3-3 Project One Milestone: Vector Data Structure

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Pseudocode

### For this project milestone, I will be covering vectors and managing course information. Here are the steps:

1. **Define Course Data Structure**

struct Course {

String courseNumber

String title

List<String> prerequisites

}

1. **Pseudocode** to Load the Data from File

Function LoadCoursesFromFile(String filename, Vector<Course> &courses) {

Open file with name 'filename'

If file not found

Print "Error: File not found."

Return

While there are more lines in the file

Choose a line from the file

Split the line into tokens using ',' as the delimiter

If the line of tokens is less than 3,

Print "Error: Incorrect file format in line."

Continue to next line

Set courseNumber to the first token

Set title to the second token

Create a new Course object

Set Course object’s courseNumber to courseNumber

Set Course object’s title to title

Initialize an empty list for prerequisites

For each token in the tokens starting from the third

Add token to the prerequisites list

Set Course object’s prerequisites to the prerequisites list

Add Course object to the 'courses' vector

Close file

}

1. **Pseudocode to Validate Prerequisites**

Function ValidateCourses(Vector<Course> &courses) {

Set courseNumbers to an empty set

For each Course in courses

Add Course's courseNumber to courseNumbers

For each Course in courses

For each prerequisite in Course's prerequisites

If prerequisite is not in courseNumbers

Print "Error: Prerequisite " + prerequisite + " not found."

}

1. **Pseudocode to Search for and** Print Course Information

Function SearchCourse(Vector<Course> &courses, String courseNumber) {

For each Course in courses

If Course's courseNumber is equal to courseNumber

Print "Course Number: " + Course's courseNumber

Print "Title: " + Course's title

If Course has prerequisites

Print "Prerequisites:"

For each prerequisite in Course's prerequisites

Print " - " + prerequisite

Else

Print "No prerequisites"

}

In conclusion, following these steps with complete the pseudocode.