



MINISTRY OF EDUCATION, CULTURE, RESEARCH AND TECHNOLOGY  
**MALANG STATE POLYTECHNIC**  
INFORMATION TECHNOLOGY DEPARTMENT

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Page://www.polinema.ac.id

**FINAL EXAMINATION EVEN SEMESTER ACADEMIC YEAR 2023/2024**

**Course** : Practical Algorithms and Data Structures

**Day/date** : Thursday, June 13 2024

**Time** : 13.00 – 14.30 ( 90 minutes)

**Class** : TI 1A-1H

**Nature** : Practical Exam

This document contains programming exam materials that must be completed by the examinee personally and manually. The use of automated tools, including but not limited to artificial intelligence (AI), automated programming, or digital assistants such as GPT, to complete this exam is strictly prohibited. Violation of this rule will be considered cheating and may result in serious disciplinary action.

**General requirements:**

- 1) There is no provision for using arrays, linked list or double linked lists. Additional points will be given based on the level of difficulty. Arrays have no additions, linked lists **VALUE+10**, double linked lists **VALUE+15**.
- 2) It is not permitted to use Java Collection Frameworks.

**Question**

**For NIMs ending in ODD numbers**

Create a program to carry out rental transactions for goods used by the cashier. Some provisions that must be in place in the program are as follows

1. The system consists of at least 2 classes, namely RentalItems ( TNKBNumber, vehicle name, vehicle type, year, rental fee ) and Transactions (code, number of items, total price). Please note, class Rental Transaction **must be related** to the class GoodsRental. The 'transactionCode' attribute of the class Rental transactions will automatically be filled in auto increment order (**VALUE 5**)

RentalItems
TNKBNumber : String vehicleName : String vehicleType : String year : int rentalFee : int
RentalItems ( TNKBNumber, vehicleName, vehicleType, year, rentalFee )

RentalTransaction
transactionCode : int borrowerName : String lengthofLoan : int totalCost : double br : Rental Items
RentalTransaction ( transactionCode, borrowerName, lengthofLoan, totalCost, br )

2. The program is created using a menu system and specifically item data is filled in when the program is run (**VALUE 10**)



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Menu

1. Daftar Kendaraan
  2. Peminjaman
  3. Tampilkan seluruh transaksi
  4. Urutkan Transaksiurut no TNKB
  5. Keluar
- Pilih(1-5): 1

+++++

Daftar Kendaraan Rental Serba Serbi

+++++

Nomor TNKB	Nama Kendaraan	Jenis	Tahun	Biaya Sewa Perjam
S 4567 YV	Honda Beat	Motor	2017	10000
N 4511 VS	Honda Vario	Motor	2018	10000
N 1453 AA	Toyota Yaris	Mobil	2022	30000
AB 4321 A	Toyota Innova	Mobil	2019	60000
B 1234 AG	Toyota Avanza	Mobil	2021	25000

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3. When entering transaction data, the only information entered is the item code and length of loan (in hours). Perform a search on existing vehicle data (**VALUE 20**)

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- Pilih(1-5): 2

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Masukkan Data Peminjaman

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Masukkan Nama Peminjam: Santi  
Masukkan Nomer TNKB : N 1453 AA  
Masukkan Lama Pinjam: 36

Apakah Member (ya/tidak): ya

kode	No TNKB	Nama Barang	Nama Peminjam	Lama Pinjam	Total Biaya
1	N 1453 AA	Toyota Yaris	Santi	36	1415000

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- Pilih(1-5): 2

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Masukkan Data Peminjaman

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Masukkan Nama Peminjam: Popu  
Masukkan Nomer TNKB : N 1453 AA  
Masukkan Lama Pinjam: 12

Apakah Member (ya/tidak): tidak

Tidak bisa diproses, kendaraan sudah dipinjam orang lain

Some conditions related to costs that need to be met are as follows: (**VALUE 20**)

- a. The types of vehicles consist of motorbikes and cars
  - b. The hourly rental fee for a motorbike is 25000 and a car is 40000
  - c. You cannot borrow a vehicle that has been borrowed by someone else
  - d. Members will get a discount of 25000
  - e. Discounts are also applied based on the length of borrowing, which consists of between 48 to 78 hours getting a 10% discount, more than 78 hours getting a 20% discount
4. The program can display all previous transactions and display total income. (**MORE 20**)



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5. Keluar
Pilih(1-5): 3
+++++
Daftar Transaksi Peminjaman Rental Serba Serbi
+++++
kode      | No TNKB      | Nama Barang      | Nama Peminjam    | Lama Pinjam      | Total Biaya
|3         | S 4567 YV    | Honda Beat       | Wanda            | 50               | 1125000
|1         | N 1453 AA    | Toyota Yaris     | Santi            | 36               | 1415000

semua transaksi berhasil dicetak
+++++
TOTAL PENDAPATAN RENTAL SERBA SERBI
+++++
Pendapatan hari ini :2540000
```

5. The program can sort all previous transactions based on **(VALUE 15)** :  
First letter Full name **AM TNKB number** in descending order .  
First letter of full name **NZ Name** in descending order .

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Menu
1. Daftar Kendaraan
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4. Urutkan Transaksiurut no TNKB
5. Keluar
Pilih(1-5): 4
+++++
Daftar Transaksi Peminjaman Rental Serba Serbi
+++++
kode      | No TNKB      | Nama Barang      | Nama Peminjam    | Lama Pinjam      | Total Biaya
|3         | S 4567 YV    | Honda Beat       | Wanda            | 50               | 1125000
|1         | N 1453 AA    | Toyota Yaris     | Santi            | 36               | 1415000
|4         | B 1234 AG    | Toyota Avanza    | Aflah            | 24               | 960000
```

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