



# CRYPTO CURRENCY DATABASE



MD RIZWANULLAH  
208W1A1299

INFORMATION MODEL

RELATIONAL MODEL

ER MODEL

DDL COMMANDS

CREATE

ALTER

DROP

DML COMMANDS

INSERT

UPDATE





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UPDATE

## Information Model

Cryptocurrency, an encrypted, peer-to-peer network for facilitating digital barter, is a technology developed in 2009. While cryptocurrencies are not likely to replace traditional fiat currency, they could change the way Internet-connected global markets interact with each other, clearing away barriers surrounding normative national currencies and exchange rates. This database contains the name, purpose, creator, market cap, market dominance, 1 year low and high prices.





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## RELATIONAL MODEL

Crypto\_chain

Rank	Name	Key code	Total supply	Release date	Creator
1	Bitcoin	BTC	21,000,000	2009-01-03	Satoshi Nakamoto
2	Ethereum	ETH	∞	2015-07-30	Vitalik Buterin
3	Tether	USDT	∞	2014-07-20	Brock Pierce
4	USD Coin	USDC	∞	2018-05-15	Centre consortium

Market

Key_code	Price
BTC	5128383
ETH	362338
USDT	78
USDC	87



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CREATE

ALTER

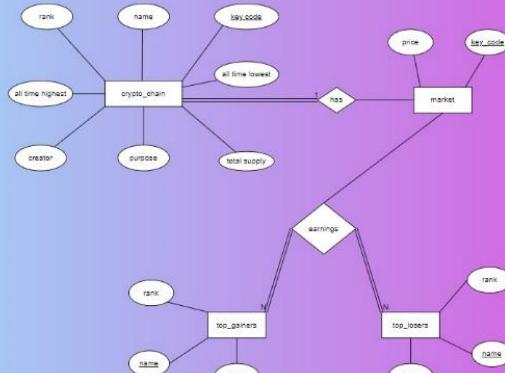
DROP

DML COMMANDS

INSERT

UPDATE

## ER MODEL





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CREATE

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DML COMMANDS

INSERT

UPDATE

## CREATE COMMAND

```
mysql> create database crypto;
Query OK, 1 row affected (0.00 sec)

mysql> show databases;
+-----+
| Database |
+-----+
| information_schema |
| crypto |
| mysql |
| rizwandb |
+-----+
4 rows in set (0.00 sec)
```



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UPDATE

```
mysql> create table crypto_details
-> (rank int(100),name varchar(30),released_date date,purpose mediumtext);
Query OK, 0 rows affected (0.01 sec)

mysql> show tables;
+-----+
| Tables_in_crypto |
+-----+
| crypto_details |
+-----+
1 row in set (0.00 sec)

mysql> desc crypto_details;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| rank | int(100) | YES | NULL | NULL | |
| name | varchar(30) | YES | NULL | NULL | |
| released_date | date | YES | NULL | NULL | |
| purpose | mediumtext | YES | NULL | NULL | |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.01 sec)
```



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DDL COMMANDS

CREATE

ALTER

DROP

DML COMMANDS

INSERT

UPDATE

## ALTER COMMAND

```
mysql> alter table crypto_details add alltime_highest_price int after name;
Query OK, 0 rows affected (0.02 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> alter table crypto_details add alltime_lowest_price int after alltime_highest_price;
Query OK, 0 rows affected (0.01 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> alter table crypto_details add total_supply int after name;
Query OK, 0 rows affected (0.01 sec)
Records: 0  Duplicates: 0  Warnings: 0
```



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INFORMATION MODEL

RELATIONAL MODEL

ER MODEL

DDL COMMANDS

CREATE

ALTER

DROP

DML COMMANDS

INSERT

UPDATE

```
mysql> alter table crypto_details add creator varchar(40) after released_date;
Query OK, 0 rows affected (0.01 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> alter table crypto_details change column alltime_highest_price alltime_highest int;
Query OK, 0 rows affected (0.01 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> alter table crypto_details change column alltime_lowest_price alltime_lowest int;
Query OK, 0 rows affected (0.01 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> desc crypto_details;
+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+
| rank | int(100) | YES | NO | NULL | |
| name | varchar(30) | YES | NO | NULL | |
| total_supply | int(11) | YES | NO | NULL | |
| alltime_highest | int(11) | YES | NO | NULL | |
| alltime_lowest | int(11) | YES | NO | NULL | |
| released_date | date | YES | NO | NULL | |
| creator | varchar(40) | YES | NO | NULL | |
| purpose | mediumtext | YES | NO | NULL | |
+-----+-----+-----+-----+-----+
8 rows in set (0.01 sec)
```



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DDL COMMANDS

CREATE

ALTER

DROP

DML COMMANDS

INSERT

UPDATE

## DROP COMMAND

```
mysql> show tables;
+-----+
| Tables_in_crypto |
+-----+
| crypto_details   |
| crypto_reference |
+-----+
2 rows in set (0.00 sec)

mysql> drop table crypto_reference;
Query OK, 0 rows affected (0.00 sec)

mysql> show tables;
+-----+
| Tables_in_crypto |
+-----+
| crypto_details   |
+-----+
1 row in set (0.00 sec)
```



