

Team Project Proposal Assignment

Miguel Aguilar

Jose Chavez

Andrew Gilbert

Chris Oppewall

Team name:

Duel of the Data Structures

Team information:

Team member's name	Discipline	STAT 312 or STAT 542 student?
Project Contact: Andrew Gilbert	Comp. Sci.	312
Miguel Aguilar	Comp. Sci.	312
Jose Chavez	Comp. Sci.	312
Chris Oppewall	Comp. Sci.	312

Objectives:

To determine how the performance of various data structures is affected by various factors.

Response variable:

The time taken to complete a set of operations on a data structure.

Experimental factors:

Factor	Levels
Number of items inserted	n , n^2 , n^3 or some other set of numbers, to be determined empirically based on time taken for the various ns.
Operation	Insert, retrieve, delete
Data structure type	Binary search tree, trie, hash table

Pilot study:

For our pilot study, we would only look at the effect of operation and number of items on one data structure. We would also limit the operations to insert and delete, and the number of items to two values.

Experimental design plan:

We plan to conduct a full-factorial experiment. It should be easy to randomize the order of testing for the “number of items” factor and the “data structure type” factor. The “operation” factor will be randomized in the usual way, which is possible because we will only be timing the actual cost of the operation of interest, not the cost of setting up the data structure as needed. Replicates will be run with different data sets each time, to attempt to gain a better understanding of how the structure behaves with a broad range of data values.

Key activities:

Activity	Completion Date
Design test framework	25 Oct 2013
Build test framework	1 Nov 2013
Pilot study	1 Nov 2013
Analyse pilot study	6 Nov 2013
Write team project update	8 Nov 2013
Find implementations of all data structures	8 Nov 2013
Run tests	15 Nov 2013
Analyse full study	22 Nov 2013
Create presentation	6 Dec 2013