Project 5/6
Due Last Day of class
200 pts.

Michael Corleone

Vito Corlenoe

- My Godfather (the Don, Michael Corleone) is the head of a major corporation that deals with olive oil imports from Sicily, legalized personal companionship, distilleries, and legal casinos gambling
- His corporation (families) interest span the United States from N.Y. N.J. Chicago, and Kansas City to name a few.
- Because the Don is a "***Family***" man and wants to personally talk with the CEOs of his interests together (and separately- when need be). For security reasons he has decided to build an airport that will accommodate both commercial and business travel

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- You are to create an automatic Air Traffic Control System that manages two runways
- Each runway is capable of landing aircraft and allowing aircraft to take off
- Planes that wish to take off will specify the amount of fuel they currently have, the cost of their cargo, number of persons on board, and if a "***family***" member is onboard
- Planes must have 20 units of fuel or they are required to go back to the gate and refuel (10 time units)
- Planes that wish to land will specify the amount of fuel they currently have, the cost of their cargo, the number of people aboard and if there any "***Grandchildren"*** aboard (family member).
- Each runway can either land or allow a plane to take off during each time unit

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- For this project you are to read from an input file that contains the actions for the planes to perform.
- The input file is a comma separated values (csv) file with the following format:

Item	Type	Values	Description
Command	Char	D, P, W	D for data, P for print statistics, Wait for carriage return
Time	Integer	>= 0	The relative time of the action
Action	Char	A, D	A: Arrival, D: Departure
Fuel	Integer	>= 0	Amount of fuel the aircraft currently has
People	Integer	>= 0	Number of people on board
Cargo	Float	Currency >= 0	Cargo Value amount
Special	Char	Y, N	Y Grandchild on board N: No Grandchild

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- Sample input file:

```
D,0,D,100,300,500000.00,N   // Data, At time 0, Departure 100 units of fuel, 300 people, 500,000.00 cargo, No Grand
D, 0,D,90,25,500.00,Y       // Data, At time 0, Departure 90 units of fuel, 25 people, 500.00 cargo, Grandchild
P                           // Print command.  Print the current statistics
W                           // Wait for carriage return
D,0,A,3,300,2500,Y          // Data, At time 0, Arrival 3 units of fuel, 300 people, 2500.00 cargo, Grandchild
D,1,A,2,300,2500,Y          // Data, At time 1, Arrival 2 units of fuel, 300 people, 2500.00 cargo, Grandchild
D,3,A,2,300,2500,N          // Data, At time 3, Arrival 2 units of fuel, 300 people, 2500.00 cargo, No Grandchild
```

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- Your program should process the input file and perform the requested action.
- You should keep the following statistics, and display after the file has been processed or on command:
  - Average Take off wait time
  - Average landing wait time
  - Number of plan crash
  - Number of plans departing
  - Number of planes arriving
  - Number of people that landed safely
  - Number of people killed
  - Number of Grandchildren killed
  - Average wait time for a grandchild Arriving or departing. (Dead grandchildren not included)
  - Amount of cargo that landed safely
  - Amount of destroyed Cargo
  - Amount of time it takes to process a input file

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- This is a competition project for this class
- For this project you will demonstrate your knowledge of the data structures we learned about and used in class.
- Your ability to use a "***canned***" data structure is limited. You must create your own or use the ones you developed in this class. If you have a question, ask me……
- You are to create a input file that demonstrate your solution.
  - Your input files will be the input into other student solutions.
  - You will be given a form to fill out for each file processed
- You will work in an assigned groups of up to TBD students per group
- You will be required to evaluate your teammates' contribution to the teams solution

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- You are to deliver a Power Point presentation outlining your solution and results (so that I can present it to Don Corleone)
- You are to deliver your code and presentation via email
- You present your presentation to the class
- You are to send me your input test file by TBD
- You are to send me your team members by TBD

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- Depending on your statistics you may meet up with my friends Peter Clemenza, and Luca Brasi