# CRYPTO CURRENCY DATABASE



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## DML COMMANDS

INSERT

UPDATE

DELETE

## LOGICAL OPERATORS

AND

OR

NOT

## SORTING

ASCENDING

## INSERT COMMAND

```
mysql> insert into crypto_chain values(1,"Bitcoin","BTC","21,000,000","5,128,383","3,993.42","2009-01-03","Satoshi Nakamoto","A way to send and receive money directly");
Query OK, 1 row affected (0.01 sec)

mysql> insert into crypto_chain values(2,"Ethereum","ETH","infinity","362,338","28.13","2015-07-30","Vitalik Buterin","To create any secured digital technology they can think of");
Query OK, 1 row affected (0.00 sec)

mysql> insert into crypto_chain values(3,"Tether","USDT","infinity","77.64","44.45","2014-07-20","Brock Pierce,Craig Sellaars,Reeve Collins","Tether is used by investors who want to avoid the volatility typical of cryptocurrencies");
Query OK, 1 row affected (0.00 sec)

mysql> insert into crypto_chain values(4,"USD Coin","USDC","infinity","87.19","65.31","2018-05-15","Centrue Consortium","USD Coin is a service to tokenize US dollars and facilitate their use over the internet and public blockchains");
Query OK, 1 row affected (0.00 sec)

mysql> insert into crypto_chain values(5,"BNB","BNB","165,116,760","50,350.92","2.58","2017-07-20","Changpeng Zhao","BNB coin is a cryptocurrency that is used primarily to pay transaction and trading fees on the Binance exchange");
Query OK, 1 row affected (0.00 sec)
```



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## DML COMMANDS

INSERT

UPDATE

DELETE

## LOGICAL OPERATORS

AND

OR

NOT

## SORTING

ASCENDING

```
mysql> insert into crypto_chain values(6,"Cardano","ADA","45,000,000,000","225.26","1.38","2017-07-20","Charles Hoskinson","Cardano aims to solve problems related to scalability, interoperability, and sustainability on cryptocurrency platforms");
Query OK, 1 row affected (0.00 sec)
```

```
mysql> insert into crypto_chain values(7,"XRP","XRP","100,000,000,000","215.10","0.159343","2012-06-20","Chris Larsen, Brad Garlinghouse","The purpose of XRP is to serve as an intermediate mechanism of exchange between two currencies or networks");
Query OK, 1 row affected (0.00 sec)
```

```
mysql> insert into crypto_chain values(8,"Binance USD","BUSD","infinity","79.58","77.30","2019-09-12","Changpeng Zhao","The BUSD stablecoin was founded by Paxos and Binance in an effort to create a cryptocurrency that would be backed by the US dollar");
Query OK, 1 row affected (0.00 sec)
```

```
mysql> insert into crypto_chain values(9,"Solana","SOL","508,180,963","19,286.66","38.03","2020-03-20","Yakovenko","Solana aims to scale throughput beyond what is typically achieved by popular blockchains while keeping costs low");
Query OK, 1 row affected (0.00 sec)
```

```
mysql> insert into crypto_chain values(10,"Dogecoin","DOGE","infinity","53.62","0.00552883","2013-12-25","Jackson Palmer","The main purpose of its creation was to raise public awareness of blockchain technology capabilities");
Query OK, 1 row affected (0.00 sec)
```



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## DML COMMANDS

INSERT

UPDATE

**DELETE**

## LOGICAL OPERATORS

AND

OR

NOT

## SORTING

rank	name	key_code	total_supply	alltime_highest	alltime_lowest	released_date	creator	purpose
1	Bitcoin	BTC	21,000,000	5,128,383	3,993.42	2009-01-01	Satoshi Nakamoto	A way to send and receive value
2	Ethereum	ETH	100,000,000	1,789,108	133.70	2015-07-30	Vitalik Buterin	To build a decentralized platform
3	Tether	USDT	infinity	77.64	44.45	2014-07-20	Brock Pierce,Craig Sellars,Reeve Collins	Tether is used by investors
4	USD Coin	USDC	infinity	87.19	65.31	2018-05-15	Centre consortium	USD Coin is a service to tokens
5	Binance	BNB	160,000,000,780	50,150.92	2.58	2017-07-01	Changpeng Zhao	BNB Coin is a cryptocurrent
6	Cardano	ADA	100,000,000,000	25.10	1.38	2017-07-20	Charles Hoskinson	Cardano aims to be a public blockchain
7	XRP	XRP	100,000,000,000	215.10	0.159343	2017-09-20	Chris Larsen, Brad Garlinghouse	The purpose of XRP is to move
8	Binance USD	BUSD	infinity	79.58	77.30	2019-09-12	Changpeng Zhao	The BUSD stablecoin was focused
9	Solana	SOL	508,180,963	19,286.66	38.03	2020-03-20	Yakovlev	Solana aims to scale through
10	Dogecoin	DOGE	infinity	53.62	0.0552883	2013-12-25	Jackson Palmer	The main purpose of its currency

10 rows in set (0.00 sec)



