1. You have a sealed class called MyClass that you need to extend in order to add new functionality. Write code to demonstrate how you can do this?

On api-exci repository <https://github.com/tzimpoulog/api-exci/tree/master/sealedClass/ConsoleAppMarpoint>

For a few days I have the api online : <https://demo-webbanking.intrasoft-intl.com/ExciDemo/Help>

1. What is a deadlock? What is a livelock?

A deadlock is a situation where an application locks up because two or more activities are waiting for each other to finish. This occurs in multithreading software where a shared resource is locked by one thread and another thread is waiting to access it and something occurs so that the thread holding the locked item is waiting for the other thread to execute.

A livelock is similar to a deadlock, except that the states of the processes involved in the livelock constantly change with regard to one another, none progressing. Livelock is a special case of resource starvation, the general definition only states that a specific process is not progressing.

1. Write a structure that allows fast retrieval of order O(1) and fast insert and can index values by keys. This structure should use the LRU algorithm to limit its size to the N most recently used contents.

Hint: In .NET there is already a class that indexes values by keys and is of O(1) to retrieve a value given the key

On api-exci repository <https://github.com/tzimpoulog/api-exci/tree/master/Dictionary/ConsoleAppDictionary>

1. What do you think is the ideal (but feasible) response time for a web service that is given a client ID and a number of credits and charges the given client for the given number of credits. The web service should return the remaining number of credits for the given client. Explain your approximation. You don’t need to write any code. Just to approximate the number of milliseconds required to perform this operation through a web service call.

A feasible time for the server response is around 200ms. This time of course depends on how optimized is our database, how many requests are made on our server and how efficiently is our server’s software.

1. Write a sample template web api application using the following technologies:

api-exci repository. <https://github.com/tzimpoulog/api-exci>

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