
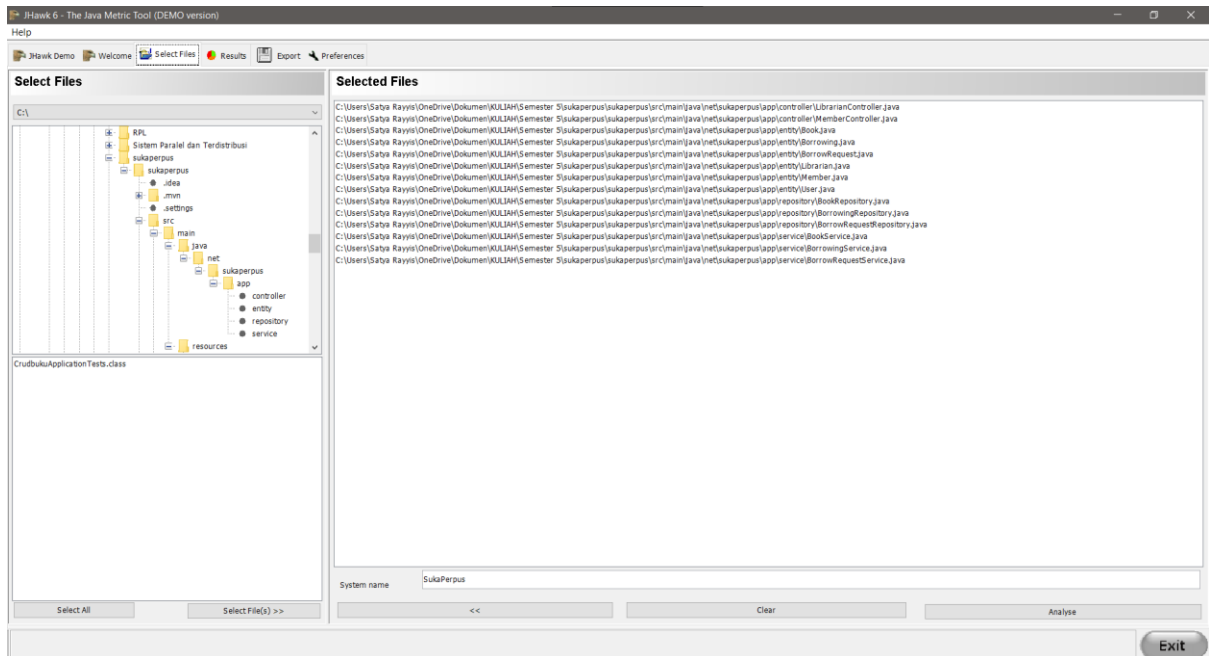


## Tugas Mengukur OOMetric

Nama file : SukaPerpus : *Library Management System*

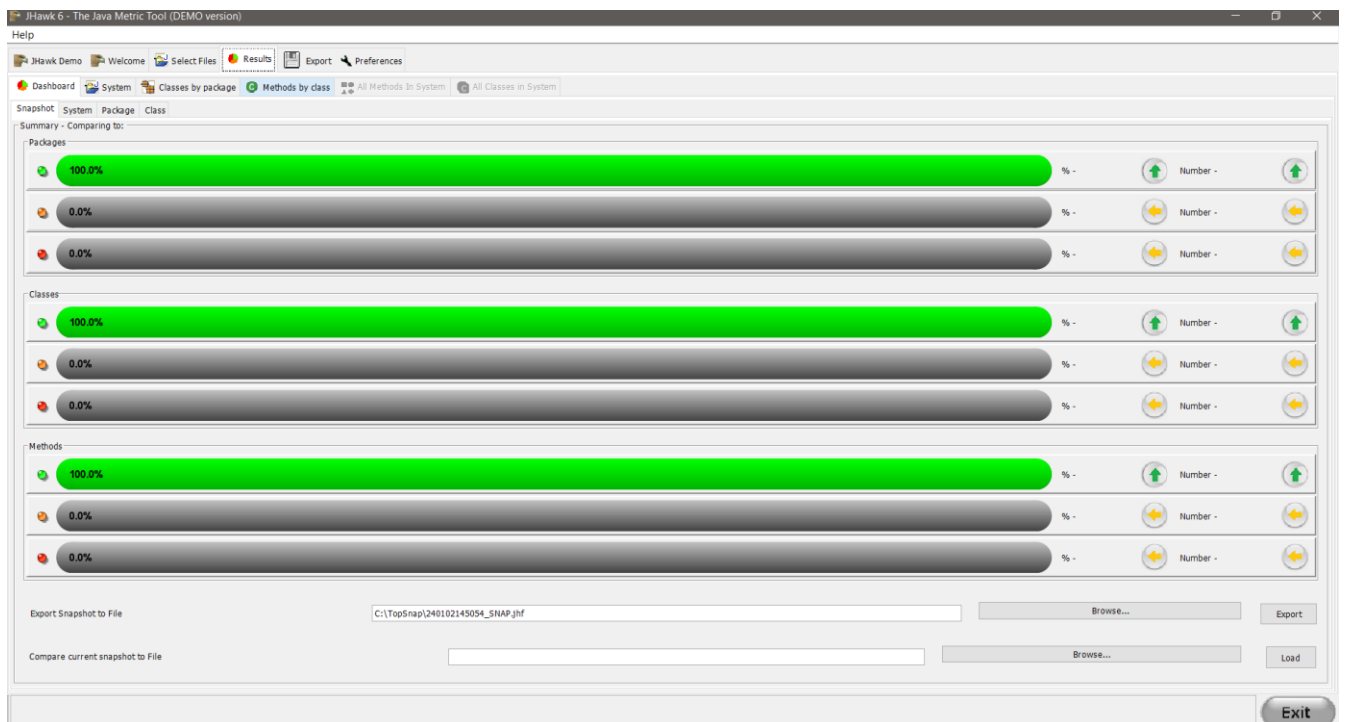
Software yang digunakan : Jhawk 6.1.7 

Total jumlah file java : 14 file



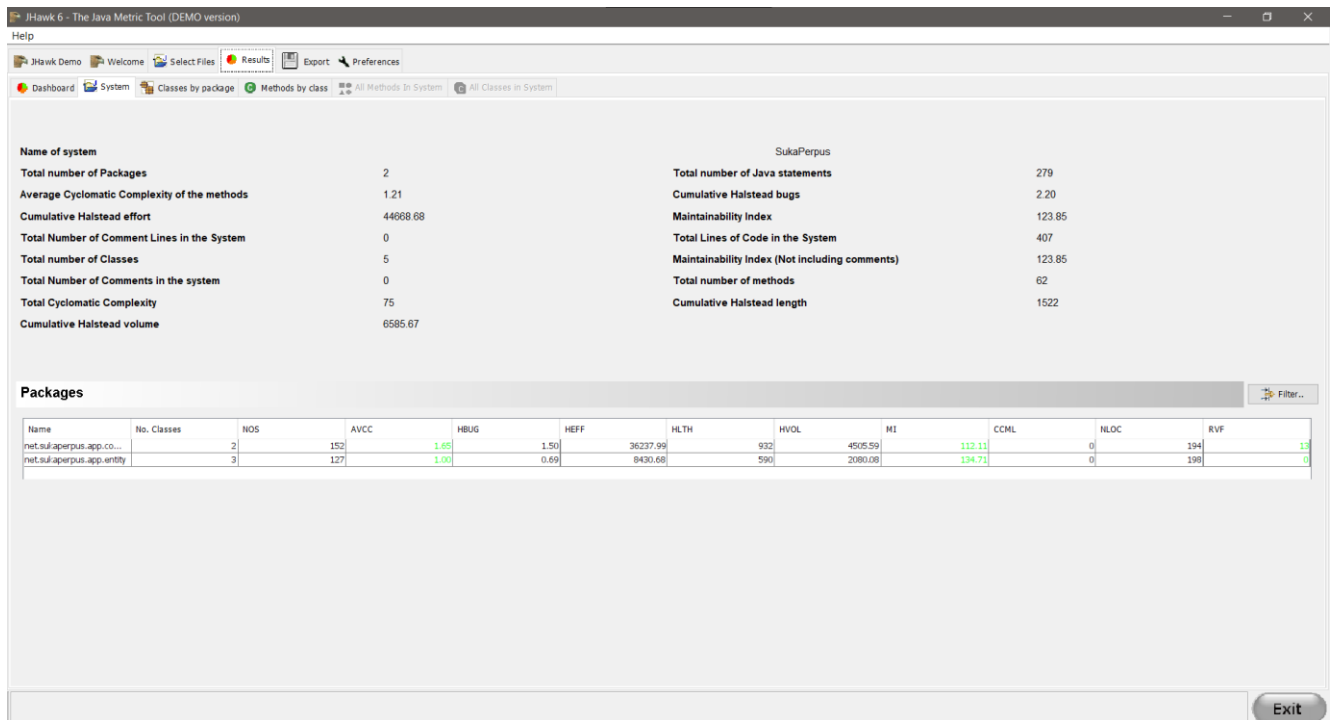
Setelah meng-klik *Analyze* , maka result yang keluar adalah sebagai berikut:

### Dashboard



## Tugas Mengukur OOMetric

### System



The screenshot shows the JHawk 6 - The Java Metric Tool (DEMO version) interface. The top menu bar includes Help, JHawk Demo, Welcome, Select Files, Results, Export, and Preferences. The main window displays system metrics for 'SukaPerpus' and a table of packages.

**Name of system** SukaPerpus

Total number of Packages	2	Total number of Java statements	279
Average Cyclomatic Complexity of the methods	1.21	Cumulative Halstead bugs	2.20
Cumulative Halstead effort	44688.68	Maintainability Index	123.85
Total Number of Comment Lines in the System	0	Total Lines of Code in the System	407
Total number of Classes	5	Maintainability Index (Not including comments)	123.85
Total Number of Comments in the system	0	Total number of methods	62
Total Cyclomatic Complexity	75	Cumulative Halstead length	1522
Cumulative Halstead volume	6585.67		

**Packages**

Name	No. Classes	NOS	AVCC	HBUG	HEFF	HLTH	HVOL	MI	CCML	NLOC	RVF
net.sukaperpus.app.co...	2	152	1.65	1.50	36237.99	932	4505.59	112.11	0	194	13
net.sukaperpus.app.enti...	3	127	1.00	0.69	8430.66	590	2080.08	134.71	0	198	0

