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COS20007 – 9.2HD – Research Project Plan

Project Title: Comparison of different Collection classes offered by the .NET library

Overview

The .NET framework provides various classes to organize data into collections of items. They differ in terms of use case, feature support, and time complexity. This paper aims to compare these classes by measuring the time it takes to perform common operations such as insertion and deletion on them.

Scope

Six generic collection classes provided by .NET: arrays, lists, dictionaries, stacks, queues, and linked lists.

Method

Define a test case for each operation and run on the collection classes. Each test case is run 100 times per collection class. The execution time is measured in milliseconds using `System.Diagnostics.Stopwatch`. The execution times of the iterations are then summed and averaged to find the mean execution time for an operation on a particular collection class.

Unit learning outcome achieved

2 - Use an object oriented programming language, and associated class libraries, to develop object oriented programs (K1,K3,S1)

This research project will provide deeper insight into the inner operations of the collection classes offered by the .NET framework, therefore helping me make better decisions when designing my programs in the C# language.