# CS 300 Pseudocode Document

## Function Signatures

Below are the function signatures that you can fill in to address each of the three program requirements using each of the data structures. The pseudocode for printing course information, if a vector is the data structure, is also given to you below (depicted in bold).

// Vector pseudocode

Class

String courseNumber

String courseName

String preReq

Open

Open file

While line is 2

Print courseNumber and courseName

While line is greater than 2

If preReq does not equal courseNumber

Print error

If preReq equals courseNumber

Print coursNumber, courseName and preReq

Print "Menu:"

Print " 1. Load Data Structure"

print " 2. Print Course List"

print " 3. Print Course"

print " 4. Exit"

// Hashtable pseudocode

Class

String courseNumber

Stiring courseTitle

String preReq

Open file

Table size

While line is 2

Print courseNumber and courseName

While line is greater than 2

If preReq does not equal courseNumber

Print error

If preReq equals courseNumber

Print coursNumber, courseName and preReq

Print "Menu:"

Print " 1. Load Data Structure"

print " 2. Print Course List"

print " 3. Print Course"

print " 4. Exit"

// Tree pseudocode

Class

Binary search tree

String courseNumber

Stiring courseTitle

String preReq

Open file

While line is 2

Print courseNumber and courseName

While line is greater than 2

If preReq does not equal courseNumber

Print error

If preReq equals courseNumber

Print coursNumber, courseName and preReq

Print "Menu:"

Print " 1. Load Data Structure"

print " 2. Print Course List"

print " 3. Print Course"

print " 4. Exit"

## Example Runtime Analysis

When you are ready to begin analyzing the runtime for the data structures that you have created pseudocode for, use the chart below to support your work. This example is for printing course information when using the vector data structure. As a reminder, this is the same pairing that was bolded in the pseudocode from the first part of this document.

| **Code** | **Line Cost** | **# Times Executes** | **Total Cost** |
| --- | --- | --- | --- |
| **for all courses** | 1 | 1 | 2 |
| **if the course is the same as courseNumber** | 1 | 6 | 25 |
| **print out the course information** | 1 | 3 | 13 |
| **for each prerequisite of the course** | 1 | 2 | 9 |
| **print the prerequisite course information** | 1 | 2 | 9 |
| **Total Cost** | | | 4n + 1 |
| **Runtime** | | | O(n) |