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**Project One Milestone Two: Psedocode For Hash Table Data Structure**

1. **Psedocode for Opening, Reading, and Validating Course File:**

FUNCTION LoadCourses(fileName, hashTable<course> courses)

OPEN file fileName FOR READING

IF file CANNOT BE OPENED THEN

PRINT "ERROR: Unable to open file"

RETURN

ENDIF

CREATE set validCourseNumbers

WHILE NOT end of file

READ line FROM file

SPLIT line INTO tokens BY ","

IF tokens.length < 2 THEN

PRINT "ERROR: Line must have at least course number and name"

CLOSE file

RETURN

ENDIF

SET courseNumber TO tokens[0]

ADD courseNumber TO validCourseNumbers

ENDWHILE

RESET file TO BEGINNING

CLEAR courses

WHILE NOT end of file

READ line FROM file

SPLIT line INTO tokens BY ","

CREATE course

SET course.courseNumber TO tokens[0]

SET course.name TO tokens[1]

SET course.prerequisites TO empty list

FOR i FROM 2 TO tokens.length - 1

IF tokens[i] NOT IN validCourseNumbers THEN

PRINT "ERROR: Prerequisite " + tokens[i] + " does not exist as a course"

CLOSE file

RETURN

ENDIF

APPEND tokens[i] TO course.prerequisites

ENDFOR

SET courses [course.courseNumber] TO course

ENDWHILE

CLOSE file

RETURN true

END FUNCTION

1. **Pseudocode for Creating and Storing Course Objects:**

STRUCTURE Course

STRING courseNumber

STRING courseName

LIST OF STRING prerequisites

END STRUCTURE

FUNCTION storeCourses(filename, hashTable<course> courses)

OPEN file filename FOR READING

IF file CANNOT BE OPENED THEN

PRINT "ERROR: Unable to open file"

RETURN

ENDIF

CLEAR courses

WHILE NOT end of file

READ line FROM file

SPLIT line INTO tokens BY “,”

CREATE course

SET course.courseNumber TO tokens [0]

SET course.name TO tokens [1]

SET course.prerequisites TO empty list

FOR i FROM 2 TO tokens.length – 1

APPEND tokens[i] TO course.prerequisties

ENDFOR

SET courses[course.courseNumber] TO course

ENDWHILE

CLOSE file

RETURN true

END FUNCTION

1. **Pseudocode for Searching and Printing Course Information:**

FUNCTION SearchCourse(hashTable<Course> courses, String courseNumber)

IF courses HAS KEY courseNumber THEN

SET course TO courses[courseNumber]

PRINT course.courseNumber + “,” + course.courseName

IF course.prerequisites IS NOT empty THEN

SET prerequisiteString TO “Prerequisites: ”

SET isFirst TO true

FOR each prerequisite IN course.prerequisites

IF isFirst THEN

SET prerequisiteString TO prerequisiteString + prerequisite

SET isFirst TO false

ELSE

ADD prerequisiteString TO prerequisiteString + “, ” + prerequisite

ENDIF

ENDFOR

PRINT prerequisiteString

ELSE

PRINT “Prerequisites: None”

ENDIF

ELSE

PRINT ERROR IF COURSE NOT FOUND

ENDIF

END FUNCTION