Terms of Reference

# Decisions to make

System architecture

1. An IDE for all team members to code on.
2. A database for our system.
3. A domain to host our service.
4. A scripting language we will use for the backend.
5. A markup language & stylesheet language we will use for the frontend.
6. A platform for our software to run on.

Communication tools

1. A method of face to face video calling.
2. A platform to send important messages daily.
3. A place to store our documentation where everyone can access.

# Identified options

System architecture

1. IDE
   1. PyCharm
   2. Visual Studio Code
   3. Atom
2. Database
   1. MongoDB
   2. MySQL
   3. SQLite
3. Domain
   1. Microsoft Azure
   2. Bluehost
   3. Domain.com
4. Scripting language
   1. Python
   2. JavaScript
   3. C
5. Markup & Stylesheet language
   1. HTML
   2. XML
   3. XSL
   4. CSS
6. Platform
   1. Native app
   2. Web browser

Communication Tools

1. Video calling
   1. Zoom
   2. Skype
   3. Microsoft Teams
2. Chat messaging
   1. Discord
   2. Slack
3. Documentation
   1. Google drive
   2. OneDrive
   3. Dropbox

# Criteria

System Architecture

1. IDE
   1. Must be free
   2. Must support the languages we are using
   3. Must be easy to use
   4. Must have developer tools such as a debugger and a runtime environment
2. Database
   1. Must be free
   2. Must be large enough to support a large body of users
   3. Must be easy to understand and use
   4. Must have a good level of security
3. Domain
   1. Must be free
   2. Must be reliable
4. Scripting language
   1. Must be suitable for platform we are building on
   2. Must be known amongst the team
5. Markup & Stylesheet language
   1. Must be suitable for platform we are building on
   2. Must be known amongst the team
6. Platform
   1. Must be accessible across many hardware platforms
   2. Must be free to host on
   3. Must align with the client requirements

Communication Tools

1. Video calling
   1. Must have good call quality
   2. Must be familiar for the team
   3. Must be free
   4. Must be easy to set up meetings
2. Chat messaging
   1. Must be familiar with the team
   2. Must be formal
3. Documentation
   1. Must be free
   2. Must be familiar with the team

Analysis against Criteria

IDE

|  | Cost | Supported languages | Ease of use (Opinions) | Tools |
| --- | --- | --- | --- | --- |
| PyCharm | Free | Python, JS, HTML/CSS | Most familiar to students, slow on startup. | Debugger, runtime environment, autofill and auto structure |
| Visual Studio Code | Free | Python, JS, HTML/CSS | Lightweight and elegant. | Debugger, runtime environment, autofill and auto structure |
| Atom | Free | Python, JS, HTML/CSS | Lightweight and elegant, familiar to students. | Autofill and auto structure. |

Database

|  | Cost | Size | Ease of use | Security |
| --- | --- | --- | --- | --- |
| MongoDB | Free | Good | Fast and easy to use, slow to setup. | Weak security under default settings |
| MySQL (community server) | Free | Good | Easy to use | Robust security |
| SQLite | Free | Small (storage in local disk file) | Easy to use | Date not encrypted |

Domain

|  | Cost | Reliability |
| --- | --- | --- |
| Microsoft Azure | Free student subscription, which offers $100 in credit | Very reliable - 99.9% uptime |
| Bluehost | Free first year, then monthly occurring costs | Very reliable - 99.9% uptime |
| Domain.com | $10 per year, with one year minimum contract | Very reliable - 99.9% uptime |

Scripting language

|  | Suitability | Familiarity |
| --- | --- | --- |
| Python | Can work with HTML/CSS. Not interpreted by browser, but can be used via a framework like Flask | Everyone has experience coding in this language |
| Javascript | Can work with HTML/CSS | Everyone has experience coding in this language |
| C | Not interpreted by the browser. | Not everyone has experience coding in this language |

Markup and stylesheet language

|  | Platform support | Familiarity |
| --- | --- | --- |
| HTML & CSS | All modern browsers | Everyone in the team has experience. |
| XML & XSL | All modern browsers | Not everyone in the team has experience. |

Platform

|  | Accessibility | Cost of hosting | Requirement alignment |
| --- | --- | --- | --- |
| Native app | Bad accessibility - all users must have Mac or Windows etc | Can be free if it’s a downloadable software or a free app published to the app store. | Does not meet the requirement of software existing on a browser platform. |
| Web app | Very accessible: can use across platforms and across different hardwares | There are options for free web hosting services. | Meets requirement of software existing on a browser platform. |

Video calling

|  | Cost | Ease of use | Quality |
| --- | --- | --- | --- |
| Zoom | Free | Easy and familiar | Good |
| Skype | Free | Easy and familiar | Average |
| Microsoft Teams | Free | Unfamiliar | Good |

Chat messaging

|  | Familiarity | Formality |
| --- | --- | --- |
| Discord | Familiar | Moderately formal |
| Slack | Unfamiliar | Formal |

Documentation

|  | Familiarity | Cost |
| --- | --- | --- |
| Google Drive | Familiar | Free |
| OneDrive | Unfamiliar | Free |
| DropBox | Unfamiliar | Free |

Recommendations

IDE

The recommended IDE for our team to use is PyCharm. The reason this IDE stands out from the others is because it is very familiar to all the team members, therefore using this IDE will ensure the team’s productivity, as they will not need to worry about learning how it works.

Database

MySQL (community server version) is the recommended database to use in our project. It is free, and easy to use, provides high security and has enough storage space for the scope of our project.

Domain

Hosting our web app on Heroku is the recommended choice as it is free and there is experience within the team in hosting on Heroku

Scripting language

Javascript is the recommended scripting language for us to use because we are making a web app and Javascript is the most appropriate language in this case. It is interpreted by the browser, so debugging can be done within the browser which will make development easier for us. Furthermore, most team members have experience developing a web application in javascript from ENG1003.

Backend language

We will use PHP as our backend language, as it works well with html and javascript to create dynamic web pages and links our front end to a database.

Markup and stylesheet language

The recommended markup and stylesheet language for us to use is HTML and CSS. This is because they work well with Javascript, and team members are familiar with them from ENG1003.

Platform

The recommended platform for our software to run on is the web browser. This allows for the software to be highly portable, accessible by different operating systems and different devices such as phones and laptops. It also adheres to the requirements given by the client.

Video calling

The recommended video calling software for us to use Zoom. Zoom is free to use with our university email accounts, and has high quality video streaming. It is also very familiar with all our team members as we use it everyday.

Chat messaging

The recommended chat messaging platform for us to use is Discord. Discord is familiar with our team members and is easy to set up a server. It is also appropriate for a formal setting.

Documentation

The recommended documenting platform for us to use is Google drive. Google drive can allow for ease of collaboration and file sharing, and is very familiar with the members of our team.

### Version Control

| Change made | Made by | Made on | Proved by |
| --- | --- | --- | --- |
| Adding PHP as our backend language | Roy | 30-09-2020 | Team |
| Changing hosting domain | Roy | 26-10-2020 | Team |