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# ePrice Comparator: An Automated Internet Price Comparison System

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## Abstract

The World Wide Web is a perfect medium for electronic retailers who specialize in cutthroat price competition (Coyle, 2002; Shulman, 1999; Wingfield, 2002). Amazon.com, for instance, has been taking a leading role in an on-line bestseller price war. In May of 1999 when Amazon.com cut its list price for bestsellers in half, Barnesandnoble.com and Borders.com quickly followed. Again, in 2002, a second price war started when Amazon lowered the minimum order size of \$49 from \$99 to qualify its customers for free shipping on most items - its fourth price cut in the past 11 months. The battle for the lowest prices among e-retailers has left most Internet shoppers little incentive to go bargain hunting at other sites (Mossberg, 2000).

E-retailers must monitor and collect competitors' price information in order to win the raging price war and increase e-commerce sales. In order to do this, office personnel are usually assigned to manually search and read price changes from competitors' Web sites. However, such a process is arduous, costly and inefficient. In an attempt to reduce cost and improve efficiency in price gathering process, inquiry is being made into ways of automation and computerization. This paper describes the design and development of an Internet application system, code named "ePrice Comparator," that automates the monitoring and collecting of prices from Web sites of targeted competitors on an hourly basis.

Users of this system will be able to access the program from an Intranet. After setting up the targeted retailers and particular products to search for, the user will trigger the comparator to get price information from those retailers' websites. Once the comparison is done, the prices will be listed along with retailers' names in a database for future analysis. By analyzing the data, the user will be able to figure out the current market situation for a particular product and adjust his price position. Note that the process of searching and reading prices from the targeted Web sites is automated by setting up time scheduling service of the operating system where the comparator is being hosted.

The system was developed in Visual Basic 6 with the use of a Microsoft SQL database server. The code modules of the system include a HTTP COM object that downloads targeted HTML pages, a HTML parser that

extracts desired pricing information, and a network of business object components that provide the data retrieval process and provide reporting services.

The system is also designed to have an easy-to-use interface with customizable functions and an open system available for future add-ons. The interface is basically comprised of three different administration panels. Within each panel, there are tabs to group different functionalities to allow for smooth operations. The three panels are database administration panel, parser administration panel, and the search engine panel. The database administration panel allows the user to set up targeted retailers' demographical data, URLs, and targeted HTML pages where the price information is stored. The parser administration panel enables the user to find the right position of price information in the targeted HTML page through analyzing the table tab structure of the page. The result of the parsing and the HTMP page analysis is a template containing a set of positioning numbers for the targeted pages. The template is then stored in the database for run-time downloading and parsing when the search engine is activated. Finally, the search engine panel provides facilities for the user to configure when and how the engine is run once the system is activated from the hosting operating system.

ePrice Comparator can be scheduled to run at any interval as needed. The result of each run is stored in the database for analysis. One of the key features of the system is its capability to publish the analysis report in HTML format, which enables corporate managers to view the report from anywhere at anytime and makes price monitoring a ready-to-employ management practice.

In this newly-emerged and highly-interdisciplinary ecommerce domain, systems development is a key research methodology that interacts with other methodologies, such as theory building, experimentation, and observation. The advancement of ecommerce research and practice often comes from new system concepts, but systems must be developed first to test and measure the underlying concepts. ePrice Comparator is a result of such a proof-of-concept approach.

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