

DISSERTATION TITLE

NAME SURNAME

**DOCTOR OF PHILOSOPHY
IN COMPUTER SCIENCE**

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**GRADUATE SCHOOL
CHIANG MAI UNIVERSITY**

MARCH 2017

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**GRADUATE SCHOOL
CHIANG MAI UNIVERSITY**

MAY 2017

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NAME SURNAME

**A THESIS SUBMITTED TO CHIANG MAI UNIVERSITY IN PARTIAL
FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY
IN COMPUTER SCIENCE**

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**GRADUATE SCHOOL, CHIANG MAI UNIVERSITY
MAY 2017**

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THIS THESIS HAS BEEN APPROVED TO BE A PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY
IN COMPUTER SCIENCE

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*To ...
(Whom I would like to
Dedicate to) ...*

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บทคัดย่อ

เนื้อหาจำลองแบบเรียบๆ ที่ใช้กันในธุรกิจงานพิมพ์หรืองานเรียงพิมพ์ มันได้กลายมาเป็นเนื้อหาจำลองมาตรฐานของธุรกิจดังกล่าวมาตั้งแต่ศตวรรษที่ 16 เมื่อเครื่องพิมพ์โนเนมเครื่องหนึ่งนำร่างตัวพิมพ์มาสลับสับตำแหน่งตัวอักษรเพื่อทำหนังสือตัวอย่าง เนื้อหาจำลองแบบเรียบๆ ที่ใช้กันในธุรกิจงานพิมพ์หรืองานเรียงพิมพ์ มันได้กลายมาเป็นเนื้อหาจำลองมาตรฐานของธุรกิจดังกล่าวมาตั้งแต่ศตวรรษที่ 16 เมื่อเครื่องพิมพ์โนเนมเครื่องหนึ่งนำร่างตัวพิมพ์มาสลับสับตำแหน่งตัวอักษรเพื่อทำหนังสือตัวอย่าง เนื้อหาจำลองแบบเรียบๆ ที่ใช้กันในธุรกิจงานพิมพ์หรืองานเรียงพิมพ์ มันได้กลายมาเป็นเนื้อหาจำลองมาตรฐานของธุรกิจดังกล่าวมาตั้งแต่ศตวรรษที่ 16 เมื่อเครื่องพิมพ์โนเนมเครื่องหนึ่งนำร่างตัวพิมพ์มาสลับสับตำแหน่งตัวอักษรเพื่อทำหนังสือตัวอย่าง

