

Nama : Bagus Zizou Satiaji
NIM : L200180212
Kelas : Sistem Basis Data (**H**)

UJIAN TENGAH SEMESTER PRAKTIKUM SISTEM BASIS DATA

Perhatikan atribut-atribut entitas untuk sirkulasi peminjaman buku di perpustakaan berikut (tabel belum normal).

NIM, Nama, Kelas, Gender, Kode_Buku, Kode_Eksemplar, Judul_Buku, Edisi, Tahun_Terbit, Kode_Pengarang, Nama_Pengarang, Title_Pengarang, Kode_Penerbit, Nama_Penerbit, Tgl_Pinjam, Tgl_Dikembalikan, Terlambat, Denda.

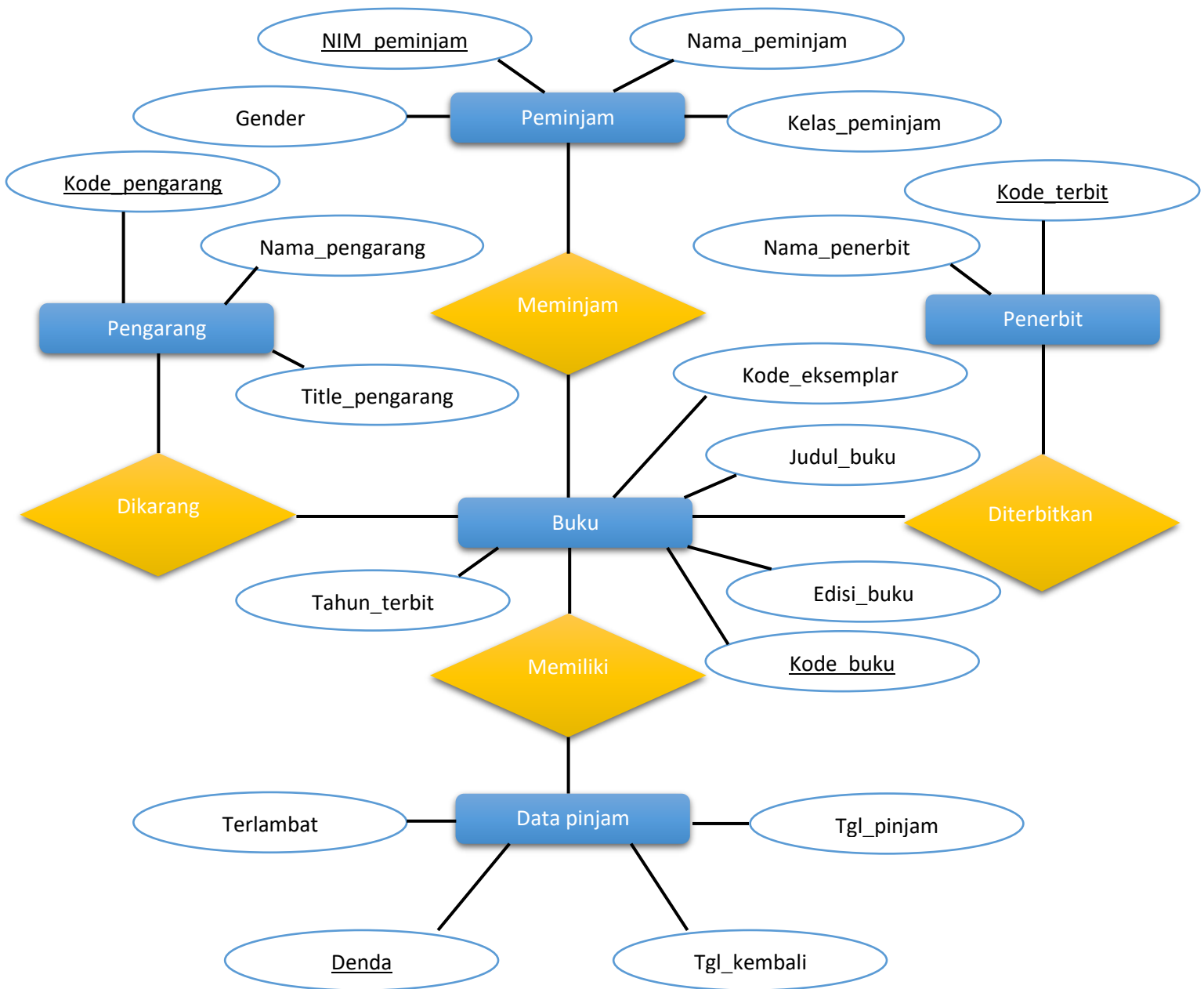
Keterangan :

