEnumerable<T> GetAll()
5. T GetById(int id)

Explore following topics

Generics in .NET

Generic classes and methods

Collections and Data Structures

Commonly Used Collection Types

When to Use Generic Collections