**Question 1:**

1. add, add, add, add, clear, add, clear add, clear, add, add, add, clear, add, add, clear, add, add, clear, add, add, clear.

1,1,1,1,4,1,1,1,1,1,1,1,3,1,1,2,1,1,2,1,1,2

2,2,2,2,0,2,0,2,0,2,2,2,0,2,2,0,2,2,0,2,2,0

1. 16->32
   1. 16 adds cost 16
   2. Resize
      1. Initialize costs 64
      2. copy from old to new costs 32
   3. total 16+64+32 = 112
   4. average cost 112/16 = 7

**Question 2:**

1. What is the actual cost of add?

n

1. What is the actual cost of resize?

4n

1. Using traditional worst-case analysis, show that the average cost of an operation is NOT constant time.

Resize cost is 4n, in the worst-case, if there are n operations, the total cost is 4n\*n, the average cost is (4n\*n)/n = O(4n)

1. Array is 9, filled 3, empty 6
   1. Add 6 cost 6
   2. Resize cost
      1. Initialize costs 27
      2. copy from old to new costs 9
   3. Total is 6+27+9 = 42
   4. Average is 7
   5. Amortized\_Cost(add) is 7
   6. e Amortized\_Cost(resize) is 0