



# Pengaksesan Basis Data

*Referential Integrity*

Fak. Teknik Prodi Teknik Informatika  
Universitas Pasundan

Caca E. Supriana, S.Si., MT.

[caca.e.supriana@unpas.ac.id](mailto:caca.e.supriana@unpas.ac.id)

[caca-e-supriana.blogspot.com](http://caca-e-supriana.blogspot.com)

# Properti Basis Data Relasional

1. Setiap hubungan (tabel) dalam database memiliki nama yang unik.
2. Sebuah entri di persimpangan setiap baris dan kolom adalah atomik (atau bernilai tunggal, *single-valued*). Hanya ada satu nilai yang terkait dengan masing-masing atribut pada baris tertentu dari tabel; atribut tidak *multivalued*.
3. Setiap baris (*record*) adalah unik; tidak ada dua baris dalam relasi yang identik.
4. Setiap atribut (kolom/*field*) dalam tabel memiliki nama yang unik.
5. Urutan kolom (kiri ke kanan) tidak signifikan. Urutan kolom dapat diubah tanpa mengubah arti atau penggunaan relasi.
6. Urutan baris (atas ke bawah) tidak signifikan. Seperti kolom, urutan dari baris dari suatu relasi dapat diubah atau disimpan dalam urutan apapun.

# Kunci Basis Data Relasional

KEY TYPE	DEFINITION
<b>Superkey</b>	An attribute (or combination of attributes) that uniquely identifies each row in a table.
<b>Candidate key</b>	A minimal (irreducible) superkey. A superkey that does not contain a subset of attributes that is itself a superkey.
<b>Primary key</b>	A candidate key selected to uniquely identify all other attribute values in any given row. Cannot contain null entries.
<b>Secondary key</b>	An attribute (or combination of attributes) used strictly for data retrieval purposes.
<b>Foreign key</b>	An attribute (or combination of attributes) in one table whose values must either match the primary key in another table or be null.



# Aturan Integritas Data

ENTITY INTEGRITY	
Requirement	All primary key entries are unique, and no part of a primary key may be null.
Purpose	Each row will have a unique identity, and foreign key values can properly reference primary key values.
Example	No invoice can have a duplicate number, nor can it be null. In short, all invoices are uniquely identified by their invoice number.
REFERENCE INTEGRITY	
Requirement	A foreign key may have either a null entry, as long as it is not a part of its table's primary key, or an entry that matches the primary key value in a table to which it is related. (Every non-null foreign key value <i>must</i> reference an <i>existing</i> primary key value.)
Purpose	It is possible for an attribute NOT to have a corresponding value, but it will be impossible to have an invalid entry. The enforcement of the referential integrity rule makes it impossible to delete a row in one table whose primary key has mandatory matching foreign key values in another table.
Example	A customer might not yet have an assigned sales representative (number), but it will be impossible to have an invalid sales representative (number).



