

Group DO Project Two Proposal

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Name	Email	Team	P1 Role	P2 Role	P3 Role
Rohan Ramachandran	RNRAMACHANDR@WISC.EDU	Red	DW	FD	BD
Raihan Tanvir	RTANVIR@WISC.EDU	Red	AE	DW	FD
Aditya Roy	ROY35@WISC.EDU	Red	BD	AE	DW
Ruilin Yan	RYAN56@WISC.EDU	Red	FD	BD	AE
Joshua Kyle Saguiped	SAGUIPED@WISC.EDU	Blue	DW	FD	BD
Joe Schmalstig	SCHMALSTIG@WISC.EDU	Blue	AE	DW	FD
SHANTANU Chaudhuri	SCHAUDHURI5@WISC.EDU	Blue	BD	AE	DW
Shyama Subrahmanya Nikhil Kruthiventi	SKRUTHIVENTI@WISC.EDU	Blue	FD	BD	AE

Project Title: Binomial Nomenclature Organizer

Brief Project Description:

The application allows users to search through a list of Animals stored in an XML file. The application allows the users to search an animal based on the Genus name, the Species name and also by their common name. The application will also check if the Scientific/Species name entered follows the rules of the Binomial Nomenclature and warns the user if this is not the case. The Application is based on a RedBlack Tree where nodes are organized based on the

Scientific Name. The RedBlack Tree is formed using the LinkedList Data Structure and the application allows iterating through the RedBlack Tree to allow searching through the Animals.

Representative Tasks Performed Using this Application:

1. Pull search specific data from an XML file (demo by Data Wrangler)
 2. Find all animals with the same Genus Name (demo by Backend Developer)
 3. Find an animal with the specific species name (demo by Algorithm Engineer)
 4. Look up an animal with its common name (demo by Frontend Developer)
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Data Wrangler (DW) Role: Raihan Tanvir, Joe Schmalstig

Create a program that can read through and pull from an XML file that contains a list of animals and relevant details.

Data Description:

Program will pull based on a search query that asks for Genus name, Species name, and common name from a file provided by the course.

Development Responsibilities:

The Data Wrangler will develop implementations for the interfaces IAnimalLoader and IAnimal. IAnimalLoader will be a reader for XML files with animal data. The implementation of IAnimal will represent each of the animals and its details such as the Genus name, the Species name, and common name.

Presentation Responsibilities:

Demonstrate how respective program pulls animals from an XML file using the Genus name, the Species name, common name.

Algorithm Engineer (AE) Role: Aditya Roy, SHANTANU Chaudhuri

Use the data provided by the Data Wrangler and implement and extend the SortedCollectionInterface so that it fulfills the requirements of the project and is easily usable by the Backend Developer.

Capabilities Added to Required Data Structure:

- In order traversal
- Level order Traversal
- Remove a Node

- Validate Data

Development Responsibilities:

Implement SortedCollectionInterface.java in a RedBlack Tree class. This class will contain methods for the BD to use in order to manipulate the genome and species fields that are provided by the DW.

Presentation Responsibilities:

Demonstrate how to search by specific species names in a flipgrid video.

Backend Developer (BD) Role: Ruilin Yan, Shyama Subrahmanya Nikhil Kruthiventi

Backend Functionality Description:

The Backend Developer is primarily responsible for implementing the search capabilities and insertion operation using the RedBlackTree implementation developed by the Algorithm Engineer. He/she will also implement the functionality to return the size(number of Animals) of the tree. The Backend Developer takes the inputs from the Frontend for search and insertion. In addition, the Backend Developer would create a class as an entry point that runs the entire application. The main entry class is called BinomialNomenclatureOrg that 1) uses IBinomialNomenclatureLoader class to load a list of species details from an xml file 2) passes new data to IBinomialNomenclatureBackend and passes this object with IBinomialNomenclatureValidator provided by AE to IBinomialNomenclatureFrontend constructor so that the front end can run the user interface.

