SQL: limbajul de definitie a structurilor de date

Crearea unei baze de date

```
CREATE DATABASE [IF NOT EXISTS] db_name
    [create_specification [, create_specification] ...]

create_specification:
    [DEFAULT] CHARACTER SET charset_name
  | [DEFAULT] COLLATE collation_name
```

Modificarea unei baze de date

```
ALTER DATABASE db_name
    alter_specification [, alter_specification] ...

alter_specification:
    [DEFAULT] CHARACTER SET charset_name
  | [DEFAULT] COLLATE collation_name
```

Stergerea unei baze de date

```
DROP DATABASE [IF EXISTS] db_name
```

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Crearea unei tabele

```
CREATE [TEMPORARY] TABLE [IF NOT EXISTS] tbl_name
    [(create_definition,...)]
    [table_options] [select_statement]
```

```
CREATE [TEMPORARY] TABLE [IF NOT EXISTS] tbl_name
    [() LIKE old_tbl_name ()];

create_definition:
    column_definition
  | [CONSTRAINT [symbol]] PRIMARY KEY [index_type] (index_col_name,...)
  | KEY [index_name] [index_type] (index_col_name,...)
  | INDEX [index_name] [index_type] (index_col_name,...)
  | [CONSTRAINT [symbol]] UNIQUE [INDEX]
        [index_name] [index_type] (index_col_name,...)
  | [FULLTEXT|SPATIAL] [INDEX] [index_name] (index_col_name,...)
  | [CONSTRAINT [symbol]] FOREIGN KEY
        [index_name] (index_col_name,...) [reference_definition]
  | CHECK (expr)

column_definition:
    col_name type [NOT NULL | NULL] [DEFAULT default_value]
        [AUTO_INCREMENT] [[PRIMARY] KEY] [COMMENT 'string']
        [reference_definition]
```

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```
type:
    TINYINT[(length)] [UNSIGNED] [ZEROFILL]
  | SMALLINT[(length)] [UNSIGNED] [ZEROFILL]
  | MEDIUMINT[(length)] [UNSIGNED] [ZEROFILL]
  | INT[(length)] [UNSIGNED] [ZEROFILL]
  | INTEGER[(length)] [UNSIGNED] [ZEROFILL]
  | BIGINT[(length)] [UNSIGNED] [ZEROFILL]
  | REAL[(length,decimals)] [UNSIGNED] [ZEROFILL]
  | DOUBLE[(length,decimals)] [UNSIGNED] [ZEROFILL]
  | FLOAT[(length,decimals)] [UNSIGNED] [ZEROFILL]
  | DECIMAL(length,decimals) [UNSIGNED] [ZEROFILL]
  | NUMERIC(length,decimals) [UNSIGNED] [ZEROFILL]
  | DATE
  | TIME
  | TIMESTAMP
  | DATETIME
  | CHAR(length) [BINARY | ASCII | UNICODE]
  | VARCHAR(length) [BINARY]
  | TINYBLOB
  | BLOB
  | MEDIUMBLOB
  | LONGBLOB
  | TINYTEXT
  | TEXT
  | MEDIUMTEXT
  | LONGTEXT
  | ENUM(value1,value2,value3,...)
  | SET(value1,value2,value3,...)
  | spatial_type
```

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```
index_col_name:
    col_name [(length)] [ASC | DESC]

reference_definition:
    REFERENCES tbl_name [(index_col_name,...)]
               [MATCH FULL | MATCH PARTIAL]
               [ON DELETE reference_option]
               [ON UPDATE reference_option]

reference_option:
    RESTRICT | CASCADE | SET NULL | NO ACTION | SET DEFAULT

table_options: table_option [table_option] ...

table_option:
    {ENGINE|TYPE} = {BDB|HEAP|ISAM|InnoDB|MERGE|MRG_MYISAM|MYISAM}
  | AUTO_INCREMENT = value
  | AVG_ROW_LENGTH = value
  | CHECKSUM = {0 | 1}
  | COMMENT = 'string'
  | MAX_ROWS = value
  | MIN_ROWS = value
  | PACK_KEYS = {0 | 1 | DEFAULT}
  | PASSWORD = 'string'
  | DELAY_KEY_WRITE = {0 | 1}
  | ROW_FORMAT = { DEFAULT | DYNAMIC | FIXED | COMPRESSED }
  | RAID_TYPE = { 1 | STRIPED | RAID0 }
        RAID_CHUNKS = value
        RAID_CHUNKSIZE = value
  | UNION = (tbl_name[,tbl_name]...)
  | INSERT_METHOD = { NO | FIRST | LAST }
  | DATA DIRECTORY = 'absolute path to directory'
  | INDEX DIRECTORY = 'absolute path to directory'
  | [DEFAULT] CHARACTER SET charset_name [COLLATE collation_name]
```

