**COMP 304 PROJECT 2 REPORT**

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In the project we were asked to implement an Air Traffic Controller simulation. In the simulation there is an airport with a single runway so two planes cannot use the runway at the same time. This report explains how to compile and run my code and the assignments of each part. Further information is inside the code. Every line is explained by my comments.

**In order to compile the code**:



**In order to run the code:** While running we can add some command line arguments and their default values are p=0.5, n=20, s=60 and option=0.



S: The simulation time

P: Probability

n: Time for the terminal output

option: an option to change the view of the output



Optionally you can set the -o to 1 to see another view for the output.

**PART 1:**

In part 1 we are asked to implement the ATC and plane threads which is the main logic of the project. This part is working completely in my submission.

**PART 2:**

In this part we are asked to solve the starvation of the queues. For the departing queue, I set a threshold which is 5 planes. If the number of planes in the departing queue, the program gives a priority to the departing planes. However, this causes a starvation in the landing queue. In order to solve this, I set a maximum waiting time, which is 3 seconds, for the plane at the top of the landing queue. If the top plane of the landing queue waits more than 3 seconds, the program gives a priority to the landing plane. This part also fully works in my submission.

**PART 3:**

In part 3 we are asked to add emergency landings to the simulation in every 40t seconds. In order to implement this, I added a new queue for emergency planes. When an emergency landing occurs, the program gives priority to the emergency landings. This part is also fully working in my submission.

**KEEPING LOGS:**

In the log all the created planes are listed and landed or departed planes are showed with request time, runway time and turnaround time. This part is also fully working in my submission.

Inside the submission you can find:

-ATC.cpp

-pthread\_sleep.c (which is provided for us)

-example log files with the parameters p=0.5, s=60, n=20

-output of the terminal with parameters p=0.5, s=60, n=20