Aquarium Application

Submission Date: 12th of May 11:59 PM

Contents

1   Introduction

Submit a **zipped folder** that is **only** containing your Java source files (*.java) in course's Black Board.

Please use the following naming convention for the submitted folders:

YourPSLetter_CourseCode_Surname_Name_HWNumber_Semester
Example folder names:

- **PSA_COMP130_Surname_Name_HW4_S19**

- **PSB_COMP130_Surname_Name_HW4_S19**

Additional notes:

- Using the naming convention properly is important, **failing** to do so will be **penalized**.

- **Do not** use Turkish characters when naming files or folders.

- Submissions with unidentifiable names will be **disregarded** completely. (ex. "homework1", "project" etc.)

- Please **write your name** into the Java source file where it is asked for. **Failing** to do so will be **penalized**.

- If you are resubmitting to update your solution, simply append **v#** where # denotes the resubmission version. (i.e. **v2**)

1.1   Academic Honesty

Koç University's *Statement on Academic Honesty* holds for all the homework given in this course. Failing to comply with the statement will be penalized accordingly. If you are unsure whether your action violates the code of conduct, please consult with your instructor.

1.2   Aim of The Homework

The aim of this project is to allow you to practice coding in graphical user interface, file IO and array lists.

1.3   Given Code

You are provided a code which has the necessary setup. It contains helper methods; variables and constants for you to start with.

1.3.1   Given Methods

There are methods provided for each part. It's up to you whether or not to use these methods. You may implement methods by yourself in the Helper Methods section. If you decide not to use some methods provided, please **make sure that every part is handled with at least one method**.

1.3.2 Given Variables and Constants

There are some variables and constants provided to you. Feel free to use the variables declared in the given code, meaning you can either use them or create new ones if you need to. HOWEVER, you need to **use the constant variables** provided to you. You can create additional constants if you need to.

1.4 Further Questions

For further questions **about the project** you may send an email to **course SLs** at (comp198-spring-19-sl-group@ku.edu.tr] and **Ayca Tuzmen** at [atuzmen@ku.edu.tr]. Note that it may take up to 24 hours before you receive a response so please ask your questions **before** it is too late. No questions will be answered when there is **less than two days** left for the submission.

2 Task

You are asked to write a Graphics Program which simulates an aquarium application. The program shall simulate an underwater environment with a number of tropical fishes. I am sure you all miss summer by now already!

The program will read two files which will allow you to create the GUI contents. One file contains a list of tropical fishes with information about its name, the name of the file to be used to simulate the fish, the cost and brief info about the fish. The second file contains information about the fishes that should appear initially in the aquarium. This file contains the name, the location of each fish and their weight. Through the GUI, the user will be able to add additional fishes to the aquarium, change their locations, scale the image size and weight, animate the fish. The user of the application will be able to generate a report which contains information about the fishes currently in the aquarium.

2.1 Part 1 - GUI Creation

The GUI of the application will be as shown in **Figure 1**.

2.2 Part 2 - Reading the Initial Contents of the Aquarium

The applications should read the file called AQUA FILE which contains information about:

- the fish name,

- x and y coordinates,

- weight and

These data is listed in this order and are separated with "=" token.

The applications should read the file called **FISH FILE** which contains information about:

Figure 1: Map

- the fish name,

- the image of the fish,

- cost of the fish

These data is listed in this order and are separated with **";"** token.

The application should use the string tokenizer in order read each data in these files. It should populate the two combo boxes accordingly.

HINT You should use **GImage** class to create a new image object for a fish. Depending on the name of the fish, the image that will be used for simulating a fish will change. You would create a new GImage as such: GImage image1 = new GImage ("filename");

2.3   Part 3 - Interacting with the application

The application will allow user to interact with the application by allowing the user to:

- adding new fish into the aquarium,

- select a specific fish,

- delete a specific fish,

- update the coordinates of the a selected fish

- animate a selected fish

- scale the size and weight of a selected fish

2.3.1   Adding a new fish

The user shall be able to select a fish name from the combobox and add a new fish into the aquarium by clicking on a button. Once clicked on this button, the corresponding image should be displayed to simulate the fish. The fish name should be added to the combobox listing all fished in the aquarium. The weight of the fish shall be set the **1.0** initially. The cost of the fish should be captured and stored using the info in the **FISH FILE**.

2.3.2   Selecting a fish

The user shall be able to select a fish name from the combobox and click on a button. Once clicked on the button, the selected fish background color should be set to **LIGHT GRAY** color. The name, coordinates, weight, and cost data for that fish shall be displayed in the appropriate text fields.

2.3.3   Update coordinates of a fish

The user shall be able to select a new coordinate on the aquarium by clicking on a specific location. The new location shall be displayed in the appropriate text field. The background color of the image should be **null**.

2.3.4   Scaling a fish

The user shall be able to select a size from a slider and click on a button. Once clicked, the size of the image, the weight of the fish shall be changed. The slider allows selection of 3 settings. If the user has selected the **left most**, the image and weight shall be scaled by **half**. If the user has selected the **right most**, the image and weight shall be scaled by **double**. If the user has selected the middle setting, the image and weight shall be scaled by **1.0**.

2.3.5   Animating a fish - BONUS

This is section where you can get creative and get **BONUS** points. The user shall be able to select a fish and animate it.

2.4   Part 4 - Saving Data Into Files

Now it is time to save the contents of the aquarium and generate a report about it. The user shall be able to click on one of the two buttons.

If clicked on **SAVE AQUARIUM** button, it should create called **OUTPUT FILE**. This file should contain the following information for each fish in currently in the aquarium:

- fish name

- x and y coordinates

- weight of the fish

These data should be created in the format similar to the AQUA FILE. The data should be separated using the "=" tokenizer.

If clicked on **GENERATE REPORT** button, it should create called **RE-PORT FILE**. This file should contain the following information about the current aquarium:

- The name and price of each fish in the aquarium is displayed per line in the file. The price is calculated by multiplying the weight of the fish with the cost of the fish.

- The total price of the aquarium.

2.5   End of Project

Your project ends here. You may continue to tinker with the code to implement any desired features and discuss them with your section leader. **Do not** include any additional features that you implement after this point in to your submission.