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Class : 1G – Business Information System
Lesson : Algorithm and Data Structure
Material : Final Exam

Code Program:

```
FinalExam06 > J RentalItems06.java > ...
1  package FinalExam06;
2
3  public class RentalItems06 {
4      String TNKBNNumber;
5      String vehicleName;
6      String vehicleType;
7      int year;
8      int rentalFee;
9
10     public RentalItems06(String TNKBNNumber, String vehicleName, String vehicleType, int year, int rentalFee) {
11         this.TNKBNNumber = TNKBNNumber;
12         this.vehicleName = vehicleName;
13         this.vehicleType = vehicleType;
14         this.year = year;
15         this.rentalFee = rentalFee;
16     }
17
18     public String display() {
19         return "TNKBNNumber: " + TNKBNNumber + ", Vehicle Name: " + vehicleName + ", Vehicle Type: " + vehicleType +
20             ", Year: " + year + ", Rental Fee: " + rentalFee;
21     }
22 }

FinalExam06 > J RentalTransactions06.java > ...
1  package FinalExam06;
2
3  public class RentalTransactions06 {
4      private static int transactionCounter = 1;
5
6      int transactionCode;
7      String borrowerName;
8      int lengthOfLoan;
9      double totalCost;
10     RentalItems06 rentalItem;
11
12     public RentalTransactions06(String borrowerName, int lengthOfLoan, RentalItems06 rentalItem) {
13         this.transactionCode = transactionCounter++;
14         this.borrowerName = borrowerName;
15         this.lengthOfLoan = lengthOfLoan;
16         this.totalCost = lengthOfLoan * rentalItem.rentalFee;
17         this.rentalItem = rentalItem;
18     }
19
20     public String display() {
21         return "Transaction Code: " + transactionCode + ", Borrower Name: " + borrowerName +
22             ", Length of Loan: " + lengthOfLoan + ", Total Cost: " + totalCost +
23             ", Rental Item: [" + rentalItem.display() + "];
24     }
25 }
```

FinalExam06 > J RentalMain06.java > ...

```
1  package FinalExam06;
2  import java.util.Scanner;
3
4  public class RentalMain06 {
5      private static RentalItems06[] rentalItemsList = new RentalItems06[50];
6      private static RentalTransactions06[] rentalTransactionList = new RentalTransactions06[50];
7      private static int rentalItemsCount = 0;
8      private static int rentalTransactionsCount = 0;
9      private static Scanner scanner = new Scanner(System.in);
10
11      Run | Debug
12      public static void main(String[] args) {
13          while (true) {
14              displayMenu();
15              int choice = scanner.nextInt();
16              scanner.nextLine();
17
18              switch (choice) {
19                  case 1:
20                      addRentalItem();
21                      break;
22                  case 2:
23                      displayRentalItems();
24                      break;
25                  case 3:
26                      recordRentalTransaction ();
27                      break;
28                  case 4:
29                      displayRentalTransactions();
30                      break;
31                  case 5:
32                      sortTransactionsByTNKB();
33                      break;
34                  case 6:
35                      System.out.println(x: "~Exiting...");
36                      return;
37                  default:
38                      System.out.println(x: "Invalid choice! Please try again....");
39              }
40          }
41      }
42  }
```

FinalExam06 > J RentalMain06.java > ...

```
4  public class RentalMain06 {
42      // displays the main menu
43      private static void displayMenu() {
44          System.out.println(x: "\nAzaria's Rental Menu");
45          System.out.println(x: "1. Add Rental Item");
46          System.out.println(x: "2. Display Rental Items");
47          System.out.println(x: "3. Loan");
48          System.out.println(x: "4. Display All Rental Transactions");
49          System.out.println(x: "5. Sort Transactions in order of TNKB number");
50          System.out.println(x: "6. Exit");
51          System.out.print(s: "Enter your choice: ");
52      }
53
54      // add a rental item
55      private static void addRentalItem() {
56          System.out.print(s: "Enter TNKB Number: ");
57          String TNKBNumber = scanner.nextLine();
58          System.out.print(s: "Enter Vehicle Name: ");
59          String vehicleName = scanner.nextLine();
60          System.out.print(s: "Enter Vehicle Type: ");
61          String vehicleType = scanner.nextLine();
62          System.out.print(s: "Enter Year: ");
63          int year = scanner.nextInt();
64          System.out.print(s: "Enter Rental Fee: ");
65          int rentalFee = scanner.nextInt();
66          scanner.nextLine();
67
68          RentalItems06 item = new RentalItems06(TNKBNumber, vehicleName, vehicleType, year, rentalFee);
69          rentalItemsList[rentalItemsCount++] = item;
70          System.out.println(x: "Rental item added successfully!");
71      }
72  }
```

