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| American University of SharjahSchool of Engineering Department of Computer Engineering  P. O. Box 26666  Sharjah, UAE  Failure to put your name and ID will result in a 2-point deduction from you grade.  **Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **ID : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |  | **Instructor:** Omar Arif **Office**: ESB-2178  **Phone**: 971-6-515 4821  **e-mail**: oarif@aus.edu  **Semester**: |

COE312 –

**The quiz open book and notes and you can use the Internet. You are not allowed to consult other individuals or your classmates.**

PLEASE UPLOAD YOUR ANSWER USING THIS **WORD** FILE. DO NOT UPLOAD ANY ZIPPED OR PDF FILE. ONE WORD FILE ONLY.

The question(s) have been written in a manner such that it is not possible for two students to have the same solution. Therefore, please refrain from the temptation of copying code and changing order of and names of variables, etc. AUS code of conduct will be strictly enforced, and no violation will be tolerated as per AUS policy. Please note that the AUS code does not discriminate between who copied from whom so it is not advisable to share your solution.

**Q1.** (10 points) Implement a class named **BankAccount** that has two methods: **deposit(int amount)** and **withdraw(int amount)**. The **deposit** method adds a specified amount of money to the account balance, and the **withdraw** method subtracts a specified amount of money from the account balance. If the balance is insufficient for the withdrawal, the method should print out “Insufficient Balance”.

Implement a class named **Transaction** that makes 10 transactions. In each transaction, it randomly chooses between depositing or withdrawing a **random** amount of money from the **BankAccount**. Each object of the Transaction class should run in its **own thread**. Use **synchronization** to synchronize the access of the shared resource.

You must run and provide output on the following program (without any changes to the program). You are not allowed to make any changes to this program.

public class Main {

public static void main(String[] args) throws Exception{

// TODO Auto-generated method stub

// creating a new bank account with initial balance of 1000

BankAccount bankAccount = new BankAccount(1000);

Transactions t1 = new Transactions(bankAccount);

Transactions t2 = new Transactions(bankAccount);

t1.getThread().join();

t2.getThread().join();

System.out.println("Final balance: " + bankAccount.getBalance());

}

}

**Expected Output:**

Withdrawn 68, balance: 908

Withdrawn 24, balance: 908

Withdrawn 61, balance: 847

Deposited 82, balance: 929

Deposited 44, balance: 973

Deposited 84, balance: 1057

Withdrawn 7, balance: 1120

Deposited 10, balance: 1130

Deposited 70, balance: 1127

Withdrawn 3, balance: 1127

Deposited 61, balance: 1188

Withdrawn 68, balance: 1120

Withdrawn 86, balance: 1034

Withdrawn 45, balance: 989

Deposited 0, balance: 989

Deposited 36, balance: 1000

Deposited 91, balance: 1091

Withdrawn 25, balance: 964

Withdrawn 35, balance: 1056

Deposited 51, balance: 1107

Final balance: 1107

Please provide 1) formatted code of Person.java, and 2) screenshots of your running program. Not providing a screenshot (with or without errors) will limit your score to below 3/10.

**Solution: (Paste formatted code here ()**

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**Solution: (Paste the screenshots here).**

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