// Vector pseudocode

Vector<Course> ParseCourseData(string filepath) {

create Vector<Course> courseData

if input file missing

throw FileNotFound exception

open input file at filepath

for each line l in input file

split line along commas into array

if array length less than 2

continue to next line

for each prerequisite

loop through input file lines

take first comma-delimited substring

if course ID matches prerequisite

success, continue to prerequisite loop

if no match is found

continue to next line

courseData.push\_back(Course(number, title, prereqs[]))

}

Course(string courseNumber, string courseTitle, char\* coursePrerequisites[]) {

number = courseNumber

title = courseTitle

prerequisites = coursePrerequisites

}

int numPrerequisiteCourses(Vector<Course> courses, Course c) {

totalPrerequisites = prerequisites of course c

for each prerequisite p in totalPrerequisites

add prerequisites of p to totalPrerequisites

print number of totalPrerequisites

}

void printSampleSchedule(Vector<Course> courses) {

get final element in courses

print course information for final element

}

void printCourseInformation(Vector<Course> courses, String courseNumber) {

for all courses

if the course is the same as courseNumber

print out the course information

for each prerequisite of the course

print the prerequisite course information

}

ParseCourseData Runtime Analysis

|  |  |  |  |
| --- | --- | --- | --- |
| Line | Line Cost | # Times Execute | Total Cost |
| For each line l in input file | 1 | n | n |
| Loop through input file lines | 1 | n^2 | n^2 |
| Total cost: | n + n^2 | Runtime: | O(n ^ 2) |

ParseCourseData Memory Analysis

|  |  |  |  |
| --- | --- | --- | --- |
| Line | Line Cost | # Times Execute | Total Cost |
| Create Vector<Course> CourseData | n | 1 | n |
| Split line along commas into array | 1 | m | m |
| courseData.push\_back(Course(number, title, prereqs[])) | 1 | N | n |
| Total cost: | 2n + m | Memory: | O(n + m) |

where M is the maximum length of a line in the file