

# Web Dev Individual Report

DANIEL SWARUP

19009942

## Contents

|  |   |
|--|---|
| Introduction .....                         | 2 |
| Website Design Principles.....             | 2 |
| Legality Issues .....                      | 2 |
| Copyright.....                             | 2 |
| Data Protection.....                       | 2 |
| Disability and the Equality Act 2010 ..... | 3 |
| Privacy Policy.....                        | 3 |
| Professional Issues .....                  | 4 |
| Usability Issues.....                      | 4 |
| Design and Implementation.....             | 4 |
| Promoting the Website.....                 | 5 |
| Meta Tags.....                             | 5 |
| Search Engine Optimization .....           | 5 |
| Conclusion.....                            | 5 |
| References .....                           | 7 |

## Introduction

Websites have evolved from text-based hyperlinks in the early years of the internet to high-end graphic design that has become crucial to the functionality of web-use. A modern web design and seamless user experience is paramount for creating a usable and effective web application. Today, users want the fastest experience with minimal effort when using a website. This ties directly into the UX, as the website must allow the user to navigate the site and reach their desired page with the fewest clicks. UX was a top priority in designing the Ace Training website. Multiple iterations of User Interface and Experience (UI/UX) were shared amongst focus groups comprising staff and students. Feedback from the groups was considered and implemented on the website, improving the UI/UX substantially. Modern web technologies such as Node.js, Vue.js, and GraphQL were used to ensure minimum load time and high efficiency.

## Website Design Principles

### Legality Issues

#### Copyright

Copyright is an intellectual property law that authorizes the owner of an original work exclusive rights on using the work. Some of these rights include the right to produce and distribute copies of the work, create imitation works, and publicly display the work. Any creative work in a tangible form such as audio recordings, visual works like paintings, posters, computer software, and written pieces like books, etc. are all subject to Copyright law (What is "Copyright"? - Legal Help, 2021). For a work to be protected by copyright, it must meet three requirements. The work must be an original piece, it should be a work of authorship, and it should be fixed in a tangible form so that it could be perceived for a longer period of time (What Is Copyright?, 2021). Any original work, from the moment it is fixed in a tangible medium, is subjected to copyright. To avoid infringing the owner's copyright, it is important to exercise caution by looking for fair use and reading Intellectual Property(IP) licensing terms.

To avoid infringing on Copyright and IP laws the website was designed and developed from scratch. Website design ideas and inspiration were taken from other universities' websites, however, none of their code or UI UX design was used. Informal focus groups consisting of Staff and Students were set up to receive feedback and improve the product which ensured a completely unique product. Website's code development was done completely in house by Daniel Swarup, the full stack developer.

#### Data Protection

Under the United Kingdom's Data Protection Act (DPA) 2018, anyone responsible for using personal data must follow "data protection principles". The developer must ensure that personal information is used fairly, lawfully, and transparently. The data must be used for specified, explicit purposes, and used in a way that is limited to only what is necessary. The data

must be accurate, kept to date, and not kept for longer than necessary (Data protection, 2021). According to the DPA 2018 the user has the right to be informed about how their data is being used, access their personal data, update incorrect data, erase their data, restrict the processing of their data, port their data for different services, and object to how their data is being processed (Data Protection Act 2018, 2021).

Complying with the United Kingdom's DPA 2018 the Ace Training website does *not* save any user information for either marketing or data processing. The website only stores and uses basic information such as a user's email and name for authentication and authorization purposes. This information is not portable, erasable, or updateable.

Due to a limit on time and resources, the current version of the website, however, fails to comply with transparency regulations that require the web developer to share with the users how their data is being used and processed. This hole can be filled by adding a Data Privacy page added to the website that makes this information accessible to all users. Further functionality, such as updating records, must be provided to users in future patches to comply with the DPA 2018.

#### [Disability and the Equality Act 2010](#)

The Disability and Equality Act protects underrepresented and disabled people from discrimination, both explicit and implicit. The Equality Act considers nine protected characteristics, which include age, disability, gender reassignment, race, sexual orientation, sex, religion, pregnancy, and civil partnership (Your rights under the Equality Act 2010 | Equality and Human Rights Commission, 2021). The act states that discrimination will not be tolerated against those with disabilities, those thought to have disabilities (discrimination by perception) or those associated with someone who has a disability (discrimination by association).

