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Project Part 1

Question 4:

The LongestIncreasingSubsequence class utilizes dynamic programming to find and print the Longest Increasing Subsequence (LIS) of an array. The PrintLIS method initializes an array (lis) for LIS lengths, iterates through the array to compute LIS values, and reconstructs and prints the LIS. The main method demonstrates the functionality with two example arrays.

Question 8:

1. Plane:

The Plane class represents an airplane with private fields for its identifier (id) and departure direction (departureDirection). The getId method retrieves the plane's identifier, and the getDepartureDirection method retrieves its departure direction. The toString method is overridden to provide a customized string representation of the plane, specifically displaying its ID.

1. Runway:

The Runway class serves as a model for a runway at an airport. It contains a list, named planes, which is responsible for storing the planes currently located on the runway. The addPlane method allows for the addition of a Plane object to the list. The getPlanes method retrieves the list of planes.

1. Departure:

The Departure class represents a system for managing the departure of planes from multiple runways at an airport. The assignPlaneToRunway method is responsible for assigning a given Plane object to a randomly selected runway from the list if there are available runways. The getRunways method allows external access to the list of runways, providing a means to observe the state of the runways after the departure simulation.

1. AirportSimulation:

Asks the user to input the number of runways (x) and the number of planes (y).

Initializes the Departure system with the specified number of runways (x).

Generates y planes with random departure directions. Assigns each plane to a runway in the departure system. Displays the planes on each runway after the departure simulation.