QUESTION BANK 4





CONCURRENCY

CERTIFICATION OBJECTIVES

Write code to define, instantiate, and start new threads using both java.lang. Thread and java.lang. Runnable.

Recognize the states in which a thread can exist, and identify ways inwhich a thread can transition from one state to another.

Given a scenario, write code that makes appropriate use of object locking to protect static or instance variables from concurrent access problems.

Given a scenario, write code that makes appropriate use of wait, notify, ornotifyAll.



Q 1: Mr. John is working in XYZ Company Ltd. He tries to compile and execute the following program:

What will happen when he compiles and executes the preceding program?

- A. The program displays "Waiting Thread" as an output.
- B. The program displays "Thread Completed" as an output.
- C. The program compiles successfully but an exception throws at runtime after displaying "Waiting Thread".
- D. The program generates compile-time error.
- E. The program displays "Waiting Thread" followed by "Thread Completed" as an output.

QUESTION 4.2

Q 2: Maria is working as a Java Programmer in XYZ Solutions. She tries to compile and execute the following program:

What will happen when she compiles and executes the preceding program?

- A. The program displays "run() method..." two times.
- B. The program displays "run() method..." as an output.

- C. The program displays "run() method..." three times.
- D. The program creates two new threads.

Q 3: Assume that you are a Software Engineer and attempts to compile and execute the following program:

Which of the following statements are true about the preceding program?

- A. When the program runs, all three threads (th1, th2, and th3) executes concurrently, taking time-sliced turns in the CPU.
- B. The thread th1, and th2 executes but th3 never get the CPU.
- C. When the program runs, thread th1 executes first, then th2 executes and then th3 executes.
- D. None of the above options are true.

Q 4: Ramesh is working as a Java Developer in ABC Software Company Ltd. He tries to compile and execute the following program:

What will happen when he compiles and executes the preceding program?

- A. The program displays "End of thread1" followed by "End of thread2" as an output.
- B. The program displays "End of thread1" and "End of thread2" in random order.
- C. The program generates exception at runtime.
- D. The program generates error at compile-time.

Q 5: Imagine that you are a Java Developer and attempts to compile and execute the following program:

Which of the following statements are correct about the preceding program?

- A. The program executes and will never end.
- B. The program generates compiler-time error.
- C. The program generates runtime exception.
- D. None of the above options are correct.
- Q 6: Which of the following methods are used to pass a timeout argument?

```
A. wait()B. yield()C. start()D. join()E. notify()F. notifyAll()G. run()H. sleep()
```

Q 7: Imagine that you are a Java Developer and attempts to compile and execute the following program:

```
System.out.println(s2);
}
}.start();
}
```

What will happen when you compile and execute the preceding program?

- A. Program result in dead lock situation.
- B. Program displays "AA" followed by "BB" as an output.
- C. Program displays "BB" followed by "AA" as an output.
- D. Program displays "AB" followed by "BA" as an output.

QUESTION 4.8

Q 8: Assume that you are a Java Developer and attempt to compile and execute the following program:

What will happen when you compile and execute the preceding program?

- A. Program displays "5000" as an output.
- B. Program displays a number greater than or equal to 0.
- C. Program displays a number greater than 5000.
- D. Program generates compile-time error.

Q 9: Assume that you are a Software Developer and attempt to compile and execute the following program:

```
class X implements Runnable {
    public void run() {
    }
}
class Y {
    public static void main(String args[]) {
        Thread th1 = new Thread();
        Thread th2 = new Thread(new X()); //2
        Thread th3 = new Thread(new X(), "X"); //3
        Thread th4 = new Thread("X"); //4
}
```

At which line is a compile-time error generated?

- A. Statement at //1
- B. Statement at //2
- C. Statement at //3
- D. None of the above

QUESTION 4.10

Q 10: Assume that you are a Java Developer in XYZ Software Solution and tries to compile and run the following thread program:

What happen when you compile and run the preceding program?

- A. Program generates compilation error at //1
- B. Program generates compilation error at //2
- C. Program generates runtime error
- D. Program compiles successfully and displays Running thread...

QUESTION 4.11

Q 11: Jude during her training session was asked to create a program extending the Thread class to implement threading concept. Jude created the following program:

```
class Jude extends Thread {
    public void run() {
        for(int i=0;i<2;i++) {
            System.out.print("Hello"+" ");
        }
        txt("Java");
    }
    public void txt(String str) {
        String s=str;
        System.out.print(s);
    }
    public static void main(String args[]) {
        Jude thrd=new Jude();
        thrd.start();
    }
}</pre>
```

What will be the output of this program?

- A. The program will generate compile time error
- B. The program will display Java Hello Hello as output.
- C. The program will display Hello Hello Java as output.
- D. The program will display Hello Hello as output.



Q 12: Jane and Sam, while preparing for the SCJP exam, came across the following program:

What will be the output of this program?

- A. The program displays Hello followed by Hello with a pause of 1500 miliseconds.
- B. The program displays Hello Hello.
- C. The program will compilation error.
- D. Program will successfully compile and execute without displaying any value.