# *Referential Integrity (1)*

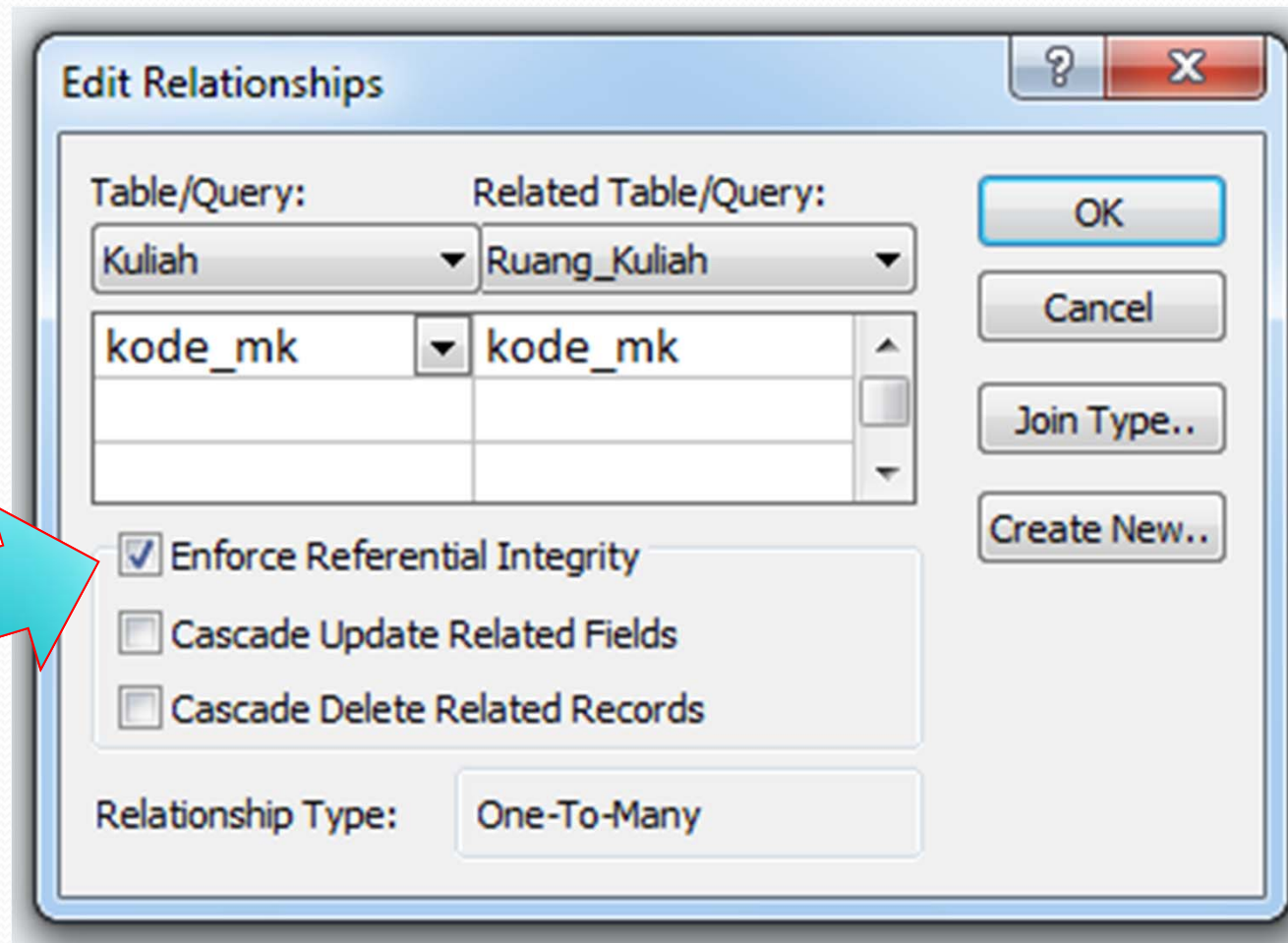
- Integritas referensial merupakan konsep yang mengacu pada sebuah kondisi ketika semua referensi dalam database yang valid dan tidak ada link yang tidak valid ada di antara berbagai tabel yang berelasi untuk membentuk sistem.
- Integritas referensial memanfaatkan *foreign key*, setiap *query* yang menghubungkan ke record yang tidak ada akan gagal; ini membantu mencegah kesalahan pengguna, menghasilkan data yang lebih akurat dalam database.



## *Referential Integrity (2)*

- Untuk mengatur hubungan kunci asing (*foreign key*) antara dua tabel, ada tiga kondisi yang harus dipenuhi:
  - *Field* yang digunakan dalam hubungan kunci asing harus diindeks.
  - *Field* yang digunakan dalam hubungan kunci asing harus sama dalam jenis data.
  - Dalam MySQL, kedua tabel harus menggunakan *database engine* (mesin basis data) **InnoDB**

## *Referential Integrity (3)*



**Edit Relationships**

Table/Query: **Kuliah**      Related Table/Query: **Ruang\_Kuliah**

**kode\_mk**      **kode\_mk**

☒ Enforce Referential Integrity

☐ Cascade Update Related Fields

☐ Cascade Delete Related Records

Relationship Type: **One-To-Many**

Buttons: OK, Cancel, Join Type.., Create New..

