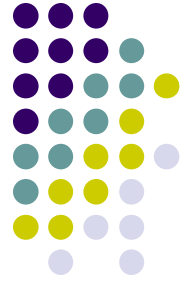


SQL – DDL



- **CREATE**
- **ALTER**
- **DROP**
 - Schema
 - Table
 - Tablespace
 - Index
 - View
 - Domain
 - Constraint
 - . . .

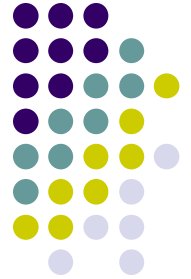
SQL DDL: CREATE SCHEMA



- CREATE SCHEMA *ime-scheme*
 [AUTHORIZATION *ime-vlasnika-scheme*]
 [CREATE TABLE *iskaz* {, CREATE TABLE
iskaz }]
 [CREATE VIEW *iskaz* {, CREATE VIEW
iskaz }] |
 [CREATE INDEX *iskaz* {, CREATE INDEX
iskaz }] |
 [GRANT *iskaz* {, GRANT *iskaz* }]

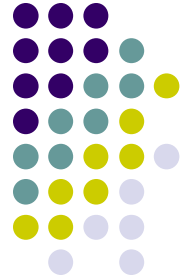
SQL DDL: DROP SCHEMA

- DROP SCHEMA *ime-scheme* RESTRICT



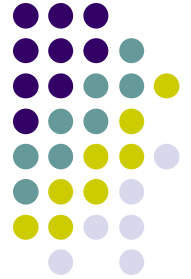
SQL DDL: bazna tabela -

CREATE TABLE



- **CREATE TABLE *ime-bazne-tabele***
(def-kolone {, def-kolone}
[, def-prim-kljuca]
[, def-str-kljuca {, def-str.kljuca}])
[, uslov-ogranicenja {, uslov-
ogranicenja}])
[drugi-parametri]

SQL DDL: CREATE TABLE (cont.)



- *def-kolone:*

ime-kolone tip-podatka

[NOT NULL [[WITH] DEFAULT [vrednost]]]

tip-podatka:

INT (32) SMALLINT (16) BIGINT (64)

DEC (p, q) (1<=p<=31, 0<=q<=p);

FLOAT (p) ili FLOAT (1<=p<=24), DOUBLE (25<=p<=53)

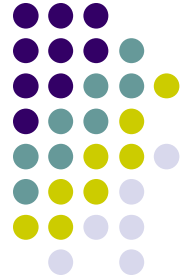
CHAR (m)

CHAR VARCHAR TEXT BLOB

DATE TIME

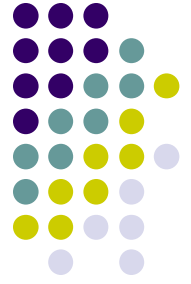
Itd.

SQL DDL: CREATE TABLE definicija primarnog ključa



- [NOT NULL [[WITH] DEFAULT [vrednost]]]
- PRK:
[CONSTRAINT *ime*] PRIMARY KEY
(*ime-kolone* {, *ime-kolone*})
- NOT NULL kolone

SQL DDL: CREATE TABLE definicija stranog ključa



- STK:

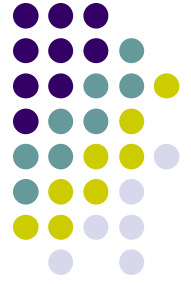
[CONSTRAINT *ime*] FOREIGN KEY (
kolona {, *kolona*})

REFERENCES *odnosna-tabela*

[ON DELETE *efekat*]

[ON UPDATE *efekat*]

SQL DDL: ON DELETE efekat



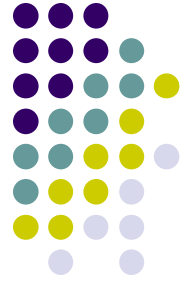
- NO ACTION (podrazumevano, posle svih)
- RESTRICT(pre svih)
- SET NULL
- CASCADE

SQL DDL: ON UPDATE **efekat**



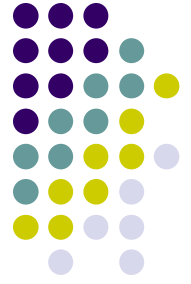
- NO ACTION (podrazumevano dejstvo)
- RESTRICT

SQL DDL: CREATE TABLE: uslov ograničenja



- CONSTRAINT *ime* CHECK (*uslov*)
- Primer:
CONSTRAINT GODTIR CHECK
(GODINA >= 1980 OR TIRAZ >=5000)
- Uslov za kolonu: uz definiciju kolone
- Primer – uz kolonu K_SIF:
CONSTRAINT BROJ_KNJIGE
CHECK (VALUE >= 'k1' AND VALUE <= 'k5001')