According to the act, any mental or physical condition which is long term and affects your daily activities is classified as a disability. The act also covers those who have been diagnosed with a progressive condition or have had a disability in the past (Disability discrimination | Equality and Human Rights Commission, 2021).

#### [Privacy Policy](#)

Under the General Data Protection Regulation, an EU legislation, it is a requirement to create a privacy policy which is easy to comprehend and is available to users. A privacy policy is a legal document that explains how a corporation or website gathers and handles the personal information of its users (Sample Privacy Policy Template - Privacy Policies, 2021). An individual's personal information may contain their name, address, age, gender, relationship status, nationality, contacts etc. The purpose of a privacy policy is to notify the users on whether this information is kept confidential or is shared with a third party. Most privacy policies state what personal information the website collects, how they collect it, what they use this information for, how they keep it secure and whether they share it with a third party (GDPR Privacy Policy

Template - Privacy Policies, 2021). Privacy policies help increase transparency and give the customer a sense of security which is a crucial step in establishing trust.

Observing the GDPR and DPA 2018, the Ace Training website's privacy policy is currently being drafted. Before the publication of the privacy policy a legal team must vet the integrity of the policy. We have created a product, which stores minimal personal data only used for authentication and authorization purposes. To completely comply with the GDPR and DPA 2018, a road map for future updates has been planned, and will be executed once funding is secured.

### Professional Issues

The MEVN(MongoDB, Express.js, Vue.js, Node.js) stack was used as the primary technology stack for Ace Training's website. The website's API was created with a combination of a REST API and GraphQL API architecture. The MEVN stack streamlines development as it is composed of JavaScript frameworks ensuring one programming language is used. However, the young nature of this stack makes it harder to find relevant resources for error handling and implementations.

GraphQL began internal development at Facebook in 2012, and only went open source in 2015 its current stable version was released in 2018 (GraphQL | A query language for your API, 2021). Similarly, Vue.js began development in 2013 and had its first release in 2014, Vue.js current stable version was released on the 1st of April 2021 (Vue.js, 2021). The young age of these technologies makes it difficult to find experienced developers and learning resources. As these technologies age these issues will sort themselves out.

Developers will also face issues while dealing with SEO optimization with Vue.js. Vue.js creates single page applications(SPAs) which makes webpages fast for users but extremely difficult for web crawlers to get relevant information from the page and rank it in search engines. This can be addressed by adapting the application to server-side rendering, with technologies such as Nuxt.js.

### Usability Issues

In accordance with the Disability and Equality Act 2010, certain features to accommodate disabled individuals using the Ace Training website were considered and have been planned for future releases. Some of these features are alt tags for image, video, and audio files to make the website accessible to users with hearing or visual disabilities. A team will be created to transcript audio and video content before major release to aid hearing-impaired users. The website currently accommodates users with mental health issues such as dyslexia, by having a clean and easy-to-use layout, to reduce confusion and strain.

### Design and Implementation

The Ace Training website was designed to provide seamless accessibility and effortless user experience. The website was designed and developed by our in-house full stack engineer Daniel

Swarup. Multiple iterations of the UI & UX design were reviewed by informal focus groups consisting of Staff and Students, and feedback was implemented to improve the UX. Website is currently not responsive on mobile devices, it will be addressed in future patches. The website was developed using modern JavaScript frameworks such as Express.js, Node.js, and Vue.js. Keeping the project under one standard programming language helped streamline development. We used modern API standards such as GraphQL & REST to prevent over-fetching of data. This enabled devices with lower bandwidth to access the website without any long load times or big data packet downloads. Website could be further improved by transforming from an SPA to a server side rendered website, thus reducing CPU load tremendously, and lowering data bandwidth requirements.

