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A brief explanation of how I developed my program

program flow:

- **airportmain.c**
  - Deal with command-line argument
  - Read flight information from a file specified as a command-line argument
  - Call functions from flights_io.c and sort.c to calculate the arrival delay, sort the airport
  - Write output to a file
- **flights_io.c**
  - Implement functions to calculate the arrival delay for each flight and accumulate information for airport
- **sort.c**
  - Implement 3 different sort algorithms: insertion sort, heap sort, merge sort

Comments on the performance of the different sorting methods

The time complexity of 3 algorithms:

- insertion sort O(N^2)
- heap sort: O(Nlog(N))
- merge sort: O(Nlog(N))

Use a timer to calculate the time cost of different sorting functions. The result is shown below. From top to bottom are insertion sort, heap sort, and merge sort, which indicates that insertion sort is the fastest. The result matches the time complexity.

```
(base) xinyuchen@XyGray ~/workspace/CSE6010-22Fall/Assignments/A4 master ± ./airport flights_jan1_delta_times_reg.csv i
Time elpased is 0.000016 seconds
(base) xinyuchen@XyGray ~/workspace/CSE6010-22Fall/Assignments/A4 master ± ./airport flights_jan1_delta_times_reg.csv h
Time elpased is 0.000022 seconds
(base) xinyuchen@XyGray ~/workspace/CSE6010-22Fall/Assignments/A4 master ± ./airport flights_jan1_delta_times_reg.csv m
Time elpased is 0.000024 seconds
```

Airport Abbrev	Delay-All	Avg Delay-Late	#Arrivals	#Late Arrivals
MIA	512.000	512.000	1	1
ROC	241.000	241.000	1	1
PHL	50.000	50.000	1	1
ATL	30.000	90.000	6	2
MSP	17.400	21.750	5	4
LGA	3.000	6.000	2	1
DTW	0.000	0.000	1	0
PBI	0.000	0.000	2	0
PIT	0.000	0.000	1	0
RSW	0.000	0.000	2	0
TPA	0.000	0.000	1	0

The procedure was verified by test cases and the results matched.

What I found useful about the peer review process

- Add more comments to make the program easier to understand;
- Fix bugs and now they are bug-free;
- Add lines to write output to a file;
- Add logic to read command-line arguements;
- Re-implement calculateDelay;

What I found useless about the peer review process

- I use scanf() instead of getline() in my initial submission