

Cryptocurrency_MultiCoinTracker - User Manual

https://github.com/Js24zz/Cryptocurrency_MultiCoinTracker.git

Section 1 (System Overview)

This system automatically:

- 1) Collects cryptocurrency market data from **CoinGecko API**.
- 2) Parses JSON using **jq**.
- 3) Stores historical data in **MySQL**.
- 4) Generates **time-series plots**.
- 5) Runs automatically via cron (**Malaysia time, UTC+8**).

The system tracks **10 major cryptocurrencies**, with **additional metrics (24h change, market cap, volume)** for Bitcoin and Ethereum.

Section 2 (Project Folder Structure)

```
acker$ tree
.
├── DB
│   └── cryptocurrency_multicoin_tracer_dump.sql
├── Data
│   ├── crypto_20251211T225430.json
│   ├── crypto_20251211T225831.json
│   ├── crypto_20251211T230808.json
│   ├── crypto_20251211T231353.json
│   ├── crypto_20251212T000001.json
│   ├── crypto_20251212T001335.json
│   ├── crypto_20251212T002735.json
│   ├── crypto_20251212T120001.json
│   ├── crypto_20251212T123001.json
│   ├── crypto_20251212T130001.json
│   ├── crypto_20251212T133001.json
│   ├── crypto_20251212T140001.json
│   ├── crypto_20251212T210002.json
│   ├── crypto_20251213T000001.json
│   ├── crypto_20251213T120001.json
│   ├── crypto_20251213T123001.json
│   ├── crypto_20251213T130001.json
│   ├── crypto_20251213T133001.json
│   ├── crypto_20251213T140001.json
│   ├── crypto_20251213T210001.json
│   ├── crypto_20251214T000002.json
│   ├── crypto_20251214T120001.json
│   ├── crypto_20251214T123000.json
│   ├── crypto_20251214T130000.json
│   ├── crypto_20251214T133001.json
│   ├── crypto_20251214T140000.json
│   ├── crypto_20251214T210001.json
│   ├── crypto_20251214T210846.json
│   ├── crypto_20251215T000001.json
│   └── crypto_20251215T010501.json
└── Documents
    ├── CryptoPricesTable.txt
    ├── Documentation.pdf
    ├── ERD.drawio.pdf
    └── UserManual.pdf

Logs
├── collect_crypto.log
├── cron_all.log
├── cron_collect.log
├── cron_plot.log
└── plot_crypto.log

Plots
├── ADA_price.png
├── BNB_price.png
├── BTC_change24.png
├── BTC_marketcap.png
├── BTC_price.png
├── BTC_volume24h.png
├── DOGE_price.png
├── ETH_change24.png
├── ETH_marketcap.png
├── ETH_price.png
├── ETH_volume24h.png
├── LINK_price.png
├── LTC_price.png
├── SOL_price.png
├── TRX_price.png
└── XRP_price.png

README.md
Schema.sql
Scripts
├── AppendCleanTable.sh
├── CollectCrypto.sh
├── HealthCheck.sh
├── PlotCrypto.sh
└── ShowLatestPrices.sh

Sql
└── Schema.sql
```

Section 3 (Environment Setup)

Required software:

- a) Windows + WSL (Ubuntu)
- b) MySQLServer
- c) Jq
- d) Curl
- e) Python (for plotting)

```
yeonj@WIN-R02UQQ0R3FN:/mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker$ mysql --version
mysql Ver 8.0.44-0ubuntu0.24.04.1 for Linux on x86_64 ((Ubuntu))
yeonj@WIN-R02UQQ0R3FN:/mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker$ jq --version
jq-1.7
```

Section 4 (Database Setup)

Import Schema

```
yeonj@WIN-R02UQQ0R3FN:/mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker$ cd /mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker
sudo mysql < Sql/Schema.sql
```

Section 5 (Data Collection (CollectCrypto.sh))

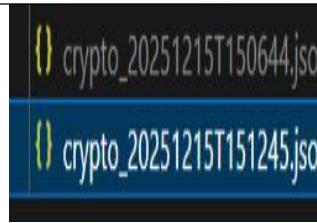
What it does:

- a) Calls **CoinGecko API**
- b) Saves raw JSON to **Data/**
- c) Creates a new snapshot row
- d) Parses values using **jq**
- e) Inserts **10 rows** into **coin_prices**

