CSE2430 - Operating Systems
Homework Processes and Scheduling (2)

Assigned on: **Feb 15 2023**

Question 1

Consider a First-come First-served scheduler as presented in class and a task queue with n tasks of length 1 and one task of length 10. Find a formula (as a function of n) for the average response time of a task for

a) the best case schedule

b) the worst case schedule.

Create a graph for the best case and worst case average response time for 1 to 25 tasks. Explain your result.

Question 2

Will the following program given in pseudo code

```
int pid = 0
pid = fork()
if(pid)
  print "parent"
else
  print "child"
```

always have the same output? Explain how your hardware and choice in scheduler can influence the outcome of the program.

Question 3

Educate yourself (e.g., using man pages or programming examples on the Internet) about the use of clock_gettime with CLOCK_MONOTONIC option for getting time values with usually nanosecond resolution. Use this clock in a small C program to measure the overhead of

a) a simple system call like SYS_getpid

b) a function call.

Explain what you find.

Keep in mind that due to the resolution of the clock you need to measure over a reasonably large number of calls. Compile your code without optimization (`-O0`) to avoid that the compiler optimizes critical parts of your code away.