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Programming for Data Science

Winter term 2023/2024

Assignment 6
Issued: 2023-10-24

1 Bank account

Create a BankAccount class. Your class should support the following methods:

```
class BankAccount:
    """Bank Account protected by a pin number."""

    def __init__(self, pin):
        """Initial account balance is 0 and pin is 'pin'."""

    def deposit(self, pin, amount):
        """Increment account balance by amount and return new balance."""

    def withdraw(self, pin, amount):
        """Decrement account balance by amount and return amount withdrawn."""

    def get_balance(self, pin):
        """Return account balance."""

    def change_pin(self, oldpin, newpin):
        """Change pin from oldpin to newpin."""
```

Write appropriate code to test the correctness of your class. All operations are performend only if the provided *pin* (resp. *oldpin* for *change_pin* is correct!

2 Special accounts

- Create a SavingsAccount class that behaves just like a BankAccount, but also has an interest rate and a method that increases the balance by the appropriate amount of interest.
- Create a FeeSavingsAccount class that behaves just like a SavingsAccount, but also charges a fee every time you withdraw money. The fee should be set in the constructor and deducted before each withdrawal.

3 ClipList

Create a ClipList class as a subclass of Python's list. A ClipList should take a *min* and *max* argument in the initializer to set the bounds of values that can be stored in the list.

- If a number larger than *max* is added to the list it should be clipped to *max*. If a number lower than *min* is added to the list, it should be clipped to *min*.
- To successfully clip values when they are added to the list, you must change the behavior by overriding the appropriate methods (*append*, *extend* and *__setitem__*).