



UNIVERSITI PUTRA MALAYSIA

COHESION METRIC FOR JAVA INNER CLASS

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FSKTM 2012 31

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MASTER OF SCIENCE

UNIVERSITI PUTRA MALAYSIA

2012

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By

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**This Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in
Fulfilment of the Requirements for the Degree of Master of Science**

July 2012

Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the degree of Master of Science

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July 2012

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Inner class is a helper class that is declared within the body of another class. To date, there is no cohesion metric specially designed for the inner classes. In current practice, the cohesion of inner classes is measured using the class cohesion metrics. However, the existing practice does not obtain the actual cohesion of inner class because the role of inner class as a helper class for its outer class is not evaluated. In this thesis, the cohesion of inner class is measured in term of the single functionality it has fostered for the outer class as a whole. A total of 74 inner classes from 15 applications were investigated. This research presents a novel twofold approach in measuring the in-bound cohesion and out-bound cohesion for inner classes. The results demonstrate that the proposed metric, namely Inner Class Based-ELCOM (IELCOM), is an improvement of its predecessor External Lack of Cohesion Metric (ELCOM) in terms of measuring the cohesion of inner class. This proposed approach enables the software practitioners to recognize the

cohesion of an inner class by considering the functional relationship between inner and outer class as an integrated whole.



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Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Master Sains

METRIK KEJELEKITAN UNTUK KELAS DALAMAN BAGI JAVA

Oleh

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Kelas dalaman ialah kelas pembantu yang diisytihar pada bahagian badan dalam kelas lain. Setakat ini masih tiada lagi satu metrik kejelekitan direka khusus untuk mengukur kelas dalaman. Kaedah semasa hanya menggunakan metrik kejelekitan bagi kelas untuk mengukur kejelekitan bagi kelas dalaman. Bagaimanapun, kaedah semasa ini tidak berupaya untuk mendapatkan kejelekitan kelas dalaman yang tepat kerana peranan kelas dalaman sebagai kelas pembantu bagi kelas luaran tidak dinilai. Dalam tesis ini, kejelekitan kelas dalaman diukur berdasarkan fungsian tunggal antara kelas dalaman dan luaran. Secara keseluruhan, sebanyak 74 kelas dalaman daripada 15 aplikasi telah dikaji. Kajian ini juga mengemukakan suatu kaedah serampang dua mata bagi mengukur kejelekitan untuk kelas dalaman. Keputusan kajian ini menunjukkan bahawa metrik yang dicadangkan, Inner Class Based-ELCOM (IELCOM), telah mempertingkatkan metrik terdahulunya External Lack of Cohesion Metric (ELCOM) dari segi pengukuran kejelekitan bagi kelas dalaman. Pendekatan yang dicadang membolehkan pengamal

perisian mengenalpasti kejelekitan kelas dalaman dengan mengambilkira pertalian fungsian antara kelas dalaman dan luaran sebagai suatu integrasi keseluruhan.



ACKNOWLEDGEMENTS

I would like to express my gratitude towards my supervisors Associate Professor Dr. Rodziah Atan and Professor Dr. Abdul Azim Abd. Ghani for their advice and guidance throughout my research. Without their invaluable support this thesis would not take its shape.



I certify that a Thesis Examination Committee has met on 6 July 2012 to conduct the final examination of Tee Sim Hui on his (or her) thesis entitled "**Cohesion Metric for Java Inner Class**" in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Master of Science.

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DECLARATION

I declare that the thesis is my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously, and is not concurrently, submitted for any other degree at Universiti Putra Malaysia or at any other institution.



TABLE OF CONTENTS

	Page
ABSTRACT	ii
ABSTRAK	iv
ACKNOWLEDGEMENTS	vi
APPROVAL	vii
DECLARATION	ix
LIST OF ABBREVIATIONS	x
LIST OF TABLES	xiv
LIST OF FIGURES	xv
CHAPTER	
1 INTRODUCTION	1
1.1 Overview	1
1.2 Background of the Problem	2
1.3 Problem Statement	2
1.4 Research Objectives	3
1.5 Research Scope	4
1.6 Significance of the Research	4
1.7 Thesis Organization	5
2 LITERATURE REVIEW	6
2.1 The Evolution of Cohesion	6
2.2 Slice-based Cohesion Metric	7
2.2.1 The Weaknesses of Slice-based Cohesion Metric	8
2.3 Lack of Cohesion in Methods (LCOM) Metric	12
2.3.1 The Weaknesses of LCOM	13
2.4 LCOM5	16
2.4.1 The Weaknesses of LCOM5	18
2.4.2 Methods to Overcome the Weaknesses of LCOM5	19
2.5 Issues of Inheritance in Cohesion Metrics	27
2.6 External Lack of Cohesion Metric (ELCOM)	33
2.6.1 The Weaknesses of ELCOM	36
2.7 Introduction to Java Inner Class	37
2.8 Types of Inner Class	42
2.8.1 Regular Inner Class	43
2.8.2 Method-local Inner Class	45
2.8.3 Anonymous Inner Class	48
2.9 Summary	50

3	RESEARCH METHODOLOGY	54
3.1	Data Collection	54
3.2	Data Analysis	55
3.3	Recording of Cohesion Value for Inner Classes	56
3.4	Summary	57
4	INNER CLASS-BASED ELCOM	58
4.1	Framework for Inner Class Cohesion Metric	58
4.2	Developing the Class Blueprint for Inner Class	61
4.3	Components of the Class Blueprint for Inner Class	62
4.4	Identifying the Component Relation	64
4.5	Component Connection Identification	64
4.6	Identifying the Functional Dependency between Inner Class and Outer Class	67
4.7	Identifying Direct Method-Attribute Connection for Inner Class Methods, Inherited Polymorphic Methods, Accessor Methods, and Mutator Methods	69
4.8	Identifying the Inherited Attributes	70
4.9	Identifying Constructor-Attribute Connection	70
4.10	Experimenting on Inner Classes	72
4.11	Extending ELCOM to Inner Class	73
5	RESULTS AND DISCUSSION	76
5.1	Introduction	76
5.2	Calculation of Inner Class Cohesion using ELCOM	76
5.3	Calculation of Inner Class Cohesion using IELCOM	78
5.4	Comparison between ELCOM and IELCOM	83
6	CONCLUSION AND FUTURE WORKS	86
6.1	Conclusion	86
6.2	Contribution	87
6.3	Future Works	88
	REFERENCES	90
	APPENDICES	
A	A List of Inner Classes under the Investigation and Their Corresponding Outer Classes	95
B	A List of Inner Classes with the Number of Method and Constructor	97

C The Types of Methods for each Inner Class	99
D In-bound Cohesion for Inner Classes (iELCOM)	101
E Out-bound Cohesion for Inner Classes (oELCOM)	103
F The Cohesion of Inner Class (Normalized IELCOM Values)	105
BIODATA OF STUDENT	107
LIST OF PUBLICATIONS	108

