



UNIVERSIDAD AUTÓNOMA DE
CHIHUAHUA

UNIVERSIDAD AUTÓNOMA DE CHIHUAHUA
Facultad de Ingeniería



Ingeniería en Ciencias de la Computación
COMPUTO PARALELO Y DISTRIBUÍDO
1.21 Actividad 9: Lock

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import logging
import threading

logging.basicConfig(level=logging.DEBUG, format='%(threadName)s:
%(message)s')

# Clase para representar una cuenta bancaria
class BankAccount:
    def __init__(self, initial_balance=0):
        self.balance = initial_balance
        self.lock = threading.Lock()

    # Método para depositar dinero en la cuenta
    def deposit(self, amount):
        with self.lock: # Asegura que solo un hilo modifique el saldo
a la vez
            self.balance += amount
            logging.info(f'Deposit of {amount}. Current balance:
{self.balance}')

    # Método para retirar dinero de la cuenta
    def withdraw(self, amount):
        with self.lock: # Evita que varios hilos modifiquen el saldo
al mismo tiempo
            if self.balance >= amount:
                self.balance -= amount
                logging.info(f'Withdrawal of {amount}. Current
balance: {self.balance}')
            else:
                logging.warning(f'Failed withdrawal. Insufficient
balance: {self.balance}')

# Función para simular múltiples depósitos
def perform_deposits(account, amount, times):
    for _ in range(times):
        account.deposit(amount)

# Función para simular múltiples retiros
def perform_withdrawals(account, amount, times):

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for _ in range(times):
    account.withdraw(amount)

if __name__ == '__main__':
    # Crear una cuenta bancaria con un saldo inicial de 1000
    account = BankAccount(initial_balance=300)

    # Crear hilos para realizar depósitos y retiros
    deposit_thread = threading.Thread(target=perform_deposits,
args=(account, 100, 100))
    withdrawal_thread = threading.Thread(target=perform_withdrawals,
args=(account, 50, 200))

    # Iniciar los hilos
    deposit_thread.start()
    withdrawal_thread.start()

    # Esperar a que los hilos terminen
    deposit_thread.join()
    withdrawal_thread.join()

    # Imprimir el saldo final de la cuenta
    logging.info(f'Final account balance: {account.balance}')
```

```
thead@adrigondo MINGW64 /c/Users/thead/Documents/UACH/Seventh Semester
$ python PDC.September\ 13\, \ 2024.Activity\ 1.21.py
Thread-1 (perform_deposits): Deposit of 100. Current balance: 400
Thread-1 (perform_deposits): Deposit of 100. Current balance: 500
Thread-1 (perform_deposits): Deposit of 100. Current balance: 600
Thread-1 (perform_deposits): Deposit of 100. Current balance: 700
Thread-1 (perform_deposits): Deposit of 100. Current balance: 800
Thread-1 (perform_deposits): Deposit of 100. Current balance: 900
Thread-1 (perform_deposits): Deposit of 100. Current balance: 1000
Thread-1 (perform_deposits): Deposit of 100. Current balance: 1100
Thread-1 (perform_deposits): Deposit of 100. Current balance: 1200
Thread-1 (perform_deposits): Deposit of 100. Current balance: 1300
Thread-1 (perform_deposits): Deposit of 100. Current balance: 1400
Thread-1 (perform_deposits): Deposit of 100. Current balance: 1500
Thread-1 (perform_deposits): Deposit of 100. Current balance: 1600
Thread-1 (perform_deposits): Deposit of 100. Current balance: 1700
Thread-1 (perform_deposits): Deposit of 100. Current balance: 1800
Thread-1 (perform_deposits): Deposit of 100. Current balance: 1900
Thread-1 (perform_deposits): Deposit of 100. Current balance: 2000
Thread-1 (perform_deposits): Deposit of 100. Current balance: 2100
Thread-1 (perform_deposits): Deposit of 100. Current balance: 2200
Thread-1 (perform_deposits): Deposit of 100. Current balance: 2300
Thread-1 (perform_deposits): Deposit of 100. Current balance: 2400
Thread-1 (perform_deposits): Deposit of 100. Current balance: 2500
Thread-1 (perform_deposits): Deposit of 100. Current balance: 2600
Thread-1 (perform_deposits): Deposit of 100. Current balance: 2700
Thread-1 (perform_deposits): Deposit of 100. Current balance: 2800
Thread-1 (perform_deposits): Deposit of 100. Current balance: 2900
Thread-1 (perform_deposits): Deposit of 100. Current balance: 3000
```