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ABSTRACT

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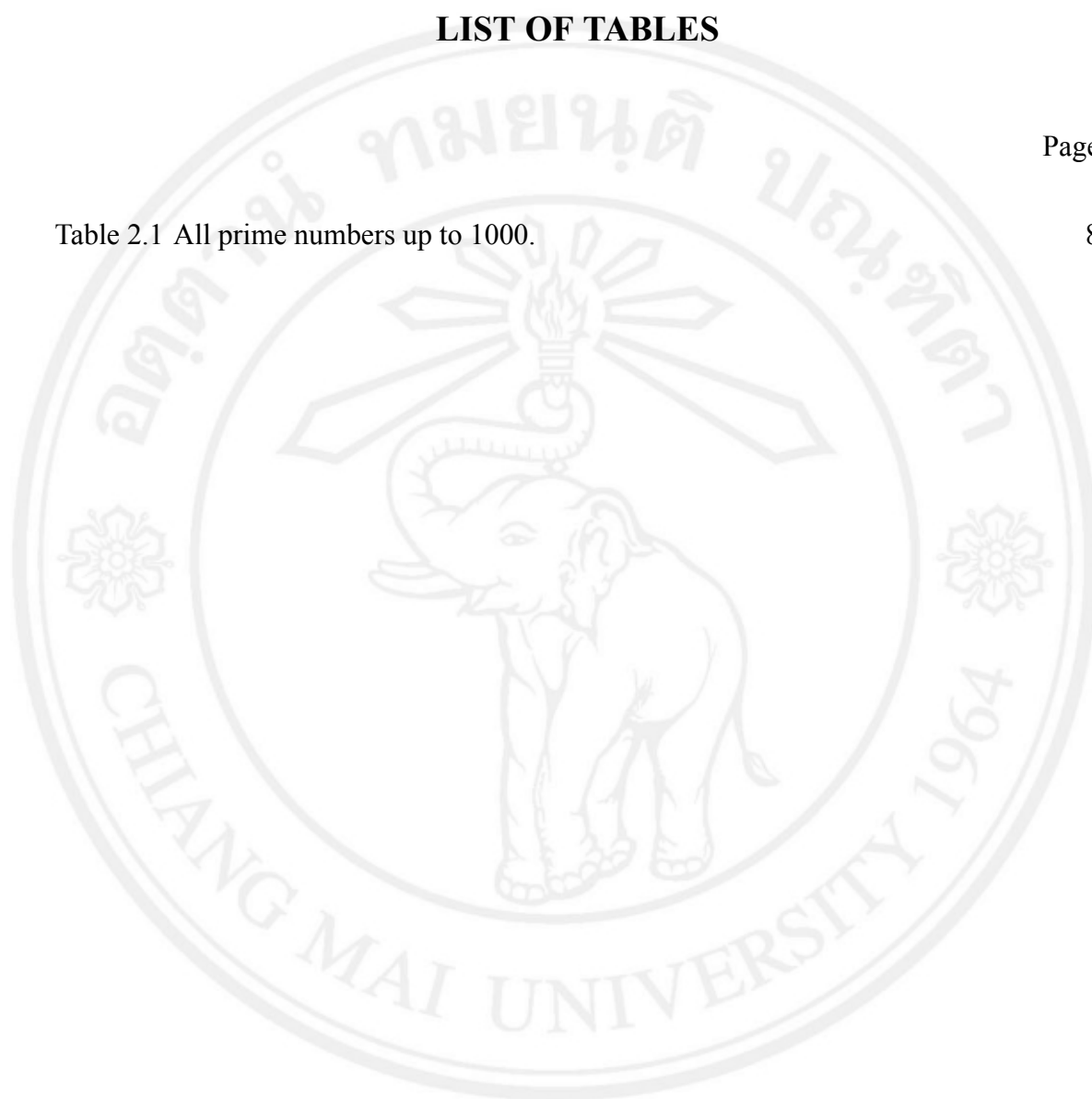
