BEGIN

// Define the Course structure

STRUCT Course

STRING courseNumber

STRING title

VECTOR<String> prerequisites

END STRUCT

// Initialize a vector to hold Course objects

VECTOR<Course> courses

// Function to load data from file into the vector data structure

FUNCTION loadData(fileName)

// Open the file

FILE file = OPEN(fileName)

// Check if the file is open

IF file IS NOT OPEN

PRINT "Error: Unable to open file."

RETURN

END IF

// Read each line from the file

WHILE NOT EOF(file)

STRING line = READLINE(file)

// Split the line into tokens

VECTOR<String> tokens = SPLIT(line, ",")

// Check if the line has at least 2 tokens (course number and title)

IF SIZE(tokens) < 2

PRINT "Error: Incorrect file format. Each line must have at least course number and title."

CONTINUE

END IF

// Create a Course object

Course course

course.courseNumber = tokens[0]

course.title = tokens[1]

// Add prerequisites if any

FOR i FROM 2 TO SIZE(tokens) - 1

// Check if prerequisite exists as a course

IF NOT courseExists(tokens[i])

PRINT "Error: Prerequisite " + tokens[i] + " does not exist in the course list."

CONTINUE

END IF

ADD tokens[i] TO course.prerequisites

END FOR

// Add the course to the courses vector

ADD course TO courses

END WHILE

// Close the file

CLOSE(file)

END FUNCTION

// Function to check if a course exists in the courses vector

FUNCTION courseExists(courseNumber)

FOR EACH course IN courses

IF course.courseNumber == courseNumber

RETURN TRUE

END IF

END FOR

RETURN FALSE

END FUNCTION

// Function to search for a course and print its information

FUNCTION printCourseInfo(courseNumber)

FOR EACH course IN courses

IF course.courseNumber == courseNumber

PRINT "Course Number: " + course.courseNumber

PRINT "Title: " + course.title

PRINT "Prerequisites: "

IF SIZE(course.prerequisites) == 0

PRINT "None"

ELSE

FOR EACH prerequisite IN course.prerequisites

PRINT prerequisite

END FOR

END IF

RETURN

END IF

END FOR

PRINT "Course " + courseNumber + " not found."

END FUNCTION

// Main Program

FUNCTION main()

STRING fileName = "course\_data.txt"

CALL loadData(fileName)

// Example: Print information for a specific course

STRING courseNumber = "CS101"

CALL printCourseInfo(courseNumber)

END FUNCTION

// Execute the main program

CALL main()

END

**Explanation of Pseudocode**

Course Structure Definition:

The Course structure contains courseNumber, title, and a vector of prerequisites.

Initialization:

A vector courses is initialized to store Course objects.

Loading Data:

The loadData function opens the file, reads each line, and splits the line into tokens.

It checks if each line has at least two tokens (course number and title).

It creates a Course object and assigns the course number and title.

It verifies if prerequisites exist as courses and adds them to the Course object.

The Course object is added to the courses vector.

Course Existence Check:

The courseExists function checks if a course exists in the courses vector.

Printing Course Information:

The printCourseInfo function searches for a course by its number and prints its information and prerequisites.

Main Program:

The main function calls loadData with the filename and demonstrates printing course information for a specific course.

Ends.