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Modificarea unei tabele

```
ALTER [IGNORE] TABLE tbl_name
    alter_specification [, alter_specification] ...

alter_specification:
    ADD [COLUMN] column_definition [FIRST | AFTER col_name ]
  | ADD [COLUMN] (column_definition,...)
  | ADD INDEX [index_name] [index_type] (index_col_name,...)
  | ADD [CONSTRAINT [symbol]]
        PRIMARY KEY [index_type] (index_col_name,...)
  | ADD [CONSTRAINT [symbol]]
        UNIQUE [index_name] [index_type] (index_col_name,...)
  | ADD [FULLTEXT|SPATIAL] [index_name] (index_col_name,...)
  | ADD [CONSTRAINT [symbol]]
        FOREIGN KEY [index_name] (index_col_name,...)
        [reference_definition]
  | ALTER [COLUMN] col_name {SET DEFAULT literal | DROP DEFAULT}
  | CHANGE [COLUMN] old_col_name column_definition
        [FIRST|AFTER col_name]
  | MODIFY [COLUMN] column_definition [FIRST | AFTER col_name]
  | DROP [COLUMN] col_name
  | DROP PRIMARY KEY
  | DROP INDEX index_name
  | DROP FOREIGN KEY fk_symbol
  | DISABLE KEYS
  | ENABLE KEYS
  | RENAME [TO] new_tbl_name
  | ORDER BY col_name
  | CONVERT TO CHARACTER SET charset_name [COLLATE collation_name]
  | [DEFAULT] CHARACTER SET charset_name [COLLATE collation_name]
  | DISCARD TABLESPACE
  | IMPORT TABLESPACE
  | table_options
```

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Stergerea unei tabele

```
DROP [TEMPORARY] TABLE [IF EXISTS]
    tbl_name [, tbl_name] ...
    [RESTRICT | CASCADE]
```

Redenumirea unei tabele

```
RENAME TABLE tbl_name TO new_tbl_name
    [, tbl_name2 TO new_tbl_name2] ...
```

```
CREATE TABLE new_table (...);
RENAME TABLE old_table TO backup_table, new_table TO old_table;
```

```
RENAME TABLE old_table TO tmp_table,
             new_table TO old_table,
             tmp_table TO new_table;
```

```
RENAME TABLE current_db.tbl_name TO other_db.tbl_name;
```

Crearea unui index

```
CREATE [UNIQUE|FULLTEXT|SPATIAL] INDEX index_name [index_type]
    ON tbl_name (index_col_name,...)

index_col_name:
    col_name [(length)] [ASC | DESC]
```

Stergerea unui index

```
DROP INDEX nom_de_l_index ON nom_de_table
```

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Storage engines (motoare de stocare):

Exemplu:

CREATE TABLE t (i INT) ENGINE = ‘engine_name’;

Engine	**Limita stocare**	**Tranzactii**	**B-Tree index**	**Hash-index**	**Granularitate blocare**
MyISAM	256TB	NU	DA	NU	Tabela
InnoDB	64TB	DA	DA	DA	Inregistrare
MEMORY	RAM	NU	DA	DA	Tabela

De ce sa utilizam totusi engine-uri netranzactionale ?

-mult mai rapide;

-mai putina memorie necesara (RAM si HD);

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Observatii:

Folosind cuvantul cheie TEMPORARY, la crearea unei tabele, tabela va exista numai in timpul sesiunii/conexiunii curente la baza de date;

Cuvantul cheie IF NOT EXISTS impiedica aparitia unei erori, in cazul in care tabela declarata exista deja; pe de alta parte, nu se verifica daca tabela existenta are aceeasi structura cu cea indicata de CREATE TABLE;

Daca nu se specifica atributul NULL sau NOT NULL, coloana e tratata ca si cum s-ar fi specificat atributul NULL;

Atributul AUTO_INCREMENT nu se poate atribui decat unei singure coloane intr-o tabela; acest atribut nu se aplica decat tipurilor intregi sau reale (float, double).

Tipurile de tip caracter (char, varchar, text) pot avea atribuite CHARACTER SET – setul de caractere atribuit acelei coloane;

Clauza DEFAULT permite setarea unei valori default pentru o coloana; de exemplu, pentru un tip data, se poate folosi o functie de tip NOW() sau CURRENT_TIME;

KEY e in mod normal un sinonim pentru INDEX; PRIMARY KEY poate fi simplu KEY atunci cand este folosit in definirea unei coloane;

PRIMARY KEY este un index pentru care toate coloanele care intra in definirea lui trebuie sa fie NOT NULL: daca nu sunt astfel, sunt definite implicit (si tacit).

Se poate creea o tabela din alta utilizand clauza SELECT la sfarsitul comenzii CREATE TABLE;

Folosind clauza LIKE, se poate creea o tabela goala folosind structura tabelei originale invocate dupa clauza LIKE;

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Crearea unui view

```
CREATE
    [OR REPLACE]
    [ALGORITHM = {UNDEFINED | MERGE | TEMPTABLE}]
    [DEFINER = { user | CURRENT_USER }]
    [SQL SECURITY { DEFINER | INVOKER }]
    VIEW view_name [(column_list)]
    AS select_statement
    [WITH [CASCADED | LOCAL] CHECK OPTION]
```

Modificarea unui view

```
ALTER
    [ALGORITHM = {UNDEFINED | MERGE | TEMPTABLE}]
    [DEFINER = { user | CURRENT_USER }]
    [SQL SECURITY { DEFINER | INVOKER }]
    VIEW view_name [(column_list)]
    AS select_statement
    [WITH [CASCADED | LOCAL] CHECK OPTION]
```

Stergerea unui view

```
DROP VIEW [IF EXISTS]
    view_name [, view_name] ...
    [RESTRICT | CASCADE]
```