CREATE TABLE : primer



CREATE TABLE K

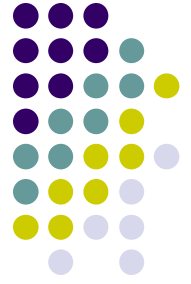
(K_SIF CHAR(5) NOT NULL,

NASLOV CHAR(50) NOT NULL WITH DEFAULT,

OBLAST CHAR(20) ,

PRIMARY KEY (K_SIF))

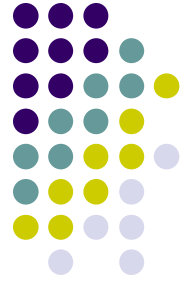
CREATE TABLE : primer



CREATE TABLE I

```
(I_SIF          CHAR(6)    NOT NULL,  
NAZIV          CHAR(20)   NOT NULL WITH  
  DEFAULT,  
STATUS SMALLINT,  
DRZAVA CHAR(20) NOT NULL WITH DEFAULT,  
PRIMARY KEY (I_SIF))
```

CREATE TABLE : primer



```
CREATE TABLE KI
(K_SIF          CHAR(5)          NOT NULL,
 I_SIF          CHAR(6)          NOT NULL,
 IZDANJE        SMALLINT        NOT NULL,
 GODINA         SMALLINT,
 TIRAZ          INTEGER,
 PRIMARY KEY    (K_SIF, I_SIF, IZDANJE),
 FOREIGN KEY (K_SIF) REFERENCES K ON DELETE
 RESTRICT ON UPDATE RESTRICT,
 FOREIGN KEY (I_SIF) REFERENCES I ON DELETE
 CASCADE)
```

ALTER TABLE



- ALTER TABLE *bazna-tabela*

ADD *ime-kolone tip-podataka* [NOT NULL [[WITH]
DEFAULT [*vrednost*]]]

| ADD *def-prim-kljuca*

| ADD *def-str-kljuca*

| ADD *uslov-ogranicenja*

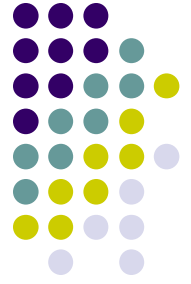
| DROP *def-prim-kljuca*

| DROP *def-str-kljuca*

| DROP *uslov-ogranicenja*

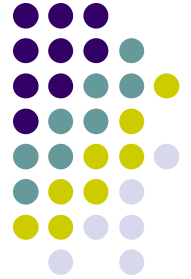
| *drugi parametri*

DROP TABLE



- DROP TABLE *bazna-tabela*

CREATE, DROP INDEX



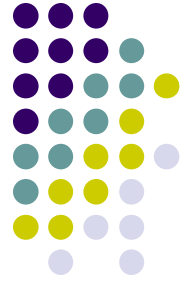
- CREATE [UNIQUE] INDEX *ime-indeksa* ON *bazna-tabela*
(*ime-kolone* [redosled] {, *ime-kolone* [redosled]})
[*drugi-parametri*]
- Primer:
CREATE INDEX XKIC ON KI (CENA)
- DROP INDEX *ime-indeksa*



CREATE, DROP VIEW

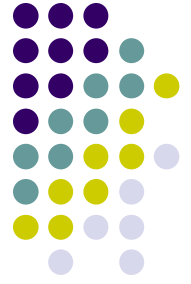
- CREATE VIEW *ime-pogleda* [(*kolona* {, *kolona*})]
AS *puni upitni blok*
[WITH CHECK OPTION]
- Primer:
 - CREATE VIEW SRBIZD
AS SELECT I SIF, NAZIV
FROM I
WHERE DRZAVA='Srbija'
- DROP VIEW *ime-pogleda*
- Primer: DROP VIEW SRBIZD

SQL - 92 – DDL: CREATE DOMAIN



- Od SQL 92:
- CREATE DOMAIN *naziv-domena* [AS] *tip-podataka*
[*podrazumevana-definicija*]
[*lista-definicija-ogranicenja-domena*]
- DROP DOMAIN *naziv-domena opcija*
(cascade | restrict)

SQL – DDL: CREATE DOMAIN



- *tip-podataka* - skalarni tip, i:

BIT [VARYING] (n)

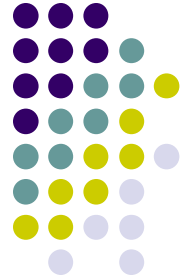
INTERVAL

DATE

TIME

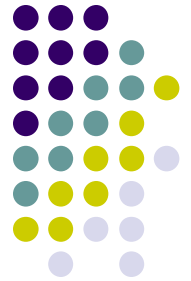
TIMESTAMP.

