Assignment 2

Part A

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In the part of the assignment, it requires the a program that implements that UML diagram that is given in the outline. The program has a thread pool that holds all the threads and a executor that is used to create the threads. The threads in this case are the workers and every-time the executor starts a new worker, it will pass a worker number and a sleep time to the worker. The worker then starts executing its job by sleep for given amount of seconds. Before the workers starts to work, it will first add itself to a log. The log is a shared resource that hold the number of working worker. After the worker is finished, it will be removed from the log and return the result to the main method.

The worker class will implements the callables, this allows that thread to return a value back after it completes its execution. The log will be public static since it is a shared resource. Each time a worker is accessing the log, a synchronized method is there to prevent thread collision. The synchronized method allows only one thread to access the method at the a time, this prevents thread collision to the shared resource. After the worker is finished with the its work, it will return a value back and the executor will decommission the worker. The following diagram shows the output of the program. In the diagram, it is clear to see that at end, the number of workers are 0 in the log. This means that all workers have been decommissioned by the executor.

