



KEMENTERIAN PENDIDIKAN, KEBUDAYAAN
RISET, DAN TEKNOLOGI
POLITEKNIK NEGERI MALANG
JURUSAN TEKNOLOGI INFORMASI

Jl. Soekarno Hatta No.9 Jatimulyo, Lowokwaru, Malang, 65141
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Mid Test 2023/2024

Course : Algorithm and Data Structure Practicum
Kelas : SIB I
Day, Date : Tuesday, April 16th 2024
Time : 13.00 – 17.00
Lecturer : Rokhimatul Wakhidah, S.Pd., M.T.

Exam Instructions

1. Practical exams are honest and open
2. Please do it at your respective places.
3. The results of the work are in the form of a file in one folder containing the Java project and a PDF screen shot file resulting from compilation and coding
4. All work is uploaded to the LMS in one zip with just the NAME file naming format.
5. The same code structure is not permitted. 30% of the code structure is the same, repeating UTS.

Exam questions

1. Create a banking information system consisting of 2 diagram classes, namely Accounts and Transactions. In this information system you can
 - a. input data,
 - b. display data,
 - c. sort data by certain criteria, and
 - d. search for data.

Note: Views and class diagrams may be modified or added but may not be reduced.

Rekening
+ noRekening: String + nama: String + namaIbu: String + Phone: String + Email: String
+ Rekening(String a, String b, String c, String d, String e): void

Transaksi
+ saldo: double + saldoAwal: double + saldoAkhir: double + tanggalTransaksi: String + type: String
+ Transaksi(double a, double b, double c, double d, double e): void

MainTransaksi
+ Main(String[] abcd): void



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Name : Azaria Cindy Sahasika
Class : 1G – SIB
Number : 06

```
midExam > J rekening06.java > rekening06
3 public class rekening06 {
5     private transaction06[] transactions; // Array to store transactions
6     private int transactionCount; // Counter for transactions
7
8     public rekening06(String noRek, String nama, String namaIbu, String phone, String email) {
9         this.noRek = noRek;
10        this.nama = nama;
11        this.namaIbu = namaIbu;
12        this.phone = phone;
13        this.email = email;
14        this.transactions = new transaction06[100]; // Assuming maximum of 100 transactions per account
15        this.transactionCount = 0; // Initialize transaction count
16    }
17
18    public String getNoRek() {
19        return noRek;
20    }
21
22    public String getNama() {
23        return nama;
24    }
25
26    public String getNamaIbu() {
27        return namaIbu;
28    }
29
30    public String getPhone() {
31        return phone;
32    }
33
34    public String getEmail() {
35        return email;
36    }
37
38    // Method to add transaction
39    public void addTransaction(double saldoAwal, double saldoAkhir, String tanggalTransaksi, String type) {
40        transaction06 transaction = new transaction06(saldoAkhir - saldoAwal, saldoAwal, saldoAkhir, tanggalTransaksi, type);
41        transactions[transactionCount++] = transaction; // Add transaction and increment count
42    }
43
44    // Method to display transaction details
45    public void displayTransactions() {
46        for (int i = 0; i < transactionCount; i++) {
47            System.out.println("Transaction " + (i + 1) + ":");
48            System.out.println("Type: " + transactions[i].getType());
49            System.out.println("Transaction Date: " + transactions[i].getTanggalTransaksi());
50            System.out.println("Initial Balance: " + transactions[i].getSaldoAwal());
51            System.out.println("Final Balance: " + transactions[i].getSaldoAkhir());
52            System.out.println("Amount: " + transactions[i].getSaldo());
53        }
54    }
55
56    // Method to get saldo akhir
57    public double getSaldoAkhir() {
58        double saldoAwal = 0;
59        for (int i = 0; i < transactionCount; i++) {
60            saldoAwal += transactions[i].getSaldo();
61        }
62        return saldoAwal;
63    }
64 }
65 }
```



