Assignment 3: Thread Pooling Implementation.

Due April 13th

Objectives:

This homework makes you familiar with design and implementations of architectural tactics. An important goal of this assignment is to emphasize that designing architecture is important but implementing the design, testing and maintaining the design decisions are critical.

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You are supposed to implement “Thread Pooling” and "Scheduling" Tactic. The implementation is minimum prototyping of the tactic than full implementation of a system.

A thread pool is a managed collection of threads that are available to perform tasks. Thread pools usually provide improved performance when executing large numbers of tasks due to reduced per-task invocation overhead.

Please consider the following items:

1. Develop a **performance** critical task that requires concurrency to be finished in a reasonable time.
2. Create a pool of threads to accomplish that performance critical task.
3. Pool size should be minimum of 10 threads.
4. Develop a scheduling paradigm to prioritize the execution of concurrent threads.
5. Please develop any hypothetical tasks. Examples could be: “the usage of two threads to sum up a large array of integers in parallel”, “Generating all the odd/even numbers less than a given particular number”, “Searching a particular number within a large dataset”, “processing files”, “Crawling web-content”, “generating prime numbers”.
6. Make sure your task is time consuming and it would take more than 10 threads to accomplish it. If one thread performs it tasks, it should be reused for the next piece of work.
7. You can use the existing frameworks or implement from scratch.

Deliverables:

- Runnable Source Code
- Read me file including guidance on how to run the code, list of frameworks used.
- Documentations if necessary