CS4097D : Object Oriented Programming Laboratory
Advanced level Assignment questions

1. Design a shared counter in Java
   Input: Number of threads (n)
   Maximum count in each thread (N)
   Output:Display the value of each counter in parallel , as the value gets incremented in each counter.
   All the counter should reset to zero when at least one of them reaches maximum count (N)
2. Write a java program that shows 2 ways of starting a thread (by using Thread class and by implementing Runnable interface)
3. Write a java program to illustrate the Deadlock scenario by using threads.
4. Write an example Java program to implement dynamic binding.
   (Hint: Write a class C1 which is extended by C2 , both C1 and C2 have method with the same names, but different definition , how can you execute both the functions from the main class by only using the reference of C1)
5. Write a java program to demonstrate inter-thread communication [wait(),join() & notify()]
6. Write a simple *Sender–Receiver* application – that will make use of the *wait()* and *notify()* methods to set up synchronization between them:
   -> The *Sender* is supposed to send a data packet to the *Receiver*

   -> The *Receiver* cannot process the data packet until the *Sender* is finished sending it

   Similarly, the *Sender* mustn't attempt to send another packet unless the *Receiver* has already processed the previous packet

   First create *Data* class that consists of the data *packet* that will be sent from *Sender* to *Receiver*. Show the appropriate message (send or message received)

7. You have thread T1, T2, and T3. Write a java program to ensure that thread T2 is run after T1 and thread T3 after T2 .
8. Write a client server program and connect 5 clients.
9. In 8, write logic for server to print the ip addresses of clients connected.

10. Define a new exception, called ExceptionLineTooLong, that prints out the error message"The string is too long". Write a program that reads all lines of a file and throws an exception of typeExceptionLineTooLongin the case where a string of the file is longer than 80 characters.
11. Write a java program to throw a exception for the following employee details
    i)   If an employee name is a number, a name exception must be thrown.
    ii)   If an employee age is greater than 50, an age exception must be thrown.
    iii)   Or else an object must be created for the entered employee details

12. Write a program for generating 2 threads, one for printing even numbers and the other for printing odd numbers.

13. Write a java program to create three threads. The first thread generates a random number at every 2 second and if the value is even, the second thread computes the square of the number and prints it. If the number generated is odd, the third thread will compute and print the cube of the number.