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```
midExam > J transaction06.java > transaction06
3  public class transaction06 {
5      private String tanggalTransaksi, type;
6
7      public transaction06(double saldo, double saldoAwal, double saldoAkhir, String tanggalTransaksi, String type) {
8          this.saldo = saldo;
9          this.saldoAwal = saldoAwal;
10         this.saldoAkhir = saldoAkhir;
11         this.tanggalTransaksi = tanggalTransaksi;
12         this.type = type;
13     }
14
15     public double getSaldo() {
16         return saldo;
17     }
18
19     public double getSaldoAwal() {
20         return saldoAwal;
21     }
22
23     public double getSaldoAkhir() {
24         return saldoAkhir;
25     }
26
27     public String getTanggalTransaksi() {
28         return tanggalTransaksi;
29     }
30
31     public String getType() {
32         return type;
33     }
34 }
```



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```
midExam > J transactionMain06.java > transactionMain06 > searchAccountByNumber(rekening06[], String)
4 public class transactionMain06 {
    Run | Debug
5     public static void main(String[] args) {
6         // Input data
7         Scanner scanner = new Scanner(System.in);
8         rekening06[] accounts = new rekening06[4];
9
10        for (int i = 0; i < accounts.length; i++) {
11            System.out.println("Enter account details for account " + (i + 1) + ":");
12            System.out.print(s:"Account Number: ");
13            String noRek = scanner.nextLine();
14            System.out.print(s:"Name: ");
15            String nama = scanner.nextLine();
16            System.out.print(s:"Mother's Name: ");
17            String namaIbu = scanner.nextLine();
18            System.out.print(s:"Phone: ");
19            String phone = scanner.nextLine();
20            System.out.print(s:"Email: ");
21            String email = scanner.nextLine();
22            accounts[i] = new rekening06(noRek, nama, namaIbu, phone, email);
23
24            // Input transaction details
25            System.out.println("Enter transaction details for account " + (i + 1) + ":");
26            System.out.print(s:"Initial Balance: ");
27            double saldoAwal = scanner.nextDouble();
28            System.out.print(s:"Final Balance: ");
29            double saldoAkhir = scanner.nextDouble();
30            scanner.nextLine(); // Consume newline character
31            System.out.print(s:"Transaction Date: ");
32            String tanggalTransaksi = scanner.nextLine();
33            System.out.print(s:"Transaction Type: ");
34            String type = scanner.nextLine();
35            accounts[i].addTransaction(saldoAwal, saldoAkhir, tanggalTransaksi, type);
36        }
37
38        // Display data for all accounts
39        System.out.println(x:"\nAccount Details:");
40        for (rekening06 account : accounts) {
41            System.out.println(x:"-----");
42            System.out.println("Account Number: " + account.getNoRek());
43            System.out.println("Name: " + account.getNama());
44            System.out.println("Mother's Name: " + account.getNamaIbu());
45            System.out.println("Phone: " + account.getPhone());
46            System.out.println("Email: " + account.getEmail());
47            System.out.println(x:"Transaction Details:");
48            account.displayTransactions();
49            System.out.println("Final Balance: " + account.getSaldoAkhir());
50        }
51    }
}
```