Exit

Klik package yang terdapat di bagian Packages, yang dimana terdiri dari dua package, diantaranya :

1. net.sukaperpus.app.controller

Memiliki dua class didalamnya, diantaranya :

- LibrarianController

Package Information

Package Name

net.sukaperpus.app.controller

Classes in package

LibrarianController

Name of package

net.sukaperpus.app.controller

Total number of Classes

2

Total number of Java statements

152

Average Cyclomatic Complexity for

1.65

Cumulative Halstead bugs

1.50

Cumulative Halstead effort

36237.99

Cumulative Halstead length

932

Cumulative Halstead volume

4505.59

Maintainability Index

112.11

Total Number of Comment Lines in the package

0

Total Lines of Code in the Package

194

Review Factor

13

Total Cyclomatic Complexity

33

Maximum Cyclomatic Complexity for methods in this packa...

5

Distance

0.00

Fan In

0

Abstractness

0.00

Instability

1.00

Maintainability Index (Not including comments)

112.11

Total Number of Comments in the package

0

Fan Out

1

Total number of methods

20

- MemberController

Package Information

Package Name

net.sukaperpus.app.controller

Classes in package

MemberController

Name of package

net.sukaperpus.app.controller

Total number of Classes

2

Average Cyclomatic Complexity for

1.65

Cumulative Halstead effort

36237.99

Cumulative Halstead volume

4505.59

Total Number of Comment Lines in the pack...

0

Review Factor

13

Maximum Cyclomatic Complexity for metho...

5

Fan In

0

Instability

1.00

Total Number of Comments in the package

0

Total number of methods

20

Total number of Java statements

152

Cumulative Halstead bugs

1.50

Cumulative Halstead length

932

Maintainability Index

112.11

Total Lines of Code in the Package

194

Total Cyclomatic Complexity

33

Distance

0.00

Abstractness

0.00

Maintainability Index (Not including commen...

112.11

Fan Out

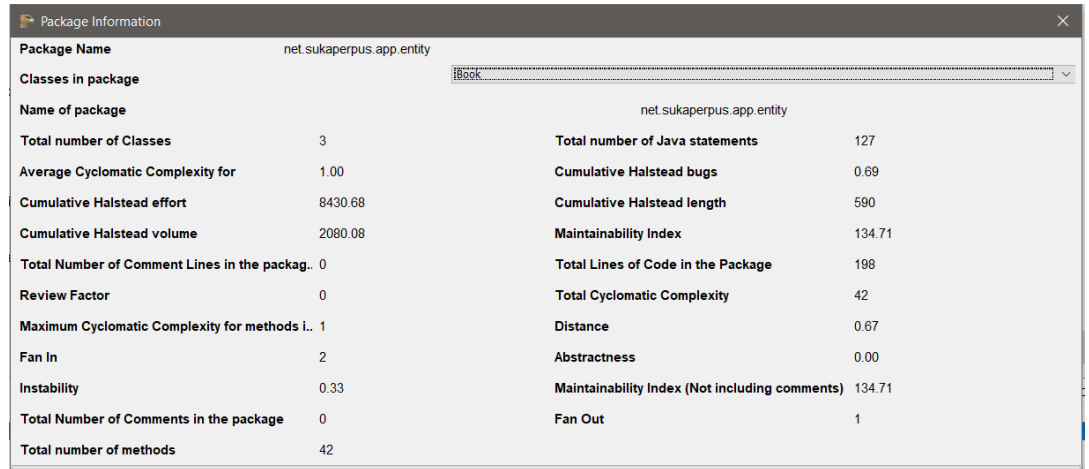
1

## Tugas Mengukur OOMetric

### 2. net.sukaperpus.app.entity

Memiliki tiga class didalamnya, diantaranya :

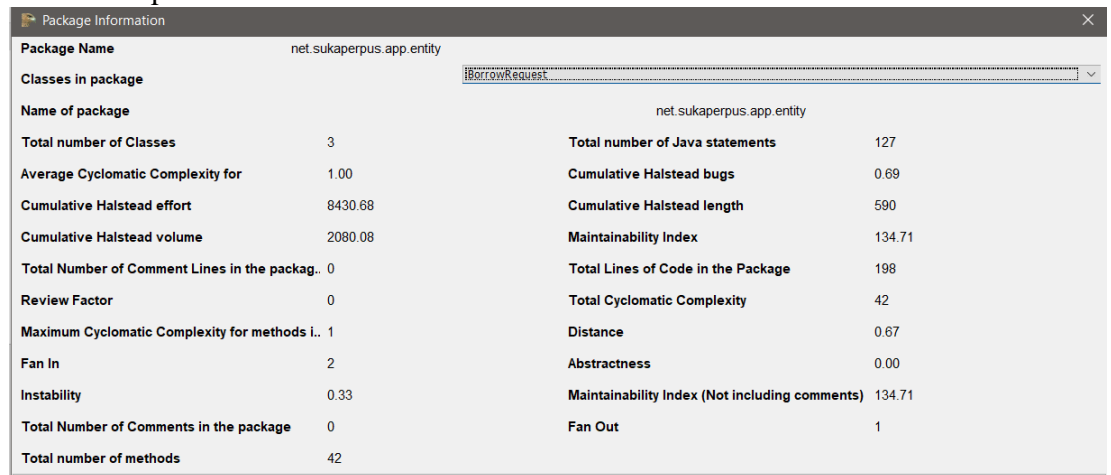
- Book



Package Information window showing metrics for package net.sukaperpus.app.entity with class Book selected.

