Pseudocode for Loading Data into a Hash Table for ABCU

**Step 1: Open the File and Read Data**

function loadDataFromFile(fileName: String)

// Open the file

file = open fileName for reading

if file is not open

print "Error: File not found or unable to open."

return

// Initialize a hash table to store courses

hashTable = create new HashTable()

// Read file line by line

for each line in file

// Split line into tokens based on comma

tokens = split line by ","

// Validate the number of tokens (at least 2: course number and title)

if length of tokens < 2

print "Error: Invalid file format. Each line must have at least a course number and title."

continue

// Extract course number and title

courseNumber = tokens[0]

courseTitle = tokens[1]

// Extract prerequisites (if any)

prerequisites = []

for i from 2 to length of tokens - 1

prerequisites.append(tokens[i])

// Create course object

course = create new Course(courseNumber, courseTitle, prerequisites)

// Add course to hash table

hashTable.put(courseNumber, course)

// Validate prerequisites

for each course in hashTable.values

for each prerequisite in course.prerequisites

if not hashTable.containsKey(prerequisite)

print "Error: Prerequisite " + prerequisite + " for course " + course.courseNumber + " does not exist."

// Close the file

close file

return hashTable

**Step 2: Parse Each Line and Check for File Format Errors**

class Course

courseNumber: String

courseTitle: String

prerequisites: List<String>

constructor Course(courseNumber: String, courseTitle: String, prerequisites: List<String>)

this.courseNumber = courseNumber

this.courseTitle = courseTitle

this.prerequisites = prerequisites

**3. Print Course Information and Prerequisites**

function printCourseInformation(hashTable: HashTable)

// Iterate through each course in the hash table

for each courseNumber in hashTable.keys

course = hashTable.get(courseNumber)

// Print course information

print "Course Number: " + course.courseNumber

print "Course Title: " + course.courseTitle

// Print prerequisites if any

if length of course.prerequisites > 0

print "Prerequisites: "

for each prerequisite in course.prerequisites

prerequisiteCourse = hashTable.get(prerequisite)

print "- " + prerequisiteCourse.courseNumber + ": " + prerequisiteCourse.courseTitle

else

print "Prerequisites: None"

print "" // Print a blank line for better readability