- a) Seorang mahasiswa boleh meminjam lebih dari satu mahasiswa.
- b) Seorang pengarang boleh mengarang lebih dari satu buku.
- c) Sebuah penerbit boleh menerbitkan lebih dari satu buku.
- d) Title_Pengarang digunakan untuk mencatat gelar yang dimiliki oleh pengarang buku, misalnya M.Kom, S.T, Dr. dan lainnya.
- e) Semua buku walaupun judulnya sama memiliki kode berbeda yang disimpan dalam kolom Kode_Eksemplar. Namun, buku yang memiliki judul sama akan memiliki Kode_Buku sama pula. Sebagai contoh, buku berjudul “CMS OpenCart untuk E-Commerce” dengan pengarang **Wiwit Supriyanti, S.Kom, M.Kom**. Jika terdapat sepuluh buku dengan judul sama, maka Kode_Buku untuk buku adalah **001.01/ws**, sedangkan setiap buku memiliki Kode_Eksemplar berbeda, yaitu : **001.01/ws/001, 001.01/ws/002, 001.01/ws/010**.

Pertanyaan :

- a. Buatlah diagram entity relationship (ERD) database sirkulasi perpustakaan. (**maksimal 25 poin**)
- b. Sebutkan relasi yang dimiliki oleh entitas dari diagram entity relationship yang anda buat (misalnya one-to-one, one-to-many atau many-to-many). (**maksimal 10 poin**)
- c. Setelah anda melakukan normalisasi, salinlah rancangan ERD anda menggunakan tool DBDesigner atau sejenisnya. Sebutkan pula tipe data yang dimiliki oleh masing-masing kolom untuk setiap tabelnya (misal integer, varchar, dll). (**maksimal 20 poin**)
- d. Implementasikan rancangan ERD pada soal c ke dalam database menggunakan query SQL : CREATE. (**maksimal 15 poin**)
- e. Tambahkan data / record pada setiap tabel yang anda buat pada soal d menggunakan perintah INSERT (masing-masing tabel minimal 10 record). (**maksimal 30 poin**)