Package Name		net.sukaperpus.app.entity	
Classes in package: Book			
Name of package: net.sukaperpus.app.entity			
Total number of Classes	3	Total number of Java statements	127
Average Cyclomatic Complexity for	1.00	Cumulative Halstead bugs	0.69
Cumulative Halstead effort	8430.68	Cumulative Halstead length	590
Cumulative Halstead volume	2080.08	Maintainability Index	134.71
Total Number of Comment Lines in the package..	0	Total Lines of Code in the Package	198
Review Factor	0	Total Cyclomatic Complexity	42
Maximum Cyclomatic Complexity for methods i..	1	Distance	0.67
Fan In	2	Abstractness	0.00
Instability	0.33	Maintainability Index (Not including comments)	134.71
Total Number of Comments in the package	0	Fan Out	1
Total number of methods	42		

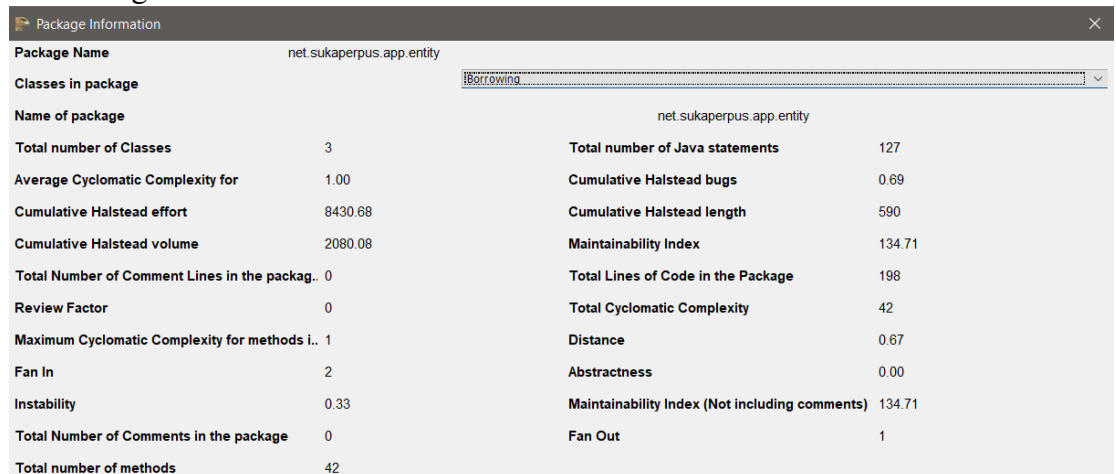
- BorrowRequest



Package Information window showing metrics for package net.sukaperpus.app.entity with class BorrowRequest selected.

Package Name		net.sukaperpus.app.entity	
Classes in package: BorrowRequest			
Name of package: net.sukaperpus.app.entity			
Total number of Classes	3	Total number of Java statements	127
Average Cyclomatic Complexity for	1.00	Cumulative Halstead bugs	0.69
Cumulative Halstead effort	8430.68	Cumulative Halstead length	590
Cumulative Halstead volume	2080.08	Maintainability Index	134.71
Total Number of Comment Lines in the package..	0	Total Lines of Code in the Package	198
Review Factor	0	Total Cyclomatic Complexity	42
Maximum Cyclomatic Complexity for methods i..	1	Distance	0.67
Fan In	2	Abstractness	0.00
Instability	0.33	Maintainability Index (Not including comments)	134.71
Total Number of Comments in the package	0	Fan Out	1
Total number of methods	42		