Manual Run

bash Scripts/CollectCrypto.sh

```
ency_MultiCoinTracker$ bash Scripts/CollectCrypto.sh
2025-12-15T15:12:45 Downloading data from CoinGecko API...
2025-12-15T15:12:46 Saved pretty JSON to /mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker/Data/crypto_20251215T150644.json
2025-12-15T15:12:46 Inserted data for snapshot_id=63
2025-12-15T15:12:46 Using snapshot_id=63
2025-12-15T15:12:46 Inserted data for snapshot_id=63
Done: collected cryptocurrency data at 20251215T151245.json
yeonj@WIN-RO2UQQ0R3FN:/mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker$
```



Section 6 (JSON Parsing with jq)

Purpose

- jq extracts required fields from **CoinGecko JSON** before inserting into **MySQL**.
- bash **Scripts/AppendCleanTable.sh**

ID	Symbol	Name	Price_USD	Market_Cap	Volume_24h	High_24h	Low_24h	Change_24h%
bitcoin	btc	Bitcoin	88972	1775302462443	33966432815	90469	88776	-1.2474
ethereum	eth	Ethereum	3098.83	374210364087	13091538578	3127.96	3073.73	-0.21678
binancecoin	bnb	BNB	886.91	122159566116	916805575	899.16	883.97	-1.25116
ripple	xrp	XRP	2.0	120535802275	1414562384	2.03	1.99	-1.34671
solana	sol	Solana	131.0	73629419626	2529517710	133.48	130.58	-1.56977
tron	trx	TRON	0.276664	26195065366	488479869	0.276645	0.27081	1.69322
dogecoin	doge	Dogecoin	0.135525	22754908298	617453436	0.139435	0.135192	-2.80447
cardano	ada	Cardano	0.39967	14647897856	479008955	0.411994	0.398986	-2.99125
chainlink	link	Chainlink	13.49	9403922778	319589150	13.78	13.45	-1.96144
litecoin	ltc	Litecoin	79.35	6080058013	334924744	81.91	78.88	-3.12425

Section 7 Plot Generation (PlotCrypto.sh)

What it generates:

Category	Output
Price Plots	10 price plots (one per cryptocurrency)
BTC Extra Plots	24h Price Change
	Market Capitalisation
	24h Trading Volume
ETH Extra Plots	24h Price Change
	Market Capitalisation
	24h Trading Volume

a) Bash `ls -t Data/*.json | head -1` to find the latest file.

```
yeonj@WIN-R02UQQ0R3FN:/mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker$ ls -t Data/*.json | head -1
Data/crypto_20251215T151245.json
```

b) Then bash

```
jq -r '.[] | [.id, .symbol, .current_price, .market_cap,
.total_volume, .low_24h, .high_24h,
.price_change_percentage_24h] | @tsv' Data/crypto_20251215T151245.json |
head
```