# Contoh *Referential Integrity*

Table name: CUSTOMER  
 Primary key: CUS\_CODE  
 Foreign key: AGENT\_CODE

Database name: Ch03\_InsureCo

CUS_CODE	CUS_LNAME	CUS_FNAME	CUS_INITIAL	CUS_AREACODE	CUS_PHONE	CUS_INSURE_TYPE	CUS_INSURE_AMT	CUS_RENEW_DATE	AGENT_CODE
10010	Ramas	Alfred	A	615	844-2573	T1	100.00	05-Apr-2010	502
10011	Dunne	Leona	K	713	894-1238	T1	250.00	16-Jun-2010	501
10012	Smith	Kathy	W	615	894-2285	S2	150.00	29-Jan-2011	502
10013	Olowski	Paul	F	615	894-2180	S1	300.00	14-Oct-2010	502
10014	Orlando	Myron		615	222-1672	T1	100.00	28-Dec-2010	501
10015	O'Brian	Amy	B	713	442-3381	T2	850.00	22-Sep-2010	503
10016	Brown	James	G	615	297-1228	S1	120.00	25-Mar-2011	502
10017	Williams	George		615	290-2556	S1	250.00	17-Jul-2010	503
10018	Farriss	Anne	G	713	382-7185	T2	100.00	03-Dec-2010	501
10019	Smith	Olette	K	615	297-3809	S2	500.00		503

Foreign Key

Table name: AGENT  
 Primary key: AGENT\_CODE  
 Foreign key: none

AGENT_CODE	AGENT_AREACODE	AGENT_PHONE	AGENT_LNAME	AGENT_YTD_SLS
501		228-1249	Alby	132735.75
502		882-1244	Hahn	138967.35
503	615	123-5589	Okon	127093.45