- Borrowing

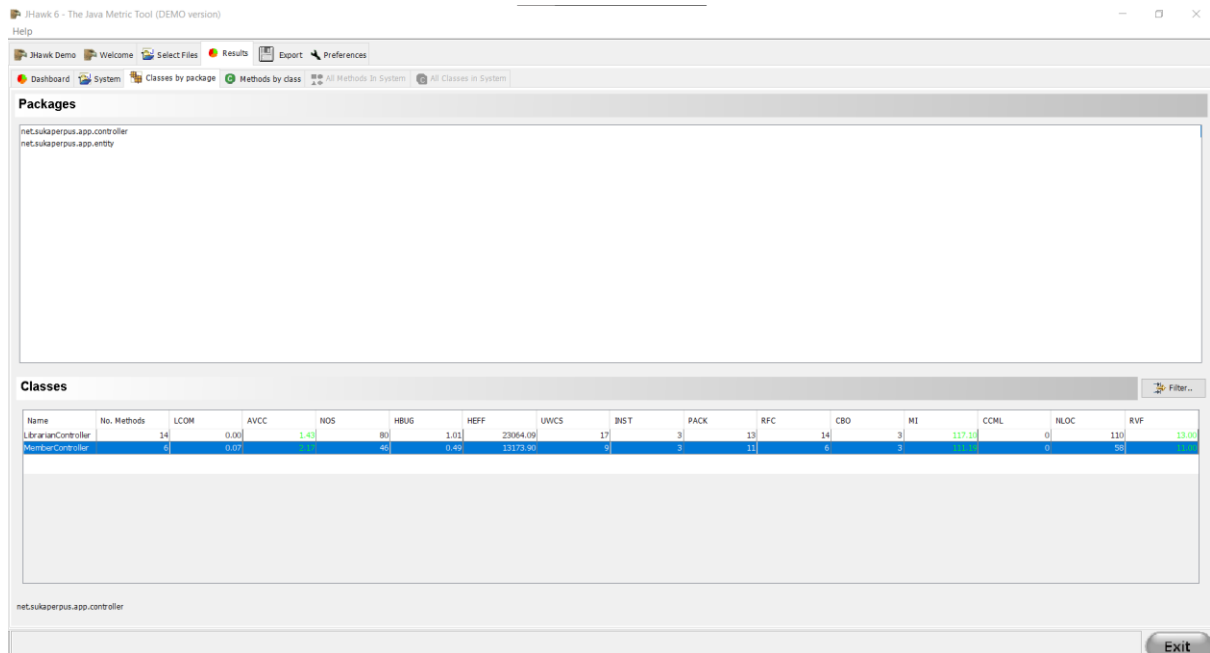


Package Information window showing metrics for package net.sukaperpus.app.entity with class Borrowing selected.

Package Name		net.sukaperpus.app.entity	
Classes in package: Borrowing			
Name of package: net.sukaperpus.app.entity			
Total number of Classes	3	Total number of Java statements	127
Average Cyclomatic Complexity for	1.00	Cumulative Halstead bugs	0.69
Cumulative Halstead effort	8430.68	Cumulative Halstead length	590
Cumulative Halstead volume	2080.08	Maintainability Index	134.71
Total Number of Comment Lines in the package..	0	Total Lines of Code in the Package	198
Review Factor	0	Total Cyclomatic Complexity	42
Maximum Cyclomatic Complexity for methods i..	1	Distance	0.67
Fan In	2	Abstractness	0.00
Instability	0.33	Maintainability Index (Not including comments)	134.71
Total Number of Comments in the package	0	Fan Out	1
Total number of methods	42		

# Tugas Mengukur OOMetric

## Classes by packages



1. net.sukaperpus.app.controller  
Memiliki dua class didalamnya, diantaranya :

- LibrarianController

Class Information	
Package Name	net.sukaperpus.app.controller
Name of class	LibrarianController
No. of instance variables declared	0
No. of packages imported	1
No. of External Methods called	1
No. of interfaces implemented	0
No. of Methods called that are in the class hierarchy	0
No. of local methods called	0
Total number of methods	14
Average Cyclomatic Complexity	1.43
Cumulative Halstead bugs	1.01
Unweighted Class size	17
CBO (Coupling Between Objects)	3
Total Number of Comment Lines in the class	0
Review Factor	13.00
Maximum Cyclomatic Complexity	5
Total number of sub classes	0
Total number of command methods	1
Depth of Inheritance Tree	1
Cohesion	0.33
Name of superclass	java.lang.Object
Message passing coupling (MPC) value	0
Cumulative Halstead length	631
Total Cyclomatic Complexity	20
Fan In (Afferent Coupling)	0
Lack of Cohesion of methods	0.00
Total number of Java statements (alternative to line of)	80
Cumulative Halstead effort	23064.09
Total Response For Class	14
Maintainability Index	117.10
Total Lines of Code in the class	110
LCOM2	10.00
ReUse Ratio	0.00
Total number of superclasses	0
Fan Out (Efferent Coupling)	3
Total Number of Comments in the class	0
Specialization Ratio	0.00
Maintainability Index(Not including comments)	117.10
Cumulative Halstead volume	3043.57
SIX	0.00
Total number of query methods	13
No. of modifiers for this class declaration	3

- MemberController

Class Information	
Package Name	net.sukaperpus.app.controller
Name of class	MemberController
No. of instance variables declared	0
No. of packages imported	1
No. of External Methods called	2
No. of interfaces implemented	0
No. of Methods called that are in the class hierarchy	0
No. of local methods called	0
Total number of methods	6
Average Cyclomatic Complexity	2.17
Cumulative Halstead bugs	0.49
Unweighted Class size	9
CBO (Coupling Between Objects)	3
Total Number of Comment Lines in the class	0
Review Factor	11.00
Maximum Cyclomatic Complexity	5
Total number of sub classes	0
Total number of command methods	1
Depth of Inheritance Tree	1
Cohesion	0.39
Name of superclass	java.lang.Object
Message passing coupling (MPC) value	0
Cumulative Halstead length	301
Total Cyclomatic Complexity	13
Fan In (Afferent Coupling)	0
Lack of Cohesion of methods	0.07
Total number of Java statements (alternative to lines of)	46
Cumulative Halstead effort	13173.90
Total Response For Class	6
Maintainability Index	111.19
Total Lines of Code in the class	58
LCOM2	6.00
ReUse Ratio	0.00
Total number of superclasses	0
Fan Out (Efferent Coupling)	3
Total Number of Comments in the class	0
Specialization Ratio	0.00
Maintainability Index(Not including comments)	111.19
Cumulative Halstead volume	1462.02
SIX	0.00
Total number of query methods	5
No. of modifiers for this class declaration	3