a. ERD Sirkulasi Perpustakaan



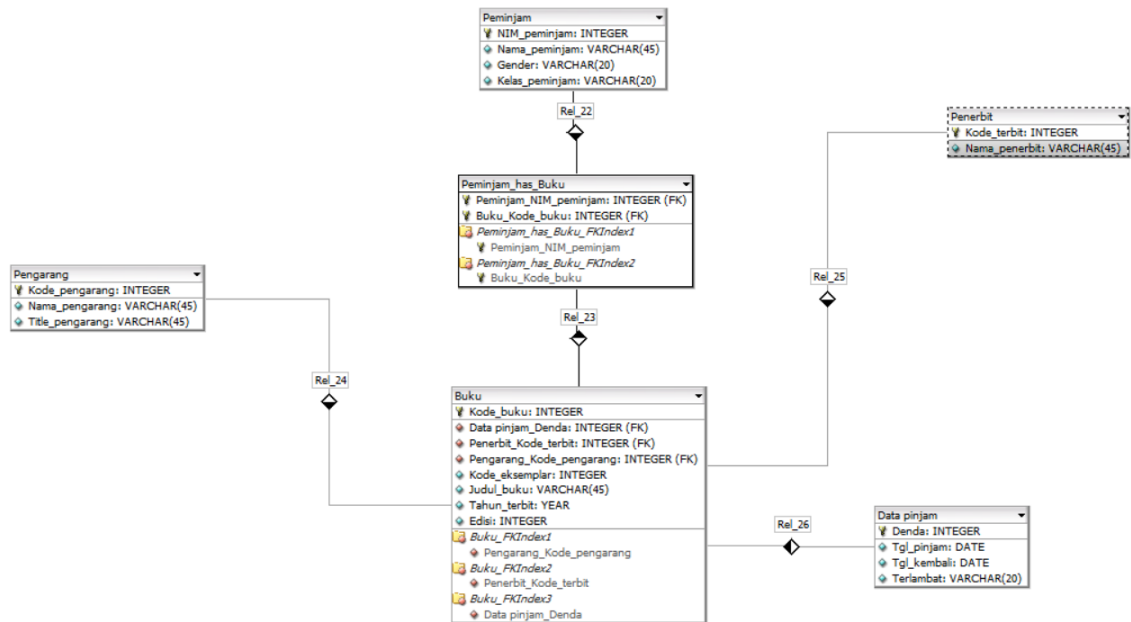
b. Relationship antar Entitas

	Peminjam	Buku	Penerbit	Pengarang	Data pinjam
Peminjam	-	M:n	-	-	-
Buku		-	1:n	1:n	1:n
Penerbit			-	-	-
Pengarang				-	-
Data pinjam					-

Hubungan

- Peminjam meminjam Buku
 - Tabel utama: Peminjam, Buku
 - Tabel kedua: Peminjam_has_Buku
 - Relationship: Many to many(m:n)
 - Attribute penghubung:
- Buku dikarang Pengarang
 - Tabel utama: Buku, Pengarang
 - Tabel kedua: Buku
 - Relationship: Many to one(n:1)
 - Attribute penghubung:
- Buku diterbitkan Penerbit
 - Tabel utama: Buku, Penerbit
 - Tabel kedua: Buku
 - Relationship: Many to one(n:1)
 - Attribute penghubung:
- Buku memiliki Data pinjam
 - Tabel utama: Buku, Data pinjam
 - Tabel kedua: Buku
 - Relationship:
 - Attribute penghubung:

c. ERD menggunakan DBDesigner



d. ERD menggunakan QUERY mySql: Create

```

C:\Users\msi gaming>cd C:\xampp\mysql\bin

C:\xampp\mysql\bin>mysql -u root -p
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 2
Server version: 10.1.37-MariaDB mariadb.org binary distribution

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> create database perpustakaan
-> ;
Query OK, 1 row affected (0.05 sec)

MariaDB [(none)]> use perpustakaan;
Database changed
    
```

```

MariaDB [perpustakaan]> create table pengarang(
  -> kode_pengarang INTEGER PRIMARY KEY,
  -> nama_pengarang VARCHAR(45) NOT NULL,
  -> title_pengarang VARCHAR(45) NOT NULL)
  -> ;

```

Query OK, 0 rows affected (0.41 sec)

```

MariaDB [perpustakaan]> show tables;

```

```

+-----+
| Tables_in_perpustakaan |
+-----+
| pengarang               |
+-----+
1 row in set (0.03 sec)

```

```

MariaDB [perpustakaan]> describe pengarang;

```

Field	Type	Null	Key	Default	Extra
kode_pengarang	int(11)	NO	PRI	NULL	
nama_pengarang	varchar(45)	NO		NULL	
title_pengarang	varchar(45)	NO		NULL	

3 rows in set (0.04 sec)

```

MariaDB [perpustakaan]> 

```

3 rows in set (0.04 sec)

```

MariaDB [perpustakaan]> create table peminjam(
  -> NIM_peminjam INTEGER PRIMARY KEY,
  -> nama_peminjam VARCHAR(45) NOT NULL,
  -> gender VARCHAR(20) NOT NULL,
  -> kelas_peminjam VARCHAR(20) NOT NULL);

```

Query OK, 0 rows affected (0.16 sec)

```

MariaDB [perpustakaan]> describe peminjam;

```

Field	Type	Null	Key	Default	Extra
NIM_peminjam	int(11)	NO	PRI	NULL	
nama_peminjam	varchar(45)	NO		NULL	
gender	varchar(20)	NO		NULL	
kelas_peminjam	varchar(20)	NO		NULL	

