**概念术语积累**

1.SDK

SDK: “Software development kit”, a collection of software development tools in one installable package. They ease creation of applications by having compiler, debugger and perhaps a ***software framework***.

🡪 \*比如Section 1 Task 2中的”python-binance”就是一个为了更加方便调用实现功能（节省繁琐基础代码）的似wrappers类package, 而不是binance官方API (documentation)本身！

2.(bitcoin) “Streaming” & “Streamer” (combinations of subs and pricing info?)

3.(CryptoCompare proprietary?)”CCCAGG”

“CCCAGG”: a bitcoin index, “the crypto coin comparison aggregated index”. It refers to the real-time index calculation methodology, the purpose of which is to show the best price estimation for crypto traders and investors to value their portfolio at any time. It aggregates transaction data of over 70 exchanges, using 24-hour volume weighted average. The CCCAGG is calculated for each crypto coin in each currency it is trading in (example: CCCAGG BTC-USD).

Crypto coins such as Bitcoin, Ethereum, Monero, etc. are traded at various markets against multiple currencies including flat currencies (USD, JPY, GBP, etc.) and other cryptos. Depending on the market type (exchange or OTC), liquidity level, trading volume, transaction fees, and many other factors, a coin can be traded at different prices across different markets, and therefore making it difficult to know the value of a coin at a certain time.

Unlike traditional stock exchanges, crypto exchanges are facing the following problems that make pricing even more challenging:

* DDOS attack, causing an interruption of trading
* Hacking of user accounts
* Lack of standards and naming convention for symbols
* Unstable technological and legal environment (causing changes in fee structure, blocking of funds withdrawal, etc.)

4.”Binance”: a *crypto-exchange*, one of the top ones in the industry

5.[复习] “Spot market” and “Future Market”

“Spot market”: 现期市场（传统上如股票等）

“future market”: 远期市场（如期货等）

6.[复习] “Stop Loss order”, “Take Profit order”, “Limit order”

7.Candle Data (“Candlestick chart” commonly)

A candlestick chart (also called Japanese candlestick chart) is a style of financial chart used to describe price movements of a security, derivative, or currency. Each "candlestick" typically shows one day, thus *a one-month chart may show the 20 trading days as 20 candlesticks*. Candlestick charts can also be built using intervals shorter or longer than one day.

It is **similar to a bar chart** in that each candlestick represents **all four important pieces of information for that day: open and close in the thick body; high and low in the “candle wick”**. Being densely packed with information, it tends to represent trading patterns over short periods of time, often a few days or a few trading sessions.

Candlestick charts are most often used in ***technical analysis of equity and currency price patterns***. They are visually similar to box plots, though box plots show different information.

A close up of a logo

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“**Open**” here for “green”(upward) candle

“**Close**” here for “green”(upward) candle

*[Source: Wiki:* [*https://en.wikipedia.org/wiki/Candlestick\_chart*](https://en.wikipedia.org/wiki/Candlestick_chart)*]*

8.order book depth / market depth

The book depth refers simply to **the number of price levels available** at a particular time in the book. Sometimes the book is represented to a fixed depth, and orders beyond that depth are ignored or rejected, and in other cases the book can contain unlimited levels. Usually buyer side and sell side market depth are compared.

Example graph:

A close up of a logo

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Order book depth chart on a currency exchange. The x-axis is the unit price, the y-axis is cumulative order depth. Bids (buyers) on the left, asks (sellers) on the right.

*[Source: Wiki:* [*https://en.wikipedia.org/wiki/Order\_book\_(trading)*](https://en.wikipedia.org/wiki/Order_book_(trading))*]*

9. “OHLCV” data format

“OHLCV” refers to **“open-high-low-close-volume” chart / data**.

An open-high-low-close chart (also OHLC) is a type of chart typically used to illustrate ***movements in the price of a financial instrument over time***. **Each vertical line** on the chart shows **the price range (the highest and lowest prices)** over one unit of time, e.g., one day or one hour. Tick marks ***project from each side of the line*** indicating **the opening price (e.g., for a daily bar chart this would be the starting price for that day) on the left, and the closing price for that time period on the right**. The bars may be shown **in different hues depending on whether prices rose or fell in that period**.

**The Japanese candlestick chart** and OHLC charts show exactly the same data, i.e., the opening, high, low, and closing prices during a particular time frame. Day traders, who by default have to watch the price movements on a chart, prefer to use the Japanese candlesticks, because they show the *"live action" price movements by expanding and contracting the candlestick's body*, which is easier to grasp (and trade upon) than the standard OHLC bar. Therefore, for *dynamic real-time chart analysis*, Japanese candlesticks offer advantages over standard OHLC bars. However, for technical analysis of *static charts*, such as after-market analysis of historical data, the OHLC bars have very clear advantages over the Japanese candlesticks: the OHLC bars do not require color or fill pattern to show the Open and Close levels, and they do not create confusion in cases when, for example, the Open price is lower than the Close price (a bullish sign), but the Close price for the studied bar is lower than the Close price for the previous bar, i.e. the bar to the left on the same chart (a bearish sign).

