Module 2
Swift Programming - MADP 401

Activity 7

Due: 10:30pm, Friday, September 27th, 2019

Problem0

Write and run all the sample codes in the Generics chapter

Problem1

Write an extension for Dictionary to add a generic method in the dictionary which receives a predicate (a closure of type (Key)-> bool) and return an array of type [Value]. Remember a Dictionary is a generic type with Key and Value.

Now, create a struct called Student and add the following properties in it:

- firstName
- lastName
- gpa
- StudentID

Add a static method to the struct called static studentIDGenerate ()->String. This method create random StudentID for each instance of student. The random studentID is a string in number format which is between 10000 and 99999.

Now create a dictionary of type <String, Student> and initialize it with some sample data. The key of the dictionary is the studentID and the value is the instance of the student.

Now create a closure (predicate) which checks whether the studentID is a string representing an odd number. For instance 898987 is a studentID between 10000 and 99999 which represents an odd number.

Now call the generic method you already defined on the dictionary and gives the above predicate closure as an input to the method. The method should return a list of

students whose studentID meets the condition defined in the predicate closure.

Problem2

Write a generic method to exchange the positions of two different elements in an array. The method receives 3 inputs:

- Index of item 1(index1)
- Index of item 2 (index2)
- An array

The method exchange the items located at index1 and index2 and return the new array.

Now call the generic method you defined for a sample list (array) of strings.

Problem3

Write a generic class with the following three methods and properties:

- A property which is generic array which is optional
- An instance method clled, *addItemToList*: add a generic object to the list and returns the new list.
- An instance method called, *removeItemFromTheList:* remove a generic object from the list and returns the removed item.

Problem4

Consider the following protocol

```
Protocol MyProtocol {
    func check()
}
```

Now consider the following method:

```
func sampleMethod<T: MyProtocol> (_ p: T, _ q: T) -> Bool {
    return true
}
```

Now we want to call the function you defined above for T=String as following:

```
func sampleMethod (_ p: String, _ q: String) -> Bool {
```

```
    return true
}
```

What do we need to add to the above code to get this to work?