Primary Key



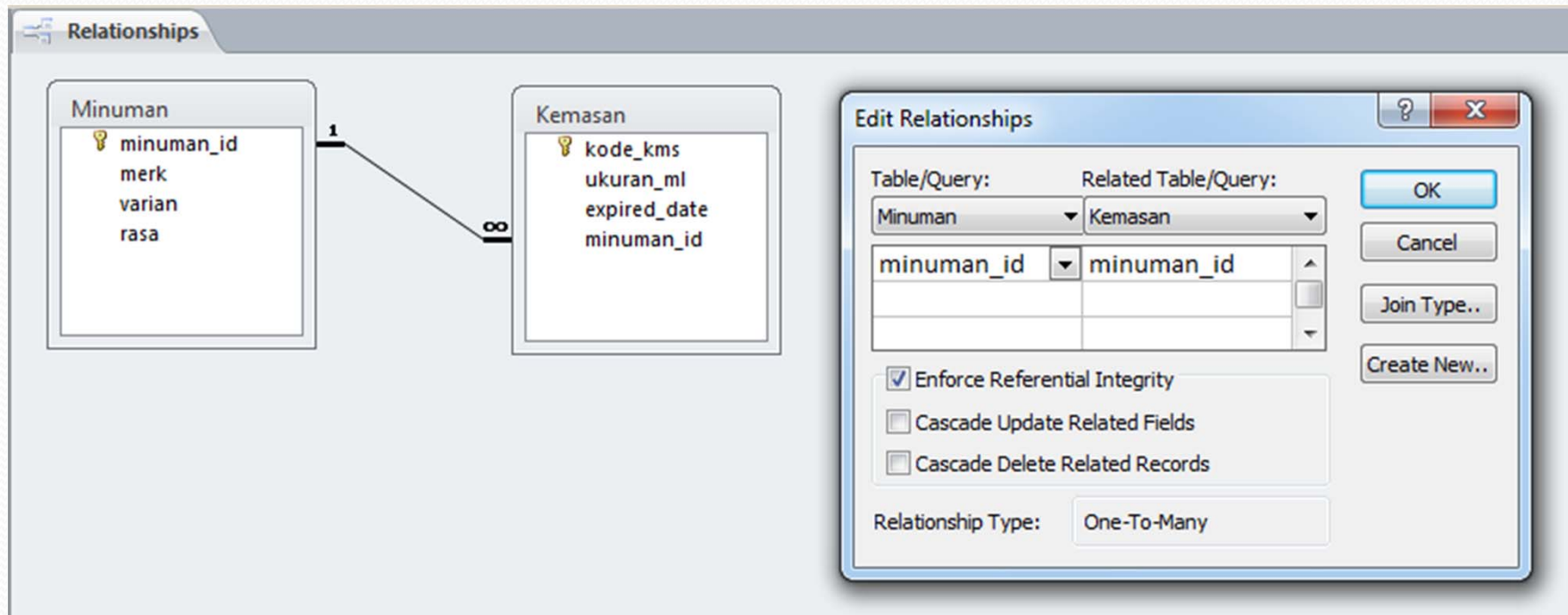
# Latihan : Tabel Minuman – Kemasan

kardinalitas 1 - n

Minuman			
	Field Name	Data Type	
⌘	minuman_id	Text	field size 15
	merk	Text	field size 50
	varian	Text	field size 50
	rasa	Text	field size 30

Kemasan			
	Field Name	Data Type	
⌘	kode_kms	Text	field size 15
	ukuran_ml	Number	integer
	expired_date	Date/Time	short date
	minuman_id	Text	field size 15

