



### CAIRO UNIVERSITY - FACULTY OF ENGINEERING

Computer Engineering Department

ADVANCED DATABASE SYSTEMS

# Project Phase Two

Mohamed Shawky Zaky

SEC:2, BN:15

Remonda Talaat Eskarous

SEC:1, BN:19

Mohamed Ahmed Mohamed Ahmed

SEC:2, BN:10

Mohamed Ramzy Helmy

SEC:2, BN:13

# Contents

1	Que	ery Statistics
	1.1	Query 1
		1.1.1 Execution Plan Before Optimization
		1.1.2 Execution Plan After Optimization
		1.1.3 Parallel Query Processing
	1.2	Query 2
		1.2.1 Execution Plan Before Optimization
		1.2.2 Execution Plan After Optimization
		1.2.3 Parallel Query Processing
	1.3	Query 3
		1.3.1 Execution Plan Before Optimization
		1.3.2 Execution Plan After Optimization
		1.3.3 Parallel Query Processing
	1.4	Query 4
		1.4.1 Execution Plan Before Optimization
		1.4.2 Execution Plan After Optimization
		1.4.3 Parallel Query Processing
	1.5	Query 5
		1.5.1 Execution Plan Before Optimization
		1.5.2 Execution Plan After Optimization
		1.5.3 Parallel Query Processing
<b>2</b>	Opt	imization Details
	2.1	New Database Statistics
	2.2	Schema Optimization
	2.3	Memory Optimization
	2.4	Index Tuning
	2.5	Query Optimization
		2.5.1 Query 1
		2.5.2 Query 2
		2.5.3 Query 3
		2.5.4 Query 4
		2.5.5 Query 5
3	Vali	idation Details
J	3.1	Time Analysis
	3.1	Space Analysis
	3.2	Database Size Effect
		Optimized SQL vs. NoSQL

	3.5	Hardware Effect	3
4 Final Remarks			
${f L}$	$\operatorname{ist}$	of Figures	

### 1 Query Statistics

- 1.1 Query 1
- 1.1.1 Execution Plan Before Optimization
- 1.1.2 Execution Plan After Optimization
- 1.1.3 Parallel Query Processing
- 1.2 Query 2
- 1.2.1 Execution Plan Before Optimization
- 1.2.2 Execution Plan After Optimization
- 1.2.3 Parallel Query Processing
- 1.3 Query 3
- 1.3.1 Execution Plan Before Optimization
- 1.3.2 Execution Plan After Optimization
- 1.3.3 Parallel Query Processing
- 1.4 Query 4
- 1.4.1 Execution Plan Before Optimization
- 1.4.2 Execution Plan After Optimization
- 1.4.3 Parallel Query Processing
- 1.5 Query 5
- 1.5.1 Execution Plan Before Optimization
- 1.5.2 Execution Plan After Optimization
- 1.5.3 Parallel Query Processing

# 2 Optimization Details

- 2.1 New Database Statistics
- 2.2 Schema Optimization
- 2.3 Memory Optimization
- 2.4 Index Tuning
- 2.5 Query Optimization
- 2.5.1 Query 1
- 2.5.2 Query 2
- 2.5.3 Query 3
- 2.5.4 Query 4
- 2.5.5 Query 5

- 3 Validation Details
- 3.1 Time Analysis
- 3.2 Space Analysis
- 3.3 Database Size Effect
- 3.4 Optimized SQL vs. NoSQL
- 3.5 Hardware Effect

# 4 Final Remarks