Advanced Algorithms - Assignment 1

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Instructions:
- *This document must be submitted along with your implementation file.*
- *You are required to run at least 3 test cases with your implementation and fill in the tables given.*
- *You may add more columns in case you have run more test cases*
- *Reallocation threshold is the percentage of the array filled after which your implementation reallocates memory*
- *Deallocation threshold is the percentage of the array emptied after which your implementation deallocates memory.*
- *Vary the thresholds in the test cases and note the time taken for the basic operation*
- *The final section is optional and can be used if you would like to give the evaluators additional information about your assignment*

1) Dynamic Table without Structure Hacking

	Test Case 1	Test Case 2	Test Case 3
Reallocation Threshold	100%	60%	100%
Deallocation Threshold	25%	25%	5%
Number of times copy was called	255	275	180
Total time	87329124	80185318	80528841
Average time taken	873.291240	801.853180	805.288410

2) Dynamic Table with Structure Hacking

	Test Case 1	Test Case 2	Test Case 3
Reallocation Threshold	100%	60%	100%
Deallocation Threshold	25%	25%	5%
Number of times copy was called	255	275	180
Total time	86301605	80870302	80665799
Average time taken	863.016050	808.703020	806.657990

3) Splay Tree

	Test Case 1	Test Case 2	Test Case 3
Number of rotations	9138	6875	10276
Total time	1627800	1378302	1940129
Average time taken	1627.8	1378.302000	1940.129000

4) Additional details: For the first two questions, I've kept the increment ratio to 2.0 and decrement ratio to 0.5, and the number of operations to 100000 (10^5). The conditions were set so that every 5000 pushes were followed by 5000 pops.

For the last question I've modified the test cases in such a way that, for 1st test case, I took 50/50 insert/find, for the 2nd 20/80 insert/find and for the last, 80/20 insert/find.