**Introduction**

The concept of data structures and algorithms dates back thousands of years, long before the advent of modern computing. Algorithm itself traces its roots back to ancient civilizations, with the term being derived from the name of the 9th-century Persian mathematician, Muhammad Ibn Musa al-Khwarizmi. An algorithm is a set of rules to solve a problem [1], while a data structure is a way of organizing, arranging, processing, retrieving and storing data [2]. Data structures work in conjunction with algorithms; they are crucial aspects of computer science and programming in general. Hence, understanding their intricate details and applications is paramount for building efficient and scalable software systems. Some examples of data structures include Arrays, Linked Lists, Stacks, Queues, Trees, Hash Tables (or Hash Maps), Graphs. Each of these data structures represents different ways of storing data. Algorithms on the other hand include Sorting Algorithms, Searching Algorithms, Graph Algorithms, Dynamic Programming Algorithms, Greedy Algorithms. Each of them has a specific use case, advantages and disadvantages. Both data structures and algorithms are fundamental to computing.

Scenario

For University students, having a solid understanding of data structures and algorithms plays a pivotal role in laying the foundation for a robust computing background, they are essential for pursuing a career in technology. This foundational knowledge not only underpins the core of efficient software development but also serves as a key differentiator in job interviews and professional development. It is of great importance for university students to gain work experience during their academic journey, as it equips them with practical insights, broadens their professional horizons, and significantly enhances their readiness for a successful transition into the competitive technology industry, this can be done by seeking internship and placement opportunities. However, without a solid foundation of data structures and algorithms, there is little to no chance of successfully securing these opportunities.

The design

This web-based multimedia application focuses on university students, especially students in their penultimate year, as its target users. The goal of this design is to nurture students on data structures and algorithms by equipping them with a comprehensive understanding and hands-on experience, thereby fostering a strong foundation that is indispensable for success in the technology sector.

[1] Khan Academy

[2] Free code camp