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Section 3.

- EE1441 - HOMEWORK 2 -

TIME AND SPACE COMPLEXITIES

(*) Time complexity;

1) For creating a new flight, we allocate a memory for an aircraft object. which is $O(1)$

2) For registering passengers;
   ⇒ we allocate a memory for a capsule object ⇒ $O(N)$
   ⇒ integrate the capsule created into the aircraft;
   we sort the capsules according to their destinations;
   sorting algorithm; $O(N^2)$
   ⇒ registering passengers $O(N)+O(N^2) = O(N^2)$

3) Simulate flight;
   ⇒ Findmax to find the max length of lines ⇒ $O(N)$
   ⇒ Print aircraft info ⇒ $O(N)$
   and drop capsule ⇒ $O(N)$
   } N times executed ⇒ $O(N^2)$

⇒ Simulate flight ⇒ $O(N)+O(N^2) = O(N^2)$

⇒ Full execution time complexity is $O(1)+O(N^2)+O(N^2) = O(N^2)$

(*) Space complexity:

For capsules: we have 7 properties for an object ⇒ $O(1)$
⇒ For N object ⇒ $O(N)$ ✓

For aircraft. we have 5 properties for an object ⇒ $O(1)$

For functions we use pass by reference so no local copies are created

⇒ Total space complexity is $O(N)$.