

# **SPECIALIZED PROJECT REPORT**

## **STUDYING AND DEVELOPING DISTRIBUTED BARRIER ALGORITHMS USING THE HYBRID PROGRAMMING MODEL COMBINING MPI-3 AND C++11**

Phạm Võ Quang Minh - 2111762

Vietnam National University - Ho Chi Minh City University of Technology

2024-12-31

# Outline

## 1. Introduction

### 1.1 Motivation

### 1.2 Objectives

## 2. Background

### 2.1 Barrier Algorithm

### 2.2 MPI-3

### 2.3 C++11

## 3. Related Works

### 3.1 The MPI-3 C++11 Paper

### 3.2 Other Barrier Algorithms

## 4. Algorithm & Simple Implementaion

### 4.1 Brook 2 process algorithm

### 4.2 Implementation using RMA

### Operation

### 4.3 Preliminary Result

## 5. Conclusions

### 5.1 Accomplishments

### 5.2 Challenges

### 5.3 Future Works

# Outline

## 1. Introduction

### 1.1 Motivation

### 1.2 Objectives

## 2. Background

### 2.1 Barrier Algorithm

### 2.2 MPI-3

### 2.3 C++11

## 3. Related Works

### 3.1 The MPI-3 C++11 Paper

### 3.2 Other Barrier Algorithms

## 4. Algorithm & Simple Implementaion

### 4.1 Brook 2 process algorithm

### 4.2 Implementation using RMA

### Operation

### 4.3 Preliminary Result

## 5. Conclusions

### 5.1 Accomplishments

### 5.2 Challenges

### 5.3 Future Works

# Outline

## 1. Introduction

### 1.1 Motivation

### 1.2 Objectives

## 2. Background

### 2.1 Barrier Algorithm

### 2.2 MPI-3

### 2.3 C++11

## 3. Related Works

### 3.1 The MPI-3 C++11 Paper

### 3.2 Other Barrier Algorithms

## 4. Algorithm & Simple Implementaion

### 4.1 Brook 2 process algorithm

### 4.2 Implementation using RMA

### Operation

### 4.3 Preliminary Result

## 5. Conclusions

### 5.1 Accomplishments

### 5.2 Challenges

### 5.3 Future Works

# Outline

## 1. Introduction

### 1.1 Motivation

### 1.2 Objectives

## 2. Background

### 2.1 Barrier Algorithm

### 2.2 MPI-3

### 2.3 C++11

## 3. Related Works

### 3.1 The MPI-3 C++11 Paper

### 3.2 Other Barrier Algorithms

## 4. Algorithm & Simple Implementaion

### 4.1 Brook 2 process algorithm

### 4.2 Implementation using RMA

### Operation

### 4.3 Preliminary Result

## 5. Conclusions

### 5.1 Accomplishments

### 5.2 Challenges

### 5.3 Future Works

# Outline

## 1. Introduction

### 1.1 Motivation

### 1.2 Objectives

## 2. Background

### 2.1 Barrier Algorithm

### 2.2 MPI-3

### 2.3 C++11

## 3. Related Works

### 3.1 The MPI-3 C++11 Paper

### 3.2 Other Barrier Algorithms

## 4. Algorithm & Simple Implementaion

### 4.1 Brook 2 process algorithm

### 4.2 Implementation using RMA

### Operation

### 4.3 Preliminary Result

## 5. Conclusions

### 5.1 Accomplishments

### 5.2 Challenges

### 5.3 Future Works

# Outline

## 1. Introduction

### 1.1 Motivation

### 1.2 Objectives

## 2. Background

### 2.1 Barrier Algorithm

### 2.2 MPI-3

### 2.3 C++11

## 3. Related Works

### 3.1 The MPI-3 C++11 Paper

### 3.2 Other Barrier Algorithms

## 4. Algorithm & Simple Implementaion

### 4.1 Brook 2 process algorithm

### 4.2 Implementation using RMA

### Operation

### 4.3 Preliminary Result

## 5. Conclusions

### 5.1 Accomplishments

### 5.2 Challenges

### 5.3 Future Works

## 5.3 Future Works

### 5.3.1 Plan

### 5.3.2 Timeline

Tổng thời lượng thuyết trình: nhóm 1 người = 10p (bao gồm cả demo)

1. Introduction (2p)
  1. Motivation (1.5p)
  2. Objectives (0.5p)
2. Background (1.5p)
  1. Vai trò của thuật toán Barrier trong xử lý đa luồng (0.2p)
  2. MPI: One-sided Communication dùng RMA (1p)
  3. C++11(?)
3. Related Works (1.5p)
4. Algorithm + Implementation + Result (2p)
5. Future Works (accomplishments + challenges + plan + timeline) (2.5p)



## 5.3 Future Works

$$\text{total} = 2 + 1.5 + 1.5 + 2 + 0.2 + 2.5 = 9.5p$$