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Telegram price monitoring bot: an automated solution for the personal users

System operating on the Telegram platform was created for automated monitoring of product and service prices on the Internet. The main goal of this solution is to allow users to monitor the prices of goods or services of interest without the need to do it manually. After entering a product link and the desired price, the Telegram bot automatically informs the user when the product meets the specified price criteria. Such a solution is especially relevant in today's e-commerce environment, where prices change dynamically and frequently, and users are looking for ways to optimize the purchase time and budget.

The relevance of the project is based on two aspects: the growing need to automate information tracking and the accessibility and popularity of the Telegram platform. The bot is adapted to work with ASOS, Wizzair and other popular websites, and can be extended to monitor any page that the HTML structure allows. The system is based on the web scraping method, using Python libraries ("requests" and "BeautifulSoup") to scan HTML data, as well as the "python-telegram-bot" library for Telegram API integration. The asynchronous checking mechanism was created with the "asyncio" and "schedule" modules, which allow automatic price checking every few hours.

No machine learning methods were used in the system development process, but careful data analysis was applied - identifying the structure of price elements on different websites, testing different HTML selectors, and ensuring reliable reading of results. Challenges related to the management of asynchronous functions and Telegram API limitations were also solved.

During the project, practical experience was gained with asynchronous application architecture, Telegram bot development, and HTML structure analysis. Conceptually, the understanding of user needs and the system design focused on convenient use without graphical interfaces were deepened. The reliability of the system was tested with several real products, and the Telegram interface was conveniently tested via a mobile device.

It is important to mention that the system is designed in such a way that it can be easily transferred to other user devices without requiring complex configuration. All settings are stored in local JSON files, so the system works independently of cloud solutions. This gives the user more control and privacy. The bot can also be easily adapted to various languages and websites in other regions.

Among the most important development options are additional website support (e.g. Zalando, Booking.com), data storage for a longer period with the ability to analyze price trends, and the creation of a graphical user interface for users who do not use Telegram. In the future, the system could also be adapted for e-commerce activity analysis or competitive price monitoring for small business needs.