

ASSIGNMENT – 6.4

Task Description #1:

Start a Python class named Student with attributes name, roll_number, and marks. Prompt GitHub Copilot to complete methods for displaying details and checking if marks are above average.

CODE

```
class Student:

    def __init__(self, name, roll_number, marks):

        self.name = name

        self.roll_number = roll_number

        self.marks = marks

    def display_details(self):

        """Display student details"""

        print(f"Name: {self.name}")

        print(f"Roll Number: {self.roll_number}")

        print(f"Marks: {self.marks}")

    def is_passed(self, average=40):

        """Check if student passed based on average marks"""

        if self.marks >= average:

            return True

        else:

            return False

# Example usage

student1 = Student("Alice", 101, 75)

student2 = Student("Bob", 102, 35)

student1.display_details()

print("Passed:", student1.is_passed())

print()
```

```
student2.display_details()

print("Passed:", student2.is_passed())
```

OUTPUT

Name: Alice

Roll Number: 101

Marks: 75

Passed: True

Name: Bob

Roll Number: 102

Marks: 35

Passed: False

Task Description #2:

Write the first two lines of a for loop to iterate through a list of numbers. Use a comment prompt to let Copilot suggest how to calculate and print the square of even numbers only.

CODE

```
numbers = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10]

for num in numbers:

    # calculate and print the square of even numbers only

    if num % 2 == 0:

        print(f"The square of {num} is {num ** 2}")
```

OUTPUT

The square of 2 is 4

The square of 4 is 16

The square of 6 is 36

The square of 8 is 64

The square of 10 is 100

Task Description #3:

Create a class called BankAccount with attributes account_holder and balance. Use Copilot to complete methods for deposit(), withdraw(), and check for insufficient balance.

CODE

```
class BankAccount:

    def __init__(self, account_holder, balance=0.0):

        self.account_holder = account_holder

        self.balance = balance

    def deposit(self, amount):

        """Add amount to the account if it's positive."""

        if amount > 0:

            self.balance += amount

            print(f"Deposited ${amount:.2f}. New balance: ${self.balance:.2f}")

        else:

            print("Deposit amount must be positive.")

    def withdraw(self, amount):

        """Withdraw amount from the account if there is sufficient balance and amount is positive."""

        if amount <= 0:

            print("Withdrawal amount must be positive.")

        elif amount > self.balance:

            print("Insufficient funds.")

        else:

            self.balance -= amount

            print(f"Withdrew ${amount:.2f}. New balance: ${self.balance:.2f}")

    def display_balance(self):

        """Display the account holder and current balance."""

        print(f"Account Holder: {self.account_holder}, Balance: ${self.balance:.2f}")
```

OUTPUT

Account Holder: Alice, Balance: \$100.00

Deposited \$50.00. New balance: \$150.00

Withdrew \$30.00. New balance: \$120.00

Insufficient funds.

Deposit amount must be positive.

Withdrawal amount must be positive.

Task Description #4:

Define a list of student dictionaries with keys name and score. Ask Copilot to write a while loop to print the names of students who scored more than 75.

CODE

```
students = [  
    {"name": "Alice", "score": 82},  
    {"name": "Bob", "score": 67},  
    {"name": "Charlie", "score": 91},  
    {"name": "David", "score": 73},  
    {"name": "Eva", "score": 88}  
]  
  
i = 0  
  
while i < len(students):  
    if students[i]["score"] > 75:  
        print(f"{students[i]['name']} scored {students[i]['score']}")  
    i += 1
```

OUTPUT

Alice scored 82

Charlie scored 91

Eva scored 88

Task Description #5:

Begin writing a class ShoppingCart with an empty items list. Prompt Copilot to generate methods to add_item, remove_item, and use a loop to calculate the total bill using conditional discounts.

CODE

```
class ShoppingCart:
```

```

def __init__(self):
    self.items = [] # empty list to hold items (each item as dict with name & price)

def add_item(self, name, price):
    """Add an item to the shopping cart."""
    self.items.append({"name": name, "price": price})
    print(f"Added {name} for ${price:.2f}")

def remove_item(self, name):
    """Remove an item by name from the shopping cart."""
    for item in self.items:
        if item["name"].lower() == name.lower():
            self.items.remove(item)
            print(f"Removed {name}")
            return
    print(f"{name} not found in cart.")

def calculate_total(self):
    """Calculate total with conditional discounts."""
    total = 0
    for item in self.items:
        total += item["price"]
    # Apply discounts based on total value
    if total > 500:
        discount = 0.20 # 20% discount
    elif total > 200:
        discount = 0.10 # 10% discount
    else:
        discount = 0.0 # no discount
    discounted_total = total - (total * discount)
    print(f"Total before discount: ${total:.2f}")
    print(f"Discount applied: {discount * 100:.0f}%")
    print(f"Final total: ${discounted_total:.2f}")

```

return discounted_total

OUTPUT

Added Shoes for \$250.00

Added Shirt for \$150.00

Added Watch for \$220.00

Removed Shirt

Total before discount: \$470.00

Discount applied: 10%

Final total: \$423.00