# Latihan : Tabel Minuman – Kemasan relationship

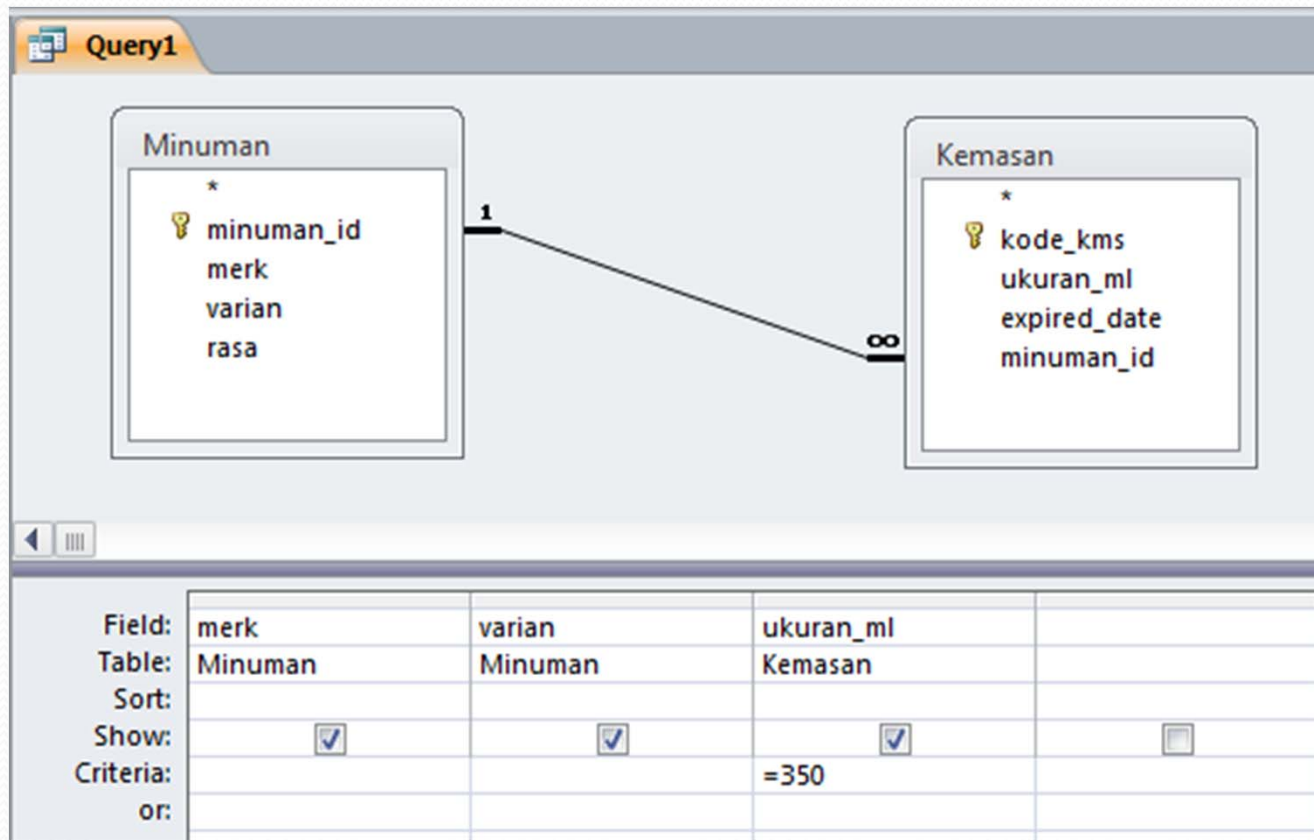




# Latihan : Tabel Minuman – Kemasan records

Minuman					
minuman_id	merk	varian	rasa	Click to Add	
mn-001	teh botol sosrc	botol	jasmine tea		
*	kode_kms	ukuran_ml	expired_date	Click to Add	
	k-01	350	11/27/2018		
mn-002	fanta	kaleng	jeruk		
*	kode_kms	ukuran_ml	expired_date	Click to Add	
	k-02	250	10/15/2017		
	k-03	330	12/12/2019		
mn-003	fanta	botol	anggur		
*	kode_kms	ukuran_ml	expired_date	Click to Add	
	k-04	350	10/15/2017		

# Latihan : Tabel Minuman – Kemasan query



Cari merk dan varian minuman yang ukurannya sama dengan 350 ml



# Latihan Query

1. Tampilkan merk dan ukuran ml minuman.
2. Cari merk minuman “Fanta”.
3. Hitung ada berapa jumlah varian minuman.
4. Cari kemasan minuman dengan mililiter paling besar.
5. Jumlahkan semua ukuran ml dari kemasan minuman.
6. Cari minuman yang expired date nya tanggal 11/27/2018.
7. Cari minuman yang expired date nya tahun 2018.
8. Cari merk dan varian rasa minuman yang rasa minumannya dimulai dengan huruf “S”.
9. Cari merk dan ukuran ml minuman yang varian “botol”.
10. Cari merk dan varian rasa minuman yang merk minumannya diakhiri dengan “Sosro”.

# Latihan : Tabel Minuman – Kemasan report

Report Minuman			
minuman_id	merk	varian	rasa
mn-001			
	teh botol sosro	botol	jasmine tea
mn-002			
	fanta	kaleng	jeruk
mn-003			
	fanta	botol	anggur
Saturday, October 29, 2016		Page 1 of 1	

Report dari Tabel Minuman



# Latihan : Tabel Minuman – Kemasan forms

The screenshot displays the Microsoft Access interface with a report design view for a report titled 'Report Minuman' (Minuman). The report is structured into three sections: Form Header, Detail, and Form Footer. The Form Header section contains a title 'Daftar Minuman'. The Detail section contains a table with four columns: minuman\_id, merk, varian, and rasa. The Form Footer section contains a 'Command' button. A red arrow points to the 'Command' button with the label 'Button'. The 'Command Button Wizard' dialog box is open, showing the 'Sample' button and the 'What action do you want to happen when the button is pressed?' section. The 'Categories' list includes Record Navigation, Record Operations, Form Operations, Report Operations (selected), Application, and Miscellaneous. The 'Actions' list includes Mail Report, Open Report, Preview Report (selected), Print Report, and Send Report to File. A red arrow points to the 'Preview Report' action with the label 'Report'. The 'Next >' button is highlighted.

Form Header			
Daftar Minuman			

Detail			
minuman_id	minuman_id		
merk	merk		
varian	varian		
rasa	rasa		

Form Footer			
Command			

Command Button Wizard

Sample:

What action do you want to happen when the button is pressed?

Different actions are available for each category.

Categories:

- Record Navigation
- Record Operations
- Form Operations
- Report Operations
- Application
- Miscellaneous

Actions:

- Mail Report
- Open Report
- Preview Report
- Print Report
- Send Report to File

Buttons: Cancel, < Back, Next >, Finish

# Latihan : Tabel Minuman – Kemasan forms


**Minuman**

Daftar Minuman

minuman_id	<input type="text" value="mn-001"/>
merk	<input type="text" value="teh botol sosro"/>
varian	<input type="text" value="botol"/>
rasa	<input type="text" value="jasmine tea"/>

[Preview Report Minuman](#)

Record: 1 of 3 | No Filter | Search





# Access Options

menampilkan form pada awal aplikasi

