Code Crafters

Options Chain Tool

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Introduction

Welcome to the future of options trading! Today, we are thrilled to introduce our revolutionary option chain tool. Our tool is designed to streamline the process of analyzing and trading options, making it easier and more efficient than ever before.

With our option chain tool, you'll be able to quickly and easily view all available options for a given stock, including their prices, expiration dates, and strike prices. You'll also be able to calculate important metrics like implied volatility and delta, giving you a comprehensive view of each option's potential profitability.

Architecture

Real-time Open Chain Tool: A tool has been created that operates in real-time and is based on an open chain architecture.

Data Stream: A Java server sends a continuous stream of data.

Flask Server: The data is processed by a Flask server. Flask is a popular web framework for Python.

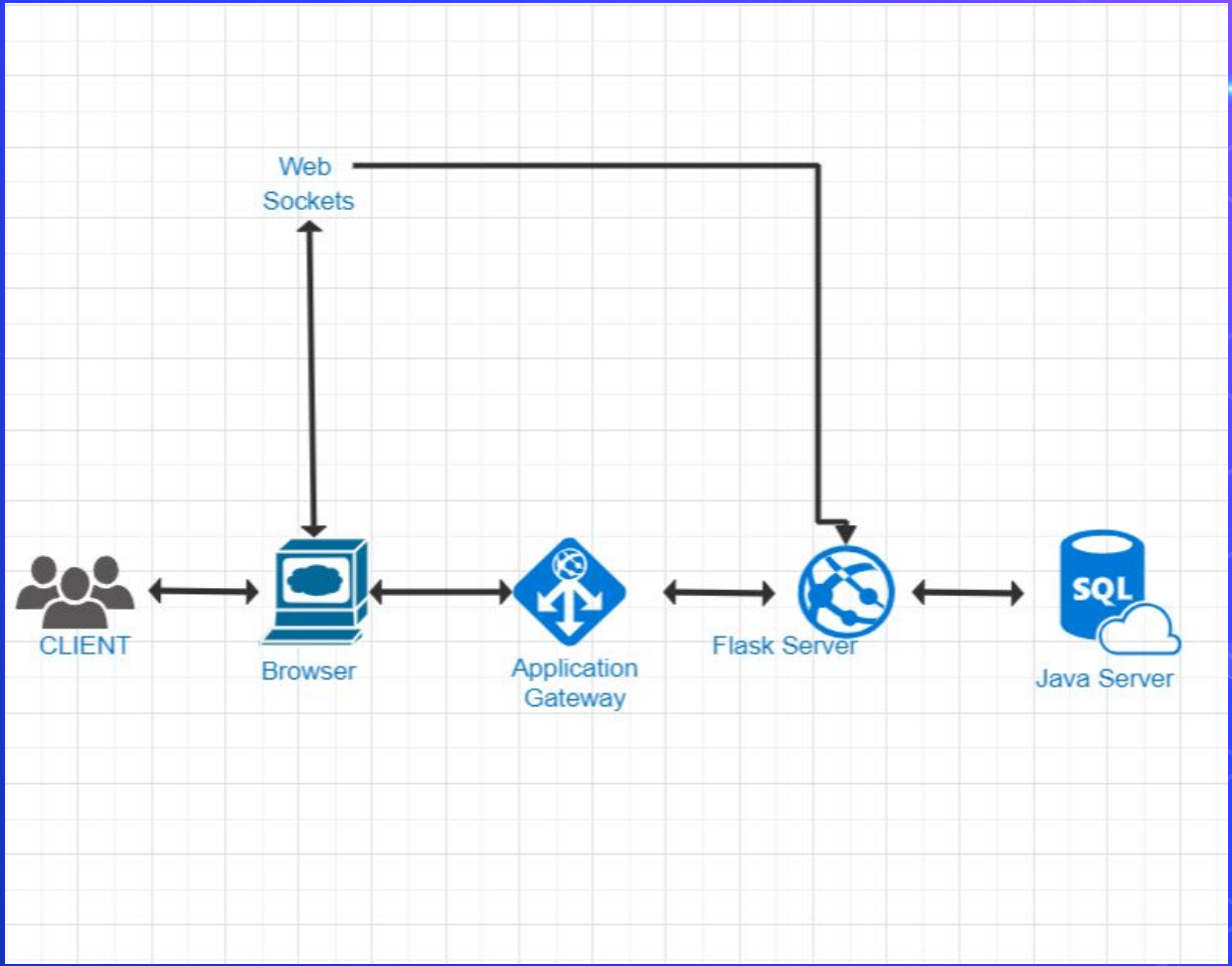
Socket Programming: The processed data is emitted to a React app using socket programming. Socket programming allows for real-time communication between the server and the client.

React App: The React app receives the emitted data from the Flask server.

Table Display: The received data is displayed in a table format in the React app.

Real-time Updates: The displayed table is updated in real-time as new data is received.

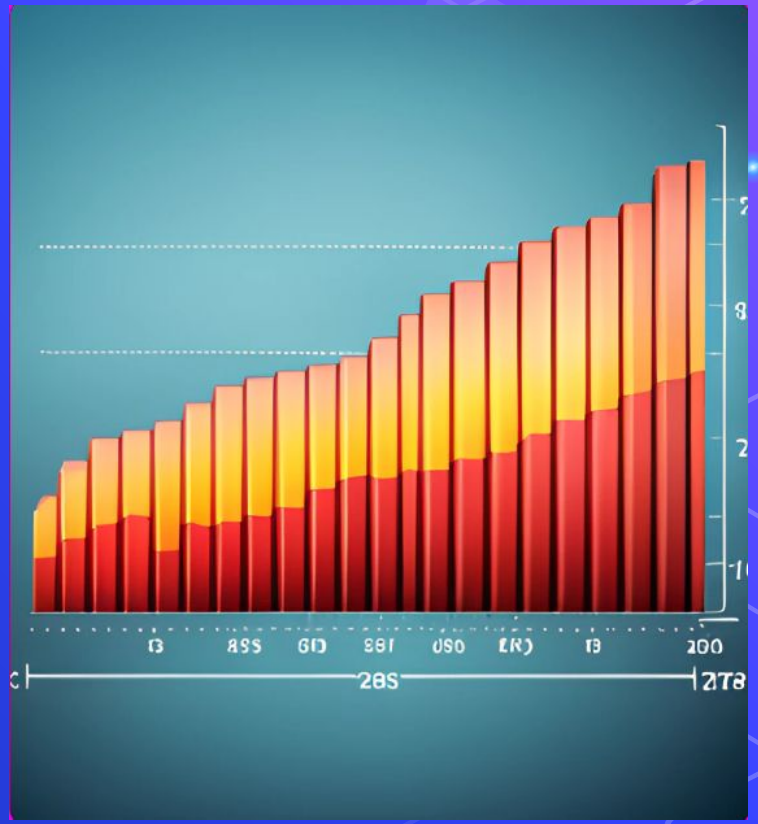
Techniques: Techniques like memoization and pagination are employed to efficiently manage the speed and volume of the incoming data.


Web
Sockets
CLIENT
Browser
Application
Gateway
Flask Server
SQL
Java Server

Implied Volatility Calculation

We utilized the Black-Scholes model, a widely recognized pricing model, to calculate the cost price of options. This model considers various factors like underlying asset price, strike price, time to expiration, risk-free rate, and volatility to determine the fair value of an option.

To determine the implied volatility (IV), which represents market expectations of future price fluctuations, we implemented an iterative Newton technique. This technique gradually refines the initial IV estimate until it converges to a solution that aligns with observed market prices, ensuring accurate pricing information for options.

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