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Project One

CS 300

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**Pseudocode for opening file and checking for errors**

OPEN file

CHECK for return value of the open function

IF value is –1

File not found

ELSE

File found

GETLINE for reading file

PRINT with cout and values

LOOP condition of EOF

**Pseudocode for menu**

LOAD file

PRINT course list

PRINT course

EXIT

PROMPT user “What options?”

**Pseudocode for printing out courses**

PRINT sample schedule

CSCI100, Introduction to Computer Science

CSCI101, Introduction to Programming in C++

CSCI200, Data Structures

CSCI301, Advance Programming in C++

CSCI300, Introduction to Algorithms

CSCI350, Operating Systems

CSCI400, Large Software Development

MATH201, Discrete Mathematics

PROMPT user “What course do you want to view?”

Vector Sorting:

Insertion sort: O(n^2)

Selection sort: O(n^2)

Quick sort: O(n^2)

Binary search tree:

Remove Operation: O(height)

Insert Operation: O(height)

Search Operation: O(height)

Vector Advantages:

* Vector does not have a fixed data size structure
* Traversing is quick and efficient with the use of CPU caches

Vector Disadvantages:

* Deletion of the array takes increased time if items need to be moved
* Has lowered efficiency if data size is too big

Hash Table Advantages:

* Inserstion and lookup can be performed together
* Quick search

Hash Table Disadvantages

* Difficult implementation

Tree Advantages

* Less space needed
* Easy implementation

Tree Disadvantages

* Insertion and lookup take more time, takes a long time for average cases

Based on these advantages and disadvantages I would recommend Vectors as it has good advantages compared to the rest and the disadvantages can be worked around. Having increased efficiency and not a limitation on data sizes is a vast improvement on the opposed.