# CRYPTO CURRENCY DATABASE



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## DML COMMANDS

INSERT

UPDATE

DELETE

## LOGICAL OPERATORS

AND

OR

NOT

## SORTING

ASCENDING

## UPDATE COMMAND

```
mysql> update crypto_chain set total_supply="∞" where total_supply="infinity";
Query OK, 5 rows affected (0.01 sec)
Rows matched: 5  Changed: 5  Warnings: 0
```

rank	name	key_code	total_supply	alltime_highest	alltime_lowest	released_date	creator	purpose
1	Bitcoin	BTC	21,000,000	5,128,383	3,999,42	2009-01-03	Satoshi Nakamoto	A way to send and receive money directly without having to trust them they can think of.
2	Ethereum	ETH	#	77,44	44,45	2014-07-20	Vitalik Buterin	Tether is used by investors who want to avoid the volatility of
3	Tether	USDT	#	87,19	65,31	2018-05-15	Brock Pierce,Craig Sellars,Reeve Collins	USD Coin is a service to tokenize US dollars and facilitate the use of stablecoins in the blockchain space. It is a stablecoin that is pegged to the US dollar.
4	USD Coin	USDC	#	185,116,760	12,00,92	2019-07-01	Centre consortium	Cardano aims to solve problems related to scalability, interoperability and sustainability.
5	Cardano	ADA	45,000,000,000	225,26	1,38	2017-07-20	Charles Hoskinson	The primary purpose of Cardano is to serve as an Internet of blockchains.
6	Ripple	XRP	100,000,000,000	215,07	0,10,9343	2015-06-20	Chris Larsen, Brad Garlinghouse	The primary purpose of Ripple is to serve as an Internet of payments.
7	Binance USD	BUSD	#	19,38	7,30	2019-09-12	Changpeng Zhao	The USD stable-coin was founded by Paxos and Bitmain.
8	Solana	SOL	508,180,963	19,286,66	38,01	2020-03-20	Yakovenko	The main purpose of its creation was to raise public awareness.
10	Dogecoin	DOGE	#	51,62	0.00552883	2013-12-21	Jackson Palmer	It is a decentralized digital currency.

10 rows in set (0.00 sec)



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### DML COMMANDS

INSERT

UPDATE

DELETE

### LOGICAL OPERATORS

AND

OR

NOT

### SORTING

ASCENDING

## DELETE COMMAND

```
mysql> select rank,name,key_code from crypto_chain;
+----+-----+-----+
| rank | name   | key_code |
+----+-----+-----+
| 1   | Bitcoin | BTC      |
| 2   | Ethereum | ETH      |
| 3   | Tether   | USDT     |
| 4   | USD Coin | USDC     |
| 5   | BNB      | BNB      |
| 6   | Cardano  | ADA      |
| 7   | XRP      | XRP      |
| 8   | Binance USD | BUSD    |
| 9   | Solana   | SOL      |
| 10  | Dogecoin | DOGE     |
| 11  | Shiba Inu | SHIB     |
+----+-----+-----+
11 rows in set (0.00 sec)

mysql> delete from crypto_chain where key_code="SHIB";
Query OK, 1 row affected (0.00 sec)
```

The image shows a presentation slide titled "CRYPTO CURRENCY DATABASE". On the left, there's a sidebar with icons of three cryptocurrencies: Dogecoin, Bitcoin, and Ethereum. The main content area has a green header bar with the title "CRYPTO CURRENCY DATABASE" and a profile picture of a man named MD RIZWAN ULLAH, along with his ID 208WIA1299. Below the header, a MySQL command is run: "mysql> select rank, name, key\_code from crypto\_chain;". The resulting table lists the top 10 cryptocurrencies by rank:

rank	name	key_code
1	Bitcoin	BTC
2	Ethereum	ETH
3	Tether	USDT
4	USD Coin	USDC
5	BNB	BNB
6	Cardano	ADA
7	XRP	XRP
8	Binance USD	BUSD
9	Solana	SOL
10	Dogecoin	DOGE

At the bottom of the MySQL output, it says "10 rows in set (0.00 sec)".



## CRYPTO CURRENCY DATABASE



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### LOGICAL OPERATORS

AND

OR

NOT

### SORTING

ASCENDING

DESCENDING

### AGRIGATE FUNCTIONS

COUNT

SUM

### LOGICAL AND

```
mysql> select rank,name,key_code,creator from crypto_chain where name="Cardano" and rank=6;
+----+-----+-----+-----+
| rank | name   | key_code | creator      |
+----+-----+-----+-----+
|    6 | Cardano | ADA     | Charles Hoskinson |
+----+-----+-----+-----+
1 row in set (0.00 sec)
```



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## LOGICAL OPERATORS

AND

OR

NOT

## SORTING

ASCENDING

DESCENDING

## AGGREGATE FUNCTIONS

COUNT

SUM

## LOGICAL OR

```
mysql> select rank,name,key_code,creator from crypto_chain where name="Cardano" or rank<=3;
+----+-----+-----+-----+
| rank | name   | key_code | creator
+----+-----+-----+-----+
|    1 | Bitcoin | BTC     | Satoshi Nakamoto
|    2 | Ethereum | ETH     | Vitalik Buterin
|    3 | Tether   | USDT   | Brock Pierce,Craig Sellars,Reeve Collins
|    6 | Cardano  | ADA     | Charles Hoskinson
+----+-----+-----+-----+
4 rows in set (0.00 sec)
```



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## LOGICAL OPERATORS

AND

OR

NOT

## SORTING

ASCENDING

DESCENDING

## AGRIGATE FUNCTIONS

COUNT

SUM

## LOGICAL NOT

```
mysql> select rank,name,key_code,creator from crypto_chain where rank!=3;
+----+-----+-----+-----+
| rank | name      | key_code | creator          |
+----+-----+-----+-----+
|    1 | Bitcoin   | BTC      | Satoshi Nakamoto |
|    2 | Ethereum   | ETH      | Vitalik Buterin  |
|    4 | USD Coin   | USDC     | Centre consortium |
|    5 | BNB        | BNB      | Changpeng Zhao   |
|    6 | Cardano    | ADA      | Charles Hoskinson |
|    7 | XRP        | XRP      | Chris Larsen, Brad Garlinghouse |
|    8 | Binance USD | BUSD    | Changpeng Zhao   |
|    9 | Solana    | SOL      | Yakovenko         |
|   10 | Dogecoin   | DOGE    | Jackson Palmer   |
+----+-----+-----+-----+
9 rows in set (0.00 sec)
```