## Tugas Mengukur OOMetric

### 2. net.sukaperpus.app.entity

Memiliki tiga class didalamnya, diantaranya :

- Book

Class Information			
Package Name		net.sukaperpus.app.entity	
Name of class		Book	
No. of instance variables declared		0	
No. of packages imported		1	
No. of External Methods called		0	
No. of interfaces implemented		0	
No. of Methods called that are in the class hierarchy		0	
No. of local methods called		0	
Total number of methods	16	Lack of Cohesion of methods	0.09
Average Cyclomatic Complexity	1.00	Total number of Java statements (alternative to lines o.	45
Cumulative Halstead bugs	0.27	Cumulative Halstead effort	3832.24
Unweighted Class size	23	Total Response For Class	16
CBO (Coupling Between Objects)	4	Maintainability Index	135.28
Total Number of Comment Lines in the class	0	Total Lines of Code in the class	77
Review Factor	0.00	LCOM2	114.00
Maximum Cyclomatic Complexity	1	ReUse Ratio	0.00
Total number of sub classes	0	Total number of superclasses	0
Total number of command methods	9	Fan Out (Efferent Coupling)	0
Depth of Inheritance Tree	1	Total Number of Comments in the class	0
Cohesion	0.06	Specialization Ratio	0.00
Name of superclass	java.lang.Object	Maintainability Index(Not including comments)	135.28
Message passing coupling (MPC) value	0	Cumulative Halstead volume	800.73
Cumulative Halstead length	229	SIX	0.00
Total Cyclomatic Complexity	16	Total number of query methods	7
Fan In (Afferent Coupling)	4	No. of modifiers for this class declaration	3

- BorrowingRequest

Class Information			
Package Name		net.sukaperpus.app.entity	
Name of class		BorrowRequest	
No. of instance variables declared		0	
No. of packages imported		1	
No. of External Methods called		0	
No. of interfaces implemented		0	
No. of Methods called that are in the class hierarchy		0	
No. of local methods called		0	
Total number of methods	10	Lack of Cohesion of methods	0.08
Average Cyclomatic Complexity	1.00	Total number of Java statements (alternative to lines of c.	26
Cumulative Halstead bugs	0.15	Cumulative Halstead effort	1487.31
Unweighted Class size	14	Total Response For Class	10
CBO (Coupling Between Objects)	3	Maintainability Index	138.18
Total Number of Comment Lines in the class	0	Total Lines of Code in the class	41
Review Factor	0.00	LCOM2	42.00
Maximum Cyclomatic Complexity	1	ReUse Ratio	0.00
Total number of sub classes	0	Total number of superclasses	0
Total number of command methods	6	Fan Out (Efferent Coupling)	1
Depth of Inheritance Tree	1	Total Number of Comments in the class	0
Cohesion	0.17	Specialization Ratio	0.00
Name of superclass	java.lang.Object	Maintainability Index(Not including comments)	138.18
Message passing coupling (MPC) value	0	Cumulative Halstead volume	439.44
Cumulative Halstead length	129	SIX	0.00
Total Cyclomatic Complexity	10	Total number of query methods	4
Fan In (Afferent Coupling)	2	No. of modifiers for this class declaration	3

- Borrowing

Class Information			
Package Name		net.sukaperpus.app.entity	
Name of class		Borrowing	
No. of instance variables declared		0	
No. of packages imported		1	
No. of External Methods called		0	
No. of interfaces implemented		0	
No. of Methods called that are in the class hierarchy		0	
No. of local methods called		0	
Total number of methods	16	Lack of Cohesion of methods	0.04
Average Cyclomatic Complexity	1.00	Total number of Java statements (alternative to li..	45
Cumulative Halstead bugs	0.28	Cumulative Halstead effort	3111.14
Unweighted Class size	23	Total Response For Class	16
CBO (Coupling Between Objects)	3	Maintainability Index	135.99
Total Number of Comment Lines in the class	0	Total Lines of Code in the class	69
Review Factor	0.00	LCOM2	108.00
Maximum Cyclomatic Complexity	1	ReUse Ratio	0.00
Total number of sub classes	0	Total number of superclasses	0
Total number of command methods	9	Fan Out (Efferent Coupling)	1
Depth of Inheritance Tree	1	Total Number of Comments in the class	0
Cohesion	0.11	Specialization Ratio	0.00
Name of superclass	java.lang.Object	Maintainability Index(Not including comments)	135.99
Message passing coupling (MPC) value	0	Cumulative Halstead volume	839.91
Cumulative Halstead length	232	SIX	0.00
Total Cyclomatic Complexity	16	Total number of query methods	7
Fan In (Afferent Coupling)	2	No. of modifiers for this class declaration	3

## Tugas Mengukur OOMetric

### Methods by class

JHawk 6 - The Java Metric Tool (DEMO version)

Help

JHawk Demo Welcome Select Files Results Export Preferences

Dashboard System Classes by package Methods by class All Methods In System All Classes In System

