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from abc import ABC, abstractmethod

class BankAccount(ABC):
    def __init__(self, account_number, account_holder_name,
account_balance):
        self.account_number = account_number
        self.account_holder_name = account_holder_name
        self.account_balance = account_balance

    @abstractmethod
    def deposit(self, amount):
        pass

    @abstractmethod
    def withdraw(self, amount):
        pass

    def get_account_balance(self):
        return self.account_balance

class SavingsAccount(BankAccount):
    def __init__(self, account_number, account_holder_name,
account_balance, interest_rate):
        super().__init__(account_number, account_holder_name,
account_balance)
        self.interest_rate = interest_rate

    def deposit(self, amount):
        if amount > 0:
            self.account_balance += amount

    def withdraw(self, amount):
        if amount > 0 and self.account_balance >= amount:
            self.account_balance -= amount
            return True
        return False

    def add_interest(self):
        interest_amount = self.account_balance * (self.interest_rate /
100)
        self.account_balance += interest_amount

class CheckingAccount(BankAccount):
    def __init__(self, account_number, account_holder_name,
account_balance, overdraft_limit):
        super().__init__(account_number, account_holder_name,
account_balance)
        self.overdraft_limit = overdraft_limit

    def deposit(self, amount):

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        if amount > 0:
            self.account_balance += amount

    def withdraw(self, amount):
        if amount > 0 and self.account_balance + self.overdraft_limit
>= amount:
            self.account_balance -= amount
            return True
        return False

class CreditCardAccount(BankAccount):
    def __init__(self, account_number, account_holder_name,
account_balance, credit_limit):
        super().__init__(account_number, account_holder_name,
account_balance)
        self.credit_limit = credit_limit

    def deposit(self, amount):
        if amount > 0:
            self.account_balance += amount

    def make_purchase(self, amount):
        if amount > 0 and self.account_balance + self.credit_limit >=
amount:
            self.account_balance -= amount
            return True
        return False

    def make_payment(self, amount):
        if amount > 0:
            self.account_balance += amount

    def withdraw(self, amount):
        if amount > 0 and self.account_balance + self.overdraft_limit
>= amount:
            self.account_balance -= amount
            return True
        return False

if __name__ == "__main__":
    # Creating instances
    savings_acc = SavingsAccount(1001, "Alice", 1000.0, 5.0) #
interest rate 5%
    checking_acc = CheckingAccount(2001, "Bob", 500.0, 200.0) #
overdraft limit 200
    credit_card_acc = CreditCardAccount(3001, "Charlie", 0.0, 1000.0)
# credit limit 1000

    # Testing SavingsAccount
    savings_acc.deposit(500)

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    print(f"Balance after deposit in Savings Account:
{savings_acc.get_account_balance()}")

    savings_acc.withdraw(200)
    print(f"Balance after withdrawal from Savings Account:
{savings_acc.get_account_balance()}")

    savings_acc.add_interest()
    print(f"Balance after adding interest in Savings Account:
{savings_acc.get_account_balance()}")

    # Testing CheckingAccount
    checking_acc.deposit(300)
    print(f"Balance after deposit in Checking Account:
{checking_acc.get_account_balance()}")

    checking_acc.withdraw(700) # exceeds balance but within overdraft
limit
    print(f"Balance after withdrawal from Checking Account:
{checking_acc.get_account_balance()}")

    # Testing CreditCardAccount
    credit_card_acc.make_purchase(800) # exceeds credit limit
    print(f"Balance after purchase in Credit Card Account:
{credit_card_acc.get_account_balance()}")

    credit_card_acc.make_payment(500)
    print(f"Balance after payment in Credit Card Account:
{credit_card_acc.get_account_balance()}")

Balance after deposit in Savings Account: 1500.0
Balance after withdrawal from Savings Account: 1300.0
Balance after adding interest in Savings Account: 1365.0
Balance after deposit in Checking Account: 800.0
Balance after withdrawal from Checking Account: 100.0
Balance after purchase in Credit Card Account: -800.0
Balance after payment in Credit Card Account: -300.0

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