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 with Structure Hacking**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Test Case 1 | Test Case 2 | Test Case 3 |
| Reallocation Threshold | 100 | 50 | 50 |
| Deallocation Threshold | 75 | 50 | 50 |
| The factor by which I am increasing the size | 2 | 2 | 3 |
| The factor by which I am decreasing the size | 0.5 | 0.5 | 0.5 |
| Number of times copy was called | 10 | 11 | 7 |
| Total time | 15625000 | 15625000 | 31250000 |
| Average time taken | 1562 | 1562 | 3125 |

**2) Dynamic Table without Structure Hacking**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Test Case 1 | Test Case 2 | Test Case 3 |
| Reallocation Threshold | 100 | 50 | 50 |
| Deallocation Threshold | 75 | 50 | 50 |
| The factor by which I am increasing the size | 2 | 2 | 3 |
| The factor by which I am decreasing the size | 0.5 | 0.5 | 0.5 |
| Number of times copy was called | 10 | 11 | 7 |
| Total time | 15625000 | 15625000 | 15625000 |
| Average time taken | 1562 | 1562 | 1562 |

**3) Splay Tree**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Test Case 1 | Test Case 2 | Test Case 3 |
| Number of rotations | 416 | 8690 | 135202 |
| Total time | 331441 | 3493136 | 34606552 |
| Average time taken | 3314 | 3493 | 3460 |

**4) Additional details:**