## CRYPTO CURRENCY DATABASE



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### SORTING

ASCENDING

DESCENDING

### AGGREGATE FUNCTIONS

COUNT

SUM

AVG

MAX

MIN

### SQL CONSTRAINTS

PRIMARY

## ASCENDING ORDER

```
mysql> select * from market;
+-----+-----+
| key_code | price |
+-----+-----+
| BTC      | 5128383 |
| ETH      | 362338  |
| USDT    | 78      |
| USDC    | 87      |
| BNB      | 50350   |
+-----+-----+
5 rows in set (0.00 sec)

mysql> select * from market order by price;
```



## CRYPTO CURRENCY DATABASE



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### SORTING

ASCENDING

DESCENDING

### AGRIGATE FUNCTIONS

COUNT

SUM

AVG

MAX

MIN

### SQL CONSTRAINTS

```
+-----+-----+
| 5 rows in set (0.00 sec)
```

```
mysql> select * from market order by price asc;
+-----+-----+
| key_code | price   |
+-----+-----+
| USDT    |      78 |
| USDC    |      87 |
| BNB     |  50350 |
| ETH     | 362338 |
| BTC     | 5128383|
+-----+-----+
5 rows in set (0.00 sec)
```



## CRYPTO CURRENCY DATABASE



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### SORTING

ASCENDING

DESCENDING

### AGGREGATE FUNCTIONS

COUNT

SUM

AVG

MAX

MIN

### SQL CONSTRAINTS

## DESCENDING ORDER

```
mysql> select * from market;
+-----+-----+
| key_code | price |
+-----+-----+
| BTC      | 5128383 |
| ETH      | 362338  |
| USDT    | 78      |
| USDC    | 87      |
| BNB      | 50350   |
+-----+-----+
5 rows in set (0.00 sec)
```



## CRYPTO CURRENCY DATABASE



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### SORTING

ASCENDING

DESCENDING

### AGGRIGATE FUNCTIONS

COUNT

SUM

AVG

MAX

MIN

### SQL CONSTRAINTS

```
| USDC      |     87 |
| BNB       | 50350 |
+-----+-----+
5 rows in set (0.00 sec)
```

```
mysql> select * from market order by price desc;
+-----+-----+
| key_code | price   |
+-----+-----+
| BTC      | 5128383 |
| ETH      | 362338  |
| BNB      | 50350   |
| USDC     |     87  |
| USDT     |      78 |
+-----+-----+
5 rows in set (0.00 sec)
```



# CRYPTO CURRENCY DATABASE



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## AGGREGATE FUNCTIONS

COUNT

SUM

AVG

MAX

MIN

## SQL CONSTRAINTS

NULL

NOT NULL

UNIQUE

PRIMARY KEY

## COUNT OPERATOR

```
mysql> select count(name) from crypto_chain;
+-----+
| count(name) |
+-----+
|          10 |
+-----+
1 row in set (0.00 sec)

mysql> select rank,name from crypto_chain;
+-----+-----+
| rank | name  |
+-----+-----+
|    1 | Bitcoin      |
|    2 | Ethereum     |
|    3 | Tether        |
|    4 | USD Coin     |
|    5 | BNB           |
|    6 | Cardano       |
|    7 | XRP            |
|    8 | Binance USD   |
|    9 | Solana         |
|   10 | Dogecoin      |
+-----+-----+
10 rows in set (0.00 sec)
```



# CRYPTO CURRENCY DATABASE



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## AGGREGATE FUNCTIONS

COUNT

SUM

AVG

MAX

MIN

## SQL CONSTRAINTS

NULL

NOT NULL

UNIQUE

PRIMARY KEY

## SUM OPERATOR

```
mysql> select * from market;
+-----+-----+
| key_code | price |
+-----+-----+
| BTC      | 5128383 |
| ETH      | 362338  |
| USDT    | 78       |
| USDC    | 87       |
| BNB      | 50350   |
+-----+-----+
5 rows in set (0.00 sec)

mysql> select sum(price) from market;
+-----+
| sum(price) |
+-----+
| 5541236  |
+-----+
1 row in set (0.00 sec)
```



# CRYPTO CURRENCY DATABASE



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## AGGREGATE FUNCTIONS

COUNT

SUM

AVG

MAX

MIN

## SQL CONSTRAINTS

NULL

NOT NULL

UNIQUE

PRIMARY KEY

## AVERAGE OPERATOR

```
mysql> select * from market;
+-----+-----+
| key_code | price |
+-----+-----+
| BTC      | 5128383 |
| ETH      | 362338  |
| USDT    | 78      |
| USDC    | 87      |
| BNB      | 50350   |
+-----+-----+
5 rows in set (0.00 sec)

mysql> select avg(price) from market;
+-----+
| avg(price) |
+-----+
| 1108247.2000 |
+-----+
1 row in set (0.00 sec)
```



