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CS-300

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5-3 Project One Milestone Three: Tree Data Structure Pseudocode

**Task 1: Opening the File, Reading Data, Parsing, and Checking for File Format Errors**

FUNCTION LoadDataFromFile(filename)

OPEN file with name filename

IF file is not open

PRINT "Error: File cannot be opened."

RETURN

END IF

WHILE there are lines in the file

READ line from file

SPLIT line into tokens (courseNumber, courseTitle, prerequisites)

IF courseNumber or courseTitle is missing

PRINT "Error: Missing course number or title in line."

CONTINUE to next line

END IF

END WHILE

CLOSE file

END FUNCTION

**Task 2: Validating the File Format and Checking Prerequisites**

FUNCTION LoadDataFromFile(filename)

OPEN file with name filename

IF file is not open

PRINT "Error: File cannot be opened."

RETURN

END IF

WHILE there are lines in the file

READ line from file

SPLIT line into tokens (courseNumber, courseTitle, prerequisites)

IF courseNumber or courseTitle is missing

PRINT "Error: Missing course number or title in line."

CONTINUE to next line

END IF

FOR each prerequisite in prerequisites

IF prerequisite course does not exist in the file

PRINT "Error: Prerequisite course " + prerequisite + " not found."

CONTINUE to next line

END IF

END FOR

END WHILE

CLOSE file

END FUNCTION

**Task 3: Creating Course Objects and Storing in the Binary Search Tree**

FUNCTION LoadDataFromFile(filename)

OPEN file with name filename

IF file is not open

PRINT "Error: File cannot be opened."

RETURN

END IF

WHILE there are lines in the file

READ line from file

SPLIT line into tokens (courseNumber, courseTitle, prerequisites)

IF courseNumber or courseTitle is missing

PRINT "Error: Missing course number or title in line."

CONTINUE to next line

END IF

FOR each prerequisite in prerequisites

IF prerequisite course does not exist in the file

PRINT "Error: Prerequisite course " + prerequisite + " not found."

CONTINUE to next line

END IF

END FOR

CREATE course object with courseNumber, courseTitle, prerequisites

INSERT course object into binary search tree

END WHILE

CLOSE file

END FUNCTION

**Task 4: Printing Course Information and Prerequisites**

FUNCTION PrintCourseInformation(binarySearchTree)

IF binarySearchTree is empty

PRINT "No courses available."

RETURN

END IF

PERFORM in-order traversal of binarySearchTree

FOR each course node in tree

PRINT courseNumber + ": " + courseTitle

IF prerequisites is not empty

PRINT "Prerequisites: " + list of prerequisites

ELSE

PRINT "No prerequisites."

END IF

END FOR

END FUNCTION