Lab 6 - CSCI 1103

For this lab we will be building a whole class, piece by piece. You should probably name your
class BankAccount, since that is what we are making.

**Part 1.** Create a constructor for this bank account. This constructor should have two
arguments: a (String) name and (String) account ID. Both of these arguments should be stored
inside the BankAccount class when running the constructor method.

**Output:**
None, yet. You will have to show TAs the code.

**Part 2.** Make a deposit(money) method. This should add “money” to the bank account.

Then make a displayBalance() method, that shows how much money is in the bank account.

**Output:**
Make a (BankAccount) variable, deposit $100 in it and then run the displayBalance() method.
This should show that there is $100 in the bank account. (You should show this as: $100.00)

**Part 3.** Add a withdraw(money) method, which should remove a certain amount of “money”.
You should not be able to withdraw more than you actually have.

Assume that the bank account has an interest rate of 5%. Make a wait(years) method that
assumes interest has accumulated for “years” years. The formula for this is below:
(Hint: can you borrow from your homework?)

Interest rate formula (for this case): \( FV = PV \times (1+r)^n \)
PV = Present value
FV = Future value
r = interest rate
n = number of years

**Output**
Deposit $100, wait 2 years, withdraw $100 and then display how much money is in the
account. (You should show this as: $10.25)
Part 4. The bank decides to offer a “super investor” benefit. If there is more than $1 million dollars in an account, they get double the interest rate (10%). Modify your wait(years) method to accommodate this change.

Output
Deposit $1 million, wait 1 year, display the account balance.

Part 5. The bank realize they can make millions by always rounding down when computing your annual interest rate! Change everything to int instead of double to ensure you round down (how do you keep track of cents?). This trick allows the interest rate to rise to 6% (12% for “super investors”). (If you used proper programing techniques, these changes should be easy.) Note: You should not need to change how you use the program in main()...

Output
Deposit $100, wait 2 years, withdraw $100 then display the balance. (You should show this as: $12.36)

Part 6. So far you have been running commands in the main() method. Write an interface so the user can choose from a list of options. This interface should keep asking the user for instructions until they quit. The options available to the user are:

D - deposit (after this option you should ask them how much. For example “D (enter) 100.00” should deposit 100 dollars)

W - withdraw (after this option you should ask them how much)

A - accumulate interest, this is your wait(years) method (after this option you should ask how many years)

I - displays the information of the bank account (name and account ID)

P - displays the projected balance (nothing deposited/withdrawn). After choosing “P” the user should enter how many years they want to see. (For example, if the user types “P (enter) 5” it should show the bank account after 1, 2, 3, 4 and 5 years.)

Q - quit and close the program

Output
Display the list of options every time they input something. You should also show the balance after each action that the user chooses.