

Introduction

Wazuh Inc. is a leading American IT security company specializing in open-source security solutions. We are dedicated to the development and enhancement of Wazuh, a powerful XDR (Extended Detection and Response) and SIEM (Security Information and Event Management) platform.

We are seeking a highly motivated and versatile individual to contribute to the core development of Wazuh. This role involves working on low-level tasks in C and C++, expanding the platform's capabilities.

The following tasks are designed to assess your skills and problem-solving abilities. Instructions for submitting your responses are provided at the end of this document. We appreciate your time and effort in completing these tasks.

Best regards,

Wazuh, Inc.

Selection Tasks

Task 1: Serialize and deserialize text fields

Description

Write a C++ program that can operate in two modes:

- **Serialize:** reads multiple lines from standard input (each line is a text field) and outputs a single line where the fields are serialized using a delimiter character.
- **Deserialize:** reads a single serialized line from standard input and prints one field per line.

The delimiter must be configurable (default is ','). The program must handle escaped characters so that the delimiter itself, newline characters, and backslashes can appear in field content without breaking the format. Escaping must be reversible.

You are free to design the command-line interface as you prefer, as long as it supports:

- Choosing the mode (serialize or deserialize).
- Setting a custom delimiter.
- Reading from standard input and writing to standard output.

The goal is to preserve the exact field content through a round-trip: deserializing a serialized output must yield the original input.

Task 2: Analyze a program for bugs

Please review the code available at

<https://gist.github.com/vikman90/46b3f47c45cd2c75f88ac2bb136e393b>. The file includes instructions on how to compile it.

Your task is to carefully analyze the code to identify any bugs and potential security vulnerabilities. Describe each issue you find in detail, explaining why it is problematic. If you use any tools during your analysis, such as static analyzers or sanitizers, please mention them and how they helped.

Additionally, propose possible solutions or mitigations for the problems detected. Optionally, you may implement these fixes directly in the code.

Form of Delivery

Please submit your responses in the following formats:

- Include the complete **source code** of your program for Task 1.
- Provide a **PDF document** detailing your responses to Task 2.

All files must be compressed into a **single ZIP file** and sent to hr@wazuh.com.

Due Date

Your responses are due **four days** after receiving this document. Code simplicity and clarity will be favorably evaluated.