Sofia University
Department of Mathematics and Informatics

Course : OO Programming C#.NET
Date: January 16, 2019
Student Name:

Lab No. 15

Submit the all C# .NET files developed to solve the problems listed below. Use comments and Modified-Hungarian notation.

Problem No.1

Multithreaded servers are quite popular today, especially because of the increasing use of multiprocessing servers. **Modify** the simple server application presented in ***WPFChatServer.zip*** (attached) to be a **multithreaded** server making use of a ***ThreadPool***. Then use several client applications and have each of them connect to the server simultaneously.

Problem No.2

Modify **Problem 1** to use a ***Dictionary<Thread, Socket>*** and ***Dictionary<Thread, BinaryWriter>*** (namespace ***System.Collections***) to store the client threads and broadcast messages from the server to the currently connected to it clients. ***Dictionary*** provides several properties and methods of use in this exercise. ***Property Keys*** returns an ***ICollection*** of keys currently found in the ***Dictionary***. Each ***key*** can then be used in the ***Dictionary's*** indexer to retrieve the corresponding value. Method ***Add*** places its arguments—a ***key*** and a ***value***— into the ***Dictionary***. Method ***Remove*** deletes its argument—the ***key***—from the ***Dictionary***.

Problem No.3a

Write a **SOAP web services** with **WCF,** where **the web service** returns the contents of a textfile specified by a `string` parameter `filename`. **Allow clients** use a **WPF window** to **read, display in a multiline textbox** and **save** using a dialog box the contents of `filename` locally in their application domain.

Problem No.3b

Write a **REST web services** with **WCF,** where **the web service** returns the contents of a textfile specified by a `string` parameter `filename`. **Allow clients** use a **WPF window** to **read, display in a multiline textbox** and **save** using a dialog box the contents of `filename` locally in their application domain.

Problem No.3c

Modify **Problem 3a** allowing **clients to update** the `filename` contents returned by the **web service** and **save the changes** in a file in their local application domain.

Problem No.3d

Modify the network application ***WPFChatServer.zip*** (attached) to allow the **client** to modify the contents of the **file** and send the **file** back to the **server** for storage. The user can edit the file in a ***TextBox***, then click a ***Update*** file on server button to send the file back to the server.

Problem No.4a

Write server and client network applications, where the NetworkStream allows a client to specify a text file's ***name*** and have the server **send** the **contents** of the file or send a message to the client **indicating** that the file is updated or does not **exist**. Echo the message on the server.

Problem No.4b

Modify the solution of **Problem 4a** to become a **multithread server**, where multiple clients can send concurrently requests to the server.