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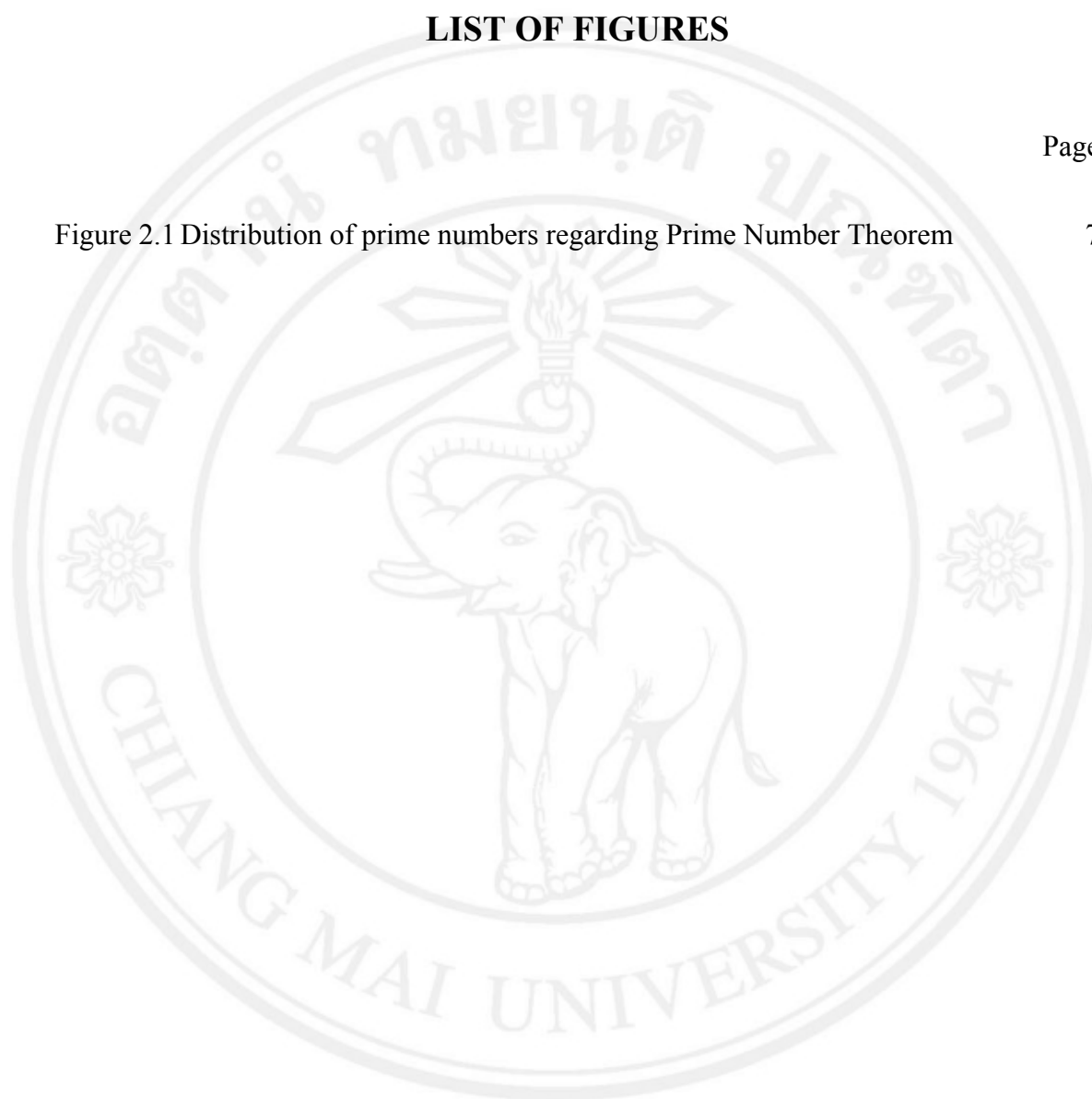
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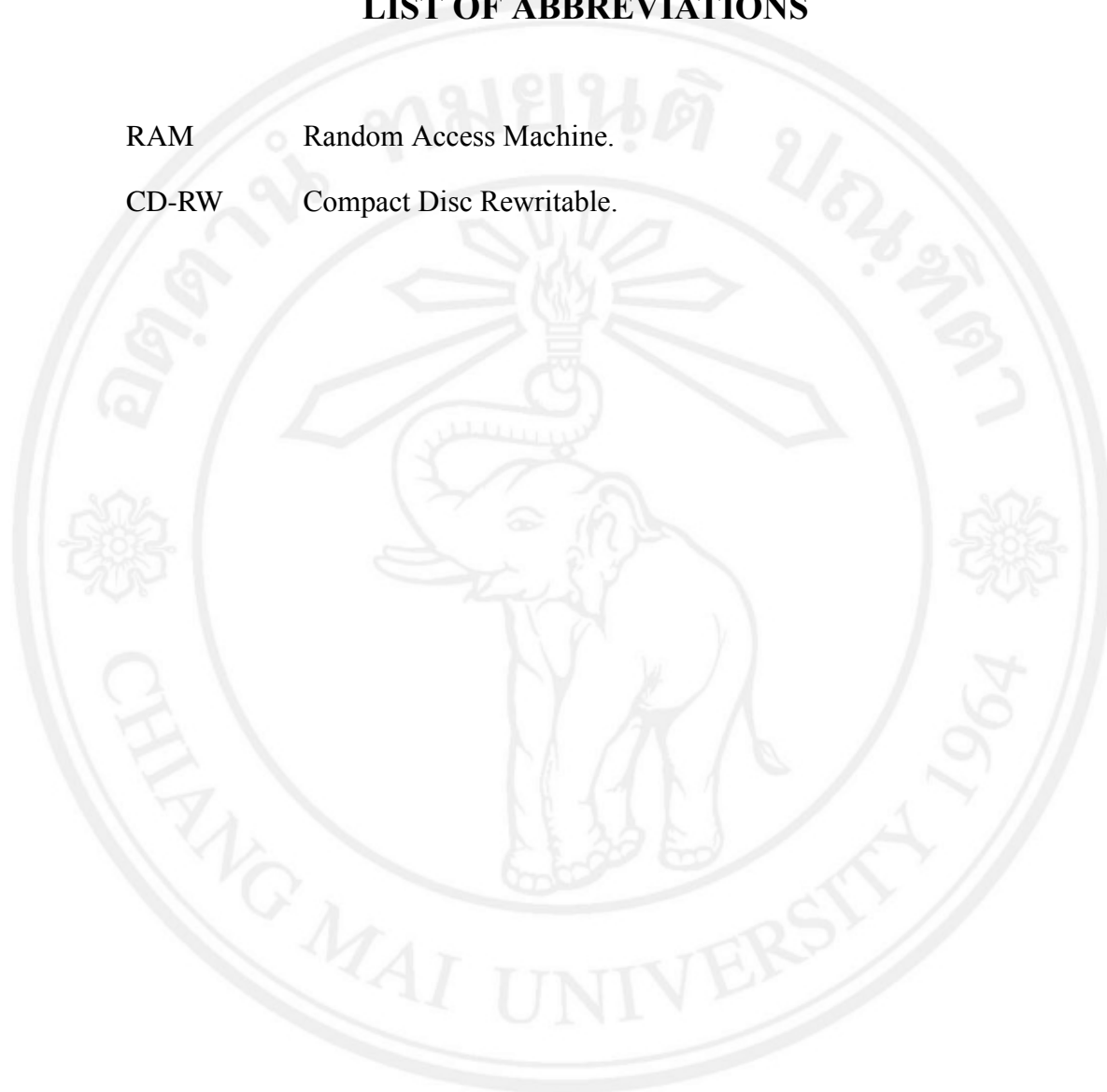