4 rows in set (0.01 sec)

```

MariaDB [perpustakaan]> 

```

```

MariaDB [perpustakaan]> create table penerbit(
  -> kode_penerbit INTEGER PRIMARY KEY,
  -> nama_penerbit VARCHAR(45));
Query OK, 0 rows affected (0.30 sec)

MariaDB [perpustakaan]> describe penerbit;
+-----+-----+-----+-----+-----+-----+
| Field          | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| kode_penerbit  | int(11)       | NO   | PRI | NULL    |       |
| nama_penerbit  | varchar(45)   | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.01 sec)

MariaDB [perpustakaan]> create table datapinjam(
  -> denda INTEGER PRIMARY KEY,
  -> tgl_pinjam DATE NOT NULL,
  -> tgl_kembali DATE NOT NULL,
  -> terlambat VARCHAR(20) NOT NULL);
Query OK, 0 rows affected (0.18 sec)

MariaDB [perpustakaan]> describe datapinjam;
+-----+-----+-----+-----+-----+-----+
| Field          | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| denda          | int(11)       | NO   | PRI | NULL    |       |
| tgl_pinjam     | date          | NO   |     | NULL    |       |
| tgl_kembali    | date          | NO   |     | NULL    |       |
| terlambat      | varchar(20)   | NO   |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.01 sec)

MariaDB [perpustakaan]> 

```

```

4 rows in set (0.01 sec)

MariaDB [perpustakaan]> create table buku(
  -> kode_buku INTEGER PRIMARY KEY,
  -> dendaFK INTEGER REFERENCES datapinjam(denda)
  -> ON DELETE SET NULL ON UPDATE CASCADE,
  -> kode_terbitFK INTEGER REFERENCES penerbit(kode_terbit)
  -> ON DELETE SET NULL ON UPDATE CASCADE,
  -> kode_pengarangFK INTEGER REFERENCES pengarang(kode_pengarang)
  -> ON DELETE SET NULL ON UPDATE CASCADE,
  -> kode_eksemplar INTEGER NOT NULL,
  -> judul_buku VARCHAR(45) NOT NULL,
  -> tahun_terbit YEAR NOT NULL,
  -> edisi INTEGER NOT NULL);
Query OK, 0 rows affected (0.19 sec)

MariaDB [perpustakaan]> describe buku;
+-----+-----+-----+-----+-----+-----+
| Field          | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| kode_buku      | int(11)       | NO   | PRI | NULL    |       |
| dendaFK        | int(11)       | YES  |     | NULL    |       |
| kode_terbitFK  | int(11)       | YES  |     | NULL    |       |
| kode_pengarangFK | int(11)      | YES  |     | NULL    |       |
| kode_eksemplar | int(11)       | NO   |     | NULL    |       |
| judul_buku     | varchar(45)   | NO   |     | NULL    |       |
| tahun_terbit   | year(4)       | NO   |     | NULL    |       |
| edisi          | int(11)       | NO   |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
8 rows in set (0.01 sec)

MariaDB [perpustakaan]> 

```

```

C:\Program Files\MySQL\MySQL Server 5.5\bin> mysql -u root -p
8 rows in set (0.01 sec)

MariaDB [perpustakaan]> create table peminjam_has_buku(
  -> NIM_peminjamFK INTEGER REFERENCES peminjam(NIM_peminjam)
  -> ON DELETE CASCADE ON UPDATE CASCADE,
  -> kode_bukuFK INTEGER REFERENCES buku(kode_buku)
  -> ON DELETE CASCADE ON UPDATE CASCADE,
  -> PRIMARY KEY(NIM_peminjamFK, kode_bukuFK));
Query OK, 0 rows affected (0.16 sec)

MariaDB [perpustakaan]> show tables;
+-----+
| Tables_in_perpustakaan |
+-----+
| buku                    |
| datapeminjam            |
| peminjam                |
| peminjam_has_buku       |
| penerbit                |
| pengarang               |
+-----+
6 rows in set (0.00 sec)

MariaDB [perpustakaan]> describe peminjam;
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| NIM_peminjam | int(11)   | NO   | PRI | NULL    |       |
| nama_peminjam | varchar(45) | NO   |     | NULL    |       |
| gender      | varchar(20) | NO   |     | NULL    |       |
| kelas_peminjam | varchar(20) | NO   |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.01 sec)

MariaDB [perpustakaan]> describe peminjam_has_buku;
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| NIM_peminjamFK | int(11) | NO   | PRI | NULL    |       |
| kode_bukuFK    | int(11) | NO   | PRI | NULL    |       |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.01 sec)

