

1. Introduction:

- General task description: Development and configuration of an arbitrage bot for cryptocurrency trading that will place limit and market orders based on specific criteria.

- Project objective: Creating an efficient bot capable of automatically conducting arbitrage operations on various exchanges.

1. Requirements for bot functionality:

- Perform monitoring of various exchanges to detect arbitrage opportunities.
- Analyze data (exchange rates, trading volumes, order book depth) to determine the possibility of profitable operations.
- Make a decision on the type of order (limit or market) considering current conditions and potential profitability of the operation.
- Place limit orders with specified prices and volumes.
- Place market orders for quick operations without price limitations.

2. Limit order placement strategies:

- Price differences between exchanges: If a significant price difference is detected between exchanges, the bot should place a limit buy order on the exchange with a low price and a limit sell order on the exchange with a high price.
- Expected price change: If the bot anticipates a significant price change in the near future, it should place limit buy or sell orders according to the expected price movement.

3. Market order placement strategies:

- Time-sensitive trades: If a significant volatility or high trading pressure is observed on an exchange, the bot should use market orders for quick buying or selling of coins without price restrictions.
- Arbitrage between exchanges with different liquidity: If one exchange has low liquidity while another has high liquidity, the bot should use market orders on the more liquid exchange for quick buying or selling.

4. Bot development and configuration:

- Develop software for the arbitrage bot, including modules for monitoring, data analysis, and decision-making on order type.
- Integrate APIs with selected exchanges to retrieve data and place orders.
- Conduct testing and debugging of the bot on historical data.
- Optimize the bot to efficiently execute arbitrage operations.

5. Documentation requirements:

- Detailed description of the solution algorithm and decision-making logic.
- User manual explaining how to set up, launch, and monitor the bot's operation.
- Instructions for updating and configuring the bot.
- Description of the technologies, libraries, and tools used.

Note: The technical specification may be supplemented or modified depending on the specific project requirements and developer team preferences.

2. Deposit tokens and USDT on the exchanges:

- Find out the wallet addresses on each exchange where you need to make the deposit of tokens and USDT.

- Transfer the required amount of tokens and/or USDT to these addresses using wallets or other payment systems that you utilize.

1. Confirmation of deposit:
 - After transferring tokens and/or USDT to the exchange wallets, wait for the transaction to be confirmed.
 - There are different confirmation levels for different blockchains and tokens, so the waiting time may vary.
2. Conducting arbitrage operations:
 - Use the tokens or USDT available on the exchange to carry out arbitrage operations.
 - Analyze prices on different exchanges and identify opportunities for arbitrage based on price differences.
 - Buy tokens at a lower price on one exchange and simultaneously sell them at a higher price on another exchange.
3. Transferring back to the original exchange:
 - After completing the arbitrage trade and gaining profit, you can transfer the tokens and/or USDT back to the original exchange to finalize the operation.
 - Once again, use the wallet addresses on each exchange to transfer the tokens and/or USDT back.

It is important to consider that each exchange may have its own requirements and procedures for token deposits and withdrawals, so it is crucial to study their documentation and follow the instructions provided by the exchange itself.

3. Develop an arbitrage bot for cryptocurrency exchanges using machine learning and optimization for placing limit and market orders, follow these steps:

1. Data Collection:
 - Gather historical data from cryptocurrency exchanges, including price information, trading volumes, order book depth, and other relevant parameters.
 - Ensure that the data is sufficiently accurate and represents a significant sample for analysis and training of the machine learning model.
2. Data Analysis:
 - Use machine learning algorithms such as regression, time series, or neural networks to analyze the collected data and determine relationships between various parameters.
 - Apply optimization methods such as gradient descent or evolutionary algorithms to search for optimal values of model parameters.
3. Model Building:
 - Create a machine learning model (e.g., regression model or neural network) to predict future cryptocurrency prices or the likelihood of arbitrage opportunities based on the analysis of historical data.
 - Train the model on the collected data, using train-test splits, and evaluate its performance.
4. Order Strategy Development:
 - Using the trained model, develop a strategy for placing limit and market orders based on the model's predictions and current market conditions.
 - Consider various factors such as risk, instrument liquidity, and fees to optimize order decisions.
5. Testing and Optimization:
 - Conduct testing of the bot on historical data and evaluate its performance and profitability.
 - Use the testing results to optimize the model parameters and order strategy.
 - Make necessary adjustments and repeat the testing and optimization process until desired results are achieved.

6. Deployment and Monitoring:

- Deploy the bot on selected cryptocurrency exchanges and configure it to automatically execute order placement tasks based on the optimized strategy.
- Set up monitoring mechanisms and regularly monitor the bot's performance and results, making necessary adjustments as needed.