Connor Morrison

RASPBERRY PI WEB SERVER ARCHITECTURE

Contents

[Server Architecture 2](#_Toc168963256)

[Key Requirements 2](#_Toc168963257)

[Non-functional Requirements 2](#_Toc168963258)

[Hosted Projects ASRs 2](#_Toc168963259)

[Dependencies 2](#_Toc168963260)

[Server and Delivery 2](#_Toc168963261)

[Front-end 2](#_Toc168963262)

[Back-end 2](#_Toc168963263)

[Questions 3](#_Toc168963264)

[Projects 4](#_Toc168963265)

[Portfolio 4](#_Toc168963266)

[Abstract 4](#_Toc168963267)

[Key Requirements 4](#_Toc168963268)

[Game Style Form 4](#_Toc168963269)

[Abstract 4](#_Toc168963270)

[Key Requirements 4](#_Toc168963271)

[Virtual Chatbot 4](#_Toc168963272)

[Abstract 4](#_Toc168963273)

[Key Requirements 4](#_Toc168963274)

[Biometric 2FA 5](#_Toc168963275)

[Abstract 5](#_Toc168963276)

[Key Requirements 5](#_Toc168963277)

# Server Architecture

## Key Requirements

#### Non-functional Requirements

* Availability
* Reliability
* Lightweight

### Hosted Projects ASRs

#### Portfolio Display

#### Game-style Form

#### Virtual Chatbot

#### Biometric 2FA

## Dependencies

### Server and Delivery

#### Dynamic Domain Name Service – NameCheap

#### Web Server Software – NGINX

#### Containerisation - Docker

### Front-end

#### Front-end Framework – React

#### CSS Library – TailwindCSS

### Back-end

#### Back-end Framework – Flask (probably)

#### Database – SQLite

## Questions

* Do I need caching of data?
* Do I need a SQL database?
  + Do only some portions of the website need databases, if so is a microservice architecture better suited?
* Listing and considering all functional requirements for the application so far, would a microservices controller architecture work best?
* How to best address certain security concerns? Reference OWASP and Vulnerability Testing Tools???
  + Form input (XSS and SQL Injection)
  + Firewalls
* Should I host a chatbot on my back-end?

# Projects

## Portfolio

### Abstract

### Key Requirements

#### Functional Requirements

#### Non-functional Requirements

## Game Style Form

### Abstract

Think of a falling block/ball (addressed as the Selector) game that has buckets the player can direct the Selector into that have replies to form questions that can be sent back to the database. Once questions have been answered, users can input their name in a game like keyboard to add their “high score” to the board (every player gets the high score) (this “adding their score” submits to the data to the database).

### Key Requirements

#### Functional Requirements

* Must submit data to a persistence database
* Upon submission an email should be sent to me with the users replies

#### Non-functional Requirements

* Must have a fun colourful UI (think like Tetris I reckon)
* Must have an easy to use and practical control scheme

## Virtual Chatbot

### Abstract

A virtual chatbot to answer questions relating to my experience in computer science and my qualifications + experience.

### Key Requirements

#### Functional Requirements

#### Non-functional Requirements

## Biometric 2FA

### Abstract

### Key Requirements

#### Functional Requirements

#### Non-functional Requirements