```

e. INSERT

```

MariaDB [perpustakaan]> insert into pengarang(kode_pengarang, nama_pengarang, title_pengarang) values
  -> (1,"timothi","M.Si"),
  -> (2,"tio","S.T"),
  -> (3,"lusi","S.pd"),
  -> (4,"tukul","S.Ag"),
  -> (5,"rosi","S.kom"),
  -> (6,"dika","M.Si"),
  -> (7,"loki","M.Si"),
  -> (8,"sanji","S.T"),
  -> (9,"riko","M.Kom"),
  -> (10,"teo","M.Kom");
ERROR 1136 (21S01): Column count doesn't match value count at row 6
MariaDB [perpustakaan]> insert into pengarang(kode_pengarang, nama_pengarang, title_pengarang) values
  -> (1,"timothi","M.Si"),
  -> (2,"tio","S.T"),
  -> (3,"lusi","S.pd"),
  -> (4,"tukul","S.Ag"),
  -> (5,"rosi","S.kom"),
  -> (6,"dika","M.Si"),
  -> (7,"loki","M.Si"),
  -> (8,"sanji","S.T"),
  -> (9,"riko","M.Kom"),
  -> (10,"teo","M.Kom");
Query OK, 10 rows affected (0.08 sec)
Records: 10 Duplicates: 0 Warnings: 0

MariaDB [perpustakaan]> select* from pengarang;
+-----+-----+-----+
| kode_pengarang | nama_pengarang | title_pengarang |
+-----+-----+-----+
| 1 | timothi | M.Si |
| 2 | tio | S.T |
| 3 | lusi | S.pd |
| 4 | tukul | S.Ag |
| 5 | rosi | S.kom |
| 6 | dika | M.Si |
| 7 | loki | M.Si |
| 8 | sanji | S.T |
| 9 | riko | M.Kom |
| 10 | teo | M.Kom |
+-----+-----+-----+
10 rows in set (0.00 sec)

```

```

MariaDB [perpustakaan]> insert into peminjam(NIM_peminjam, nama_peminjam, gender, kelas_peminjam) values
-> (100, "leo", "laki-laki", "A"),
-> (151, "DEA", "PEREMPUAN", "B"),
-> (300, "IKHWAN", "LAKI-LAKI", "D"),
-> (250, "MIJAN", "REVAN", "D"),
-> (252, "MEGA", "PEREMPUAN", "D"),
-> (253, "REVAN", "LAKI-LAKI", "D"),
-> (254, "RIDHO", "LAKI-LAKI", "D"),
-> (255, "RISKI", "LAKI-LAKI", "D"),
-> (101, "DIAH", "PEREMPUAN", "A"),
-> (192, "MIA", "PEREMPUAN", "C");
Query OK, 10 rows affected (0.06 sec)
Records: 10 Duplicates: 0 Warnings: 0

```

```

MariaDB [perpustakaan]> update peminjam set gender="LAKI-LAKI" WHERE NIM_peminjam="250";
Query OK, 1 row affected (0.07 sec)
Rows matched: 1 Changed: 1 Warnings: 0

```

```

MariaDB [perpustakaan]> select* from peminjam;

```

NIM_peminjam	nama_peminjam	gender	kelas_peminjam
100	leo	laki-laki	A
101	DIAH	PEREMPUAN	A
151	DEA	PEREMPUAN	B
192	MIA	PEREMPUAN	C
250	MIJAN	LAKI-LAKI	D
252	MEGA	PEREMPUAN	D
253	REVAN	LAKI-LAKI	D
254	RIDHO	LAKI-LAKI	D
255	RISKI	LAKI-LAKI	D
300	IKHWAN	LAKI-LAKI	D

```

10 rows in set (0.00 sec)