**Packages**

net.sukaperpus.app.controller  
net.sukaperpus.app.entity

**Classes**

**Methods**

Name	COMP	NOCL	NOS	HLTH	HVOC	HEFF	HBUG	CREF	XMET	LMET	NLOC
LibrarianController (net.s...	1	0	4	28	14	639.64	0.04	3	0	0	7
addBook (net.sukaperp...	1	0	3	24	18	382.12	0.03	2	1	0	4
borrowingReturnMedi(ja...	1	0	8	62	32	1880.22	0.10	4	7	0	9
confirmRequest(net.suk...	1	0	4	35	23	865.13	0.05	3	3	0	5
deleteBook (java.lang.L...	1	0	3	23	17	346.21	0.03	2	1	0	4
home() (net.sukaperpu...	1	0	2	12	11	124.54	0.01	1	0	0	3
requestConfirmationFor...	1	0	9	75	38	2670.82	0.13	6	8	0	10
showBookDetail (java.la...	1	0	3	29	21	509.51	0.04	3	2	0	4
showBookManager (org...	1	0	3	24	18	382.12	0.03	2	2	0	4
showBorrowRequest(s...	3	0	9	56	33	2824.86	0.09	5	5	0	9
showBorrowingList(org...	5	0	12	114	48	8554.18	0.21	7	13	0	14
showCreateBookForm(j...	1	0	4	28	20	693.08	0.04	3	2	0	5
showEditBookForm(ja...	1	0	3	29	21	509.51	0.04	3	2	0	4
updateBook (java.lang.L...	1	0	9	82	33	2647.30	0.14	3	12	0	10

1. net.sukaperpus.app.controller  
Memiliki dua class didalamnya, diantaranya :

- LibrarianController

JHawk 6 - The Java Metric Tool (DEMO version)

Help

JHawk Demo Welcome Select Files Results Export Preferences

Dashboard System Classes by package Methods by class All Methods In System All Classes In System

**Packages**

net.sukaperpus.app.controller  
net.sukaperpus.app.entity

**Classes**

LibrarianController  
MemberController

**Methods**

Name	COMP	NOCL	NOS	HLTH	HVOC	HEFF	HBUG	CREF	XMET	LMET	NLOC
LibrarianController (net.s...	1	0	4	28	14	639.64	0.04	3	0	0	7
addBook (net.sukaperp...	1	0	3	24	18	382.12	0.03	2	1	0	4
borrowingReturnMedi(ja...	1	0	8	62	32	1880.22	0.10	4	7	0	9
confirmRequest(net.suk...	1	0	4	35	23	865.13	0.05	3	3	0	5
deleteBook (java.lang.L...	1	0	3	23	17	346.21	0.03	2	1	0	4
home() (net.sukaperpu...	1	0	2	12	11	124.54	0.01	1	0	0	3
requestConfirmationFor...	1	0	9	75	38	2670.82	0.13	6	8	0	10
showBookDetail (java.la...	1	0	3	29	21	509.51	0.04	3	2	0	4
showBookManager (org...	1	0	3	24	18	382.12	0.03	2	2	0	4
showBorrowRequest(s...	3	0	9	56	33	2824.86	0.09	5	5	0	9
showBorrowingList(org...	5	0	12	114	48	8554.18	0.21	7	13	0	14
showCreateBookForm(j...	1	0	4	28	20	693.08	0.04	3	2	0	5
showEditBookForm(ja...	1	0	3	29	21	509.51	0.04	3	2	0	4
updateBook (java.lang.L...	1	0	9	82	33	2647.30	0.14	3	12	0	10

- MemberController

JHawk 6 - The Java Metric Tool (DEMO version)

Help

JHawk Demo Welcome Select Files Results Export Preferences

Dashboard System Classes by package Methods by class All Methods In System All Classes In System