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```
midExam > J transactionMain06.java > transactionMain06 > searchAccountByNumber(rekening06[], String)
4 public class transactionMain06 {
5     public static void main(String[] args) {
6
7         // Sorting data based on account name
8         sortAccountsByName(accounts);
9
10        // Search for data based on account number
11        System.out.println(x:"-----");
12        System.out.print(s:"Enter account number to search: ");
13        String searchAccountNumber = scanner.next();
14        rekening06 foundAccount = searchAccountByNumber(accounts, searchAccountNumber);
15        if (foundAccount != null) {
16            System.out.println(x:"-----");
17            System.out.println(x:"Account Found:");
18            System.out.println(x:"-----");
19            System.out.println("Account Number: " + foundAccount.getNoRek());
20            System.out.println("Name: " + foundAccount.getNama());
21            System.out.println("Mother's Name: " + foundAccount.getNamaIbu());
22            System.out.println("Phone: " + foundAccount.getPhone());
23            System.out.println("Email: " + foundAccount.getEmail());
24            System.out.println("Saldo: " + foundAccount.getSaldoAkhir());
25            System.out.println(x:"-----");
26        } else {
27            System.out.println(x:"\nAccount not found.");
28            System.out.println(x:"-----");
29        }
30
31        scanner.close();
32    }
33
34    // Method to sort accounts by name
35    private static void sortAccountsByName(rekening06[] accounts) {
36        for (int i = 0; i < accounts.length - 1; i++) {
37            for (int j = i + 1; j < accounts.length; j++) {
38                if (accounts[i].getNama().compareTo(accounts[j].getNama()) > 0) {
39                    // Swap accounts
40                    rekening06 temp = accounts[i];
41                    accounts[i] = accounts[j];
42                    accounts[j] = temp;
43                }
44            }
45        }
46    }
47
48    // Method to search for account by number
49    private static rekening06 searchAccountByNumber(rekening06[] accounts, String searchNumber) {
50        for (rekening06 acc : accounts) {
51            if (acc.getNoRek().equals(searchNumber)) {
52                return acc;
53            }
54        }
55        return null;
56    }
57
58    }
59 }
```



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```
Enter account details for account 1:
Account Number: 1
Name: Azaria
Mother's Name: Arum
Phone: 081393500070
Email: Azaria@gmail.com
Enter transaction details for account 1:
Initial Balance: 2000000
Final Balance: 3000000
Transaction Date: 16/04/24
Transaction Type: Saving
Enter account details for account 2:
Account Number: 2
Name: Cindy
Mother's Name: Apriani
Phone: 081393
Email: Cindy@gmail.com
Enter transaction details for account 2:
Initial Balance: 5000000
Final Balance: 2000000
Transaction Date: 16/04/24
Transaction Type: purchase
Enter account details for account 3:
Account Number: 3
Name: Sahasika
Mother's Name: Triwijayanti
Phone: 0813526
Email: Sahasika@gmail.com
Enter transaction details for account 3:
Initial Balance: 2000000
Final Balance: 4000000
Transaction Date: 16/04/24
Transaction Type: Saving
```

```
Enter account details for account 4:
Account Number: 4
Name: Garcia
Mother's Name: Haris
Phone: 0819743
Email: Garcia@gmail.com
Enter transaction details for account 4:
Initial Balance: 3000000
Final Balance: 1000000
Transaction Date: 16/04/24
Transaction Type: purchase

Account Details:
-----
Account Number: 1
Name: Azaria
Mother's Name: Arum
Phone: 081393500070
Email: Azaria@gmail.com
Transaction Details:
Transaction 1:
Type: Saving
Transaction Date: 16/04/24
Initial Balance: 2000000.0
Final Balance: 3000000.0
Amount: 1000000.0

Final Balance: 1000000.0
-----
```




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```
Account Number: 2
Name: Cindy
Mother's Name: Apriani
Phone: 081393
Email: Cindy@gmail.com
Transaction Details:
Transaction 1:
Type: purchase
Transaction Date: 16/04/24
Initial Balance: 5000000.0
Final Balance: 2000000.0
Amount: -3000000.0
```

```
Final Balance: -3000000.0
```

```
-----
Account Number: 3
Name: Sahasika
Mother's Name: Triwijayanti
Phone: 0813526
Email: Sahasika@gmail.com
Transaction Details:
Transaction 1:
Type: Saving
Transaction Date: 16/04/24
Initial Balance: 2000000.0
Final Balance: 4000000.0
Amount: 2000000.0
```

```
Final Balance: 2000000.0
```

```
-----
Account Number: 4
Name: Garcia
Mother's Name: Haris
Phone: 0819743
Email: Garcia@gmail.com
Transaction Details:
Transaction 1:
Type: purchase
Transaction Date: 16/04/24
Initial Balance: 3000000.0
Final Balance: 1000000.0
Amount: -2000000.0
```

```
Final Balance: -2000000.0
```

```
Enter account number to search: 3
```

```
-----
Account Found:
```

```
-----
Account Number: 3
Name: Sahasika
Mother's Name: Triwijayanti
Phone: 0813526
Email: Sahasika@gmail.com
Saldo: 2000000.0
```