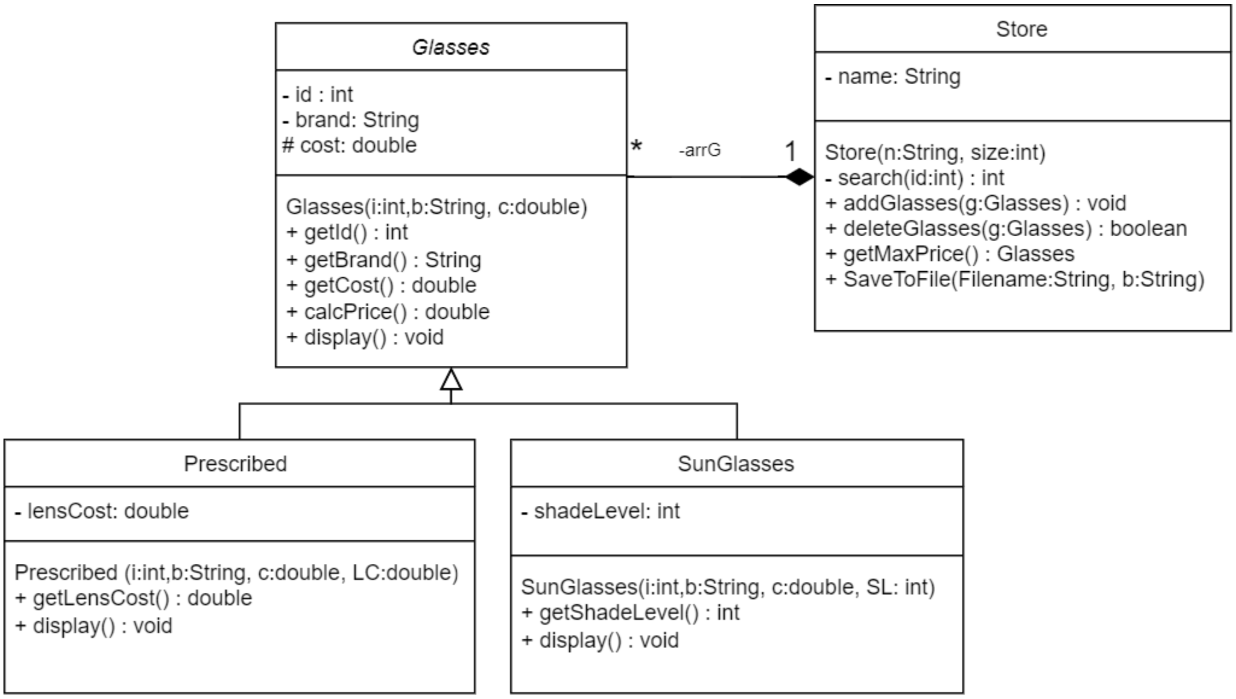
King Saud University
College of Computer and Information Sciences - Department of Computer Science
CSC113 – Computer Programming II – Lab Final Exam-v1 – Spring 2022



Q1: Write the classes “Glasses”, “Prescribed”, and “SunGlasses” in java. The classes descriptions are as follows (**5 marks**):

- Class ***Glasses:***
    - Attributes:
        - id: stores the id of the glasses as an int.
        - brand: stores the brand of the glasses as a String
        - cost: stores the cost of the glasses as a double.
    - Methods:
        - Glasses(i:int, b:String, c:double) : constructor.
        - getId(): returns the id of the glasses.
        - getBrand(): returns the brand of the glasses.
        - getCost(): returns the cost of the glasses, but if the cost is 0 or less, this method throws **IllegalArgumentException**.
        - calcPrice(): this is an abstract method. The price is calculated as follows:
            - **Prescribed**: price = cost * 1.3 + lensCost * 1.2
            - **SunGlasses:** price = cost * 1.5
        - display(): print the attributes of the class.

- Class ***Prescribed**:*
  - Attributes:
    - lensCost: the cost of the prescribed lens.

  - Methods:
    - Prescribed(i:int, b:String, c:double, LC:double): constructor.
    - getLensCost: returns the cost of the lens.
    - display(): print the attributes of the class.
- Class ***SunGlasses:***
  - Attributes:
    - shadeLevel: the level of sunglasses shade.

  - Methods:
    - SunGlasses(i:int, b:String, c:double, SL:int): constructor.
    - getShadeLevel(): returns the shade level.
    - display(): print the attributes of the class.

Q2: Write the class “Store” in java. The class description is as follows (**5 mark**):

- Class ***Store***:
  - Attributes:
    - name: stores the name of the library.
    - arrG: array of Glasses.
    - nbG: number of Glasses currently in the store.
  - Methods:
    - Store(name:String, size:int) : constructor.
    - search(id:int) : returns the index of the glasses that has the same id as *id*, or -1 if not found.
    - addGlasses(g:Glasses): add the Glasses *g* to the array of glasses arrG, if the array is full, **throw ArrayIndexOutOfBoundsException**.
    - deleteGlasses(g:Glasses): delete the Glasses g from the array arrG and returns true. This method will return false if the glasses g was not found.
    - getMaxPrice(): returns the glasses with the maximum price.
    - SaveToFile(filename:String, b:Brand): save all the SunGlasses that are of the brand **b** into the file **filename**.
      NOTE: class Glasses must implement the serializable interface.

When you finish, export your project as a ‘.zip’ file (File > export > general > archive file) and submit it to the blackboard website (https://lms.ksu.edu.sa/).