Assignment 3

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// code

#include<iostream>

#include<algorithm>

#include<array>

#include<chrono>

using namespace std;

int minimum\_cabs(int\*\*, int);

bool compare(int \*, int \*);

int main(void) {

  int n;

  cout << "Enter number of passengers: ";

  cin >> n;

  int\*\* passengers = new int\*[n];

  for (auto i = 0; i < n; i++) {

    cout << "Enter start and finish time of passenger" << i + 1 << ": ";

    passengers[i] = new int[2];

    cin >> passengers[i][0];

    cin >> passengers[i][1];

  }

  auto start = chrono::high\_resolution\_clock::now();

  int min\_cabs = minimum\_cabs(passengers, n);

  auto end = chrono::high\_resolution\_clock::now();

  auto duration = chrono::duration\_cast<chrono::nanoseconds>(end-start).count();

  cout << "Minimum Cabs required by start time: " << min\_cabs << endl;

  cout << "Time taken by algorithm: " << duration << "ns." << endl;

}

bool compare(int \*a, int \*b) {

  if (a[1] == b[1]) return a[0] < b[0];

  return a[1] < b[1];

}

int minimum\_cabs(int\*\* arr, int n) {

  sort(arr, arr + n, compare);

  int min\_ft\_cab = 0; int count = 1;

  for (int i = 1; i < n; i++) {

    if (arr[i][0] >= arr[min\_ft\_cab][1]) {

      min\_ft\_cab++;

    } else {

      count++;

    }

  }

  return count;

}

//Output

