

Chapter 3 Project

Part 3 – Interest Earned:

START

DO

Ask the user for:

- Principal amount (P)
- Annual interest rate (%)
- Times compounded per year (n)
- Number of years (t)

IF any input value is less than or equal to zero THEN

Display: "Please enter positive values."

Repeat the input step

ENDIF

Convert rate to decimal: $r = \text{rate} / 100$

Calculate total amount:

$$A = P * (1 + r / n)^{(n * t)}$$

Calculate interest:

$$\text{interest} = A - P$$

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Display:

- "Interest earned: \$", interest
- "Total amount: \$", A

Ask the user: "Do you want to calculate again? (Y/N)"

WHILE the user enters 'Y' or 'y'

Display: "Thank you!"

END

Math Progress:

$$A = P \times (1 + r/n)^{(n \times t)} \quad \text{example}$$

Interest = A - P

$P = 1000$ $r = 12\% (0.12)$
 $n = 12$ $t = \text{year}(1)$

$$\frac{0.12}{12} = 0.01 \rightarrow (1 + r/n)^{(n \times t)} = (1.01)^{12} = 1.12683$$

$$12 \times 1 = 12$$

$$A = 1000 \times 1.12683 = 1126.83$$

$$\text{Interest} = 1126.83 - 1000 = 126.83$$