

Erik Ayavaca-Tirado  
10/22/18  
CSC 450  
Python project

#### Overview:

In this project the use of the python programming language will be used to simulate a simulation of Airport take off time. This program will keep track of information that is needed for airstrip scheduling such as request identifier, request submission time, time slot requested, length of time requested, actual start time, actual end time. This information will be read in by a file. A queue detailing the airplanes waiting before they can take off. A print out the status of the queue as time moves along will be the output produced.

#### Design:

There is python class named flightSimulations.py that contains 4 different functions. Below is a list of the 4 functions and what each function does.

1. read\_file: reads in a file
2. printQueue: prints the queue at each time interval
3. simulate\_airport: simulates an actual airport, so adding/removing planes based on request time. Priority queue is implemented here.
4. takeOffPrint: prints out the list of flight that have departed the runway.

#### Example:

If the user were to input the following content of a cvs file.

ID	Submisson Time	Requested Start	Requested Duration
Delta 160	1	0	4
UAL 120	0	5	4
Delta 6	2	3	4
Wes 10	1	3	4
Mex 5	3	1	4
Pizza 6	0	0	4
JET 7	3	1	4

Figure 1: content of a cvs input file

The expected output will look like the following images below:

```
=====
The queue at Time: 0
Currently Departing: Pizza 6 (started at 0)
Waiting:
UAL 120 (Scheduled for 5)
Currently Departing: No flights are currently departing
Waiting:
UAL 120 (Scheduled for 5)

=====

The queue at Time: 1
Currently Departing: Pizza 6 (started at 0)
Waiting:
Delta 160 (Scheduled for 3)
Wes 10 (Scheduled for 7)
UAL 120 (Scheduled for 11)
Currently Departing: No flights are currently departing
Waiting:
Delta 160 (Scheduled for 3)
Wes 10 (Scheduled for 7)
UAL 120 (Scheduled for 11)

=====

The queue at Time: 2
Currently Departing: Pizza 6 (started at 0)
Waiting:
Delta 160 (Scheduled for 3)
Wes 10 (Scheduled for 7)
Delta 6 (Scheduled for 11)
UAL 120 (Scheduled for 15)
Currently Departing: No flights are currently departing
Waiting:
Delta 160 (Scheduled for 3)
```

Figure 2: Output of queue at different time intervals

```
Actual take off times:
Delta 160 (3-7)
UAL 120 (23-27)
Delta 6 (19-23)
Wes 10 (15-19)
Mex 5 (7-11)
Pizza 6 (0-3)
JET 7 (11-15)
```

Figure 3: Ending output with final take off times for all airplanes from file.