NOTE: SCENARIO IS WHAT THE PUZZLE TAKER SEES.

SCENARIO:

Many applications need to write data into temporary files. In some cases these files contain sensitive information and, therefore, must be deleted before the application terminates. Consider such an application that writes sensitive data into a temporary file and deletes this file when it finishes processing it. The snippet of code below represents part of a simplified version of this application. The `processFile` method is called to create the temporary file, and the `sysSafeExit` method when the program ends normally. Consider the snippet of code below and answer the following questions, assuming that the code has all required permissions to execute.

```java
// OMITTED: Import whatever is needed.
public static class ProcessTempFile {
  /**
   * This method creates a temporary file and calls deleteOnExit
   * to delete the file on Java JVM exit. The data that has to be
   * written into the temporary file is passed as a String to the
   * processFile method.
   */
  public static void processFile (String data)
      throws IOException {
    File file = new File("temp.tmp");
    file.deleteOnExit();
    try (FileOutputStream output = new FileOutputStream(file)) {
      output.write(data.getBytes());
      //OMITTED: Other file processing
    }
    Catch (Exception e) {
      System.out.println("Error in the processFile method");
    }
  }

  public void sysSafeExit() {
     //OMITTED: Program safely terminates;
  }
}
```

Questions:

1. What will the method `processFile` do when executed?

2. Suppose the JVM crashes after the method `processFile` is executed, but before method the `sysSafeExit` is called. Which one of the following is true?

a. The temporary file will be deleted when the program crashes, because the `deleteOnExit` method is called.
b. An exception will be thrown and the program will print “Error in the processFile method” before crashing.
c. The temporary file will not be deleted.
d. The temporary file may or may not be deleted.
e. The temporary file will only be deleted when the garbage collector runs.

[Other statistical questions will be imported here while creating the survey]

NOTE: ANSWER IS TO BE SHOWN TO THE PUZZLE TAKERS AT THE END OF THE SESSION.

ANSWER:
c
It is not guaranteed that the temporary file will be deleted. Even though the deleteOnExit method is called, as defined by the Java Language Specification, deletion will be attempted only for normal termination of the virtual machine.

NOTE: THE REST OF THIS DOCUMENT CONTAINS EXTRA INFORMATION FOR THE PROJECT RESEARCHERS. IT IS NOT TO BE SHOWN TO THE PUZZLE TAKERS.

TAGS:
java, file-class, io-operation, file-operation

CATEGORIES:
Blindspot - YES
Type - File
Number of distinct functions - 6
Number of total functions - 6
Blindspot function - File.deleteOnExit()
Function call omitted - NO
Blindspot type - Incorrect usage
Number of Parameters in the blindspot function - 0 parameters
Cyclomatic complexity - 2

NAME:
File class, createNewFile method - An abstract representation of file or directory pathnames, creates a new file.

DESCRIPTION:
Operating systems use system-dependent pathname strings to name files and directories. The Java `File` class is an abstract representation of file and directory pathnames. This class

presents an abstract, system-independent view of hierarchical pathnames and is used for various operations, such as creating and deleting files and directories.

BLINDSPOT:

Developers can assume that initiate delete on files on system exit, but when JVM crashes suddenly the `deleteOnExit` method does not delete the files putting the temporary files under risk of attack. Therefore the deletion of such files has to be initiated on the start of the process when a file is created.

CORRECT USE EXAMPLE:

#N/A

MORE INFORMATION:

#N/A

REFERENCES:

1. http://stackoverflow.com/questions/6509419/deleteonexit-jvm-shutdown