

PROJECT REPORT  
EXAM SCHEDULE WITH GRAPHCOLORING

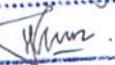
F.X Angga Kurniawan Effendy  
10.02.0016  
2013/2014

FACULTY OF COMPUTER SCIENCE  
SOEGIJAPRANATA CATHOLIC UNIVERSITY

Jl. Pawiyatan Luhur IV/1, Bendan Duwur, SEMARANG 50234

Telp. 024-8441555 (hunting) Web: <http://www.unika.ac.id>  
<http://ikomunika.web.id/>

i

		<b>PERPUSTAKAAN</b> Universitas Katolik Soegijapranata
No. Inv.	265 / S / SK / C. 1.	
Tanggal	19 Agustus 2014	
Paraf		

## APPROVAL AND RATIFICATION PAGE

### PROJECT REPORT

Exam Schedule With Algorithm GraphColoring

by

10.02.0016 – F.X Angga Kurniawan Effendy

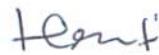
This project report has been approved and ratified by the Dean of Faculty  
of Computer Science and Supervisor on 18 July 2014

With approval,

Examiners,

  
Hironimus Leono, S.Kom., M.Kom  
NPP : 058.1.2007.273

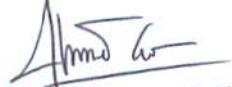
Supervisor,

  
Rosita Herawati, ST., MIT  
NPP : 058.1.2004.263

Examiners,

  
Suyanto Edward Antonius, Ir., M.Sc  
NPP : 058.1.1992.116

Examiners,

  
Shinta Estri Wahyuningrum, S.Si, M.Cs  
NPP : 058.1.2007.272

Dean of Faculty of Computer Science,



  
Hironimus Leono, S.Kom., M.Kom  
NPP : 058.1.2007.273

**STATEMENT OF ORIGINALITY**

I, the undersigned:

Name : F.X Angga Kurniawan Effendy

ID : 10.02.0016

Certify that this project was made by myself and not copy or plagiarize from other people, except that in writing expressed to the other article. If it is proven that this project was plagiarizes or copy the other, I am ready to accept a sanction.

Semarang, 18 July 2014



F.X Angga Kurniawan Effendy

10.02.0016

## ABSTRACT

*Abstract — schedule an exam is one of the routine activities that require high concentration so as not to occur simultaneously to schedule two or more courses that are followed by students. This research a technique for the manufacture of schedule the exam can be done by automated. The applied technique using algorithms Welch-Powell who is one of the algorithms in graph coloring method and is implemented using a PHP object. This algorithm will search a number of chromatic indicates the number of minimum test schedule to be held also a list of courses that can have the same exam schedule. The results showed that Welch-Powell algorithm implemented with PHP object is capable of providing solutions to automatically schedule creation.*

*Index terms of PHP Object, exam scheduling, Graphcoloring, Welch-Powell.*

## FOREWORD

My project end **Exam Schedule with Algorithm GraphColoring**. This program is very difficult within 4 months. With the presence of many errors and many times to fix the program. This Program can be so perfectly,because my supervisor to help me and give me advice to finish this project. And thanks for all prayer and blessing:

- Jesus Christ who gives me blessing to finish this project.
- My Mother Dian Listyowati that helps me in food and My Father Julianus Effendy to helps me in maintaining health, My Sister Luci Natalia Effendy making reports and in my college financing.
- UNIKA library as a place to make this program a place quiet so I could make this program until completion. And help me in finding journals that will I use in making program.
- My Lecturers that helps me in finding algorithm ,the data structure and to help me in making the title and data that will be used.
- All my friends from the Faculty of computer science and Architect that helps me when there is an error in the program.

Semarang, Juli 18<sup>th</sup> 2014



F.X Angga Kurniawan Effendy

# **Table of Contents**

<b>APPROVAL and RATIFICATION PAGE.....</b>	<b>i-ii</b>
<b>LETTER of STATEMENT.....</b>	<b>iii</b>
<b>ABSTRACT.....</b>	<b>iv</b>
<b>FOREWORD.....</b>	<b>v</b>
<b>TABLE OF CONTENTS.....</b>	<b>vi-vii</b>
<b>TABLE OF FIGURES.....</b>	<b>viii-ix</b>
<b>TABLE OF TABLES.....</b>	<b>x</b>
<b>CHAPTER I INTRODUCTION</b>	
1.1 Background.....	1
1.2 Scope.....	2
1.3 Objectives.....	2
<b>CHAPTER II LITERATURE STUDY</b>	
2.1 Data Structures.....	3
2.1.1 Array.....	3
2.1.2 Graph.....	4
2.2 Algorithm.....	4
2.2.1 GraphColoring.....	5
2.2.2 Welch-Powell.....	6
<b>CHAPTER III PLANNING</b>	
3.1 Research Methodology.....	7
3.2 Project Management.....	7
<b>CHAPTER IV ANALYSIS AND DESIGN</b>	
4.1 Analysis.....	8
4.1.1 Use Case Diagram.....	8
4.2 Design.....	9
4.2.1 Class Diagram.....	9

## **CHAPTER V IMPLEMENTATION AND TESTING**

<b>5.1. Implementation.....</b>	<b>10</b>
<b>5.1.1 Step 1 – Early prcess.....</b>	<b>10</b>
<b>5.1.2. Step 2 – Input and Display.....</b>	<b>11-17</b>
<b>5.1.3 Step 3 – Combination and Algorithms.....</b>	<b>18-20</b>
<b>– Welch-Powell.....</b>	<b>21-24</b>
<b>5.2 Interface.....</b>	<b>25</b>
<b>5.2.1 Main Menu Indeks.....</b>	<b>25-29</b>
<b>5.2.2 Implementasi in <i>human language</i>.....</b>	<b>30-36</b>

## **CHAPTER VI CONCLUSION**

<b>6.1 Conclusion.....</b>	<b>37</b>
<b>6.2 Further Research.....</b>	<b>37</b>
<b>REFERENCES.....</b>	<b>38</b>

## **TABLE OF FIGURES**

Figure 2.1 Graph.....	4
Figure 4.1 Use Case Diagram.....	8
Figure 4.2 Class Diagram.....	9
Figure 5.1 Binary Code dbconfig.php.....	11
Figure 5.2 Binary Code Krs.....	12
Figure 5.3 Binary Code Input Krs.....	13
Figure 5.4 Binary Code Dosen.....	13
Figure 5.5 Binary Code Input Dosen.....	14
Figure 5.6 Binary Code Courses.....	15
Figure 5.7 Binary Code Rooms.....	15
Figure 5.8 Binary Code Update Dosen.....	16
Figure 5.9 Binary Code Update Rooms.....	17
Figure 5.10 Binary Code Combination.....	18
Figure 5.11 Binary Code Launcher.....	19
Figure 5.12 Binary Code GraphColoring And Welch-Powell.....	19-24
Figure 5.13 Index.....	25
Figure 5.14 Display Krs.....	26
Figure 5.15 Display Rooms.....	26
Figure 5.16 Display Courses.....	27
Figure 5.17 Display Dosen.....	28
Figure 5.18 Display Dosen Input.....	29
Figure 5.19 Display Graph in Human Languange.....	30
Figure 5.20 Display Welch-Powell And GraphColoring in Human Languange.	31-36

## **TABLE OF TABLES**

Table 3.1 Project Management.....	7
-----------------------------------	---