# WatchDogX: Real-Time Intrusion Detection & Logging System

WatchDogX is a Windows-based security application designed to work alongside an Arduino-powered motion detection system. It provides a secure and interactive interface that allows both admin and regular users to log in, monitor motion events in real time, and manage encrypted logs. This system is ideal for environments where intrusion detection, access control, and event recording are critical.

The application features a secure login system that supports both admin and user roles. Admins have full control over logs and user management, while users are limited to viewing logs. The login screen includes password masking to protect input, and credentials are stored in separate text files for admin and users.

One of the key features of WatchDogX is its real-time monitoring capability. When connected to an Arduino device (e.g., with a PIR motion sensor and keypad), the software automatically detects the COM port and starts listening for motion alerts. If motion is detected and not deactivated via password on the hardware side, the event is recorded and saved with a timestamp.

All logs are encrypted using a simple XOR encryption technique and saved in a binary file for added security. Users can view logs through the software, which supports live updates and auto-scrolling. Logs can also be cleared or saved manually by admins when needed.

The application is organized into three core files: a header file (WatchDogX.h) that contains structure definitions and function declarations, an implementation file (WatchDogX.c) for the logic behind login, logging, and serial communication, and a main file (main.c) which controls the program flow and interface.

To run the system, users need a Windows PC, an Arduino Uno (or compatible board), a motion sensor, a keypad, and a USB cable for connection. Once the hardware is connected, the application can be compiled using GCC with support for the Windows setup API.

This version of WatchDogX includes the foundational features for intrusion monitoring and logging. Future improvements may include email alerts, database integration, webcam snapshot capture, and a mobile application for remote monitoring.

WatchDogX provides a simple but powerful framework for building secure, real-time monitoring systems with hardware and software integration.