# CRYPTO CURRENCY DATABASE



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## AGREGATE FUNCTIONS

COUNT

SUM

AVG

MAX

MIN

## SQL CONSTRAINTS

NULL

NOT NULL

UNIQUE

PRIMARY KEY

## MAX OPERATOR

```
mysql> select * from market;
+-----+-----+
| key_code | price |
+-----+-----+
| BTC      | 5128383 |
| ETH      | 362338  |
| USDT    | 78       |
| USDC    | 87       |
| BNB      | 50350   |
+-----+-----+
5 rows in set (0.00 sec)

mysql> select max(price) from market;
+-----+
| max(price) |
+-----+
| 5128383  |
+-----+
1 row in set (0.00 sec)
```



## CRYPTO CURRENCY DATABASE



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### AGGREGATE FUNCTIONS

COUNT

SUM

AVG

MAX

MIN

### SQL CONSTRAINTS

NULL

NOT NULL

UNIQUE

PRIMARY KEY

## MIN OPERATOR

```
mysql> select * from market;
+-----+-----+
| key_code | price   |
+-----+-----+
| BTC      | 5128383 |
| ETH      | 362338  |
| USDT    | 78      |
| USDC    | 87      |
| BNB      | 50350   |
+-----+-----+
5 rows in set (0.00 sec)

mysql> select min(price) from market;
+-----+
| min(price) |
+-----+
|       78   |
+-----+
1 row in set (0.00 sec)
```



## CRYPTO CURRENCY DATABASE



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### SQL CONSTRAINTS

NULL

NOT NULL

UNIQUE

PRIMARY KEY

FOREIGN KEY

CHECK

DEFAULT

WHERE

GROUP BY

HAVING

### NULL CONSTRAINT

```
mysql> create table top_gainers (rank int NULL,name varchar(30),gain varchar(10));
Query OK, 0 rows affected (0.01 sec)
```

```
mysql> insert into top_gainers (name,gain) values("Solana","20%");
Query OK, 1 row affected (0.01 sec)
```

```
mysql> select * from top_gainers;
+----+----+----+
| rank | name | gain |
+----+----+----+
| NULL | Solana | 20% |
+----+----+----+
```



# CRYPTO CURRENCY DATABASE



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## SQL CONSTRAINTS

NULL  
NOT NULL  
UNIQUE  
PRIMARY KEY  
FOREIGN KEY  
CHECK  
DEFAULT  
WHERE  
GROUP BY  
HAVING

## NOT NULL CONSTRAINT

```
mysql> create table top_losers (rank int NULL,name varchar(30),loss varchar(10) NOT NULL);
Query OK, 0 rows affected (0.01 sec)

mysql> insert into top_losers (rank,name) values(216,"Terra Luna");
Query OK, 1 row affected, 1 warning (0.00 sec)

mysql> select * from top_losers;
+-----+-----+-----+
| rank | name  | loss |
+-----+-----+-----+
| 216  | Terra Luna |      |
+-----+-----+-----+
1 row in set (0.00 sec)
```



# CRYPTO CURRENCY DATABASE



MD RIZWAN ULLAH  
208WIAI299

## SQL CONSTRAINTS

- NULL
- NOT NULL
- UNIQUE
- PRIMARY KEY
- FOREIGN KEY
- CHECK
- DEFAULT
- WHERE
- GROUP BY
- HAVING

## UNIQUE CONSTRAINT

```
mysql> create table new_tokens (rank int,name varchar(30) NOT NULL,hash_id varchar(30) UNIQUE);
Query OK, 0 rows affected (0.01 sec)
```

```
mysql> insert into new_tokens values(46,"KuCoin Token","A8E93D62807CB885C3DC4B4D78EA40");
Query OK, 1 row affected (0.01 sec)

mysql> select * from new_tokens;
+-----+-----+-----+
| rank | name      | hash_id   |
+-----+-----+-----+
|   46 | KuCoin Token | A8E93D62807CB885C3DC4B4D78EA40 |
+-----+-----+-----+
1 row in set (0.00 sec)
```



# CRYPTO CURRENCY DATABASE



MD RIZWAN ULLAH  
208WIAI299

## SQL CONSTRAINTS

NULL  
NOT NULL  
UNIQUE  
PRIMARY KEY  
FOREIGN KEY  
CHECK  
DEFAULT  
WHERE  
GROUP BY  
HAVING

## PRIMARY KEY CONSTRAINT

```
mysql> create table newly_added_coins (coin_id int, name varchar(30), price varchar(40),
-> primary key(coin_id));
Query OK, 0 rows affected (0.01 sec)

mysql> insert into newly_added_coins values(1,"Football Battle","16.06");
Query OK, 1 row affected (0.00 sec)

mysql> select * from newly_added_coins;
+-----+-----+-----+
| coin_id | name           | price |
+-----+-----+-----+
|      1 | Football Battle | 16.06 |
+-----+-----+-----+
1 row in set (0.00 sec)
```



## CRYPTO CURRENCY DATABASE



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### SQL CONSTRAINTS

NULL

NOT NULL

UNIQUE

PRIMARY KEY

FOREIGN KEY

CHECK

DEFAULT

WHERE

GROUP BY

HAVING

```
| name      | varchar(30) | YES  |      | NULL   |      |
+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)
```

```
mysql> create table coin_now (sno int, key_code varchar(10), loss varchar(10),
-> foreign key(key_code) references coin_then(key_code));
Query OK, 0 rows affected (0.03 sec)
```

```
mysql> desc coin_now;
+-----+-----+-----+-----+-----+-----+
| Field    | Type     | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| sno      | int(11)  | YES  |      | NULL    |      |
| key_code | varchar(10)| YES  | MUL | NULL    |      |
| loss     | varchar(10)| YES  |      | NULL    |      |
+-----+-----+-----+-----+-----+
3 rows in set (0.01 sec)
```



