Technical Project Specification

Project Title: Shortened URL Validator

1. Project Overview

The goal of this project is to build a system that validates shortened URLs without actually clicking or visiting them. This tool will help users assess the safety and legitimacy of a shortened URL by analyzing metadata, expanding the URL, checking against known blacklists, and evaluating domain reputation.

2. Functional Requirements

The system must be able to:

- Accept user input of a shortened URL.
- Expand the shortened URL to its full destination URL.
- Ensure not to redirect the user to the destination url
- Analyze the destination domain's reputation.
- Check the destination against phishing/malware blacklists.
- List all of the redirects happened prior to reaching the destination url and display on the screen to the user.
- Keep track of all of the inspected short urls
- If input URL matches one from the datastore, then return the data from datastore
- Display results to the user with a confidence score or recommendation.

3. Non-Functional Requirements

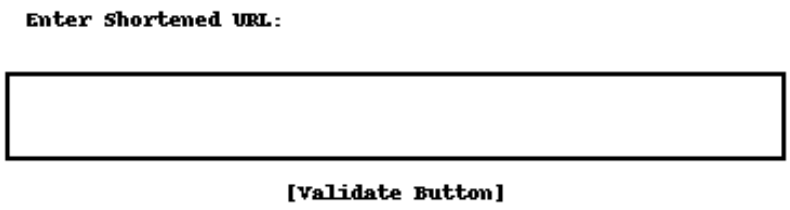
The system should:

- Use secure methods to process and store data.

4. Sample User Interfaces

4.1 URL Input Screen

This is the main interface where users can input shortened URLs to validate.



5. Technology Stack

- Frontend: HTML, CSS, JavaScript

- Backend: As your preference

- URL Expansion: requests, unshorten APIs

- Security Checks: Google Safe Browsing API, PhishTank API

- Hosting: For phase 1, a locally running app is fine. For phase 2, we will decide one of the cloud vendors i.e. AWS/GCP/Azure

- All codes should be committed to a private github repository. And add the user "vanuverma" as an author to that repository.

- Proper documentation of how the entire system works

6. Future Enhancements (Phase 2)

- Add browser extension support

- Add user login

- Keep track of user's usage quota and allow/restrict usage based on it

- Integrate with social media platforms

- Use AI to analyze content previews for safety