Competencies

In this project, you will demonstrate your mastery of the following competencies:

- Implement appropriate language constructs for an object-oriented programming language
- Write programs using object-oriented conventions in accordance with industry standard best practices

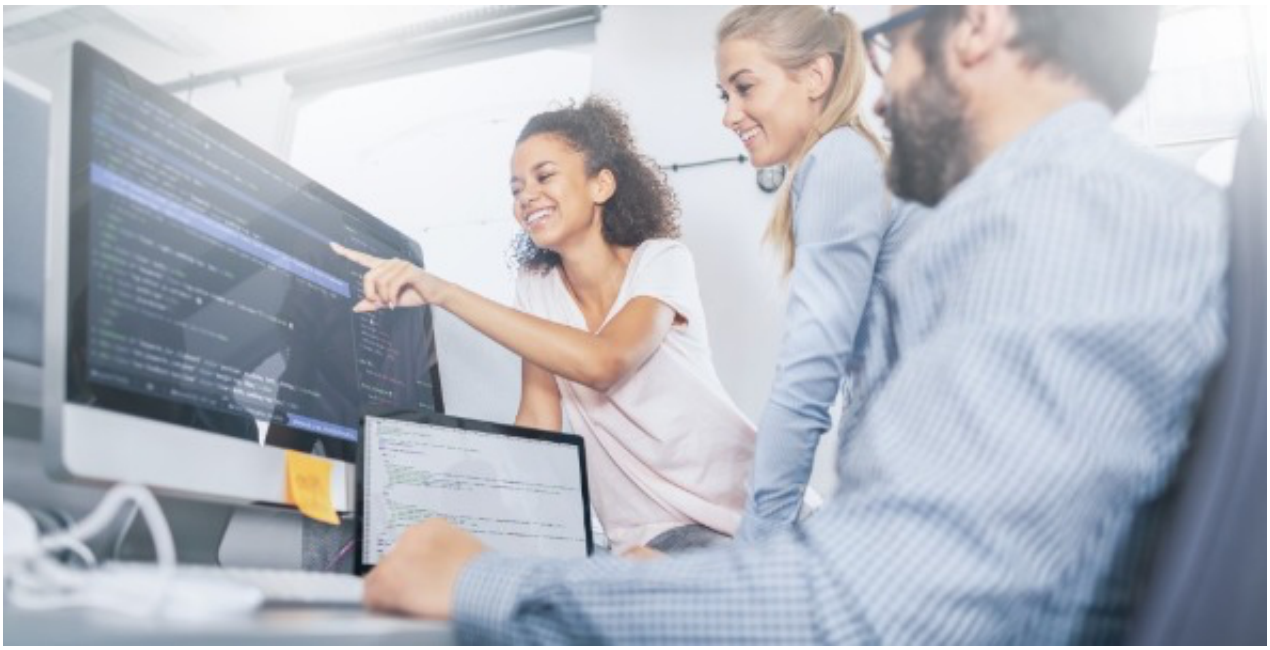
Scenario

GLOBALRAIN

You work for Global Rain, a software engineering company that specializes in custom software design and development. As a junior software developer, you are part of a software development team at Global Rain that collaborates to create software solutions for entrepreneurs, businesses, and government agencies around the world.

You have been newly assigned to a development team at Global Rain. This team is currently working on a project for an innovative international search and rescue animal training company, Grazioso Salvare. Grazioso Salvare is seeking a software application that will help track search and rescue animals, sometimes referred to as rescue animals. These rescue animals are obtained and trained by the company to rescue humans from difficult (or even life-threatening) situations.

A portion of the work on this project has already been done. Your team lead has assigned you to create one new class and modify the existing driver class in the software application. You will deliver all the class files to the team lead, who will consolidate them with the work from other team members and present the application to your client.



Directions

Your team lead has given you a specification document detailing Grazioso Salvare's software needs. Other members of the Global Rain development team have already started creating the RescueAnimal.java, Dog.java, and Driver.java class files. Your team lead has asked you to modify the existing Driver.java class and create a Monkey.java class as your contribution to the team.

Required Pre-work

1. To gain a clear understanding of the client's requirements, review the Grazioso Salvare Specification Document, located in the Supporting Materials section. As you read, pay close attention to the attributes and methods that you will need to implement into the program.
2. Open the Virtual Lab by clicking on the link in the Virtual Lab Access module. Then open the Eclipse IDE. Follow the Uploading Files to Eclipse Tutorial to upload the Grazioso.zip files into Eclipse. Both the tutorial and the zipped folder are located in the Supporting Materials section. The Grazioso.zip folder contains three class files. Once you upload the files, compile the code. Although the program is not complete, it should compile without error.
3. Read through the code for *each* class that you have been given. This will help you understand what code has been created and what code must be modified or created to meet the requirements.

