VECTOR reading file

Code	Line Cost	# Times Executes	Total Cost
`Loading file`	1	1	1
`Create vector`	1	1	1
`Call function csvParser`	1	1	1
`For loop rowCount`	1	n	n
		Total Cost	3n
		Runtime	O(n)

VECTOR creating object

Code	Line Cost	# Times Executes	Total Cost
`Call function loadCourses`	1	1	1
`Read size of course`	1	1	1
`For loop iteraring each row`	1	n	n
`adding courseName to vector`	1	1	1
`Adding courseTitle to vector`	1	1	1
`Pushback into course vector`	1	n	n
		Total Cost	2n+2
		Runtime	O(n)

HashTable reading file

Code	Line Cost	# Times Executes	Total Cost
`Create new hash table`	1	1	1
`LoadCourses into courseTable`	1	n	n
`Parse file with for loop`	1	n	n
`Push courseName and Title with insert function`	1	n	n
		Total Cost	2+4n
		Runtime	O(n)

HashTable creating object

Code	Line Cost	# Times Executes	Total Cost
`Key created as hash`	1	1	1
`IF loop with 3 arguments`	1	n	n
`WHILE loop as long as its not null`	1	n	n
`Node is pointed to new node`	1	n	n
		Total Cost	1+3n
		Runtime	O(n)

BinarySearchTree reading file

Code	Line Cost	# Times Executes	Total Cost
`Binary tree is created`	1	1	1
`loadCourses is called`	1	1	1
`For loop itereating thru file`	1	n	n
`Insert function is called`	1	1	1
		Total Cost	2+n+1
		Runtime	O(n)

BinarySearchTree creating object

Code	Line Cost	# Times Executes	Total Cost

`If for New node is created`	1	n	n
`Else node is added`	1	n	n
`AddNode function called`	1	1	1
`If loop comparing to node`	1	n	n
`Nested if loop to create node`	1	n	n
`If loop for right node`	1	n	n
		Total Cost	4n + 1
		Runtime	O(logn)

EVALUATION and RECOMMENDATION

We looked at the vector, hash table and binary tree data structures to evaluate the time complexities and worst-case scenario as it pertains to Big-O.

After evaluating all the time complexities of each data structure, it seems they are all equally o(n).

Considering that vector utilizes a quicksort to be able to organize the data, and the binary search tree also involves a log(n) function, we would be able to recommend that the Hash Table is the most appropriate choice for the Computer Science department at ABC.