In technical analysis OHLC charts are *often combined with charts of other types such as line charts (showing moving average), column charts (trading volume), and range areas (Bollinger Bands)*.

Example graph:

A close up of a logo

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10. “Base Asset” (“Base Currency” in crypto-currency trading) & “Quote Asset” (“Quote Currency”); “Trading pairs”

(Each investment asset has a measure of value. Stock, bond, real estate, gold – all these instruments can be simply compared using the valuation in the ***base fiat currency***. In the traditional markets, these are the currencies of the national central banks, such as dollars, euros, British pounds, etc. The situation on the crypto market is in many ways very similar. To estimate the rate of various cryptocurrencies, **fiat money or major cryptocurrencies** can be used.)

The base currency is a way of *representing an identifiable measure* of the value of different assets. In order to *exchange one type of asset for another*, **a trading platform** is necessary. *In the case of cryptocurrencies, such a platform is* ***the cryptocurrency exchange****.*

There are more than 1000+ cryptocurrencies on the crypto market, and in theory, they can all be used for trading. However, due to the fact that all currencies vary in a number of users, capitalization, frequency and usability, the concept of the base currency is used. **As a base currency, we want to see stable coins with a numerous variety of trading pairs.** In cryptocurrency trading, **the term “trading pairs” describes a trade between one type of cryptocurrency and another**. And to compare the fair and universal value of different cryptocurrencies, the exchange rate is used to the base currency. At that way, the second cryptocurrency will be called “**quote currency**“.

Unfortunately, *not all trading pairs are available, meaning that a direct exchange of one coin for another isn’t always possible to perform*. In this case, **you will be prompted to use the base currency as an intermediate**. For example, if you want to exchange Dogecoin (DOGE) to Ripple (XRP) but the DOGE/XRP pair is not available, you will be offered to exchange DOGE for the base currency and then base currency for XRP.

**Main Base currency list:**

**1) Tether (USDT)**

(by 2019) Current capitalization: $4.03B

This is a cryptocurrency token issued by Tether Limited in 2015, which claims that ***its value is partially covered by U.S. dollar reserves held in its bank accounts or by obligations on the part of other companies***. **The main idea of the developers of this token is to allow the participants of the cryptocurrency market to use a stable digital asset, the rate of which is pegged to the U.S. dollar and does not feel as strong fluctuations as the rates of other cryptocurrencies**. Tether is released on the platform Omni, which is a superstructure (layer) over the Bitcoin blockchain.

**2) Bitcoin (BTC)**

Capitalization: $188.6B

**Bitcoin is the first and by far the most popular cryptocurrency.** It was created by the mysterious Satoshi Nakamoto in 2009 as the first ever electronic decentralized currency, operating on a peer-to-peer basis. ***The main advantages of this cryptocurrency are the large number of trading pairs, high liquidity and popularity among users.*** Bitcoin is the most popular cryptocurrency at the moment, so *its base value determines the prices of all traded coins*.

**3) Ethereum (ETH)**

Capitalization: $23.6B

A platform for the creation of blockchain-based decentralized online services (decentralized applications) based on smart contracts. Implemented as a single decentralized virtual machine. It was proposed by Vitalik Buterin, the founder of Bitcoin Magazine, at the end of 2013, with the network being launched on July 30, 2015.

**4) Litecoin (LTC)**

Capitalization: $6B

Litecoin is a blockchain project *based on the Bitcoin protocol*. It is a peer-to-peer network consisting of a chain of linked blocks of transaction information. ***The main objective of the project is to develop a means of payment that is more convenient, quicker and cheaper than traditional national currencies.*** **Litecoin is used as the base currency on currency pairs of more than 160 cryptocurrencies.** More than 400 different combinations of traded pairs based Litecoin are available on the market.

**5) Binance coin (BNB)**

Capitalization: $4.3B

Binance Coin (BNB) is a token that is issued in consequence of ICO’s conduct by the **Binance Cryptocurrency Exchange**. ***The BNB token is issued on the blockchain of Ethereum cryptocurrency and is used to pay trade fees and participate in special promotions***. There are 57 cryptocurrency pairs traded with the exchange token. According to the regulations, Binance plans to use 20% of its profits each quarter to buy out and burn Binance Coin’s cryptocurrency until it burns up to 50% of the total supply of Binance Coin tokens (100 million).

