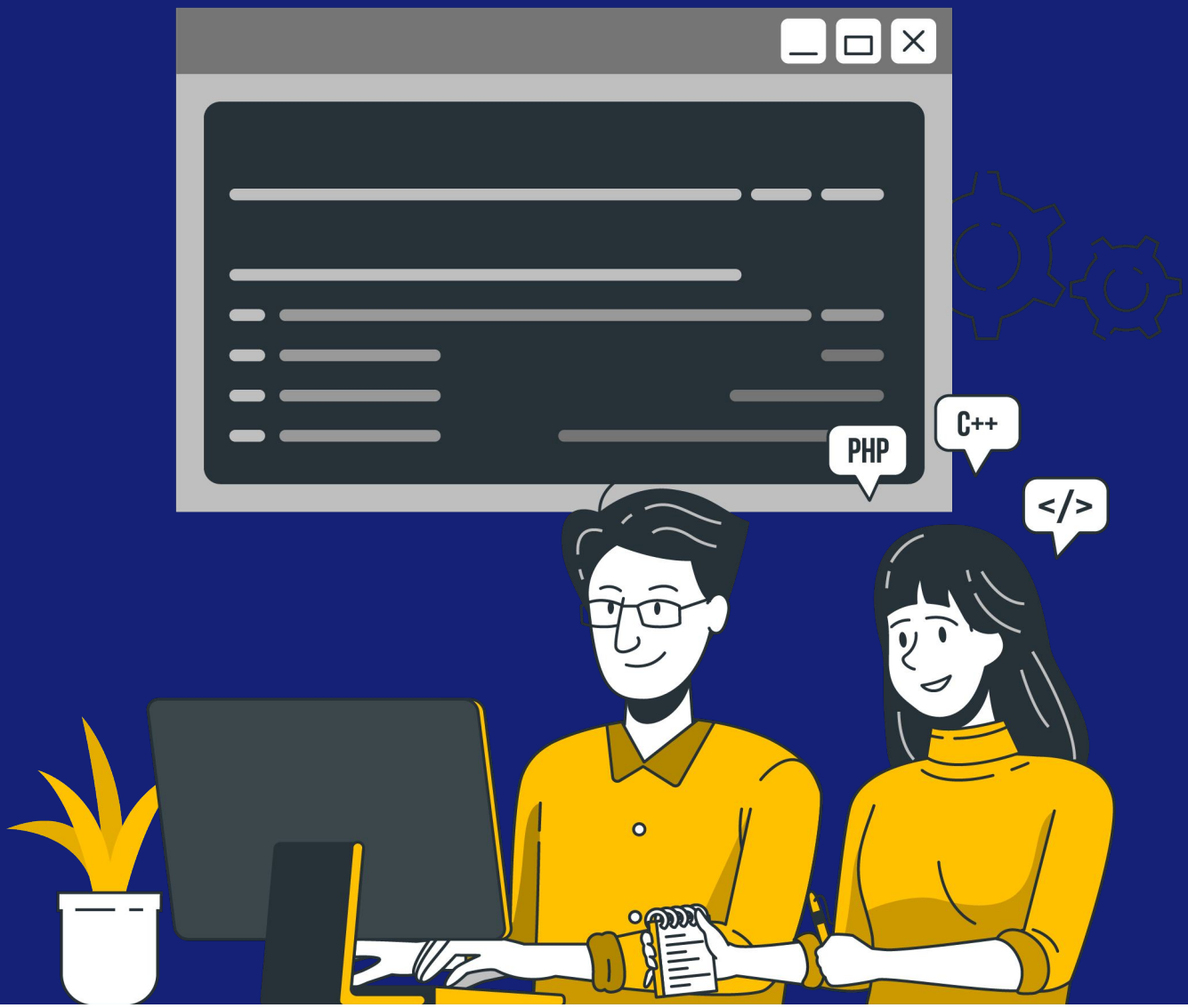
PW SKILLS

OOPS

Assignment Questions



1. What are the five key concepts of Object-Oriented Programming (OOP)?

2. Write a Python class for a `Car` with attributes for `make`, `model`, and `year`. Include a method to display the car's information.

3. Explain the difference between instance methods and class methods. Provide an example of each.

4. How does Python implement method overloading? Give an example.

5. What are the three types of access modifiers in Python? How are they denoted?

6. Describe the five types of inheritance in Python. Provide a simple example of multiple inheritance.

7. What is the Method Resolution Order (MRO) in Python? How can you retrieve it programmatically?

8. Create an abstract base class `Shape` with an abstract method `area()`. Then create two subclasses `Circle` and `Rectangle` that implement the `area()` method.

9. Demonstrate polymorphism by creating a function that can work with different shape objects to calculate and print their areas.

10. Implement encapsulation in a `BankAccount` class with private attributes for `balance` and `account_number`. Include methods for deposit, withdrawal, and balance inquiry.

11. Write a class that overrides the `__str__` and `__add__` magic methods. What will these methods allow you to do?

12. Create a decorator that measures and prints the execution time of a function.

13. Explain the concept of the Diamond Problem in multiple inheritance. How does Python resolve it?

14. Write a class method that keeps track of the number of instances created from a class.

15. Implement a static method in a class that checks if a given year is a leap year.