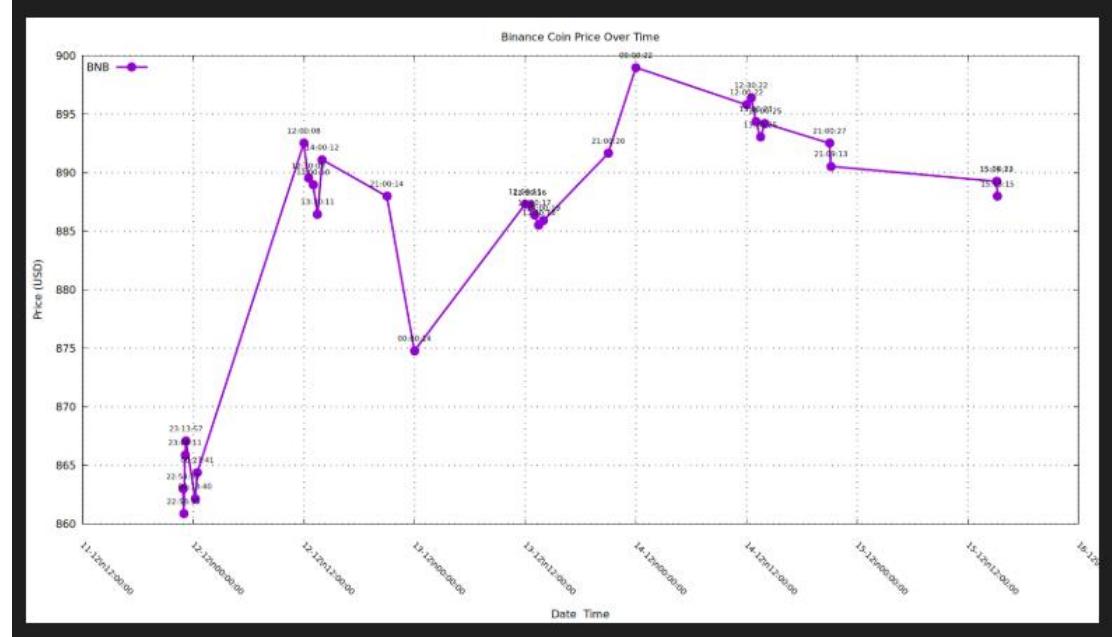
* PLEASE NOTE THAT THE ONE IN BOLD U MUST CHOOSE THE LATEST FILE THAT SHOWN ACCORDING TO THE CIRCLED.

```
yeonj@WIN-R02UQQ0R3FN:/mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker$ jq -r '.[] | [.id, .symbol, .current_price, .market_cap,
.total_volume, .low_24h, .high_24h,
.price_change_percentage_24h] | @tsv' Data/crypto_20251215T151245.json | head
bitcoin btc      89571   1789152744859   35745452600   87892   90266   -0.64876
ethereum eth     3126.99  377905959389    21747040734   3052.44  3141.86  0.54365
binancecoin bnb    887.96  122449080489    1272407095   874.45   898.3   -0.57727
ripple xrp      2.0     120996656954    1962244617    1.98    2.02    -0.96725
solana sol     132.16   74362547019    3370352037   129.28   133.42   -0.61062
tron trx       0.281379  26636549898    676172359    0.274157  0.282445  2.61658
dogecoin doge    0.136528  22960749346    1012428477    0.1338   0.13835  -1.17378
cardano ada    0.403394  14829739828    601441687    0.395047  0.409333  -1.07476
chainlink link    13.59   9501067796    454151203    13.26    13.74   -0.78597
litecoin ltc     80.87   6207407556    426748792    78.32    81.16   -0.04052
yeonj@WIN-R02UQQ0R3FN:/mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker$
```

C) bash Scripts/PlotCrypto.sh

```
yeonj@WIN-R0ZUQQ0R3FN:/mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker$ bash Scripts/PlotCrypto.sh
2025-12-15T15:26:59 Generating price plots for 10 cryptocurrencies...
2025-12-15T15:26:59 Saved price plot → /mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker/Plots/BTC_price.png
2025-12-15T15:26:59 Saved price plot → /mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker/Plots/ETH_price.png
2025-12-15T15:26:59 Saved price plot → /mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker/Plots/SOL_price.png
2025-12-15T15:27:00 Saved price plot → /mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker/Plots/BNB_price.png
2025-12-15T15:27:00 Saved price plot → /mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker/Plots/XRP_price.png
2025-12-15T15:27:00 Saved price plot → /mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker/Plots/ADA_price.png
2025-12-15T15:27:00 Saved price plot → /mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker/Plots/DOGE_price.png
2025-12-15T15:27:00 Saved price plot → /mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker/Plots/TRX_price.png
2025-12-15T15:27:00 Saved price plot → /mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker/Plots/LINK_price.png
2025-12-15T15:27:00 Saved price plot → /mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker/Plots/LTC_price.png
2025-12-15T15:27:00 Generating 24h change plots (BTC, ETH)...
2025-12-15T15:27:00 Saved 24h change plot → /mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker/Plots/BTC_change24.png
2025-12-15T15:27:00 Saved 24h change plot → /mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker/Plots/ETH_change24.png
2025-12-15T15:27:00 Generating market cap plots (BTC, ETH)...
2025-12-15T15:27:01 Saved market cap plot → /mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker/Plots/BTC_marketcap.png
2025-12-15T15:27:01 Saved market cap plot → /mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker/Plots/ETH_marketcap.png
2025-12-15T15:27:01 Generating 24h volume plots (BTC, ETH)...
2025-12-15T15:27:01 Saved 24h volume plot → /mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker/Plots/BTC_volume24h.png
2025-12-15T15:27:01 Saved 24h volume plot → /mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker/Plots/ETH_volume24h.png
2025-12-15T15:27:01 Finished generating plots.
```

D) Open .png file to check the latest plot update.



