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CS 420 – Object-Oriented Design

Project # 4

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## **Description:**

The Application class allows the user to manipulate the BST, that includes an implementation of generics, by accepting input data from a text file titled "InputData.txt" and from command line and keyboard. The application provides the user with instructions and a list of available commands to use for the program within the comments. The user can use "help" to view a list of commands the user can input, "quit" to end the program, "add" to add an employee to the bst, "remove" to remove an employee from the bst which utilizes the StackUnderflowException, StackOverflowException, and IOException handling, contain() to find an employee in the bst, inorder() to print the bst in inorder traversal, and size() to view the current number of employees. The application also writes out to a file titled "OutputData.txt".

### Files included:

#### Java Files:

- 1. MendozaRaelyn BST.java
- 2. MendozaRaelyn BST Application.java
- 3. MendozaRaelyn BST Interface.java
- 4. MendozaRaelyn\_BST\_Node\_Class.java
- 5. MendozaRaelyn Employee.java
- 6. MendozaRaelyn Stack Interface.java
- 7. MendozaRaelyn StackADT.java
- 8. MendozaRaelyn StackOverflowException.java
- 9. MendozaRaelyn StackUnderflowException.java

#### Class Files:

- 10. MendozaRaelyn BST.class
- 11. MendozaRaelyn BST Application. class
- 12. MendozaRaelyn BST Interface. class
- 13. MendozaRaelyn BST Node Class. class
- 14. MendozaRaelyn Employee. class
- 15. MendozaRaelyn Stack Interface. class
- 16. MendozaRaelyn StackADT. class
- 17. MendozaRaelyn StackOverflowException. class
- 18. MendozaRaelyn\_StackUnderflowException. class

# Read Me File:

- 19. readMe\_Project4\_MendozaRaelyn.pdf
- **UML Diagram PNG:** 
  - 20. MendozaRaelyn UMLdiagram Project4.png

#### Text Files:

- 21. InputData.txt
- 22. OutputData.txt

#### **UML Diagram:** <<Interface>> MendozaRaelyn\_StackOverflowException MendozaRaelyn\_StackInterface<T> + MendozaRaelyn\_StackOverflowException(String) + isEmpty(): boolean + isFull(): boolean MendozaRaelyn\_StackUnderflowException + push(T): void + pop(): String + MendozaRaelyn\_StackUnderflowException(String) + top(): T + list(): String MendozaRaelyn\_StackADT<T> employeesList: T[] MendozaRaelyn\_Employee - index: int employeeName: String + MendozaRaelyn\_StackADT(int) - department: String + isEmpty(): boolean - salary: double + isFull(): boolean + push(T): void + MendozaRaelyn\_Employee(String, String, double) + pop(): String + getEmployeeName(): String + top(): T + getDepartment(): String + size(): int + getSalary(): double list(): String + setEmployeeName(String): void + setDepartment(String): void + setSalary(double): void + toString(): String MendozaRaelyn\_BST<T> <<Interface>> MendozaRaelyn\_BST\_Interface<T> root: MendozaRaelyn\_BST\_Node\_Class<T> found: boolean + isEmpty(): boolean + isFull(): boolean + MendozaRaelyn\_BST() + size(): int + isFull(): boolean + contains(T): boolean + isEmpty(): boolean + add(T): boolean + size(): int + remove(T): boolean + sizeRec(MendozaRaelyn\_BST\_Node\_Class<T>): int + inOrder(FileWriter, int): void + contains(T): boolean + contains(T, MendozaRaelyn\_BST\_Node\_Class<T>): boolean + add(T): boolean + addRec(T, MendozaRaelyn\_BST\_Node\_Class<T>): MendozaRaelyn\_BST\_Node\_Class<T> + remove(T): boolean + removeRec(T, MendozaRaelyn\_BST\_Node\_Class<T>): MendozaRaelyn\_BST\_Node\_Class<T> + removeNode(MendozaRaelyn\_BST\_Node\_Class<T>): MendozaRaelyn\_BST\_Node\_Class<T> getPredecessor(MendozaRaelyn\_BST\_Node\_Class<T>): T + inOrder(FileWriter, int): void inOrderRec(MendozaRaelyn\_BST\_Node\_Class<T>, MendozaRaelyn\_StackADT<T>): void MendozaRaelyn\_BST\_Application capacity: int + main(String[]): void MendozaRaelyn\_BST\_Node\_Class<T> info: T

- left: MendozaRaelyn\_BST\_Node\_Class<T>
- right: MendozaRaelyn\_BST\_Node\_Class<T>
- + MendozaRaelyn\_BST\_Node\_Class(T)
- + getInfo: T
- + setInfo(T): void
- + getLeft(): MendozaRaelyn\_BST\_Node\_Class<T>
- + setLeft(MendozaRaelyn\_BST\_Node\_Class<T>): void
- + getRight(): MendozaRaelyn\_BST\_Node\_Class<T>
- setRight(T, MendozaRaelyn\_BST\_Node\_Class<T>): void