

Assignment 2 Report

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Object Oriented Design

Below is a description of classes created and how they are related.

Classes	Description
Dam	Initialises the name, FSC, and dam level for a dam object that can be obtained from the file containing the dam details.
DamBSTApp	Creates a binary tree of Dam objects and stores each item in a BinaryTreeNode (takes in a Dam objects and extracts the toString() method from the Dam program). Makes use of the BinarySearchTree class to traverse through the binary tree using the methods printAllDams() and printDam(). This class uses modified code provided by Hussein Suleman.
DamAVLApp	This program is similar to the DamBSTApp program in reading in the CSV file and storing the data items in the AVL tree. It uses implements the methods from Hussein's AVLTree class and BinaryTreeNode class. A Dam object is initialised and inserted into the AVL tree in the main method. The methods printDam() and printAllDams() are called to print a specific dam and all dams respectively.

Experiment

The goal of this experiment is compare using an AVL Tree and using a Binary Search Tree, in a Java application to read in details about dams.

Testing with DamAVLTree class

When searching through the array of dams for a particular dam, a count operation was implemented to count how many Dams were compared with the given argument before the Dam was found (assuming the dam is in the list).

In Part 2, tests were carried out to search for 3 known dams ("Mokolo Dam", "Debe Dam" and "Bloemhof Dam") and one unknown dam ("Unknown Dam").

These are the results obtained when these tests were carried out:

Searching for 'Mokolo Dam'...

Mokolo Dam, the FSC is 145.37 and the most recent dam level is 77.099999999999994
Comparison operations made for the search of Mokolo Dam is 8

Searching for 'Debe Dam'...

Debe Dam, the FSC is 6.331 and the most recent dam level is 86.9
Comparison operations made for the search of Debe Dam is 7

Searching for 'Bloemhof Dam'...

Bloemhof Dam, the FSC is 1240.24 and the most recent dam level is 15.5

Comparison operations made for the search of Bloemhof Dam is 7

Searching for 'Unknown Dam'...

Dam not found

Comparison operations made for the search of Unknown Dam is 8

Albasini Dam, the FSC is 28.199000000000002 and the most recent dam level is 69.2

Albert Falls Dam, the FSC is 288.14 and the most recent dam level is 36.4

Allemanskraal Dam, the FSC is 174.52 and the most recent dam level is 13.5

Armenia Dam, the FSC is 12.957000000000001 and the most recent dam level is 10

Beervlei Dam, the FSC is 85.778999999999996 and the most recent dam level is 1.5

Belfort Dam, the FSC is 0.413 and the most recent dam level is 98

Bellair Dam, the FSC is 4.241 and the most recent dam level is 78.3

Berg River Dam, the FSC is 127.05 and the most recent dam level is 31.1

Binfield Dam, the FSC is 36.848999999999997 and the most recent dam level is 96.6

Bloemhof Dam, the FSC is 1240.24 and the most recent dam level is 15.5

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Wemmershoek Dam, the FSC is 58.71 and the most recent dam level is 52.3

Westoe Dam, the FSC is 60.094999999999999 and the most recent dam level is 48.3

Witbank Dam, the FSC is 104.02 and the most recent dam level is 52.2

Witklip Dam, the FSC is 12.519 and the most recent dam level is 39.299999999999997

Wolwedans Dam, the FSC is 24.626000000000001 and the most recent dam level is 95.4

Woodstock Dam, the FSC is 373.25 and the most recent dam level is

77.099999999999994

Wriggleswade Dam, the FSC is 91.471000000000004 and the most recent dam level is

98.7

Xilinx Dam, the FSC is 13.823 and the most recent dam level is 27.2

Xonxa Dam, the FSC is 115.86 and the most recent dam level is 100

Zaaihoek Dam, the FSC is 184.63 and the most recent dam level is 58.5