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LIST OF ABBREVIATIONS

RAM Random Access Machine.

CD-RW Compact Disc Rewritable.



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LIST OF SYMBOLS

\leq	Less than or equal to.
$=$	Equal to.
\geq	Greater than or equal to.

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ขอความ'แห่งการริเริ่ม

1. เนื้อหาจำลองแบบเรียบๆ ที่ใช้กัน'ในธุรกิจงานพิมพ์หรืองานเรียงพิมพ์ มันได้กลายมาเป็นเนื้อหาจำลองมาตรฐานของธุรกิจดังกล่าวมาตั้งแต่ศตวรรษที่ 16
2. เนื้อหาจำลองแบบเรียบๆ ที่ใช้กัน'ในธุรกิจงานพิมพ์หรืองานเรียงพิมพ์ มันได้กลายมาเป็นเนื้อหาจำลองมาตรฐานของธุรกิจดังกล่าวมาตั้งแต่ศตวรรษที่ 16

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CHAPTER 1

Introduction

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1.1 Historical Background

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1.2 Literature Review

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1.4 Scope of Study

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CHAPTER 2

Contents

The goal of this chapter is to illustrate the environments for definition, lemma, theorem, corollary, proof, figure, and table.

2.1 Definition, Lemma, Theorem, Corollary, and Proof

Let $\mathbb{N} = \{1, 2, 3, \dots\}$ be the set of natural numbers.

