

CS1040 – Section 3 - Lab Exercise 2

ShinePrinters is a printing shop near the University with multiple computers and printers connected over a network. Customers can use any computer to create print jobs. These print jobs are then placed in a shared queue, from which the printers can retrieve and process them. Suppose you are hired to develop this system.

Implement a producer-consumer-based solution using Java to handle the print jobs in ShinePrinters. The expected classes are `PrintJob`, `Computer`, `Printer`, `SharedQueue`, and `Main`. Assume that ShinePrinters has 3 computers and 2 printers, and the capacity of the shared queue is 5. Identify possible memory consistency errors that could occur in this multi-threaded system and ensure that those errors and any possible exceptions are appropriately handled in your code.

Suppose the printers in ShinePrinters can handle only certain types of files. Hence, when creating the print job, we should check if the system supports the type of the print job and if not, throw the `TypeNotSupportedException`. Extend the `Computer` and `Print` classes to handle `TypeNotSupportedException`.

ShinePrinters plans to introduce a simple web interface for their customers to send print jobs before coming to the shop so that they can efficiently get their jobs done. Using Java, implement the `ReadAFile` method to read a given text file and add the text content to an object of the `TextFile` class. Your code should follow the appropriate best practices.

Include your Java code in a PDF file, rename it with your group name, and upload it to the given link. THIS IS A TURNITIN ASSIGNMENT, AND CODE PLAGIARISM WILL BE CHECKED AUTOMATICALLY.