SQL – DDL: CREATE DOMAIN



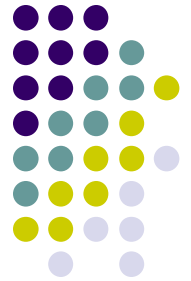
- *podrazumevana-definicija :*
DEFAULT *podrazumevana-vrednost*
- Na primer,
DEFAULT NULL
- *lista-definicija-ogranicenja-domena, npr.*
CREATE DOMAIN K_SIF AS CHAR(5) DEFAULT '?'
CONSTRAINT BROJ_KNJIGE
CHECK (VALUE >= 'k1' AND VALUE <= 'k5001')

SQL – DDL: CREATE DOMAIN



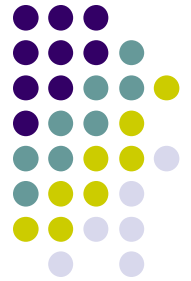
- *Opcija* pri uklanjanju domena može biti RESTRICT ili CASCADE
- ALTER DOMAIN
 - SET, DROP DEFAULT
 - ADD, DROP CONSTRAINT
- Ne podržava pravu semantiku domena

CREATE TABLE: atributi nad domenima, ON UPDATE efekat



```
CREATE TABLE KI
(K_SIF K_SIF NOT NULL,
I_SIF I_SIF NOT NULL,
IZDANJE IZDANJE NOT NULL,
GODINA GODINA NULL,
TIRAZ TIRAZ 0,
PRIMARY KEY (K_SIF, I_SIF, IZDANJE),
FOREIGN KEY (K_SIF) REFERENCES K
ON DELETE NO ACTION
ON UPDATE NO ACTION,
FOREIGN KEY (I_SIF) REFERENCES I
ON DELETE CASCADE
ON UPDATE CASCADE,
CHECK (IZDANJE>0 AND IZDANJE<50 ))
```

ALTER, DROP TABLE: **izmena,**
uklanjanje



ALTER TABLE

DROP TABLE [RESTRICT | CASCADE] – pogled,
uslov ograničenja



Opšti uslov integriteta

- CREATE ASSERTION *ime-pravila* CHECK(*uslov*)
- DROP ASSERTION *ime-pravila*
- Uslov: logički izraz proizvoljne složenosti, kao u WHERE liniji, npr.
- CREATE ASSERTION KI1 CHECK
(NOT EXISTS (SELECT * FROM I, KI
WHERE I.STATUS < 20 AND
I.I_SIF = KI.I_SIF AND KI.TIRAZ > 5000))



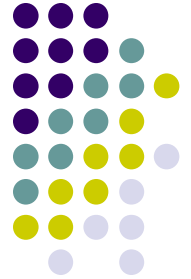
CREATE SCHEMA

- CREATE SCHEMA *ime-sheme*
<autorizacija>
<karakterski skup> /*default karakterskog skupa sheme*/
<opis svake komponente sheme>

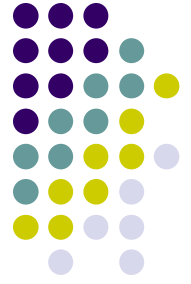
```
[ definicija-domena | definicija-tabele |  
  definicija-pogleda |  
  definicija-uslova-ogranicenja  
  {, definicija-domena}, {, definicija-tabele}  
  {, definicija-pogleda},  
  {, definicija-uslova-ogranicenja}  
]
```

DROP SCHEMA

- DROP SCHEMA *ime-scheme*
[RESTRICT | CASCADE]



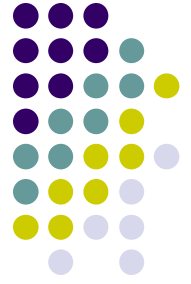
SQL DML: unošenje



INSERT INTO *ime-tabele* ...

