If Statements

Question 1: Even or Odd

Write a program that takes an integer as input and prints out whether the number is “Even” or “Odd”.

Example Input 1:
5

Example Output 1:
Odd

Explanation of question creation and value: This question introduces students to the idea of conditional statements. The key idea behind this problem is to begin with a concept that many students are familiar with, such as even and odd numbers, and further develop their skills to think in a computational manner. This encourages students to think through the problem and further engage with the course material. Furthermore, the solution to this problem requires two conditional statements, along with the mod operator, which enforces the basics of if statements and computational thinking.

Question 2: Number to letter grade

Write a program that converts a number to a letter grade. The grading scale being used is that marks 80 and up are grade A, 70-80 is a B, 60-70 is a C, 50-60 is a D, and anything below is a F.

Example Input 1:
75

Example Output 1:
B

Example Input 2:
96

Example Output 2:
A

Explanation of question creation and value: This question aims to build upon the first question and reinforce student understanding about conditional statements. The question prompts students to delve further into conditional statements and think about situations that have multiple outcomes. Moreover, Hogan et al. (2024) found that incarcerated students are more engaged with computer science exercises when the material is related to areas of interest or enjoyment. The grade converter problem incorporates existing research by

relating to the topic of education, thus having a greater interest for the students taking the course.

Question 3: Medical Code

The objective of this problem is to decode the medical code input and correctly output the patient's status. The problem description is as follows: To ensure confidentiality, a doctor has assigned unique medical codes to each of their patients.

- Medical codes that are divisible by 3 and 5 output 'Fully recovered'
- Codes divisible only by 3 output 'Recovery in progress'
- Codes divisible only by 5 output 'Appointment scheduled'
- Otherwise, output 'No appointment'.

Example Input 1:
15

Example Output 1:
Fully recovered

Example Input 2:
9

Example Output 2:
Recovery in progress

Example Input 3:
7

Example Output 3:
No appointment

Explanation of question creation and value: The third question is slightly more advanced and combines the concepts from the first two questions. This question is designed to build on Hogan et al.'s (2024) findings regarding incarcerated individuals preferring themes with real-world scenarios. Fundamentally, the question is identical to the FizzBuzz problem, but rephrased such that it correlates to a real-life scenario. Restructuring a technical question to have meaning promotes students to engage with the material more thoughtfully and approach problems critically.