## Promoting the Website

### Meta Tags

Meta tags contain information about the specific web page for search engines. The head section in the raw HTML contains meta tags (Special tags that Google understands | Search Central, 2021). Web crawlers and search engine ranking algorithms scan through meta tags to find information such as the description, language, title etc. Information in meta tags cannot be random. For instance, Google's web crawlers only recognize a handful of tags mentioned on their website. Originally, meta tags were crucial for good search engine visibility. However, recently they only account for a small portion for search engine indexing among other criteria such as load speeds, user interaction, organic search results etc. (Special tags that Google understands | Search Central, 2021). Meta tags should contain useful and detailed information to be effective.

### Search Engine Optimization

Search engine optimization (SEO) is primarily about making modifications to the website to try and achieve better visibility on search engines. Google (2021) states that a developer should create a website that benefits the user and keep improving the user experience. Regardless of the size of the website, it must have good load speeds, great user experience, and interesting content. To ensure maximum visibility Ace Training should hire a SEO specialist who will manage and advise on what improvements could be made to increase visibility. The website currently runs Vue.js making it extremely fast, however, it being a SPA does not integrate well with web crawlers. Thus, it is recommended Nuxt.js is incorporated into the website.

## Conclusion

Website development projects are mammoth tasks which must be executed with accuracy and precision. The developers must keep legal issues and user accessibility as top priorities throughout the development process. The Ace Training website has presented proof of concept but before it is launched for public and commercial use it must address GDPR, DPA, and DEA issues brought up in this report. It would be criminal to launch this website without being DEA compliant as it would limit many users with pre-existing disabilities from accessing educational resources. Data protection must be improved and consulted on by an external firm so no

education data such as confidential testing materials can be hacked, which would lead to breaking of academic honor codes.

## References

Copyright Alliance. 2021. *What Is Copyright?*. [online] Available at:

<<https://copyrightalliance.org/faqs/what-is-copyright/>> [Accessed 31 May 2021].

Support.google.com. 2021. *What is "Copyright"? - Legal Help*. [online] Available at:

<<https://support.google.com/legal/answer/3463239?hl=en>> [Accessed 31 May 2021].

Equalityhumanrights.com. 2021. *Your rights under the Equality Act 2010 | Equality and Human Rights Commission*. [online] Available at: <<https://www.equalityhumanrights.com/en/advice-and-guidance/your-rights-under-equality-act-2010#h3>> [Accessed 1 June 2021].

Equalityhumanrights.com. 2021. *Disability discrimination | Equality and Human Rights Commission*. [online] Available at: <<https://www.equalityhumanrights.com/en/advice-and-guidance/disability-discrimination>> [Accessed 1 June 2021].

Privacy Policies. 2021. *Sample Privacy Policy Template - Privacy Policies*. [online] Available at: <<https://www.privacypolicies.com/blog/privacy-policy-template/#:~:text=A%20Privacy%20Policy%20is%20a,or%20sold%20to%20third%20parties.>>> [Accessed 2 June 2021].

Privacy Policies. 2021. *GDPR Privacy Policy Template - Privacy Policies*. [online] Available at: <<https://www.privacypolicies.com/blog/gdpr-privacy-policy/>> [Accessed 2 June 2021].

GOV.UK. 2021. *Data protection*. [online] Available at: <<https://www.gov.uk/data-protection>> [Accessed 4 June 2021].

Legislation.gov.uk. 2021. *Data Protection Act 2018*. [online] Available at:

<<https://www.legislation.gov.uk/ukpga/2018/12/contents/enacted>> [Accessed 4 June 2021].

GraphQL.org. 2021. *GraphQL | A query language for your API*. [online] Available at:

<<https://graphql.org/>> [Accessed 4 June 2021].

Vuejs.org. 2021. *Vue.js*. [online] Available at: <<https://vuejs.org/>> [Accessed 4 June 2021].

Google Developers. 2021. *Special tags that Google understands | Search Central*. [online] Available at: <<https://developers.google.com/search/docs/advanced/crawling/special-tags>> [Accessed 4 June 2021].

Google Developers. 2021. *SEO Starter Guide: The Basics | Google Search Central*. [online]



Available at: <<https://developers.google.com/search/docs/beginner/seo-starter-guide>>  
[Accessed 4 June 2021].