# CRYPTO CURRENCY DATABASE



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## SQL CONSTRAINTS

NULL

NOT NULL

UNIQUE

PRIMARY KEY

FOREIGN KEY

CHECK

DEFAULT

WHERE

GOURP BY

HAVING

## CHECK CONSTRAINT

```
mysql> create table coin_entry (sno int,name varchar(30),price int,check(price > 100));
Query OK, 0 rows affected (0.01 sec)

mysql> desc coin_entry;
+-----+-----+-----+-----+-----+-----+
| Field | Type   | Null | Key  | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| sno   | int(11) | YES  |      | NULL    |       |
| name  | varchar(30)| YES  |      | NULL    |       |
| price | int(11)  | YES  |      | NULL    |       |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.01 sec)
```



# CRYPTO CURRENCY DATABASE



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208WIAI299

## SQL CONSTRAINTS

NULL

NOT NULL

UNIQUE

PRIMARY KEY

FOREIGN KEY

CHECK

DEFAULT

WHERE

GROUP BY

HAVING

## DEFAULT CONSTRAINT

```
mysql> create table coin_status (sno int,name varchar(30),category varchar(10) default "coin");
Query OK, 0 rows affected (0.01 sec)

mysql> desc coin_status;
+-----+-----+-----+-----+-----+-----+
| Field | Type  | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| sno   | int(11) | YES  |     | NULL    |       |
| name  | varchar(30) | YES  |     | NULL    |       |
| category | varchar(10) | YES  |     | coin    |       |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)
```



# CRYPTO CURRENCY DATABASE



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WHERE  
GROUP BY  
HAVING  
LIKE  
LIMIT  
NESTED QUERIES  
JOINS  
**RELATIONAL ALGEBRA**  
OPERATORS  
NORMALIZATION

## WHERE COMMAND

```
mysql> select rank,name,key_code,total_supply,alltime_highest from crypto_chain;
+----+-----+-----+-----+-----+
| rank | name   | key_code | total_supply | alltime_highest |
+----+-----+-----+-----+-----+
| 1  | Bitcoin | BTC    | 21,000,000  | 5,128,383
| 2  | Ethereum | ETH    | ∞           | 362,338
| 3  | Tether   | USDT   | ∞           | 77.64
| 4  | USD Coin | USDC   | ∞           | 87.19
| 5  | BNB      | BNB    | 165,116,760 | 50,350.92
| 6  | Cardano  | ADA    | 45,000,000,000 | 225.26
| 7  | XRP      | XRP    | 100,000,000,000 | 215.10
| 8  | Binance USD | BUSD   | ∞           | 79.58
| 9  | Solana   | SOL    | 508,180,963  | 19,286.66
| 10 | Dogecoin | DOGE   | ∞           | 53.62
+----+-----+-----+-----+-----+
10 rows in set (0.00 sec)

mysql> select rank,key_code,alltime_highest from crypto_chain where name="solana";
+----+-----+-----+
| rank | key_code | alltime_highest |
+----+-----+-----+
| 9   | SOL     | 19,286.66
+----+-----+-----+
```



## CRYPTO CURRENCY DATABASE



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208WIA1299

### GROUP BY COMMAND

WHERE  
GROUP BY  
HAVING  
LIKE  
LIMIT  
NESTED QUERIES  
JOINS  
RELATIONAL ALGEBRA  
OPERATORS  
NORMALIZATION

```
mysql> select name,key_code,alltime_highest from crypto_chain;
```

name	key_code	alltime_highest
Bitcoin	BTC	5,128,383
Ethereum	ETH	362,338
Tether	USDT	77.64
USD Coin	USDC	87.19
BNB	BNB	50,350.92
Cardano	ADA	225.26
XRP	XRP	215.10
Binance USD	BUSD	79.58
Solana	SOL	19,286.66
Dogecoin	DOGE	53.62



## CRYPTO CURRENCY DATABASE



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WHERE  
GROUP BY  
HAVING  
LIKE  
LIMIT  
NESTED QUERIES  
JOINS  
RELATIONAL ALGEBRA  
OPERATORS  
NORMALIZATION

```
mysql> select name,key_code from crypto_chain group by key_code;
+-----+-----+
| name | key_code |
+-----+-----+
| Cardano | ADA
| BNB | BNB
| Bitcoin | BTC
| Binance USD | BUSD
| Dogecoin | DOGE
| Ethereum | ETH
| Solana | SOL
| USD Coin | USDC
| Tether | USDT
| XRP | XRP
+-----+-----+
10 rows in set (0.00 sec)
```



## CRYPTO CURRENCY DATABASE



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WHERE

GROUP BY

HAVING

LIKE

LIMIT

NESTED QUERIES

JOINS

RELATIONAL ALGEBRA

OPERATORS

NORMALIZATION

## HAVING COMMAND

```
mysql> select name,key_code from crypto_chain;
+-----+-----+
| name | key_code |
+-----+-----+
| Bitcoin | BTC |
| Ethereum | ETH |
| Tether | USDT |
| USD Coin | USDC |
| BNB | BNB |
| Cardano | ADA |
| XRP | XRP |
| Binance USD | BUSD |
| Solana | SOL |
| Dogecoin | DOGE |
+-----+-----+
10 rows in set (0.00 sec)

mysql> select name,key_code from crypto_chain group by key_code having name like "B%";
+-----+-----+
| name | key_code |
+-----+-----+
| BNB | BNB |
| Bitcoin | BTC |
| Binance USD | BUSD |
+-----+-----+
```



