Operating Systems

WebX

23PT01 - Aakash Velusamy
23PT37- Vaishnavi V

OVERVIEW:

WebX is a basic web proxy server designed to handle HTTP and HTTPS traffic efficiently. Built with multithreading and synchronization techniques, it manages multiple client requests effortlessly. With a thread pool in place, system resources are used wisely and efficiently, while an LRU-based caching system speeds up responses by storing frequently accessed websites. Sitting between clients and servers,

KEY FEATURES:

- **Multithreading:** Instead of handling requests one by one, WebX runs multiple threads at the same time, allowing several clients to be served concurrently. This prevents delays and improves efficiency.
- **Thread Pool Implementation:** A fixed number of worker threads are always on standby, ready to grab incoming requests, reducing the hassle of thread management and making sure everything runs without a hitch.
- **Thread Synchronization:** Since multiple threads work with shared resources, WebX uses synchronization mechanisms like mutexes and semaphores to avoid mix-ups and keep them working together smoothly.
- **Cache Management:** Implements an LRU cache to store recent responses, reducing redundant network requests.
- **Socket Programming:** Manages communication between clients and web servers using TCP connections.

In summary, WebX showcases how operating system concepts like process scheduling, thread synchronization, memory management, and socket programming work behind the scenes of a simple web request.