**Title**: Program #2: Conversion Chart  
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**Description**: This program displays an inches-to-centimeters conversion table. The input is the smallest number of inches and then the largest number of inches to be converted. The program then displays the conversion for each 6-inch increment between the start and end numbers. The end number must be between 6 and 36 inches larger than the start number. One inch is equivalent to 2.54 centimeters. The program gives the option to run the program again.

**Initial Algorithm**

Prompt for the start number until a positive number is given

Prompt for the end number until a number within range is given

Display the table header

Calculate and display the conversion from inches to centimeters for each 6-inch increment  
in the range, formatted into the table

**Data Requirements**:

Input:

(int) startRange – This is the first inch to be converted

(int) endRange – This is the highest possible inch to be converted

(String) userContinues – This is the user’s response to whether they want to continue

Output:

(int) inch – This is the current inch being converted

(double) centimeter – This is the number of centimeters equivalent to the current inch being converted, which will be formatted to two decimal points

Additional Variables:

(final double) CONVERSION\_RATE – This is the conversion rate between inches and centimeters (currently 2.54)

(final int) INTERVAL – This is interval between each conversion (currently 6)

(final int) MAX\_RANGE – This is maximum size of the range (currently 36)

(int) min – This is the smallest number in bounds for the current prompt

(int) max – This is the highest number in bounds for the current prompt

**Formulas**:

To convert inches to centimeters:

centimeter = inch \* CONVERSION\_RATE {centimeter = inch \* 2.54}

**Refined Algorithm**

DO

min = 1

max = maximum Integer – MAX\_RANGE

DO

Prompt startRange

IF startRange < min THEN

Display error message about negative number

ELSE IF startRange > max THEN

Display error message about being too big

END IF

LOOP WHILE startRange < min OR startRange > max

min = startRange + INTERVAL

max = startRange + MAX\_RANGE

DO

Prompt endRange

IF endRange < min OR endRange > max THEN

Display error message about being out of range

END IF

LOOP WHILE endRange < min OR endRange > max

Display table header

FOR inch = startRange TO endRange [STEP inch by INTERVAL]

Calculate centimeter

Display inch and centimeter, formatted to two decimals

END FOR

Prompt userContinues

LOOP WHILE userContinues != “n” AND userContinues != “no”