## CRYPTO CURRENCY DATABASE



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WHERE  
GROUP BY  
HAVING  
LIKE  
LIMIT  
NESTED QUERIES  
JOINS  
RELATIONAL ALGEBRA  
OPERATORS  
NORMALIZATION

### LIKE COMMAND

```
mysql> select name,key_code from crypto_chain;
+-----+-----+
| name      | key_code |
+-----+-----+
| Bitcoin   | BTC      |
| Ethereum  | ETH      |
| Tether    | USDT    |
| USD Coin  | USDC    |
| BNB        | BNB      |
| Cardano   | ADA      |
| XRP        | XRP      |
| Binance USD| BUSD    |
| Solana    | SOL      |
| Dogecoin  | DOGE    |
+-----+-----+
```



## CRYPTO CURRENCY DATABASE



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WHERE  
GROUP BY  
HAVING  
LIKE  
LIMIT  
NESTED QUERIES  
JOINS  
**RELATIONAL ALGEBRA**  
OPERATORS  
NORMALIZATION

```
mysql> select name,key_code from crypto_chain where name like "%i%";  
+-----+-----+  
| name | key_code |  
+-----+-----+  
| Bitcoin | BTC |  
| Binance USD | BUSD |  
+-----+-----+  
2 rows in set (0.00 sec)  
  
mysql> select name,key_code from crypto_chain where key_code like "%__%";  
+-----+-----+  
| name | key_code |  
+-----+-----+  
| Bitcoin | BTC |  
| Ethereum | ETH |  
| BNB | BNB |  
| Cardano | ADA |  
| XRP | XRP |  
| Solana | SOL |  
+-----+-----+  
6 rows in set (0.00 sec)
```



# CRYPTO CURRENCY DATABASE



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WHERE

GROUP BY

HAVING

LIKE

LIMIT

NESTED QUERIES

JOINS

RELATIONAL ALGEBRA

OPERATORS

NORMALIZATION

## LIMIT COMMAND

```
mysql> select name,key_code from crypto_chain;
+-----+-----+
| name      | key_code |
+-----+-----+
| Bitcoin   | BTC      |
| Ethereum  | ETH      |
| Tether    | USDT    |
| USD Coin  | USDC    |
| BNB        | BNB      |
| Cardano   | ADA      |
| XRP        | XRP      |
| Binance USD| BUSD    |
| Solana    | SOL      |
| Dogecoin  | DOGE    |
```



## CRYPTO CURRENCY DATABASE



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WHERE  
GROUP BY  
HAVING  
LIKE  
LIMIT  
NESTED QUERIES  
JOINS  
RELATIONAL ALGEBRA  
OPERATORS  
NORMALIZATION

```
mysql> select name, key_code from crypto_chain limit 10;
+-----+-----+
| name | key_code |
+-----+-----+
| XRP  | XRP   |
| BUSD | BUSD  |
| SOL  | SOL   |
| DOGE | DOGE  |
+-----+-----+
10 rows in set (0.00 sec)

mysql> select name, key_code from crypto_chain limit 4;
+-----+-----+
| name | key_code |
+-----+-----+
| Bitcoin | BTC    |
| Ethereum | ETH   |
| Tether | USDT  |
| USD Coin | USDC |
+-----+-----+
4 rows in set (0.00 sec)
```



# CRYPTO CURRENCY DATABASE



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WHERE  
GROUP BY  
HAVING  
LIKE  
LIMIT  
NESTED QUERIES  
JOINS  
RELATIONAL ALGEBRA  
OPERATORS  
NORMALIZATION

## NESTED QUERIES

```
mysql> select name,key_code,alltime_highest from crypto_chain;
+-----+-----+-----+
| name | key_code | alltime_highest |
+-----+-----+-----+
| Bitcoin | BTC | 5,128,383 |
| Ethereum | ETH | 362,338 |
| Tether | USDT | 77.64 |
| USD Coin | USDC | 87.19 |
| BNB | BNB | 50,350.92 |
| Cardano | ADA | 225.26 |
| XRP | XRP | 215.10 |
| Binance USD | BUSD | 79.58 |
| Solana | SOL | 19,286.66 |
| Dogecoin | DOGE | 53.62 |
+-----+-----+-----+
```



## CRYPTO CURRENCY DATABASE



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WHERE  
GROUP BY  
HAVING  
LIKE  
LIMIT  
NESTED QUERIES  
JOINS

RELATIONAL ALGEBRA  
OPERATORS  
NORMALIZATION

```
mysql> select * from market;
+-----+-----+
| key_code | price |
+-----+-----+
| BTC      | 5128383 |
| ETH      | 362338  |
| USDT    | 78      |
| USDC    | 87      |
| BNB      | 50350   |
+-----+-----+
5 rows in set (0.00 sec)
```

```
mysql> select name,alltime_highest,alltime_lowest,total_supply from crypto_chain where
-> key_code in (select key_code from market);
+-----+-----+-----+-----+
| name   | alltime_highest | alltime_lowest | total_supply |
+-----+-----+-----+-----+
| Bitcoin | 5,128,383     | 3,993.42     | 21,000,000   |
+-----+-----+-----+-----+
```



