

# COE 379L: Homework 7

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## 1 Introduction

## 2 Methodology

### 2.1 Setup and Execution

### 2.2 Jacobi Method

### 2.3 Parallelization

## 3 Results

### 3.1 Exercise 8: Speedup Tests

Table 1: Parallelization speedup tests for various problem sizes.

Vector Size	100	100,000	1,000,000
Threads	Elapsed Time (s)		
1	0.007	2.526	24.719
2	0.047	1.321	12.524
4	0.066	0.737	6.456
8	0.139	0.709	4.715
12	0.213	0.727	3.605

### 3.2 Exercise 9: Performance Improvements

Table 2: The impact of performance improvements on a large problem size.

Case	n = 1,000,000	a	b	c
Threads	Elapsed Time (s)			
1	24.719	23.736		
2	12.524	11.900		
4	6.456	6.093		
8	4.715	4.693		
12	3.605	3.401		

### **3.3 Exercise 10: Scheduling Improvements**

### **3.4 Exercise 11: Full Parallelization**

## **4 Conclusions**