Once you have completed the pre-work, you are ready to begin your assigned tasks.

Monkey.java Class

1. Your team lead reminded you to demonstrate **industry standard best practices** in all of your code to ensure clarity, consistency, and efficiency among all software developers working on the program. In your code for each class, be sure to include the following:
    - **In-line comments that denote your changes and briefly describe the functionality of each method or element of the class**
    - **Appropriate variable and method naming conventions**
2. In a new Java file, **create the Monkey class**, using the specification document as a guide. The Monkey class must do the following:
    - **Inherit** from the RescueAnimal class
    - **Implement all attributes** to meet the specifications
    - **Include a constructor**. You may use a default constructor. To score "exemplary" on this criterion, you must include the

more detailed constructor that initializes values for all attributes. Refer to the constructor in the Dog class for an example.
- **Include accessors and mutators** for all implemented attributes

Driver.java Class

In this class, you will modify and implement several different methods. You will need to refer back to the code from the other classes to properly implement these methods.

1. As a reminder, you must demonstrate **industry standard best practices**, such as **in-line comments to denote changes and describe functionality and appropriate naming conventions** throughout the code that you create or modify for this class.
2. First, you will modify the main() method. In main(), you must **create a menu loop that does the following**:
    - **Displays the menu** by calling the displayMenu() method. This method is in the Driver.java class.
    - **Prompts the user for input**
    - **Includes input validation**. If the user inputs a value not on the menu, the program should print an error message.
    - **Takes the appropriate action** based on the value that the user entered.

    IMPORTANT: In the Module Five milestone, you were asked to create a menu loop but were not required to include input validation. Be sure to include input validation for your Project Two submission.
3. Next, you will **complete the intakeNewDog() method**. Your completed method should do the following:
    - **Prompt the user for input**
    - Include input validation. Note: The required input validation has already been included in the starter code; be sure to review it.
    - **Set data for all attributes based on user input**
    - **Add the newly instantiated dog to an ArrayList**

    Hint: Remember to refer to the accessors and mutators in the Dog and RescueAnimal classes as you create this method.
4. Next, you will **implement the intakeNewMonkey() method**. Before you do this, you will need to create a monkey ArrayList in the Driver.java class. Refer to the dog ArrayList for an example. Then, begin implementing the intakeNewMonkey() method. Your completed method should do the following:
    - **Prompt the user for input**
    - **Include input validation for the monkey's name and species type**. If the user enters an invalid option, the program should print an error message.
    - **Set data for all attributes based on user input**
    - **Add the newly instantiated monkey to an ArrayList**

    Hint: Remember to refer to the accessors and mutators in your Monkey and RescueAnimal classes as you create this method.

    IMPORTANT: In the Module Five milestone, you began implementing this method but were not required to include input validation. Be sure to include input validation for your Project Two submission.
5. Next, you will **implement the reserveAnimal() method**. Your completed method should do the following:
    - **Prompt the user for input**. The user should enter their desired animal type and country.
    - If there *is* an available animal which meets the user's input criteria, the method should **access an animal object from an ArrayList**. If there are multiple animals that meet these criteria, the program should access the first animal in the ArrayList. The method should also **update the "reserved" attribute of the accessed animal**.
    - If there is *not* an available animal which meets the user's input criteria, the method should **output feedback to the user** letting them know that no animals of that type and location are available.

6. Finally, you have been asked to **implement a printAnimals() method that provides easy-to-read output displaying the details of objects in an ArrayList**.
    - To demonstrate this criterion in a "proficient" way, your implemented method must successfully print the ArrayList of dogs *or* the ArrayList of monkeys.
    - To demonstrate this criterion in an "exemplary" way, your implemented method must successfully print a list of all animals that are "in service" and "available".

What to Submit

To complete this project, you must submit the following:

Grazioso.zip (Eclipse Project File)
Your submission for this project should be a zipped folder that contains all four of the following files. Use the Downloading Files from Eclipse Tutorial in the Supporting Materials section to help you download these files.