Section 8 Manual Verification Script (ShowLatestPrices.sh)

Provides human-readable verification of latest snapshot data.

a) bash Scripts>ShowLatestPrices.sh

Snapshot_Time	Coin	Price_USD	Low_24h_USD	High_24h_USD	Change_24h_Pct
2025-12-15 15:12:45	ADA	0.40339400	0.39504700	0.40933300	-1.07
2025-12-15 15:12:45	BNB	887.96000000	874.45000000	898.30000000	-0.58
2025-12-15 15:12:45	BTC	89571.00000000	87892.00000000	90266.00000000	-0.65
2025-12-15 15:12:45	DOGE	0.13652800	0.13380000	0.13835000	-1.17
2025-12-15 15:12:45	ETH	3126.99000000	3052.44000000	3141.86000000	0.54
2025-12-15 15:12:45	LINK	13.59000000	13.26000000	13.74000000	-0.79
2025-12-15 15:12:45	LTC	80.87000000	78.32000000	81.16000000	-0.04
2025-12-15 15:12:45	SOL	132.16000000	129.28000000	133.42000000	-0.61
2025-12-15 15:12:45	TRX	0.28137900	0.27415700	0.28244500	2.62
2025-12-15 15:12:45	XRP	2.00000000	1.98000000	2.02000000	-0.97

Section 9 Clean Output Table (AppendCleanTable.sh)

Creates a formatted snapshot table from the latest JSON.

a) bash Scripts/AppendCleanTable.sh

=====								
Crypto Prices Snapshot: 2025-12-15 01:05:07								
Source JSON: crypto_20251215T010501.json								
ID	Symbol	Name	Price_USD	Market_Cap	Volume_24h	High_24h	Low_24h	Change_24h%
bitcoin	btc	Bitcoin	88972	1775302462443	33966432815	90469	88776	-1.2474
ethereum	eth	Ethereum	3098.83	374210364087	13091538578	3127.96	3073.73	-0.21678
binancecoin	bnb	BNB	886.91	122159566116	916805575	899.16	883.97	-1.25116
ripple	xrp	XRP	2.0	120535802275	1414562384	2.03	1.99	-1.34671
solana	sol	Solana	131.0	73629419626	2529517710	133.48	130.58	-1.56977
tron	trx	TRON	0.276664	26195065366	488479869	0.276645	0.27081	1.69322
dogecoin	doge	Dogecoin	0.135525	22754908298	617453436	0.139435	0.135192	-2.80447
cardano	ada	Cardano	0.39967	14647897856	479008955	0.411994	0.398986	-2.99125
chainlink	link	Chainlink	13.49	9403922778	319589150	13.78	13.45	-1.96144
litecoin	ltc	Litecoin	79.35	6080058013	334924744	81.91	78.88	-3.12425

Section 10 Health Check (HealthCheck.sh)

Confirms pipeline integrity

- a) Snapshots exist
- b) Exactly 10 rows per snapshot
- c) Plot files exist
- d) Clean table updated
- e) bash Scripts/HealthCheck.sh

```
[4] Plot outputs
Total PNG plots: 16
Latest 8 plots:
-rwxrwxrwx 1 yeonj yeonj 72089 Dec 15 01:05 /mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker/Plots/ETH_volume24h.png
-rwxrwxrwx 1 yeonj yeonj 94342 Dec 15 01:05 /mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker/Plots/BTC_volume24h.png
-rwxrwxrwx 1 yeonj yeonj 74159 Dec 15 01:05 /mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker/Plots/ETH_marketcap.png
-rwxrwxrwx 1 yeonj yeonj 78152 Dec 15 01:05 /mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker/Plots/BTC_marketcap.png
-rwxrwxrwx 1 yeonj yeonj 100854 Dec 15 01:05 /mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker/Plots/ETH_change24.png
-rwxrwxrwx 1 yeonj yeonj 96792 Dec 15 01:05 /mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker/Plots/BTC_change24.png
-rwxrwxrwx 1 yeonj yeonj 86544 Dec 15 01:05 /mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker/Plots/LTC_price.png
-rwxrwxrwx 1 yeonj yeonj 98966 Dec 15 01:05 /mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker/Plots/LINK_price.png

[5] Clean table file (last 20 lines)

=====
Crypto Prices Snapshot: 2025-12-15 01:05:07
Source JSON: crypto_20251215T010501.json

ID      Symbol    Name          Price_USD   Market_Cap     Volume_24h   High_24h    Low_24h    Change_24h%
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
bitcoin  btc      Bitcoin       88972     1775302462443  33966432815  90469      88776      -1.2474
ethereum eth      Ethereum      3098.83   374210364087   13091538578  3127.96    3073.73    -0.21678
binancecoin bnb    BNB          886.91    122159566116   916805575   899.16     883.97    -1.25116
ripple    xrp      XRP          2.0       120535802275   1414562384   2.03       1.99     -1.34671
solana    sol      Solana        131.0     73629419626   2529517710   133.48     130.58    -1.56977
tron      trx      TRON         0.276664   26195065366   488479869   0.276645   0.27081   1.69322
dogecoin  doge     Dogecoin      0.135525   22754908298   617453436   0.139435   0.135192   -2.80447
cardano   ada      Cardano       0.39967   14647897856   479008955   0.411994   0.398986   -2.99125
chainlink link    Chainlink     13.49     9403922778   319589150   13.78      13.45     -1.96144
litecoin  ltc      Litecoin      79.35     6080058013   334924744   81.91      78.88     -3.12425

[6] Health check complete.
```

