ROBOTICS – Python Development – Lab 8 - Homework

1. Considering the following class specifications:

- **Account** - an abstract class which models a customer account. It should have the identifier and balance attributes along with deposit, withdraw and current_balance methods (at least deposit and withdraw should be abstract methods);

- **StandardAccount** - provides standard implementation to the deposit and withdraw methods (they just add or remove the specified amount to or from the account's balance). Withdrawals that lead to a negative amount are not allowed;

- **OverdraftAccount** - provides implementation to the deposit and withdraw methods. The class has two additional parameters: negative_balance_limit representing the limit of negative balance withdrawals and overdraft_penalty which is a percentage value. In case of withdrawals, when negative balance withdrawals are happening, the overdraft_penalty is applied on top of the negative balance generated. The withdrawal, including the penalty applied, cannot go bellow the negative_balance_limit value.

Please perform the following:

- Implement the classes described by this specification, prioritizing the good usage of inheritance and polymorhism;

- Implement a functional flow to demonstrate the polymorphic functionality for withdraw method in case of StandardAccount and OverdraftAccount.

For example in case of overdraft account with the following configuration:

Initial Balance = 50 RON

Overdraft Penalty = 10%

Negative Balance Limit = -100.

the results of the operations would be:

Withdrawing 100 RON:

Current Balance: 50

Negative amont generated: 50 – 100 = -50

Overdraft penalty applied: -50*0.1 = -5

New Balance: 100 -50 -5 = -45

It is above negative balance limit – operation permitted.

Withdrawing 10 RON:

Current Balance:-45

Negative amount generated: -10

Overdraft penalty applied: -10 * 0.1 = -1

New Balance = -45 - 10 - 1 = -56

It is above negative balance limit – operation permitted.

Withdrawing 50 RON:

Current Balance:-56

Negative amount generated: -50

Overdraft penalty applied: -50 * 0.1 = -5

New Balance = -56 - 50 - 5 = -111

It is below negative balance limit – operation denied.

New Balance remains -56