

Content

Dedication	I
Acknowledgments	II
List of figures and table	III
List of abbreviations	IV
General introduction	1
Chapter 1:	
1 Introduction	3
2 What Is Optimization	4
2.1 Formal definition of an optimization problem	4
3 Categories of Optimization	5
4 Optimizations techniques	6
4.1 Exact algorithms	7
4.2 Approximate algorithms	8
4.2.1 Heuristic Methods	8
1.5.1 Heuristic searches	8
1.5.2 Taxonomy of heuristic search strategies	8
4.2.2 Metaheuristics	9
Chapter 2:	
1 Introduction	10
2 Definition and Fundamental Concepts	10
2.1. Graph Theory	10
2.1.1 Definition	10
2.1.2 Terminologies	11
2.1.3 Graph types	12
2.2 APPLICATION OF GRAPH	15
2.2.1 Social Network Analysis	15
2.2.2 Route Planning	16
3 Minimum Weight Dominating Set Problem	17
3.3 Minimum Dominating set	17
4 Minimum Weight Dominating Set problem (MWDS)	17
4.1 Definition	17

5 Greedy heuristic for MWDS	18
6 Applications of the MWDS	19
 Chapter 3:	
1 Introduction	20
2 Greedy algorithms	20
2.1 Definition	20
2.2 Greedy algorithm components	21
2.3 Greedy algorithm properties	21
2.4 Case of failure	21
2.5 Pseudo code for a greedy algorithm	22
3 Greedy Heuristics for the MWDS problem	22
4 Illustrative example of a greedy heuristic for the MWDS problem	24
4.1 Our proposed greedy heuristics for the MWDS problem	24
5 Example of greedy heuristic for MWDS	25
 Chapter 4:	
1 Introduction	30
2 Data Set	30
3 Programing language	30
4 Results	30
General conclusion	36
Bibliography	V
Image Source	VI
Summary (in English French and Arabic)	