- **RescueAnimal.java Class File:** You were not required to make changes to this file, but you must include it as part of your submission.
- **Dog.java Class File:** You were not required to make changes to this file, but you must include it as part of your submission.
- **Monkey.java Class File.** You created this class from scratch, implementing attributes, a constructor, accessors, and mutators. You should have included in-line comments and clear variable naming conventions.
- **Driver.java Class File.** You were given some starter code within this file, and were asked to modify or implement a menu loop and methods to intake dogs, intake monkeys, reserve animals, and print animals. You were also asked to include input validation for certain methods and in-line comments describing your changes.

Supporting Materials

The following resource(s) may help support your work on the project:

Grazioso Salvare Specification Document
Review the specification document provided by the Grazioso Salvare client to learn about its software requirements and perform your development work.

Grazioso.zip (Eclipse Project File)
This Eclipse Project folder contains the RescueAnimal.java, Dog.java, and Driver.java class files that were created by other members of your team. Be sure to review the RescueAnimal.java and Dog.java classes carefully, though you are not required to modify them. The Driver.java class file will run the application. In-line comments have been included to describe code that was already created and to identify places that you will need to modify.

Uploading Files to Eclipse Tutorial
You will write, test, and run each class file in an IDE. Review this tutorial to learn how to upload the Eclipse Project file (ZIP), which contains all your class files, into your IDE.

Downloading Files from Eclipse Tutorial
You will write, test, and run your class files using an integrated development environment (IDE). Review this tutorial to learn how to save and export files from your IDE. Important: Do not change the names of any existing class files.

Project Two Rubric

Criteria	Exemplary	Proficient	Needs Improvement	Not Evident	Value
Monkey.java: Creating a Class	Exceeds proficiency by creating a detailed constructor that initializes values for all attributes (100%)	Creates a class that inherits from another class and implements all attributes with appropriate data	Shows progress toward proficiency, but with errors or omissions; areas for improvement may	Does not attempt criterion (0%)	15

		structures, a constructor, accessors, and mutators to meet software requirements (85%)	include implementing inheritance, attribute use, accessor or mutator method definitions, functionality, syntax, or logic (55%)		
Driver.java: Menu Loop	N/A	Creates a loop that displays a menu, reads user input, and takes action based on the input (100%)	Shows progress toward proficiency, but with errors or omissions; areas for improvement may include using loop syntax, or taking the correct action based on user input (55%)	Does not attempt criterion (0%)	15
Driver.java: intakeNewDog() Method	N/A	Completes a method that prompts the user for input, sets data for attributes, and adds an object to an array (100%)	Shows progress toward proficiency, but with errors or omissions; areas for improvement may include include implementing method, using attributes, functionality, syntax, or logic (55%)	Does not attempt criterion (0%)	10
Driver.java: intakeNewMonkey() Method	N/A	Implements a method that prompts the user for input, sets data for attributes, and adds an object to an ArrayList (100%)	Shows progress toward proficiency, but with errors or omissions; areas for improvement may include implementing method, using attributes, functionality, syntax, or logic (55%)	Does not attempt criterion (0%)	15
Driver.java: Input Validation for Menu Loop and intakeNewMonkey() Method	Exceeds proficiency in an exceptionally clear, insightful, or sophisticated manner (100%)	Validates user input by checking for invalid values and printing an error message if invalid input occurs (85%)	Shows progress toward proficiency, but with errors or omissions; areas for improvement may include using input validation in all	Does not attempt criterion (0%)	7.5

			required areas or helpfulness of error messages (55%)		
Driver.java: reserveAnimal() Method	N/A	Implements a method that prompts the user for input and handles the input appropriately by accessing and updating an object's attribute or outputting feedback to the user (100%)	Shows progress toward proficiency, but with errors or omissions; areas for improvement may include implementing method, using attributes, functionality, syntax, or logic (55%)	Does not attempt criterion (0%)	15
Driver.java: printAnimals() Method	Exceeds proficiency by a printing an ArrayList using more advanced logic (100%)	Implements a method that provides easy-to-read output displaying the details of objects in an ArrayList (85%)	Shows progress toward proficiency, but with errors or omissions; areas for improvement may include printing readable output, including required details for the object, or logic of the method (55%)	Does not attempt criterion (0%)	15
Industry Standard Best Practices	Exceeds proficiency in an exceptionally clear, insightful, or sophisticated manner (100%)	Demonstrates industry standard best practices including appropriate in-line comments and variable and method naming conventions (85%)	Shows progress toward proficiency, but with errors or omissions; areas for improvement may include detail of in-line comments or appropriateness of naming conventions (55%)	Does not attempt criterion (0%)	7.5
				Total:	100%