

## Object-Oriented Programming

### I. Objectives

- Getting familiar with Java SWING library for graphical user interface
- Getting familiar with multiple methods to store and retrieve data

### II. References

- Swing tutorial: <https://www.tutorialspoint.com/swing/index.htm>
- Serializable interface tutorial: <https://www.mkyong.com/java/how-to-write-an-object-to-file-in-java/>
- Read text file tutorial: <https://www.mkyong.com/java/java-read-a-text-file-line-by-line/>
- Write text file tutorial: <https://www.mkyong.com/java/how-to-write-to-file-in-java-bufferedwriter-example/>
- JSON tutorial: <https://www.mkyong.com/java/jackson-2-convert-java-object-to-from-json/>
- JAXB tutorial: <https://www.mkyong.com/java/jaxb-hello-world-example/>

### III. Exercises

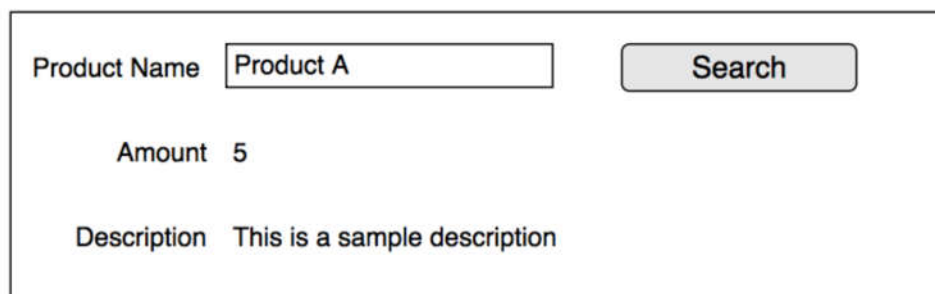
You are required to develop a WAREHOUSE MANAGEMENT software. This Java-based application has 2 menu items. One for adding and removing products, as shown in Figure 1. Another one for searching a product, as shown in Figure 1. You can store the data of products in a text file, or implement Serializable interface, or save an XML/JSON object. When a user adds a new product, the amount of this product is added to the current amount of the same product. When a user removes a product by inputting product name and clicking on Remove button, the amount of this product is **decreased by 1**. If the amount of a product is zero, this product is removed out of the database. You are free to re-design the graphical user interface, but the functionality of the application has to be kept unchanged.



The GUI for adding/removing products features a form on the left and a product list on the right. The form includes input fields for 'Product Name', 'Amount', and 'Description', along with 'Add' and 'Remove' buttons. The product list is titled 'Product List' and contains a scrollable table with three items: '1. Small Chair' with an amount of 3, '2. Big Chair' with an amount of 2, and '3. Table A' with an amount of 2.

| Product List   |   |
|----------------|---|
| 1. Small Chair | 3 |
| 2. Big Chair   | 2 |
| 3. Table A     | 2 |

FIGURE 1. GUI for adding/removing Products



The GUI for searching a product shows a search interface. It includes a 'Product Name' input field containing 'Product A' and a 'Search' button. Below the search results, the 'Amount' is displayed as 5, and the 'Description' is 'This is a sample description'.

Product Name: Product A      Search

Amount: 5

Description: This is a sample description

FIGURE 2. GUI for searching a product