Definition 2.1 (Prime and Composite) *A natural number is called a **prime number** (or a **prime**) if it has exactly two positive divisors, 1 and the number itself [?]. Natural numbers greater than 1 that are not prime are called **composite**.*

Lemma 2.2 (2 is prime) *2 is a prime number.*

Proof: 2 and 1 are exactly two positive divisors of 2. ■

Theorem 2.3 (2 is the only even prim number) *An even natural number greater than 2 is not prime.*

Proof: Every even natural number is a composite as there are at least three positive divisors: 1, 2, and the number itself. ■

From Theorem 2.3, we have the following corollary.

Corollary 2.4 (Most of even natural numbers are not prime) *2 is the only even prime number.*

2.2 Table and Figure

Figure Figure 2.1 illustrates the asymptotic distribution of prime numbers according to the PRIME NUMBER THEOREM (PNT) which is stated as follows:

Theorem 2.5 (PRIME NUMBER THEOREM (PNT)) Let $\pi(x)$ denote the prime-counting function that gives the number of primes less than or equal to x , for any real number x .

$$\lim_{x \rightarrow \infty} \frac{\pi(x)}{\frac{x}{\log(x)}} = 1$$

In other words, the PNT states that $x/\log x$ is a good approximation to $\pi(x)$.

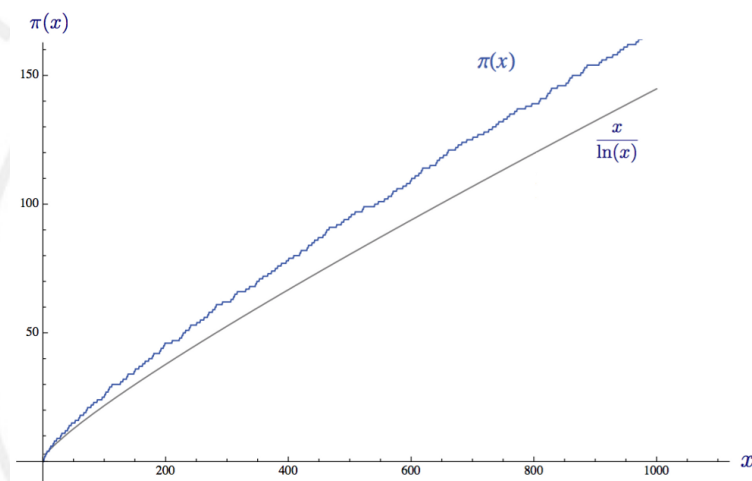


Figure 2.1: The prime counting function $\pi(x)$ and the estimate from the the PNT plotted up to $x = 1000$. Source: https://cdn-images-1.medium.com/max/1000/1*AhZ7SxlQWrBGd4HXHs1JWA.png

The following table shows all prime numbers up to 1000.

Table 2.1: All prime numbers up to 1000.

	2	3	5	7	11	13	17	19	23
29	31	37	41	43	47	53	59	61	67
71	73	79	83	89	97	101	103	107	109
113	127	131	137	139	149	151	157	163	167
173	179	181	191	193	197	199	211	223	227
229	233	239	241	251	257	263	269	271	277
281	283	293	307	311	313	317	331	337	347
349	353	359	367	373	379	383	389	397	401
409	419	421	431	433	439	443	449	457	461
463	467	479	487	491	499	503	509	521	523
541	547	557	563	569	571	577	587	593	599
601	607	613	617	619	631	641	643	647	653
659	661	673	677	683	691	701	709	719	727
733	739	743	751	757	761	769	773	787	797
809	811	821	823	827	829	839	853	857	859
863	877	881	883	887	907	911	919	929	937
941	947	953	967	971	977	983	991	997	

CHAPTER 3

Conclusion and Suggestion

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LIST OF PUBLICATIONS

- 1) Authors' name. Publication title, *Journal/Conference*, Vol. . . ., Month and year of publication, Page No. . . .
- 2) Authors' name. Publication title, *Journal/Conference*, Vol. . . ., Month and year of publication, Page No. . . .
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