Method Overloading Practice Questions

Easy Level

Question 1

Write a CPP program to create a class `Calculator` with an `add` method that performs addition. Overload the `add` method to handle:

- Two integers
- Three integers
- Two double values

```cpp
class Calculator {
    int add(int a, int b) { return a + b; }
    int add(int a, int b, int c) { return a + b + c; }
    double add(double a, double b) { return a + b; }
}
```

Question 2

Create a class `Printer` with an overloaded `print` method that accepts:

- A string
- An integer
- A double

Question 3

Define a `Rectangle` class with an overloaded `area` method to calculate the area based on:

- Length and width (for a rectangle)
- A single side (for a square)

Medium Level

Question 4

Write a class `Multiplier` with an overloaded `multiply` method to handle:

- Two integers
- Two doubles
- An integer and a double (in any order)

Question 5

Create a `Person` class with an overloaded `introduce` method:

- Without parameters (prints a generic introduction)
- With a name (prints "Hello, my name is XYZ")
- With a name and age (prints "Hello, my name is XYZ, and I am AGE years old")

Question 6

Implement a `MathOperations` class with overloaded `power` methods to calculate:

- The square of a number
- The cube of a number
- A number raised to any power (base, exponent)

Question 7

Design a `Vehicle` class with an overloaded `start` method that:

- Takes no parameters (default start)
- Takes a string (starts with a specific mode, e.g., "eco mode")
- Takes an integer (starts with a countdown before ignition)

Hard Level

Question 8

Create a `BankAccount` class with overloaded `deposit` methods that:

- Accepts an integer amount
- Accepts a double amount
- Accepts an amount and a currency type (e.g., "USD", "EUR")

Question 9

Write a class `Logger` with an overloaded `log` method that:

- Logs a simple message
- Logs a message with a log level (INFO, WARNING, ERROR)
- Logs a message with a timestamp

Question 10

Develop a `Converter` class with overloaded `convert` methods that:

- Converts kilometers to miles
- Converts Celsius to Fahrenheit
- Converts a string to an integer

Bonus Question

Create a `Shape` class with an overloaded `draw` method that:

- Draws a circle given a radius
- Draws a rectangle given width and height
- Draws a triangle given three sides

Happy Coding!