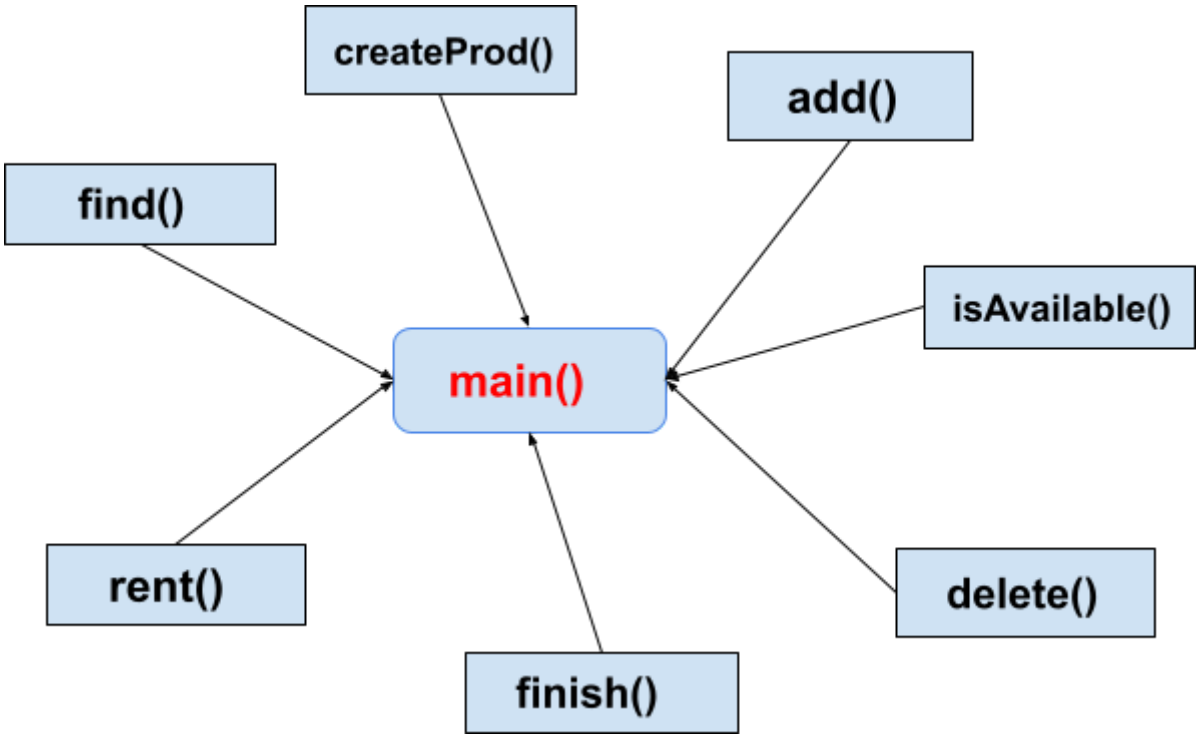
Abdallah Ghordlo
Hussein Abdikarim

CMPE 223 - SEC 05
Assignment/ HW-3

PA REPORT- 3

Problem Statement and Code Design

This assignment is made up of two parts, the 1st part consists of three main methods which are createProd(), find() and isAvailable() which checks if a product is available. In the 2nd part,we had to create a system for a chauffeur-driven rental company. This class takes a txt-file as input and reads the file that should contain multiple lines that have specific commands, and the information necessary to call that command, after it. After analyzing the line and storing the information in different variables, the chosen command is called with the given information. The output depends on the given txt-file.



Implementation, Functionality

How does it work?

As for the 1st part, By calling multiple methods, main() first reads the txt file, analyzes every line in that file, and calls the function that is called in the lines. To be able to call the functions, main analyzes the sub string that comes after the commands in each line to extract all the necessary values like the ID, the name, and the number of pieces. The second part

1. **find()**:This function takes in the ID in form of an int, which it uses to search for the node that has a key equal to the ID and returns that node.
2. **createProd()**:This function takes in two integers for the ID and the number of pieces, and one String for the name.
3. **isAvailable()**:This function takes in the ID in form of an int, which it uses to call for the find() function, and returns the number of pieces left.If the product isn't found has 0 pieces,a message will be printed out.
4. **add()**: This function takes in an integer for the ID and a String for the name. It creates and adds a product in the appropriate place in the tree.
5. **rent()**:This function takes in the ID in form of an int, which it uses to search for the node with the given ID by calling the find() function. After that, it calls the isAvailable() method to print a message that informs the user whether the captain with the given ID is available.If available, the captain is rented.
6. **finish()**:This function takes in the ID in the form of an int, and another int that represents whether the customer was satisfied or not.
7. **delete()**:This function takes in the ID in form of an int, which it uses to search for the node with the given ID by calling the find() function. After that, it calls

the findParent() function because the parent is needed when deleting nodes in a tree. There are 3 cases: The node we want to delete is a leaf, the node we want to delete has one child, and the node we want to delete has two children. All cases are handled. In the case of two children, the node with the biggest key value in the left subtree replaces the node we want to delete, this is done by calling the max() method and using the node it returns to replace the node we want to delete.

FINAL ASSESSMENTS

The challenges in this assignment were not as worrying as the others, but was a quite intriguing assignment. We had fun doing this assignment as a group and learned a lot from each other. Reading the txt file was not a problem this time as we got acquainted with it. The most challenging part was implementing the Delete() function. That being said, we are very happy with the journey we took in this assignment as a team and look forward to more challenges in the future.