/\* CS261- Assignment 2\*/

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\* Solution description: amortizedAnalysis.txt

|  |  |
| --- | --- |
| units | costs |
| 1 | 1 |
| 2 | 1 |
| 3 | 1 |
| 4 | 1 |
| 5 | 1 |
| 6 | 1 |
| 7 | 1 |
| 8 | 1 |
| 9 | 8+1 |
| 10 | 1 |
| 11 | 1 |
| 12 | 1 |
| 13 | 1 |
| 14 | 1 |
| 15 | 1 |
| 16 | 1 |
| 17 | 16+1 |
| 18 | 1 |
| 19 | 1 |
| 20 | 1 |
| 21 | 1 |
| 22 | 1 |
| 23 | 1 |
| 24 | 1 |
| 25 | 1 |
| 26 | 1 |
| 27 | 1 |
| 28 | 1 |
| 29 | 1 |
| 30 | 1 |
| 31 | 1 |
| 32 | 1 |
| 33 | 32+1 |
| 34 | 1 |
| 35 | 1 |
| 36 | 1 |
| 37 | 1 |
| 38 | 1 |
| 39 | 1 |
| 40 | 1 |
| total | average |
| 96 | 96/40=2.4 |

1. How many cost units are spent in the entire process of performing 40 consecutive push operations on an empty array which starts out at capacity 8, assuming that the array will double in capacity each time a new item is added to an already full dynamic array? As N (ie. the number of pushes) grows

large, under this strategy for resizing, what is the average big-oh complexity for a push?

Total of 96 units with an average of 2.4 and is O(1)+

2.How many cost units are spent in the entire process of performing 40 consecutive push operations

on an empty array which starts out at capacity 8, assuming that the array will grow by a constant 2 spaces each time a new item is added to an already full dynamic array? As N (ie. the number of pushes) grows large, under this strategy for resizing, what is the average big-oh complexity for a

push?

amortizedAnalysis.txt

|  |  |
| --- | --- |
| units | Total costs |
| 1 | 1 |
| 2 | 2 |
| 3 | 3 |
| 4 | 4 |
| 5 | 5 |
| 6 | 6 |
| 7 | 7 |
| 8 | 8 |
| 10 | 18 |
| 12 | 30 |
| 14 | 44 |
| 16 | 60 |
| 18 | 78 |
| 20 | 98 |
| 22 | 120 |
| 24 | 144 |
| 26 | 170 |
| 28 | 198 |
| 30 | 228 |
| 32 | 260 |
| 34 | 294 |
| 36 | 330 |
| 38 | 368 |
| 40 | 408 |
|  |  |

408 total costs. 408/40= 10.2 and the O complexity is O(n) for a single push()