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Algorithm Visualizer App

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Abstract: *Computer Engineering Algorithms and data structures serve as the foundation of computer science and software development. To grasp these fundamental concepts effectively, it is crucial to provide learners with visual aids that demonstrate the inner workings of algorithms. This research paper introduces the development of an Algorithm Visualizer App, created using the Kotlin programming language, designed to facilitate this educational process. The project leverages Kotlin's strengths in conciseness, expressiveness, and safety to implement an intuitive and interactive platform for visualizing algorithms. By making these complex processes more accessible and engaging, the app aims to bridge the gap between algorithmic theory and practical implementation. In doing so, it provides a valuable resource for computer science students, educators, and developers seeking to enhance their understanding of algorithms. This paper provides a comprehensive exploration of the app's design and architecture, highlighting its modular structure that allows for easy integration of various algorithms and data structures. It offers insights into the algorithms the app currently supports, emphasizing its extensibility to accommodate a wide range of algorithm types, from sorting and Searching. Moreover, the user interface design is examined in detail, emphasizing its user-friendliness and interactivity. Users can interact with visual representations of algorithms, gaining a hands-on understanding of how data is processed step by step. This visual learning approach has the potential to significantly improve algorithm comprehension and problem-solving skills. The study also delves into the performance aspects of the app, including its speed and responsiveness, ensuring that it remains a practical tool for educational purposes. It addresses challenges and considerations in creating a responsive and real- time visual experience, which is essential for effectively conveying the dynamic nature of algorithms*

Keywords: Algorithm, Searching, Sorting, Path-Finding, Algorithm Visualizer

REFERENCES

[1]. K. Becker and M. Beacham, "A tool for teaching advanced data structures to computer science students: an overview of the BDP system," Journal of Computing Sciences, vol. 16, no. 2, pp. 65-71, 2001
[2]. E. Vrachnos and A. Jimoyiannis, "Design and evaluation of a web-based dynamic algorithm visualization environment for novices," Procedia Computer Science, vol. 27, pp. 229-239, 2014.
[3]. F. E, A. M and S. C, "The role of visualization in computer science education," Computers in the Schools, vol. 29, pp. 95-117, 2012.
[4]. D. Hundhausen, S. Douglas and J. Stasko, "A meta study of algorithm visualization effectiveness," Journal of Visual Languages and Computing, vol. 3, no. 3, pp. 259-290, 2002.
[5]. G. Robling and T. L. Naps, "A testbed for pedagogical requirements in algorithm visualizations," in Conference on Innovation and Technology in Computer Science Education, New York, USA, 2002.
[6]. J. Urquiza-Fuentes and J. A. Velazquez-Iturbide, "A survey of successful evaluations of program visualization and algorithm animation systems," ACM Transactions on Computing Education, vol. 9, no. 2, pp. 1-24, 2009.
[7]. Bremananth R, Radhika V Thenmozhi S "Visualizing Sequence of Algorithms for Searching and Sorting" 2009 International Conference on Advances in Recent Technologies in Communication and Computing2009

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[8]. T. L. Naps, G. Robling, V. Almstrum, W. Dann, R. Fleischer, C. Hundhausen, A. Korhonen, L. Malmi, M. McNally, S. Rodger and J. A. Velazquez-Iturbide, "Exploring the role of visualization and engagement in computer science education," in Proceedings of ITiCSE on Innovation and Technology in Computer Science Education, New York, USA, 2002.

9. **[9].** A. Dix, J. Finlay, G. D. Abowd and R. Beale, Human- Computer Interaction, 3. Edition, Ed., Harlow: Pearson Education, 2004.