

Solution – Final Exam (Advanced Programming – L2 MIASHS)

Teacher: Pr Mounir HEMAM

Exercise 1:

Solution:

```
class BankAccount:                                (1 Pts)
    def __init__(self, owner, balance):
        self.owner = owner
        self.balance = balance

    def deposit(self, amount):                    (1 Pts)
        self.balance += amount

    def withdraw(self, amount):                  (1 Pts)
        if amount <= self.balance:
            self.balance -= amount
        else:
            print("Insufficient balance")

    def display(self):                            (1 Pts)
        print("Owner:", self.owner)
        print("Balance:", self.balance)

class SavingAccount(BankAccount):                (1 Pts)
    def __init__(self, owner, balance, interest_rate):
        super().__init__(owner, balance)
        self.interest_rate = interest_rate

    def apply_interest(self):                    (1 Pts)
        self.balance += self.balance * self.interest_rate

# Test                                           (2 Pts)
account = SavingAccount("Ali", 1000, 0.05)
account.deposit(500)
account.withdraw(200)
account.apply_interest()
account.display()
```

Exercise 2:

Solution:

```
numbers = [1, 2, 3, 4, 5] (2 Pts)
```

```
result = list(map(lambda x: x**2, numbers)) (5 Pts)
```

```
print(result) (1 Pts)
```

Questions

1. Difference between a normal function and a lambda function:

- A normal function is defined using the def keyword and can contain multiple expressions.

(1 Pts)

- A lambda function is an anonymous function written in one single expression. (1 Pts)

2. Impure function:

An impure function is a function that modifies external variables or depends on external state. (1 Pts)

Example: (1 Pts)

```
x = 10
```

```
def impure_function():
```

```
    global x
```

```
    x += 1
```