Section 11 Automation with Cron (Malaysia Time)

Cron schedule rationale

- a) 12:00, 12:30, 13:00, 13:30, 14:00 (lunch/rest)
- b) 21:00 (after work / OT)
- c) 00:00 (start of new day)
- d) 01:05 (checking for new day)

Chosen to align with working adult usage patterns.

e) Bash sudo crontab -l

```
yeonj@WIN-RO2UQ0R3FN:/mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker$ sudo crontab -l
# === CRYPTO PIPELINE (MYT UTC+8) ===

# 12:00
0 12 * * * cd /mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker && bash Scripts/collectCrypto.sh && bash Scripts/PlotCrypto.sh && bash Scripts/AppendCleanTable.sh && bash Scripts/HealthCheck.sh >> Logs/cron_all.log 2>&1

# 12:30
0 12 * * * cd /mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker && bash Scripts/collectCrypto.sh && bash Scripts/PlotCrypto.sh && bash Scripts/AppendCleanTable.sh && bash Scripts/HealthCheck.sh >> Logs/cron_all.log 2>&1

# 13:00
0 13 * * * cd /mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker && bash Scripts/collectCrypto.sh && bash Scripts/PlotCrypto.sh && bash Scripts/AppendCleanTable.sh && bash Scripts/HealthCheck.sh >> Logs/cron_all.log 2>&1

# 13:30
0 13 * * * cd /mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker && bash Scripts/collectCrypto.sh && bash Scripts/PlotCrypto.sh && bash Scripts/AppendCleanTable.sh && bash Scripts/HealthCheck.sh >> Logs/cron_all.log 2>&1

# 14:00
0 14 * * * cd /mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker && bash Scripts/collectCrypto.sh && bash Scripts/PlotCrypto.sh && bash Scripts/AppendCleanTable.sh && bash Scripts/HealthCheck.sh >> Logs/cron_all.log 2>&1

# 14:30
0 14 * * * cd /mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker && bash Scripts/collectCrypto.sh && bash Scripts/PlotCrypto.sh && bash Scripts/AppendCleanTable.sh && bash Scripts/HealthCheck.sh >> Logs/cron_all.log 2>&1

# 21:00
0 21 * * * cd /mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker && bash Scripts/collectCrypto.sh && bash Scripts/PlotCrypto.sh && bash Scripts/AppendCleanTable.sh && bash Scripts/HealthCheck.sh >> Logs/cron_all.log 2>&1

# 00:00
0 0 * * * cd /mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker && bash Scripts/collectCrypto.sh && bash Scripts/PlotCrypto.sh && bash Scripts/AppendCleanTable.sh && bash Scripts/HealthCheck.sh >> Logs/cron_all.log 2>&1

# 01:05
5 1 * * * cd /mnt/c/Users/yeonj/OneDrive/Cryptocurrency_MultiCoinTracker && bash Scripts/collectCrypto.sh && bash Scripts/PlotCrypto.sh && bash Scripts/AppendCleanTable.sh && bash Scripts/HealthCheck.sh >> Logs/cron_all.log 2>&1
```

Section 12 ERD Diagram (Database Design)

What to Include

- a) coins (master)
- b) snapshots (time dimension)
- c) coin_prices (fact table)
- d) PK, FK, UNIQUE constraint