FinalExam06 > J RentalMain06.java > ...

```
4 public class RentalMain06 {
73 // add rental transaction
74 private static void recordRentalTransaction() {
75     System.out.print(s:"Enter Borrower Name: ");
76     String borrowerName = scanner.nextLine();
77     System.out.print(s:"Enter Length of Loan (in days): ");
78     int lengthOfLoan = scanner.nextInt();
79     scanner.nextLine();
80
81     System.out.println(x:"Available Rental Items:");
82     for (int i = 0; i < rentalItemsCount; i++) {
83         System.out.println((i + 1) + ". " + rentalItemsList[i].display());
84     }
85     System.out.print(s:"Select Rental Item (number): ");
86     int itemIndex = scanner.nextInt() - 1;
87     scanner.nextLine();
88
89     if (itemIndex < 0 || itemIndex >= rentalItemsCount) {
90         System.out.println(x:"Invalid item selection! Transaction not recorded...");
91         return;
92     }
93
94     RentalItems06 selectedItem = rentalItemsList[itemIndex];
95     RentalTransactions06 transaction = new RentalTransactions06(borrowerName, lengthOfLoan, selectedItem);
96     rentalTransactionList[rentalTransactionsCount++] = transaction;
97     System.out.println(x:"Rental transaction recorded successfully!");
98 }
99
100 // display rental items
101 private static void displayRentalItems() {
102     if (rentalItemsCount == 0) {
103         System.out.println(x:"No rental items available!");
104     } else {
105         System.out.println(x:"Rental Items:");
106         for (int i = 0; i < rentalItemsCount; i++) {
107             System.out.println(rentalItemsList[i].display());
108         }
109     }
110 }
```

FinalExam06 > J RentalMain06.java > ...

```
4 public class RentalMain06 {
112 // display rental transactions
113 private static void displayRentalTransactions() {
114     if (rentalTransactionsCount == 0) {
115         System.out.println(x:"No rental transactions recorded!");
116     } else {
117         System.out.println(x:"Rental Transactions:");
118         for (int i = 0; i < rentalTransactionsCount; i++) {
119             System.out.println(rentalTransactionList[i].display());
120         }
121     }
122 }
123
124 // sort transactions by TNKB
125 private static void sortTransactionsByTNKB() {
126     if (rentalTransactionsCount == 0) {
127         System.out.println(x:"No rental transactions to sort!");
128         return;
129     }
130
131     for (int i = 0; i < rentalTransactionsCount - 1; i++) {
132         for (int j = i + 1; j < rentalTransactionsCount; j++) {
133             // compareTo untuk membandingkan dua TNKB dari items dan transactions
134             // compares two objects to determine their order
135             if (rentalTransactionList[i].rentalItem.TNKBNumber.compareTo(rentalTransactionList[j].rentalItem.TNKBNumber) > 0) {
136                 // compareTo akan return
137                 RentalTransactions06 temp = rentalTransactionList[i];
138                 rentalTransactionList[i] = rentalTransactionList[j];
139                 rentalTransactionList[j] = temp;
140             }
141         }
142     }
143
144     System.out.println(x:"Transactions sorted by TNKB number!");
145 }
146 }
```