## CRYPTO CURRENCY DATABASE



MD RIZWAN ULLAH  
208WIA1299

WHERE  
GROUP BY  
HAVING  
LIKE  
LIMIT  
NESTED QUERIES  
JOINS  
**RELATIONAL ALGEBRA**  
OPERATORS  
NORMALIZATION

### JOINS COMMAND

```
mysql> select name,key_code,alltime_highest from crypto_chain;
+-----+-----+-----+
| name | key_code | alltime_highest |
+-----+-----+-----+
| Bitcoin | BTC | 5,128,383 |
| Ethereum | ETH | 362,338 |
| Tether | USDT | 77.64 |
| USD Coin | USDC | 87.19 |
| BNB | BNB | 50,350.92 |
| Cardano | ADA | 225.26 |
| XRP | XRP | 215.10 |
| Binance USD | BUSD | 79.58 |
| Solana | SOL | 19,286.66 |
| Dogecoin | DOGE | 53.62 |
+-----+-----+-----+
10 rows in set (0.00 sec)
```



## CRYPTO CURRENCY DATABASE



MD RIZWANULLAH  
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WHERE

GROUP BY

HAVING

LIKE

LIMIT

NESTED QUERIES

JOINS

RELATIONAL ALGEBRA

OPERATORS

NORMALIZATION

```
| USDC      |      87 |
| BNB       |    50350 |
+-----+-----+
5 rows in set (0.00 sec)
```

```
mysql> select crypto_chain.name,crypto_chain.key_code,market.price
   -> from crypto_chain
   -> inner join market on crypto_chain.key_code = market.key_code;
+-----+-----+-----+
| name  | key_code | price  |
+-----+-----+-----+
| Bitcoin | BTC     | 5128383 |
| Ethereum | ETH     | 362338  |
| Tether   | USDT   | 78      |
| USD Coin | USDC   | 87      |
| BNB     | BNB     | 50350  |
+-----+-----+-----+
5 rows in set (0.00 sec)
```



## CRYPTO CURRENCY DATABASE



MD RIZWAN ULLAH  
208WIA1299

HAVING  
LIKE  
LIMIT  
NESTED QUERIES  
JOINS  
RELATIONAL ALGEBRA  
OPERATORS  
NORMALIZATION  
1NF  
2NF

## RELATIONAL ALGEBRA OPERATORS

### SELECTION OPERATOR

$$\pi_{(\text{rank, key\_code})} < \text{crypto\_chain} >$$

### PROJECTION OPERATOR

$$\sigma_{(\text{rank} \geq 6)} < \text{crypto\_chain} >$$

### RENAME OPERATOR

$$\rho((\sigma(\text{rank} \geq 5) < \text{crypto\_chain} >), \text{crypto})$$

$$\pi_{(\text{hid} > 100)} < \text{crypto} >$$



# CRYPTO CURRENCY DATABASE



MD RIZWANULLAH  
208WIA1299

HAVING  
LIKE  
LIMIT  
NESTED QUERIES  
JOINS  
RELATIONAL ALGEBRA  
OPERATORS  
NORMALIZATION  
INF  
2NF

## FIRST NORMAL FORM (1NF)

Before 1NF

Rank	Name	Key code	Total supply	Release date	Creator
1	Bitcoin	BTC	21,000,000	2009-01-03	Satoshi Nakamoto
2	Ethereum	ETH	∞	2015-07-30	Vitalik Buterin
3	Tether	USDT	∞	2014-07-20	Brock Pierce,Craig Sellars,Reeve Collins

After 1NF

Rank	Name	Key code	Total supply	Release date	Creator
1	Bitcoin	BTC	21,000,000	2009-01-03	Satoshi Nakamoto
2	Ethereum	ETH	∞	2015-07-30	Vitalik Buterin
3	Tether	USDT	∞	2014-07-20	Brock Pierce
3	Tether	USDT	∞	2014-07-20	Craig Sellars
3	Tether	USDT	∞	2014-07-20	Reeve Collins



# CRYPTO CURRENCY DATABASE



MD RIZWANULLAH  
208WIA1299

HAVING  
LIKE  
LIMIT  
NESTED QUERIES  
JOINS  
RELATIONAL ALGEBRA  
OPERATORS  
NORMALIZATION  
INF  
2NF

## SECOND NORMAL FORM (2NF)

Before 2NF

Rank	Name	Key code	Total supply	Release date	Creator
1	Bitcoin	BTC	21,000,000	2009-01-03	Satoshi Nakamoto
2	Ethereum	ETH	∞	2015-07-30	Vitalik Buterin
3	Tether	USDT	∞	2014-07-20	Brock Pierce
3	Tether	USDT	∞	2014-07-20	Craig Sellars
3	Tether	USDT	∞	2014-07-20	Reeve Collins



## CRYPTO CURRENCY DATABASE



MD RIZWANULLAH  
208WIA1299

HAVING  
LIKE  
LIMIT  
NESTED QUERIES  
JOINS  
**RELATIONAL ALGEBRA**  
OPERATORS  
**NORMALIZATION**  
1NF  
2NF

After 2NF

Rank	Name	Key code
1	Bitcoin	BTC
2	Ethereum	ETH
3	Tether	USDT

Key code	Total supply	Release date	Creator
BTC	21,000,000	2009-01-03	Satoshi Nakamoto
ETH	$\infty$	2015-07-30	Vitalik Buterin
USDT	$\infty$	2014-07-20	Brock Pierce
USDT	$\infty$	2014-07-20	Craig Sellars
USDT	$\infty$	2014-07-20	Reeve Collins