Development Responsibilities:

Backend Developer will implement a class for the IBinomialNomenclatureBackend interface. The IBinomialNomenclatureBackend interface provides search functionality needed by the Frontend Developer. This includes a search by specific species name, a search by genus which will return all related species in a list, and a search by common name of the animal. In addition, BackendDeveloper will develop the BinomialNomenclatureOrg class as the entry point into the project that instantiates all necessary objects/classes contributed by the roles of the project. This class will be used to run the Binomial Nomenclature Organizer application.

Presentation Responsibilities:

The Backend Developer will record a video demonstrating the functionality of using Binomial Nomenclature Organizer to find all related animals in the dataset when the GenusName(first part of genus species name) is inputted.

Frontend Developer (FD) Role: Rohan Ramachandran, Joshua Kyle Saguiped

The Frontend Developer is primarily responsible for developing the text-based user interface of the Binomial Nomenclature Organizer application.

Log of a Sample Execution of the App (user input is colored red):

Welcome to the Binomial Nomenclature Organizer Application!

x+x+x+x+x+x+x+x+x+x+x+x+x+x+x+x+x

You are in the Main Menu:

- 1) Search by Common Name
- 2) Search by Genus Name
- 3) Search by Species Name
- 4) Exit Application

1

You are in the Search by Common Name menu:

Enter Common Name to search: **tiger**

1. "Scientific Name: Panthera Tigris, Tiger is a cat"

You are in the Main Menu:

- 1) Search by Common Name
- 2) Search by Genus Name
- 3) Search by Species Name
- 4) Exit Application

2

You are in the Search by Genus Name menu:

Enter Genus Name to search: **Panthera**

1. "Scientific Name: Panthera Tigris, Tiger is a cat"
2. "Scientific Name: Panthera Leo, Lion is a cat"
3. "Scientific Name: Panthera Onca, Leopard is a cat"

You are in the Main Menu:

- 1) Search by Common Name
- 2) Search by Genus Name
- 3) Search by Species Name
- 4) Exit Application

3

You are in the Search by Species Name menu:

Enter a Species Name to search: **musculus**

1. "Scientific Name: Balaenoptera Musculus, Blue Whale is a whale"

4

Development Responsibilities:

Frontend Developer will implement a class for the IBinomialNomenclatureFrontend interface. This implementation will be used for all user input interaction. The constructor of the class will accept the backend class and will provide access to the backend methods of the application. In addition, Frontend will also accept IBinomialNomenclatureValidator in its constructor. Finally, the constructor will also accept a scanner to allow it to read user input. This will allow the user to be able to access all functionalities of the application.

Presentation Responsibilities:

Frontend developer will provide a demo video of the application being used to search an animal using its common name.

Scope and Signatures:

Ideas for Scoping Up:

One option for scoping up the project is to allow the frontend to receive input to insert new species into the tree. In addition, we can also extend the project to allow a search for the most common animal type in the tree(ex: most mammals, reptiles, etc.).

Ideas for Scoping Down:

Options for scaling down the project are 1) omit the validity of Scientific name 2) remove the search by genusName method 3) omit the common name from each species.

Outside Libraries and Other Tools:

XML file for import of list of species

Team Signatures:

Name	Email	Team	Type Name As Signature
Rohan Ramachandran	RNRAMACHANDR@WISC.EDU	Red	Rohan Ramachandran
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Shyama Subrahmanya Nikhil Kruthiventi	SKRUTHIVENTI@WISC.EDU	Blue	Shyama Subrahmanya Nikhil Kruthiventi

TA Feedback:

RAIHAN TANVIR , where are you planning on getting the xml data of animals from? For the Blue team, feel free to take Raihan's IAnimalLoader interface or, if needed, I could copy it for you. Similarly, for the Blue team's frontend code, feel free to take the implementation offered by Rohan. Other than that, good work.

Team Response:

<After grading, if the TA Feedback above describes and required clarifications or changes to this proposal, please discuss as a group before acknowledging and addressing those concerns here.>

Proposal Amendments:

If your group needs to make any changes to what is described above after the proposal deadline, then 1) make sure everyone in your group agrees with those changes, 2) describe those changes in the first empty row below, and then 3) notify your group's TA about those changes and why they are being made. Your TA will then review your request and indicate whether they approve of such changes by adding their initials to the end of that amendment's row below.

Number	Description	TA Approval
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