

# QuickLinks Design Document

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## What is this?

A simple, lightweight link shortening API for use on a personal web server

## Principles

1. All primary endpoints MUST accept GET requests to ensure web browsers can be used to interact with it

## Goals

1. Be simple and easy to use
2. Provide fastest possible response times
3. Utilize native HTTP features for redirection as to be non-browser-reliant
4. Provide simple analytics information upon request

## Non-Goals

1. Provide a graphical front-end
2. Allow for IP/Client blocking or require authentication
  - a. These can be implemented at the webserver level and should not be implemented here

## Requirements

### Use cases

1. Adding a new URL via browser
  - 1.1. User visits website to add link
  - 1.2. The website gives him the new shortened link in a form that does NOT redirect along with the unique ID
2. Visiting a shortlink
  - 2.1. The user types the shortlink into the address bar
  - 2.2. If the link exists they are redirected via a 301 to the long link
  - 2.3. If the link does not exist the api should handled the 404, not the web server
3. Retrieving analytic information
  - 3.1. The user visits example.com/analytics/UID
  - 3.2. The if the UID is invalid it should return a 400 Bad Request along with formatted information about the error
  - 3.3. If the UID is valid it should return the stored analytic information along with the shortlink and longlinks in plaintext

## Minimal Viable Product

The MVP should be able to add and return links. Analytics are not included

## Other Requirements

1. The same URL added multiple times should not have the same shortlink
2. Two URLs added at the same time should not have the same shortlink

## Design

### Algorithms

1. Link generation
  - 1.1. Identical links should NEVER be generated
  - 1.2. The link should be alphanumeric and both rememberable and easy to distribute
  - 1.3. The link should be three to five English words randomly selected from a words list
  - 1.4. The first letter of each word should be capitalized
  - 1.5. After generation uniqueness should be checked

### Data Structures

ShortLinks should be stored with the original URL, analytical information, and a unique string different from the shortlink that can be used to retrieve analytics

Analytic information should include total page views and unique visitors

### Databases

The database should be automatically set up and usable on any system without any admin interaction