# CS 300 Pseudocode Document

// Main Program

BEGIN

fileName = "course\_information.txt" // File to be processed

courseTable = new HashTable<String, Course>() // Create an empty hash table

// File Input and Validation

fileHandle = OPEN(fileName)

IF fileHandle IS NULL

PRINT "Error opening file: " + fileName

RETURN NULL // Indicate failure

ENDIF

WHILE NOT END\_OF\_FILE(fileHandle)

line = READ\_LINE(fileHandle)

// Error Check 1: Empty Line

IF line IS EMPTY

PRINT "Warning: Empty line in file."

CONTINUE // Skip to next line

ENDIF

courseData = SPLIT(line, ",")

// Error Check 2: Insufficient Parameters

IF courseData.length < 2

PRINT "Error: Invalid format (missing course number or title) on line: " + line

CONTINUE // Skip to next line

ENDIF

courseNumber = courseData[0]

courseTitle = courseData[1]

newCourse = new Course(courseNumber, courseTitle)

// Handle Prerequisites with Validation

FOR i = 2 TO courseData.length - 1

prerequisite = courseData[i]

// Defer prerequisite validation until after all courses are loaded

newCourse.addPrerequisite(prerequisite) // Add even if not found yet

ENDFOR

courseTable.insert(courseNumber, newCourse) // Insert into the hash table

ENDWHILE

CLOSE(fileHandle)

// Validate Prerequisites After File Reading

FOR EACH course IN courseTable.values()

FOR EACH prerequisite IN course.prerequisites

IF NOT courseTable.containsKey(prerequisite)

PRINT "Error: Prerequisite " + prerequisite + " for course " + course.number + " does not exist

ENDIF

ENDFOR

ENDFOR

// Search and Print Course Information

PRINT "Enter course number to search:"

courseToSearch = READ\_INPUT()

searchCourse(courseTable, courseToSearch) // Call the search function (provided below)

END

// Function to search for and print course details

FUNCTION searchCourse(HashTable<String, Course> courseTable, String courseNumber)

courseFound = courseTable.get(courseNumber)

IF courseFound IS NOT NULL

PRINT "Course Information:"

PRINT courseFound.number + " - " + courseFound.title

IF NOT courseFound.prerequisites.empty()

PRINT "Prerequisites:"

FOR EACH prereq IN courseFound.prerequisites

PRINT prereq

ENDFOR

ENDIF

ELSE

PRINT "Error: Course not found."

ENDIF

ENDFUNCTION

// Course Object Structure (Pseudocode)

STRUCT Course

String number

String title

Vector<String> prerequisites

// Add prerequisite to the course

FUNCTION addPrerequisite(String prereq)

prerequisites.add(prereq)

ENDFUNCTION

ENDSTRUCT