Output:

```
Azaria's Rental Menu
1. Add Rental Item
2. Display Rental Items
3. Loan
4. Display All Rental Transactions
5. Sort Transactions in order of TNKB number
6. Exit
Enter your choice: 1
Enter TNKB Number: S 4567 YV
Enter Vehicle Name: Honda Beat
Enter Vehicle Type: Motor
Enter Year: 2017
Enter Rental Fee: 10000
Rental item added successfully!
```

```
Azaria's Rental Menu
1. Add Rental Item
2. Display Rental Items
3. Loan
4. Display All Rental Transactions
5. Sort Transactions in order of TNKB number
6. Exit
Enter your choice: 2
Rental Items:
TNKBNumber: S 4567 YV, Vehicle Name: Honda Beat, Vehicle Type: Motor, Year: 2017, Rental Fee: 10000
TNKBNumber: N 4511 VS, Vehicle Name: Honda Vario, Vehicle Type: Motor, Year: 2018, Rental Fee: 10000
TNKBNumber: N 1453 AA , Vehicle Name: Toyota Yaris, Vehicle Type: Mobil, Year: 2022, Rental Fee: 30000
TNKBNumber: AB 4321 A, Vehicle Name: Toyota Innova, Vehicle Type: Mobil, Year: 2019, Rental Fee: 60000
TNKBNumber: B 1234 AG , Vehicle Name: Toyota Avanza, Vehicle Type: Mobil, Year: 2021, Rental Fee: 25000
```

```
Azaria's Rental Menu
1. Add Rental Item
2. Display Rental Items
3. Loan
4. Display All Rental Transactions
5. Sort Transactions in order of TNKB number
6. Exit
Enter your choice: 3
Enter Borrower Name: Santi
Enter Length of Loan (in days): 36
Available Rental Items:
1. TNKBNumber: S 4567 YV, Vehicle Name: Honda Beat, Vehicle Type: Motor, Year: 2017, Rental Fee: 10000
2. TNKBNumber: N 4511 VS, Vehicle Name: Honda Vario, Vehicle Type: Motor, Year: 2018, Rental Fee: 10000
3. TNKBNumber: N 1453 AA , Vehicle Name: Toyota Yaris, Vehicle Type: Mobil, Year: 2022, Rental Fee: 30000
4. TNKBNumber: AB 4321 A, Vehicle Name: Toyota Innova, Vehicle Type: Mobil, Year: 2019, Rental Fee: 60000
5. TNKBNumber: B 1234 AG , Vehicle Name: Toyota Avanza, Vehicle Type: Mobil, Year: 2021, Rental Fee: 25000
Select Rental Item (number): 3
Rental transaction recorded successfully!
```

```
Azaria's Rental Menu
1. Add Rental Item
2. Display Rental Items
3. Loan
4. Display All Rental Transactions
5. Sort Transactions in order of TNKB number
6. Exit
Enter your choice: 4
Rental Transactions:
Transaction Code: 1, Borrower Name: Santi, Length of Loan: 36, Total Cost: 1000000.0, Rental Item: [TNKBNumber: N 1453 AA ,
Vehicle Name: Toyota Yaris, Vehicle Type: Mobil, Year: 2022, Rental Fee: 30000]
Transaction Code: 2, Borrower Name: Wanda, Length of Loan: 50, Total Cost: 500000.0, Rental Item: [TNKBNumber: S 4567 YV, Ve
hicle Name: Honda Beat, Vehicle Type: Motor, Year: 2017, Rental Fee: 10000]
Transaction Code: 3, Borrower Name: Aflah, Length of Loan: 24, Total Cost: 600000.0, Rental Item: [TNKBNumber: B 1234 AG , V
ehicle Name: Toyota Avanza, Vehicle Type: Mobil, Year: 2021, Rental Fee: 25000]
```

```
Azaria's Rental Menu
1. Add Rental Item
2. Display Rental Items
3. Loan
4. Display All Rental Transactions
5. Sort Transactions in order of TNKB number
6. Exit
Enter your choice: 5
Transactions sorted by TNKB number!
```