

project1.txt

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/*
 * ev176P1.pdf
 *
 * COSC 051 Fall 2015
 * Project #1
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 *
 * Due on: SEP 23, 2015
 *
 * In accordance with the class policies and Georgetown's Honor Code,
 * I certify that I have neither given nor received any assistance
 * on this project with the exceptions of the lecture notes and those
 * items noted below.
 *
 * Note that you should not mention any help from the TAs, the professor,
 * or any code taken from the class textbooks.
 */

// Preprocesses and start
CALCULATE preprocess include iostream and math.h for the Pi constant

START standard namespace
START the main function

    // Initialize Variables with Default Values (except height and slantHeight)
    CALCULATE shapeCode = ''
    CALCULATE materialCode = ''
    CALCULATE radius = 0, surfaceArea = 0, volume = 0, materialCost, laborCost,
totalCost = 0, retailCost = 0

    // Introduction

    OUTPUT greeting message

    // -- Prompts --

    // Shape
    OUTPUT prompt the user for the shape to be used: o - cone, y - cylinder, p -
sphere
    INPUT CALCULATE shapeCode // written this way because variable assignment was
treated as a calculation in class
    IF shapeCode is not lowercase or capital o, y, or p, THEN
        BEGIN
            OUTPUT invalid shape error message
            STOP main function (by returning 1)
        END

    // Radius
    OUTPUT prompt the user for the radius to be used
    INPUT CALCULATE radius
    IF radius is too large (>36") or too small (<3"), THEN
        BEGIN
            OUTPUT invalid radius error message
            STOP main function (by returning 1)
        END

    // Height
    IF shape is a cone or cylinder, THEN
        BEGIN
            OUTPUT prompt the user for the height to be used
            INPUT CALCULATE height // height declared as float
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IF height is too large (>1.5*radius) or too small (<radius),
BEGIN
    OUTPUT invalid height error message
    STOP main function (by returning 1)
END
END
OTHERWISE CALCULATE height = 'n/a' // height declared as string

// Material
OUTPUT prompt the user for the material to be used: k - oak, a - plastic, u -
aluminum
INPUT CALCULATE materialCode
IF material is not lowercase or capital k, a, or u, THEN
BEGIN
    OUTPUT invalid material error message
    STOP main function (by returning 1)
END

// -- calculations --

// Calculate Surface Area and Volume
IF shapeCode is 'o', THEN
BEGIN
    CALCULATE slantHeight = sqrt((radius**2)+(height**2)); // slantHeight
declared as a float
    CALCULATE surfaceArea = M_PI*(radius**2) + M_PI*radius*slantHeight;
    CALCULATE volume = (M_PI*(radius**2) * height)/3;
END

OTHERWISE IF shapeCode is 'y', THEN
BEGIN
    CALCULATE slantHeight = 'n/a' // slantHeight declared as a string
    CALCULATE surfaceArea = 2*M_PI*radius*(height + radius);
    CALCULATE volume = M_PI*(radius**2)*height;
END

    OTHERWISE (implicitly shapeCode is 'p')
    BEGIN
        CALCULATE slantHeight = 'n/a' // slantHeight declared as a string
        CALCULATE surfaceArea = 4*M_PI*(radius**2);
        CALCULATE volume = (4*M_PI*(radius**3))/3;
    END

// Calculate material and labor costs
IF materialCode is 'k', THEN
BEGIN
    CALCULATE materialCost = 1.26 * surfaceArea;
    CALCULATE laborCost = 256.27 + (0.4 * materialCost);
END

OTHERWISE IF materialCode is 'a', THEN
BEGIN
    CALCULATE materialCost = 0.49 * surfaceArea;
    CALCULATE laborCost = 32.10 + (0.1 * materialCost);
END

OTHERWISE
BEGIN
    CALCULATE materialCost = 6.32 * surfaceArea;
    CALCULATE laborCost = 785.16 + (0.8 * materialCost);
END

CALCULATE totalCost = materialCost + laborCost

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CALCULATE retailCost = totalCost * 1.25
// -- Output the calculations --

OUTPUT type of shape
OUTPUT surfaceArea and volume (labeled)

OUTPUT dimension header
OUTPUT dimensions labels
OUTPUT dimensions

OUTPUT cost header
OUTPUT cost and price labels
OUTPUT costs and price

// -- Ending --

OUTPUT goodbye message
STOP the main function
STOP (implicitly) the use of the standard namespace. No code necessary.

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