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CS 300 – Analysis and Design

Module 4 - Project One Milestone Two

Pseudocode for ABCU:

STRUCT Course

courseID // String: Unique course identifier (e.g., "CS101")

courseTitle // String: Title of the course (e.g., "Intro to Programming")

prerequisites // List of Strings: Prerequisite course IDs

END STRUCT

FUNCTION LoadCoursesFromFile(fileName)

OPEN file with name fileName FOR reading

IF file cannot be opened THEN

PRINT "Error: Cannot open file."

RETURN

INITIALIZE empty hashTable

INITIALIZE empty set allCourseIDs

// First pass: Collect all course IDs

FOR each line in file

SPLIT line by comma into tokens

IF tokens.size < 2 THEN

PRINT "Error: Invalid line format. Each line must contain at least a course ID and title."

CONTINUE

SET courseID = tokens[0].trim()

ADD courseID to allCourseIDs

END FOR

REWIND file to beginning

// Second pass: Create and insert Course objects

FOR each line in file

SPLIT line by comma into tokens

SET courseID = tokens[0].trim()

SET courseTitle = tokens[1].trim()

INITIALIZE empty list prerequisites

FOR i = 2 TO tokens.size - 1

SET prereqID = tokens[i].trim()

IF prereqID NOT IN allCourseIDs THEN

PRINT "Error: Prerequisite " + prereqID + " does not exist as a course."

CONTINUE

END IF

ADD prereqID to prerequisites

END FOR

CREATE new Course object with courseID, courseTitle, and prerequisites

INSERT course into hashTable with key = courseID

END FOR

CLOSE file

RETURN hashTable

END FUNCTION

FUNCTION PrintAllCourses(hashTable)

FOR each courseKey in hashTable

SET course = hashTable[courseKey]

PRINT course.courseID + ": " + course.courseTitle

IF course.prerequisites IS NOT EMPTY THEN

PRINT " Prerequisites: "

FOR each prereq in course.prerequisites

PRINT " - " + prereq

END FOR

ELSE

PRINT " Prerequisites: None"

END IF

END FOR

END FUNCTION

FUNCTION PrintCourseInfo(hashTable, courseID)

IF courseID NOT IN hashTable THEN

PRINT "Error: Course not found."

RETURN

END IF

SET course = hashTable[courseID]

PRINT "Course ID: " + course.courseID

PRINT "Title: " + course.courseTitle

IF course.prerequisites IS NOT EMPTY THEN

PRINT "Prerequisites:"

FOR each prereq in course.prerequisites

PRINT " - " + prereq

END FOR

ELSE

PRINT "Prerequisites: None"

END IF

END FUNCTION