Computer Modelling Final Project 1

This small report will detail how exactly I got the values and results that I got.

Firstly, I wanted to test the limits of the default setup by increasing the speed of the car and seeing how far I can stretch it. This led me to the following screenshot:

As you can see, I got a time of 2:14 for my first lap. This was not much of an improvement, thus I had to take a different aproach to the problem.

Furthermore, I would like to state that from this point on, I let the race complete all 3 laps and took screenshots of the final screen of the best time. To my knowlage, It wasn't explicitly stated anywhere that I needed to take the first lap thus, this seemed fair.

One of the biggest diffuculties was that no matter what changes I made to the period and execution times was that I always seemed to get deadline missed errors. This got me to think, the main issue of the default state provided was that it seemed to slow to react. So my attempt was still the same to decrease the periods and execution times so that it happens more frequently. And thus the car stays on track better. Thus my aproach was to take a ratio'd version of the default values. This way, there should be no execution problems, and it should run quicker.

Initially, I took these base stats:

	CC	LK	Sensing	Brake	Power	Local
Period	500	500	500	500	500	500
Execution time	50	50	100	100	100	100

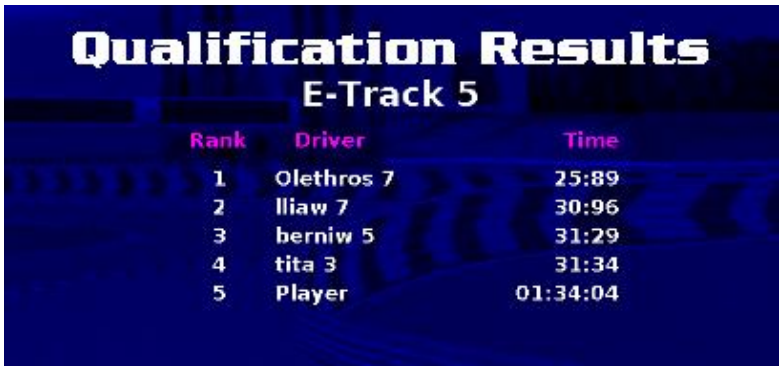
And turned them into the following by deviding every value by 5:

	CC	LK	Sensing	Brake	Power	Local
Period	100	100	100	100	100	100
Execution time	10	10	20	20	20	20

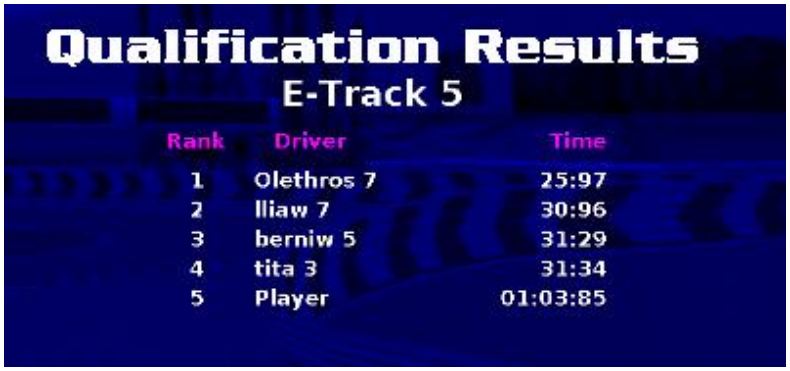
At this point, I didn't see any problems with these values, and they worked perfectly to the point where I got a lap time of 50 seconds. However, after going through the slides, I realised one of the conditions stated that the minimum execution time was 20. Thus, to fix this, I just doubled all the values on the previous table to this (I also reset all the changes I made to cc.cpp and lk.cpp):

	CC	LK	Sensing	Brake	Power	Local
Period	200	200	200	200	200	200
Execution time	20	20	40	40	40	40

These values seem to follow the constraints set. With these values set, I got the following result:



As you can see, there was a significant improvement by this. However, the car still seemed to be going too slow and thus can go faster to reach the maximum potential of these values. After tweaking the relavent files for stearing and speed, I got these following results:



These resutls are significantly better than previously. The way I tweaked the cc and lk was by slowly increasing the speed and changing the lk to see if it can handle it.