Q 13: Rose works as a developer in XYZ Company and she created the following program:

What will be the output of this program?

- A. The program will cause compilation error.
- B. Program will execute in an infinite loop and display T1 and T2 depending on their time slice.
- C. T2 will not be displayed because the t1.start() first invokes the run() method and therefore T2 will not be displayed
- D. The program will throw runtime exception.

Q 14: Jude works as a developer in XYZ Company and during a project she created the following program:

What will be the output of the preceding program?

- A. The program will display Hello Hello as output.
- B. Program will not compile successfully because run() method is being explicitly called.
- C. The run() method that will execute in this program, is of Runnable interface.
- D. Program will successfully compile and execute but does not display any value.



Q 15: Rose while working on a project in XYZ Company created the following program:

What will be the output of the preceding program?

- A. The program generates compilation error because the start() method is called twice on the same object.
- B. The program throws runtime exception because the start() method is called twice on the same object.
- C. The program displays 1 followed by runtime exception.
- D. The program displays 1 2 3 4 5 as output.



Q 16: Rose during her training session was shown the following program:

What will be the output of the preceding program?

- A. The program will display Hello as output.
- B. The program will generate compilation error because start() method is not invoked therefore run() method can also not be invoked.
- C. The program will throw runtime exception because start() method is not invoked therefore run() method can also not be invoked.
- D. Program will compile and execute successfully but nothing will be displayed as output.

QUESTION 4.17

Q 17: Assume that you are a Java Developer in ABC Software Solution and tries to compile and run the following thread program:

What happen when you compile and run the preceding program?

- A. Program displays "Starting thread" 2 times and after 1 seconds, it displays "Time is up" 2 times.
- B. Program does not display any output
- C. Program generates compilation error
- D. Program generates runtime error.

QUESTION 4.18

Q 18: Imagine you are working in ABC Company as a Java programmer and have written the following program:

What is the result when you compile and execute this program?

- A. The program compiles without error and displays My Thread as output.
- B. The program compiles without error and displays My Thread and Thread Demo as output.
- C. The program compiles without error and displays Thread Demo as output.
- D. The program generates compilation error because of overridden start() method.

Q 19: Imagine you are working as a Java programmer in ABC Company and have written the following program:

What will be the result when you compile and execute this program?

- A. The program compiles without error and displays Thread Inactive Demo, takes pause and then displays Thread Active Demo.
- B. The program generates compilation error.
- C. The program compiles without error and displays Thread Active Demo, takes pause and then displays Thread Inactive Demo.
- D. Different output will be shown in multiple executions.

Q 20: Imagine you are a Java programmer in ABC Company and you have written the following code

What is the result when you compile and execute this program?

- A. It shows a compile time error.
- B. It throws InterruptedException at runtime.
- C. It compiles without error and does not display any output.
- D. It compiles without error and displays The interrupt() Method Invoked as output.

QUESTION4.21

Q 21: Imagine you are a Java programmer of ABC Company and have written the following code

```
public class Concur6 {
          public static void main(String ar[]) throws InterruptedException {
                System.out.println("The main() method");
```

What is the result of the program when you compile and execute it?

- A. The program displays The run() method, The main() method and false as output.
- $B. \ \ \mbox{The program displays The run() method, The main() method and true as output.}$
- C. The program displays The main() method, The run() method and false as output.
- D. The program displays The main() method, The run() method and true as output.

Q 22: Imagine you are working in ABC Company as Java programmer and have written following code:

```
public class Concur7 {
    public static void main(String ar[]) throws InterruptedException {
        String str1 = new String("R1");
        String str2 = new String("R2");
        MyThread thrd1 = new MyThread("Firsr", str1, str2);
        MyThread thrd2 = new MyThread("Second", str1, str2);
        thrd1 start();
}
                                 thrd1.start();
thrd1.join();
thrd2.start();
}
class MyThread extends Thread {
                private String First;
private String Second;
public MyThread(String thrdname, String one, String two) {
                                 super(thrdname);
First = one;
Second = two;
                Thread.sleep(4000);
} catch (InterruptedException E) {
    E.printStackTrace();
                                                  synchronized (Second) {}
                                 }
else {
                                                 synchronized (Second) {
try {
                                                                  Thread.sleep(4000);
                                                                 (InterruptedException E) {
E.printStackTrace();
                                                  } catch
                                                  synchronized (First) {}
                                 }
                }
}
```

What will be the result when you compile and execute the preceding code?

- A. The program generates compilation error.
- B. The program compiles without error but throws runtime exception.
- C. The program compiles without error but deadlock occurs at runtime.
- D. The program compiles and executes without any error or deadlock

Q 23: Imagine as a Java programmer you have written the following code to implement the wait() and notifyAll() methods.

What is the result when you compile and execute the program?

- A. The program compiles without error but throws IllegalMonitorStateException exception on thread t2 at runtime.
- B. The program generates compilation error.
- C. The program compiles without error and executes in an infinite loop.
- D. The program compiles without error but throws InterruptedException exception at runtime.