```

```

MariaDB [perpustakaan]> insert into penerbit(kode_penerbit, nama_penerbit)values
-> (1001, "1917"),
-> (1000, "HARRY POTTER"),
-> (1002, "AVENGER"),
-> (1003, "THE HOBBIT"),
-> (1004, "THE LORD OF THE RINGS"),
-> (1005, "A TALE OF TWO CITIES"),
-> (1006, "BUMI MANUSIA"),
-> (1007, "THE LION"),
-> (1008, "THE LITTLE PRINCE"),
-> (1009, "DON QUIXOTE");
Query OK, 10 rows affected (0.08 sec)
Records: 10 Duplicates: 0 Warnings: 0

```

```

MariaDB [perpustakaan]> select* from penerbit;

```

kode_penerbit	nama_penerbit
1000	HARRY POTTER
1001	1917
1002	AVENGER
1003	THE HOBBIT
1004	THE LORD OF THE RINGS
1005	A TALE OF TWO CITIES
1006	BUMI MANUSIA
1007	THE LION
1008	THE LITTLE PRINCE
1009	DON QUIXOTE

```

10 rows in set (0.00 sec)

```



```

MariaDB [perpustakaan]> insert into datapinjam(denda, tgl_pinjam, tgl_kembali, terlambat)values
-> (10000, 2020-01-01, 2020-01-07,"1 HARI"),
-> (100000, 2020-01-01, 2020-01-08,"10 HARI"),
-> (90000, 2020-01-01, 2020-01-08,"9 HARI"),
-> (80000, 2020-01-01, 2020-01-18,"8 HARI"),
-> (70000, 2020-01-01, 2020-01-28,"7 HARI"),
-> (60000, 2020-01-01, 2020-01-12,"6 HARI"),
-> (50000, 2020-01-01, 2020-01-16,"5 HARI"),
-> (40000, 2020-01-01, 2020-01-10,"4 HARI"),
-> (30000, 2020-01-01, 2020-01-14,"3 HARI"),
-> (20000, 2020-01-01, 2020-01-24,"2 HARI");
Query OK, 10 rows affected, 20 warnings (0.09 sec)
Records: 10 Duplicates: 0 Warnings: 20

```

```

MariaDB [perpustakaan]> insert into buku(kode_buku, kode_eksemplar, judul_buku, tahun_terbit,edisi)values
-> (500, 22,"mamiu", 2000, 4),
-> (5001,23,"kaemo", 2002, 5),
-> (5002,24,"mero", 2005,1),
-> (5003,25,"itaawon", 2020, 1),
-> (5004,26,"potter", 1994, 6),
-> (5005,27,"roger", 1990,7),
-> (5006,28,"lance", 2001,5),
-> (5007,29,"vall",2000,1),
-> (5008,30,"ganfall", 2007, 3),
-> (5009,31,"romeo",1980, 10);
Query OK, 10 rows affected (0.07 sec)
Records: 10 Duplicates: 0 Warnings: 0

```

```

MariaDB [perpustakaan]> select* from buku;

```

kode_buku	dendaFK	kode_terbitFK	kode_pengarangFK	kode_eksemplar	judul_buku	tahun_terbit	edisi
500	NULL	NULL	NULL	22	mamiu	2000	4
5001	NULL	NULL	NULL	23	kaemo	2002	5
5002	NULL	NULL	NULL	24	mero	2005	1
5003	NULL	NULL	NULL	25	itaawon	2020	1
5004	NULL	NULL	NULL	26	potter	1994	6
5005	NULL	NULL	NULL	27	roger	1990	7
5006	NULL	NULL	NULL	28	lance	2001	5
5007	NULL	NULL	NULL	29	vall	2000	1
5008	NULL	NULL	NULL	30	ganfall	2007	3
5009	NULL	NULL	NULL	31	romeo	1980	10

```

10 rows in set (0.00 sec)

```