

Programmer Manual

Programmer Manual
Oxy Cookie Company

1. Problem Description

This program uses a Binary Search Tree to store a database of employees and information about those employees. The program gets the employee information from a file, and then the user can view the information, add new employees, delete employees, update existing employee information, display a selected employee, view employees by job code, or copy the records from the tree into a file, which can then be read back into the program.

2. Data Types and Classes

The data types used in this program fall into two categories: predefined data types and programmer-defined data types. The following subsections address the data types used.

2.1 char (predefined type)

Variables:

input	user input for the main menu
code	employee job code

2.2 char[] (predefined type)

Variables:

fName	employee first name
lName	employee last name
ssn	employee social security number

2.3 bool (predefined type)

Variables:

populated	boolean determining if the tree has data or not
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2.4 int (predefined type)

Variables:

age	age of an employee
dependents	the number of dependents an employee has

2.5 double (predefined type)

Variables:

payRate	hourly pay rate of an employee
hoursWorked	number of hours an employee has worked

2.6 istream (predefined type)

Variables:

is	input stream
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2.7 ostream (predefined type)

Variables:

os	output stream
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2.8 Employee (programmer-defined type)

This class has:

Data members:	fName lName ssn age dependents code payRate hoursWorked
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public member functions:	Employee operator= operator>> operator<< operator< operator> operator>= operator<= operator== operator!= setFName setLName setSSN setAge setDependents setCode setPayRate setHoursWorked getLastName getCode getPayRate getHoursWorked
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See the programmer manual for Employee for more details

2.9 Oxy (programmer-defined type)

This class has:

Data members:	populated
Private member functions:	printInOrder preOrderWrite deleteTree validateName isValidSSN validateInt validateDouble
Public member functions:	Oxy populate insertEmployee update retrieveEmployee listRecords writeToFile deleteEmployee

See the programmer manual for Oxy for more details

3. High Level Program Solution

Main Program

Prompt for input file holding employee data

Populate the binary search tree with data from the file

Print main menu for user input

- G get records from file

- I insert records for a new employee
 get data for a new employee from the user
 insert into tree

- U update record for existing employee
 display menu allowing the user to update a selected field
 - 1 first name
 - 2 last name
 - 3 social security number
 - 4 age
 - 5 number of dependents
 - 6 employee code
 - 7 hourly pay rate
 - 8 hours worked
 - 9 finalize update reinsert employee into the tree

- R retrieve and display record for an employee

- L list the data
 allows for sub-options
 - ALL display all records
 - OFF display office employees
 - FAC display factory employees
 - SAL display sales employees

- S save tree to a file
 get name of the file to save to from the user

- D delete an employee

- E exit program

4. Limitations and Suggestions

The current program must have a correctly formatted input file in order to get the data correctly into the tree. The employees currently can only be sorted by last name in alphabetical order. The program could be extended to allow the user to select how the employees are sorted. The employees are also saved to a file in a preorder traversal of the tree. The user could also be given some control over the order the employees are written to the file.