Department of Computer Engineering

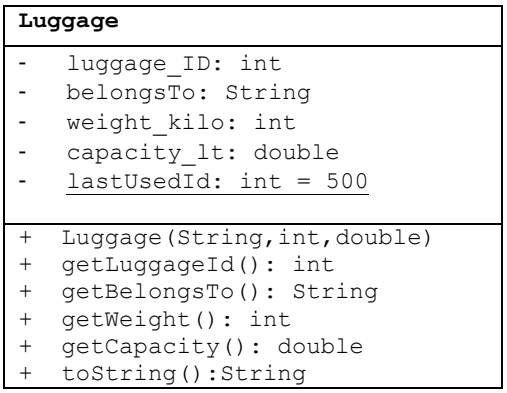
CENG201 – Object-oriented Programming

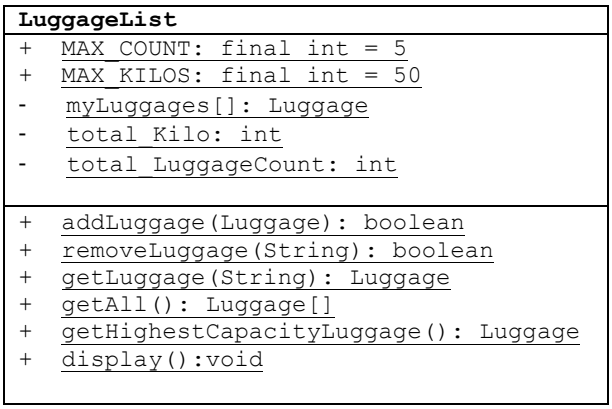
Fall 2018 - 2019

Lab Guide #4 – Week 5

OBJECTIVE: Visibility modifiers, Packages, Accessors and Mutators, Array of Objects, String	
Instructor : Yusuf Evren AYKAÇ **Assistants : Ömer MİNTEMUR, Yusuf Şevki GÜNAYDIN**	**Week** : 5

1. Write a Java program that stores and displays the luggage's information during a check-in process of the Istanbul helicopter shuttle operations. Create **Luggage** and **LuggageList** classes as shown in the following Class Diagram.





Create a Luggage class.

- Write the data members.
- Write a non-default constructor takes **belongsTo**, **weight_kilo** and **capacity_lt** as parameter and assigns the values. Also, sets the **lastUsedId** as the object's **luggage_ID** and increments it.
- Write **get** methods for luggage_ID, belongsTo, weight_kilo and capacity_lt.
- Write a **toString**() method that returns luggage_ID, belongsTo, weight_kilo and capacity_lt.

Create a LuggageList class.

- Write a static final members MAX_COUNT with value of 5 which latter determines the size of the object array, and MAX_KILOS with value of 50. Since, the available helicopter's cargo capacity allows up to 5 luggage with total of 50 kilos maximum.
- Write an object array myLuggages[] created from Luggage class, with MAX_COUNT as size.
- Write a data member named total_LuggageCount to store the number of luggage that system has.
- Write an **addLuggage**() method, that takes a Luggage object as parameter and check if the array is full. If it's not full, add the Luggage object to the Luggage object array and returns true. If the array is full, returns false.
- Write a **removeLuggage**() method that takes the luggage_ID of the Luggage to be removed. Search the sarray to find the given id (Since the type of the parameter is String, you will have to parse it to integer). If found, move the last element of the array to the index of the found item and decrement count. If successful, return true, otherwise returns false.
- Write a **getLuggage**() method that takes 'belongs to' information as parameter, searches for that luggage in the object array. If found, return the object, otherwise, return null.
- Write a **getAll**() method that returns myLuggages object array.
- Write a **getHighestCapacityLuggage**() method that searches for the luggage with the highest capacity and returns that luggage object.
- Write a **display**() method that prints all the luggage objects' information in the object array to console.

Create a Main Class called **Cargo.**

- In **main** method, do the following.
  - Input 5 luggages and store them into a LuggageList object.
  - You will scan capacity information as width:height:length in cm like 10:10:10 and convert it to liters, thus, try **split** method of String objects. (**HINT:** 1000 cm^3 equals to 1 liter)
  - Display the contents of LuggageList object by using **toString** method.
  - Ask the user which luggage to remove and then remove it.
  - Ask the user which luggage to search and then display it.
  - Display the luggage with highest capacity.

Example Run:

```
Luggage no. 1:
Belongs to: Evren Aykac
Enter weight in kilos:
20
Enter capacity like Width:Height:Length
10:10:10
The luggage belonging to: Evren Aykac is added to the list.
Luggage no. 2:
Belongs to: Omer Mintemur
Enter weight in kilos:
10
Enter capacity like Width:Height:Length
15:20:30
The luggage belonging to: Omer Mintemur is added to the list.
Luggage no. 3:
Belongs to: Yusuf Gunaydin
Enter weight in kilos:
5
Enter capacity like Width:Height:Length
11:12:13
The luggage belonging to: Yusuf Gunaydin is added to the list.
Luggage no. 4:
Belongs to: Elif Sanlialp
Enter weight in kilos:
6
Enter capacity like Width:Height:Length
5:6:7
The luggage belonging to: Elif Sanlialp is added to the list.
Luggage no. 5:
Belongs to: Fatih Celebi
Enter weight in kilos:
8
Enter capacity like Width:Height:Length
5:11:9
Error: Max size of (kilo or/and count) is reached! Cannot add any more luggage!
-----------------
Here is a list of the luggages (using toString() method of list object)...
ID: 500
Belongs to: Evren Aykac
Weight of the luggage: 20
Capacity of the luggage: 1.0 Liters
ID: 501
Belongs to: Omer Mintemur
Weight of the luggage: 10
Capacity of the luggage: 6.0 Liters
ID: 502
Belongs to: Yusuf Gunaydin
Weight of the luggage: 5
Capacity of the luggage: 1.716 Liters
ID: 503
Belongs to: Elif Sanlialp
Weight of the luggage: 6
Capacity of the luggage: 0.21 Liters
ID: 504
Belongs to: Fatih Celebi
Weight of the luggage: 8
Capacity of the luggage: 0.495 Liters
------------------
Which luggage would you like to delete?
Enter an ID:
501
The Luggage belonging to: Omer Mintemur is removed.
ID: 500
Belongs to: Evren Aykac
Weight of the luggage: 20
Capacity of the luggage: 1.0 Liters
ID: 504
Belongs to: Fatih Celebi
Weight of the luggage: 8
Capacity of the luggage: 4.95 Liters
ID: 502
Belongs to: Yusuf Gunaydin
Weight of the luggage: 5
Capacity of the luggage: 1.716 Liters
ID: 503
Belongs to: Elif Sanlialp
Weight of the luggage: 6
Capacity of the luggage: 2.1 Liters
------------------
Whose luggage would you like to search?
Evren Aykac
Here is the luggage you were looking for...
ID: 500
Belongs to: Evren Aykac
Weight of the luggage: 20
Capacity of the luggage: 1.0 Liters
-----------------
The luggage belonging to: Yusuf Gunaydin has the highest capacity of 1.716 liters.
-----------------
```