**King Abdulaziz University**
**Faculty of Computing and Information Systems**
**Spring2016–2nd Term 2016**

**Course Code: CPCS203** **Course Name: Programming II**

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## Assignment # 2 (Toy Store Inventory)

**Assigned Date and time :Thursday 25/02/2016**
**Delivery Date and time: Thursday10/3/2016 at 11:59PM**

**WARNING**:

- This program mustONLY be submitted on the Blackboard!
- This is an INDIVIDUAL project.You must solve it on your own. Any form of plagiarism will result in receiving **-4** (less than zero) in the project.
- This project worth 6% of the overall module marks (100%).
- There will be Quiz on program 2 for further information check with your Section Instructor.
- **Important Note: If a student cheated on a project for the *second time he/she will get an F* in the course .**In other words if caught in any form of cheating twice, results **F** in the course**).**

## Objectives

- Use I/O File
- Learn how to Define and CreateClasses and Objects.
- Learn How to use Constructors.
- Lear how to use Accessor/Mutator.

- Learn How to use Reference objects and Reference Types.
- Learn How to use Array of Objects.

## Program Description

A Toy store owner wants to use software to manage his store's Inventory. Periodically, he receives toy shipments from his suppliers and he wants to record all information and keep track of his sales. The information that needs recording is on the toys, manufacturers of the toys and suppliers. Once all the information is recorded the store owner needs to keep track of toy stocks and if the stock gets low then a new order needs to be sent to the supplier. In, addition promotions are made on toys - every now and then - so the inventory table needs to include the discounts put on toys. When the promotion is over the discount needs to be removed.

The Toy Store Inventory programmuststore the following data:

- ✓ Toy information( Serial Number/ Name/ age Group/ Cost/ 4 word description of toy).
- ✓ Manufacturer information (ID/ Name/ Address)
- ✓ Supplier information (ID/ Name/ Address)
- ✓ Inventory data (Toy/ Manufacturer/ Supplier/ Stock/ Discount%)

### The Initial Procedure of the Program

You will use File I/O classes to read input from a given input file [toyinventory.txt]. Make sure the file exist or display a message that the file does not exist. The file consists of:
1) First line Maximum number of toys the program needs to handle.
2) A list of Commands in CAPITAL LETTER NO SPACES BETWEEN THEM, as described below.
3) The program must produce an output file with the name [toyinventoryreport.txt]

4) A sample output file is given as a guide of how the output of your program is expected to look like. You MUST follow the formatting of the command results. This means for the given input file you must generate an IDENTICAL output file to the given sample output file.

**The commands you will have to implement are as follows:**

1) Command: ADD_TOY :this command adds a new toy to the inventory. The Toy information read from the file must be stored in the appropriate objects of the inventory.
The line following the command contains an integer indicating how many toy information will follow.
After that on a separate line there will be the data of a toy separated by spaces.
First item is an integer containing the Toy Serial Number, then a String for Toy name. This is followed by an integer for child minimum age and the child Maximum age stating the age group for the toy. The next item will be a double for the toy cost. Then EXACTLY four words are added as a description for the toy. Finally, on a separate line and integer for the number of toys delivered to the shop and a double for the PERCENTAGE of discount.
The result of this command will generate a table listing all added toys and their information as shown in the output file. You can use the following code with "printf" `"%10d%30s%4d-%4d%12.2f%40s"`to format the table.
e.g.
8
123456 duplo 1 5 100 bigblocks boy/girl buildskills share
100 10
234561 Barbie 10 16 90 girls fun dressing playHouse
50 0

2) Command: ADD_MANUFACTURER: This command adds the required Toy Manufacturing company information. It starts with an integer indicating the number of manufacturing companies the store has toys from. It will be on a separate line. This is followed by a company's information each one on a separate line. The data includes an integer for Company Id, a String for company name and another string for company address (note: the address has no spaces). Finally, a list of Toy serial numbers that are manufactured by this company and they are available at the shop is given. Here the list MUST

end with -1 to indicate end of data. Also, with this command the results are printed in the output file as a table listing all manufacturers without duplication.

e.g.
5
12345 Lego P.O.Box12345-Jeddah-21552-KSA 123456 345612 -1
23451 Mattel P.O.Box23451-Jeddah-21553-KSA 234561 456123 -1
34512 Hasbro P.O.Box34512-Jeddah-21553-KSA 135246 -1