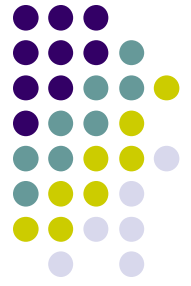
- 1. Unošenje pojedinačne vrste**
- 2. Unošenje bloka**

SQL DML: unošenje



- INSERT INTO *ime-tabele* [(*ime-kolone* {,*ime-kolone*})]
VALUES (*konstanta* {,*konstanta*})
- INSERT INTO *ime-tabele* [(*ime-kolone* {,*ime-kolone*})]
puni upitni blok

SQL: unošenje pojedinačne vrste



```
INSERT INTO K (K_SIF, NASLOV)
VALUES ('k7', 'Čarobna šuma')
```

Isto:

- INSERT INTO K (K_SIF, NASLOV, OBLAST)
VALUES ('k7', 'Čarobna šuma', NULL)

Integritet

- INSERT INTO KI (K_SIF, I_SIF, IZDANJE, TIRAZ)
VALUES ('k20', 'i20', 3, 10000) - odbijen

SQL: unošenje bloka



- ```
CREATE TABLE IP_DRZAVA
(I_SIF CHAR(6) NOT NULL,
P_SIF CHAR(6) NOT NULL,
DRZAVA CHAR(20),
PRIMARY KEY (I_SIF,P_SIF));
```

```
INSERT INTO IP_DRZAVA
SELECT I_SIF, P_SIF, I.DRZAVA
FROM I, P
WHERE I.DRZAVA = P.DRZAVA
```

# SQL: unošenje bloka - rezultat



```
SELECT *
FROM IP_DRZAVA
```

Rezultat:

| LSIF | P_SIF | DRZAVA  |
|------|-------|---------|
| i1   | p1    | Srbija  |
| i1   | p3    | Srbija  |
| i1   | p4    | Srbija  |
| i2   | p5    | Amerika |
| i3   | p1    | Srbija  |
| i3   | p3    | Srbija  |
| i3   | p4    | Srbija  |
| i4   | p1    | Srbija  |
| i4   | p3    | Srbija  |
| i4   | p4    | Srbija  |

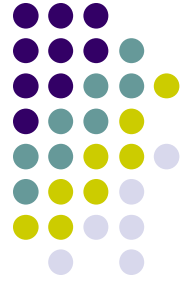


# SQL: unošenje bloka - WITH

- CREATE TABLE IZD\_BC  
(NAZIV CHAR(20) NOT NULL)
- INSERT INTO IZD\_BC  
WITH PI AS  
(SELECT DISTINCT IME, NAZIV  
FROM P, I, KP, KI  
WHERE P.P SIF=KP.P SIF AND KP.K SIF=KI.K SIF  
AND KI.I SIF=I.I SIF)  
SELECT NAZIV  
FROM PI  
WHERE IME='B.Copic'



# SQL: ažuriranje



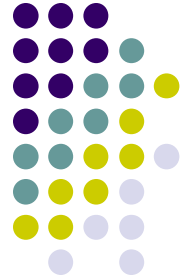
- UPDATE *ime-tabele*  
SET *ime-kolone* = *izraz* {,*ime-kolone* = *izraz*}  
[ WHERE *logicki-izraz* ]

## Na primer

```
UPDATE KI
SET TIRAZ = TIRAZ*1.1
WHERE i_SIF = 'i3'
```

- Integritet entiteta
- Referencijalni integritet

# SQL: ažuriranje - primeri

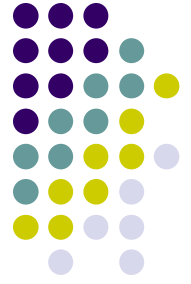


- UPDATE KI  
SET I\_SIF = 'i6'  
WHERE I\_SIF = 'i4'

odbija se

- UPDATE KI  
SET TIRAZ = TIRAZ \* 1.1  
WHERE I\_SIF IN  
(SELECT I\_SIF  
FROM I  
WHERE DRZAVA = 'Srbija')

# SQL: brisanje



- DELETE FROM *ime-tabele*  
[ WHERE *logicki-izraz* ]

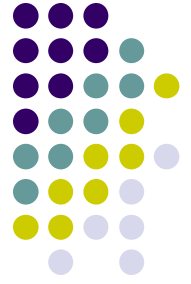
- **Na primer**

```
DELETE FROM KI
```

```
WHERE I_SIF = 'i4'
```

- **Referencijalni integritet, na primer:**
- DELETE FROM I  
WHERE I\_SIF='i3'

# SQL: Korelisani podupit u ažuriranju i brisanju



- **Na primer:** Izbrisati izdavače koji izdaju knjigu sa šifrom k3.
- ```
DELETE FROM I
WHERE 'k3' IN
(SELECT KI.K_SIF
FROM KI
WHERE KI.I_SIF = I.I_SIF)
```