Assignment #6

{‘instructor’ : ‘Ezzat’,
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While working through homework 6, many unique challenges were presented before the group which required a great deal of research and testing to better understand how the C Language in a UNIX environment handles multithreaded applications, message passing, time keeping, and blocking/non-blocking system calls.

Given that this particular assignment was of a smaller scale than previous ones, it gave each member a chance to learn at their own pace and with their own coding style. Towards the end though we took the best of all examples and merged our code, deciding to keep a procedural approach for readability. The use of GitHub and a generous dose of comments helped each member coordinate tasks, communicate issues, and formulate new ideas which would eventually lead to the final application.

The development cycles were incremental, first building out our understanding of how forks and pipes worked. Next, expanding to incorporate time management (this proved to be more difficult that we had expected given the OS dependent intricacies which exist). In our final submission you will notice this code is targeting the OSX Operating System which Apple uses, this is noted in the include statement for the mach_time libraries. Finally, once the areas of familiarity were fleshed out, we moved towards working on tasks which we were less familiar and knew would likely cause us some trouble.

The hurdle which needed to be overcome was understanding how the select function works, it turns out it is similar to a FIFO data structure and fairly simple use. The tricky aspect was realizing that we needed to understand blocking and non-blocking behavior and how it related to the use of FD_ISSET, as well as figuring out that with each iteration in the main while loop, we had needed to zero out the file descriptors and set them again. It was a minor and quite time consuming bug to find but simply 3-4 lines of code and a lot of reading eventually made sense of any problems which we ran into.