

ايات مهدي صلاح

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## **Implementing Greedy Algorithms**

### **Abstract**

This graduation project focuses on implementing greedy algorithms to solve optimization problems efficiently. Greedy algorithms are a class of algorithms known for their simplicity and effectiveness in making locally optimal choices at each step to ultimately achieve a globally optimal solution. The project aims to explore and implement various greedy algorithms across different problem domains. The proposed project involves studying and implementing several well-known greedy algorithms, such as the Kruskal's algorithm for minimum spanning trees, Dijkstra's algorithm for shortest paths. The key objectives of implementing greedy algorithms in this graduation project include: **Algorithm Analysis and Understanding:** The project aims to thoroughly analyze the principles and characteristics of greedy algorithms. It involves studying the underlying concepts, evaluating their efficiency, and understanding the conditions under which these algorithms guarantee optimal solutions. **Algorithm Implementation:** The project involves coding and implementing various greedy algorithms using suitable programming languages. Each algorithm will be carefully designed to address specific optimization problems and tested against different input scenarios to evaluate their effectiveness and performance. **Problem-Specific Applications:** The implemented greedy algorithms will be applied to a range of problem domains, including graph theory, optimization, and scheduling. The project aims to demonstrate the versatility and adaptability of greedy algorithms in solving diverse real-world problems. **Performance Evaluation and Comparison:** The project involves evaluating the performance of implemented greedy algorithms by measuring their time complexity, space efficiency, and solution quality. Comparative analysis will be conducted to assess their strengths, weaknesses, and limitations in different problem scenarios.