CS454: Software Engineering 3
Lab 2 - Multi-Threading in Java

1. Overview of the Thread Class

Methods that are invoked on a particular Thread object:

public void start()
public void run()
public final void setName(String name)
public final void setPriority(int priority)
public final void setDaemon(boolean on)
public void interrupt()
public final boolean isAlive()
public final void join()

Static Methods that performs the operation on the currently running thread:
public static void yield()
public static void sleep(long millisec)

CODE_EXAMPLE

The code is attached "thread.methods"

2. MathServer Example

A client Server application that uses sockets for communication. The client sends a simple calculation problem to the server as a text. The server parses the input text, converts it to a mathematical operation, calculates the result and returns the final result to the client.

Run the attached Code "MathServer" once from the MathServer Class and another time from the "MultiThreadedMathServer" Class. The MathServer is a simple server that handles a client request and then closes the connection. The " MultiThreadedMathServer" is a Thread running forever and handles each client in a separate thread.

3. Task

Using a client-server architecture, design and implement a multi-threaded server that allows concurrent clients to search the meaning(s) of a word, add a new word, and remove an existing word.

You Should use both **Sockets** and **Threads**.

4. References

1. https://www.tutorialspoint.com/java/java_multithreading.htm
2. Text Book: David-Reilly-Michael-Reilly-Java-Network-Programming-and-Distributed-Computing-Addison-Wesley-Professional-2002

3. https://www.tutorialspoint.com/java/java_thread_deadlock.htm
4. https://www.tutorialspoint.com/java/java_thread_synchronization.htm
5. https://www.baeldung.com/java-wait-notify
6. https://www.geeksforgeeks.org/joining-threads-in-java/
7. https://www.javatpoint.com/how-to-avoid-deadlock-in-java