***[source:*** [***https://plutus.ai/blog/base-currency-crypto-trading/#:~:text=What%20is%20meant%20by%20base,platform%20is%20the%20cryptocurrency%20exchange***](https://plutus.ai/blog/base-currency-crypto-trading/#:~:text=What%20is%20meant%20by%20base,platform%20is%20the%20cryptocurrency%20exchange.)***.]***

*12.[Medium上一篇关乎”crypto-trading 101”（using Amberdata API）的参考文章：*

[*https://medium.com/amberdata/crypto-trading-101-asset-selection-2ac020f46319*](https://medium.com/amberdata/crypto-trading-101-asset-selection-2ac020f46319)

13.(Cryptocurrency) On-chain analysis / On-chain data (including “block”, “account”, “transaction”, “erc20 contract” etc.)

14. Bitcoin “Address”

A Bitcoin address, or simply address, is an identifier of 26-35 alphanumeric characters, beginning with the number **1, 3 or bc1** that **represents a possible destination for a bitcoin payment**. Addresses can be generated at no cost by any user of Bitcoin. For example, using Bitcoin Core, one can click "New Address" and be assigned an address. It is also possible to get a Bitcoin address using an account at an exchange or online wallet service.

There are currently three address formats in use:

1). P2PKH which begin with the number 1, eg: 1BvBMSEYstWetqTFn5Au4m4GFg7xJaNVN2.

2). P2SH type starting with the number 3, eg: 3J98t1WpEZ73CNmQviecrnyiWrnqRhWNLy.

3). Bech32 type starting with bc1, eg: bc1qar0srrr7xfkvy5l643lydnw9re59gtzzwf5mdq.

**A Bitcoin address is a single-use token**

Like e-mail addresses, you can send bitcoins to a person by sending bitcoins to one of their addresses. However, unlike e-mail addresses, people have many different Bitcoin addresses and for privacy and security reasons **a unique address should be used for each transaction**. Most Bitcoin software and websites will help with this by generating a brand new address ***each time you create an invoice or payment request***.

A naive way accept bitcoin as a merchant is to tell your customers to send money to a single address. However this does not work because ***Bitcoin transactions are public on the block chain***, so if a customer Alice sends you bitcoins then a malicious agent Bob could see that same transaction and send you an email claiming that he paid. You would have no way of knowing whether it was Alice or Bob who send coins to your address. **This is why each customer must be given a brand new address.**

**Addresses can be created offline**

Creating addresses can be done without an Internet connection and does not require any contact or registration with the Bitcoin network. It is possible to create large batches of addresses offline using freely available software tools. Generating batches of addresses is useful in several scenarios, such as e-commerce websites where a unique pre-generated address is dispensed to each customer who chooses a "pay with Bitcoin" option. Newer "HD wallets" can generate a "master public key" token which can be used to allow untrusted systems (such as webservers) to generate an unlimited number of addresses without the ability to spend the bitcoins received.

**Addresses are often case sensitive and exact**

Old-style Bitcoin addresses are case-sensitive. Bitcoin addresses should be copied and pasted using the computer's clipboard wherever possible. If you hand-key a Bitcoin address, and each character is not transcribed exactly - including capitalization - the incorrect address will most likely be rejected by the Bitcoin software. You will have to check your entry and try again.

The probability that a mistyped address is accepted as being valid is 1 in 232, that is, approximately 1 in 4.29 billion.

New-style bech32 addresses are case insensitive.

**Proving you receive with an address**

Most Bitcoin wallets have a function to "sign" a message, proving the entity receiving funds with an address has agreed to the message. This can be used to, for example, finalise a contract in a cryptographically provable way prior to making payment for it.

Some services will also piggy-back on this capability by dedicating a specific address for authentication only, in which case the address should never be used for actual Bitcoin transactions. When you login to or use their service, you will provide a signature proving you are the same person with the pre-negotiated address.

It is important to note that these signatures only prove one receives with an address. Since Bitcoin transactions do not have a "from" address, you cannot prove you are the sender of funds.

Current standards for message signatures are only compatible with "version zero" bitcoin addresses (that begin with the number 1).

*[Source: Wiki:* [*https://en.bitcoin.it/wiki/Address#:~:text=A%20Bitcoin%20address%2C%20or%20simply,by%20any%20user%20of%20Bitcoin.]*](https://en.bitcoin.it/wiki/Address#:~:text=A%20Bitcoin%20address%2C%20or%20simply,by%20any%20user%20of%20Bitcoin.)

15.cryptocurrency Contract ABI

16.”event-driven” system (for Backtesting)