3) Command: ADD_SUPPLIER: This is similar to the Manufacturer data. Also, here the list of toys delivered by this supplier must end with -1 indicating end of data.Also, with this command the results are printed in the output file as a table listing all suppliers without duplication.
e.g.
3
1234 Ahmed-Co P.O.Box54321-Jeddah-21550-KSA 123456 345612 -1
2341 Ali-Co P.O.Box43215-Jeddah-21549-KSA 234561 456123 561234 -1

4) Command: DELETE_TOY
This command is followed by one integer the Toy Serial Number and it removes this toy from inventory. Note it is very important to SHIFT the data after every delete to avoid having gaps in the inventory array.

5) Command: ADD_DISCOUNT
This command is followed by two integers the first is the Toy Serial Number and the other is the Discount percent. The result is just replaces the old value with the new.

6) Command: COMPUTE_DISCOUNT
Following this command is a list of Toy Serial Numbers all in one line and end with a (-1) as shown in the example below. The (-1) is important to mark the end of the toy list. The result will be the new cost of the toys after applying the discount. Note that the discount is stored as a PERCENTAGE (%) of the price. This means you must CALCULATE the new cost. Use the following equation
current cost * discount/100 (e.g. 40 * 0.2 this means this product is reduced 20%) .
The new prices are printed to the output file as a report and NOT STORED IN THE INVENTORY.

e.g.
123456 345612 456123 561234 135246 -1

7) Command: REMOVE_DISCOUNT
In this command the Serial Number of the toy is provided and as a result the program simply set the discount to ZERO.

8) Command: REDUCE_AMOUNT
Here an integer is read after the command it indicates how many must be subtracted from the current Toy Amount (number of toys). Of course it is very important to check that this amount is less than the current amount otherwise the Toy will have a NEGATIVE amount.

9) Command: INCREASE_AMOUNT
In this command only the number of toys (Amount) is updated and increased with the amount specified. The input her is an integer indicating how many toys are added, i.e. this value must be added to the current one NOT replace it.

10) Command: SEARCH_FOR_TOY
This command is followed with an integer indicating the number of operands provided for the search. The search command provides three different ways to search for toys. The first one searches based on Serial number of the toy only. In this case the next input will only be an integer. As a result it will display only ONE record if the toy that is found including its serial number and name.
The second search approach will have two arguments ZERO indicating that the Serial Number is not known and a string representing the name of the toy. The result most likely, will be one record if the toy is found. There might be more if the name is given to two different toys.
The third and last approach is used when the Serial Number & Name of the toy are not known. In this case ATTRIBUTES of the toy are given the search can take up to 4 different attributes. The result will be ALL toys that match any, part or all attributes.

11) Command: PRINT_ALL_TOYS_FOR_MANUFACTURER
The input provided for this command is an integer representing the manufacturer ID. The result of this command is a list of all toy names that are manufactured by the indicated company.

12) Command: PRINT_TOYS_WITH_LESS_THAN_AMOUNT
This command is followed by one integer value the threshold AMOUNT. This means the amount of all listed toys must be lower than the one read (threshold). Once read the command will list all the toy names and costs that match.

e.g. if the integer read is 150
then all toys with quantity less than or equal 150 are listed. The resulting table should display the MATCHING toy name and price.

**Deliverables**
You should submit a zip file with FIVE files inside:
1) ToyStoreInventoryManagement.java (includes the main method and also the Array that hold toy inventory.)
Use the following statement to define the array:

```
ToyInventory[] ToyInventoryManager = new ToyInventory[MaxInventorySize]
```

2) ToyInventory.java
3) Toy.java
4)Manufacturer.java
5) Supplier.java

**Important Notes:**

- These FIVE "java" files should all be INSIDE the same ZIPPED FOLDER called **`ID_SECTION_PROGRAM_NO`**, *for example 123456_BBR_Program2.ZIP*. If they are not in this specific package, you will lose points.
- Make sure to add your Names / ID / Email/ Section / course name / Assignment number, as comment at the beginning of your program.

**[YOU MUST GENERATE EXACTLY SAME OUTPUT FILE AS GIVEN TO YOU (toyinventoryreport.TXT)]**

# Good Luck and Start Early!