Loops

Question 4: Repeat Phrase

Write a program using loops that prints the following phrase 5 times:
"Practice makes perfect."

Modifications:

1. Ask for user input for the number of repetitions.

   Example Output:
   How many times should the phrase be repeated?
   3
   Practice makes perfect.
   Practice makes perfect.
   Practice makes perfect.

2. Number the phrases in the output.

   Example Output:
   How many times should the phrase be repeated?
   3
   1. Practice makes perfect.
   2. Practice makes perfect.
   3. Practice makes perfect.

3. Allow user input to choose from a selection of phrases.

   Example Output:
   Phrase Options:
   1 - Practice makes perfect.
   2 - Hello there!
   3 - La, La, La.
   Enter a number to pick a phrase: 2
   How many times should the phrase be repeated?
   2
   1. Hello there!
   2. Hello there!

Explanation of question creation and value: This question would allow students to begin working with loop structures, and the added complexities in the modifications will challenge the students

as they progress through the exercise. Moreover, incorporating user input can allow room for collaboration and testing each other's programs. A study conducted by (Hogan et al., 2025) has shown that incarcerated learners value their peers as a resource in an academic environment.

Question 5: Business Profit Tracker

Write a program that asks the user for the amount of profit that a business makes in one week and the number of weeks, and then outputs the total profit for all the weeks.

Example Output:

Enter business profit (dollars) for one week: 120
Enter the number of weeks: 5
Total profit:
$ 600

Modifications:

1. Allow users to input different profits for each week, and output current profit after each week and total profit after all weeks.

   Example Output:

   Enter the number of weeks: 3
   Current profit: $0
   Enter profit for Week 1: $100
   Current profit: $100
   Enter profit for Week 2: $150.25
   Current profit: $250.25
   Enter profit for Week 3: $100
   Total profit: $350.25

Explanation of question creation and value: This problem has an added level of difficulty from the first problem because it requires keeping track of a variable and arithmetic operations. It would also engage students because it has a real world application. As found in a study conducted by (Hogan et al., 2024), incarcerated learners were drawn to programming applications for topics that they found meaningful and practical. Among all the topics that students chose, business management was the most popular with 14.1% opting to code an open-ended program that was related to business management.

Question 6: Draw a Tree

Write a program using loops that outputs the following tree shape:

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   *
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******
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Use the asterisk character on your keyboard: *

Modifications:

1. Output another tree shape or geometric shape (square, diamond, heart) using loops and the characters found on your keyboard.

Explanation of question creation and value: This question builds on the previous two loop questions because it's not repeating the same phrase. Instead, it's building on top of the output each time. This could be extended beyond just trees, so students can create a variety of different shapes using loops and keyboard characters to express themselves in a fun and artistic way. As noted by (Bares et al., 2019), computing in the context of arts has been shown to have a positive impact on student's motivation in a class.
