Course Name: Scalable Application Development using Java
Course Code: CSE2503

CA-1 Question Bank:

2 Marks Questions:

1.List the two different ways to create a Thread in Java with Syntax.
2.What is a monitor in Java and why is it important for synchronization?
3.In a producer–consumer system, data is generated by one module and processed by another. How does multithreading help in coordinating these tasks?
4.In a background processing system, a thread must be given higher priority than others. Write the syntax to set and get thread priority.
5.Mention any four difference between byte stream and character stream.
6.What is inter-thread communication? Name the methods used
7.Explain why Runnable interface is preferred over extending Thread. Give its Syntax
8.Give the meaning of isAlive() and join () methods with examples.
9.Define stream in Java I/O.
10.Define multithreading and list its advantages.
11.Why is the main thread called the parent thread?

12.Can a Java program run without the main thread? Justify.

13.Why does JVM wait for non-daemon child threads to finish?

14.Why should time-consuming tasks not be executed in the main thread?

15.Why is join() commonly used with the main thread?
16.Define race condition and mention one situation where it occurs.
17.Compare synchronized method and synchronized block and justify which one is more efficient.
18.Define thread priority and state its range in Java.
19.Explain the FileReader class in Java. Mention any two methods.
20.Differentiate between sleep() and wait() based on lock handling and thread state.
21.A Java program creates a child thread inside the main() method.
Explain which thread starts execution first and why.

22.The main thread calls Thread.currentThread().setName("MainThread").
Explain the purpose of renaming the main thread.

23.A child thread is started, and immediately the main thread finishes execution.
Explain whether the child thread will continue running.

24.The main thread calls join() on a child thread.
Explain how this affects the execution order.
25.What is File I/O in Java?

26.What is the purpose of the File class?

27.Differentiate between byte stream and character stream.

What is buffering in File I/O?

28.Name any four Java I/O classes.

29.What is the difference between FileInputStream and FileReader?
30.A program writes student records to a file, but the file remains empty after execution.
Identify two possible causes and explain how to fix them.

31.An application reads a text file using FileInputStream and the output contains unreadable symbols. Explain why this happens and suggest the correct I/O classes.

32.While reading a large log file, the program performance is very slow. Suggest a suitable File I/O approach and justify your choice.

33.A file is updated frequently by an application, but previous data must be preserved. Explain how this can be achieved using Java File I/O.

34.A program throws FileNotFoundException even though the file exists in the system. Explain any two possible reasons.

35.A student forgets to close a file stream after writing data. Explain the consequences and how Java handles this issue.

Part B: 8 to 10 Marks Questions:

1.What is a thread? Describe the complete life cycle of thread with example.
2.Illustrate the two different ways of creating a thread in JAVA
3.Design a program to create two threads so one thread will print odd numbers where as second thread will print even numbers between 1 to 20 numbers
4.Develop a java program to Create a main thread displaying numbers from 1 to 5.Change the name of the main thread to MyThread& display new thread name, its priority & the name of its group
5.Demonstrate a JAVA multithreaded program for
i)isAlive( ) ii)join( )
6.Develop a program to spawn three threads named 'One', 'Two' and 'Three'. Threads display the numbers from 1 to 3. Display the name, priority & group name of threads
7.Write a java program to demonstrate two threads at different priorities. The threads should be started & allowed to run for ten seconds. Each thread should execute a loop. After 10 seconds the main thread should stop both threads and should display the number of times each thread made it through the loop
8.What is meant by 'race condition' of threads in java? Illustrate this with the help of an example. How to overcome race condition? Modify your code for this
9.Explain Inter-thread communication. How to achieve inter thread communication in JAVA?
10.Write a java program for synchronized inter-thread communication of producer/consumer problem. It has four class :Q, the queue that need to be synchronized; producer, the threaded object producing queue entries; consumer, the threaded object consuming queue entries ; and pc, the class that creates the single queue, producer& consumer.

11. Explain the **File class** in Java. Discuss commonly used methods of the File class with suitable examples.

12. Explain **character stream classes** in Java. Write a Java program to write text into a file using FileWriter.

13.Explain the **Java I/O stream hierarchy** with a neat diagram.

14. Explain the `FileInputStream` and `FileOutputStream` classes and their important methods.
Develop a Java program to copy the contents of one file into another using byte streams.

15. Explain character stream classes in Java.
Write a Java program using `FileReader` and `FileWriter` to read text from a file and display it on the console.

16. xplain the `File` class and its commonly used methods.
Write a Java program to create a file, check its properties, and display file details.

17. Differentiate between byte streams and character streams.
Write a Java program that demonstrates both types of streams.