**Packages**

net.sukaperpus.app.controller  
net.sukaperpus.app.entity

**Classes**

LibrarianController  
MemberController

**Methods**

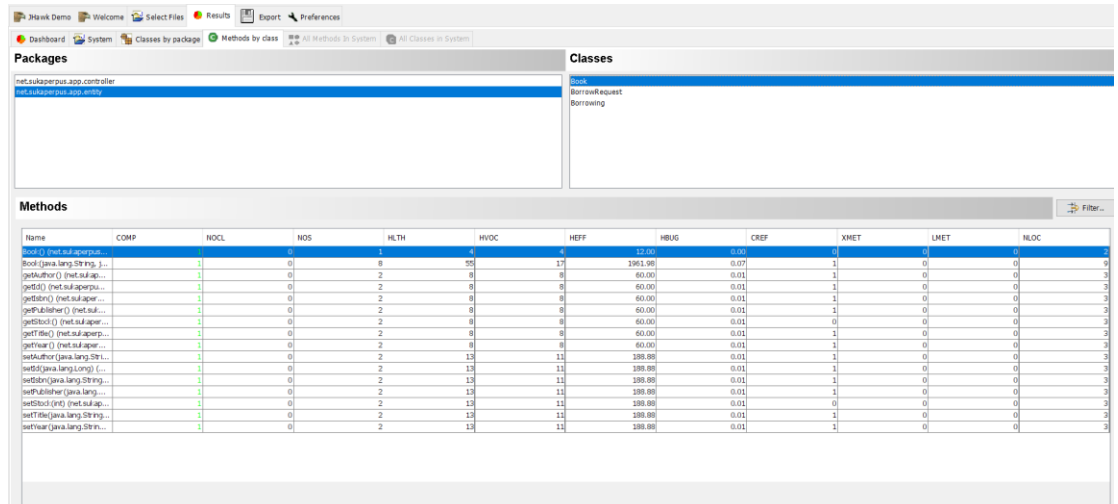
Name	COMP	NOCL	NOS	HLTH	HVOC	HEFF	HBUG	CREF	XMET	LMET	NLOC
MemberController (net.s...	1	0	4	28	14	639.64	0.04	3	0	0	7
borrowBook (java.lang...	2	0	8	71	37	2929.38	0.12	5	8	0	10
home() (net.sukaperpu...	1	0	2	12	11	124.54	0.01	1	0	0	3
makeBorrowRequest(h...	1	0	3	24	18	382.12	0.03	2	1	0	4
showBookCatalogue(or...	3	0	9	57	33	2848.31	0.10	5	5	0	9
showBorrowingPage(or...	5	0	15	98	49	6415.05	0.17	6	9	0	15

## Tugas Mengukur OOMetric

### 2. net.sukaperpus.app.entity

Memiliki tiga class didalamnya, diantaranya :

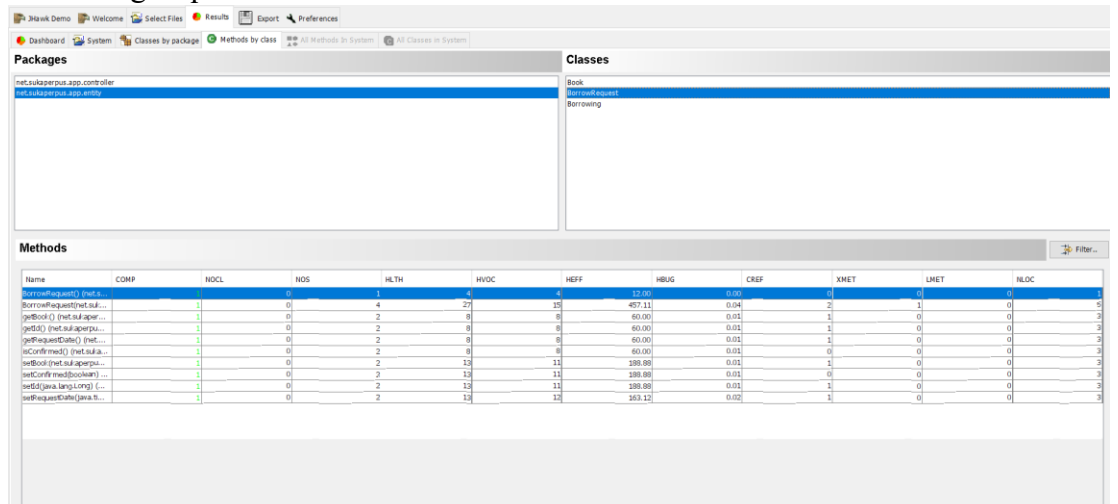
- Book



The screenshot shows the IDE interface with the 'net.sukaperpus.app.controller' package selected. The 'Classes' panel on the right lists 'Book', 'BorrowRequest', and 'Borrowing'. The 'Methods' table below displays various metrics for the selected package.

Name	COMP	NOCL	NOS	HLTH	HVDC	HEFF	HBUG	CREP	XMET	LMET	NLOC
Book() (net.sukaperpus...)	1	0	1	4	4	12.00	0.00	0	0	0	1
Book(java.lang.String, S...	1	0	8	10	17	2951.98	0.07	1	0	0	9
getAuthor() (net.sukap...	1	0	2	8	8	60.00	0.01	1	0	0	3
getB() (net.sukaperpus...	1	0	2	8	8	60.00	0.01	1	0	0	3
getBorrow() (net.sukap...	1	0	2	8	8	60.00	0.01	1	0	0	3
getPublisher() (net.suk...	1	0	2	8	8	60.00	0.01	1	0	0	3
getStock() (net.sukaper...	1	0	2	8	8	60.00	0.01	0	0	0	3
getTitle() (net.sukaper...	1	0	2	8	8	60.00	0.01	1	0	0	3
getYear() (net.sukaper...	1	0	2	8	8	60.00	0.01	1	0	0	3
setAuthor(java.lang.Str...	1	0	2	13	11	188.88	0.01	1	0	0	3
setB(java.lang.Long) [...]	1	0	2	13	11	188.88	0.01	1	0	0	3
setBorrow(java.lang.Str...	1	0	2	13	11	188.88	0.01	1	0	0	3
setPublisher(java.lang...	1	0	2	13	11	188.88	0.01	1	0	0	3
setStock(int) (net.sukap...	1	0	2	13	11	188.88	0.01	0	0	0	3
setTitle(java.lang.String...	1	0	2	13	11	188.88	0.01	1	0	0	3
setYear(java.lang.String...	1	0	2	13	11	188.88	0.01	1	0	0	3

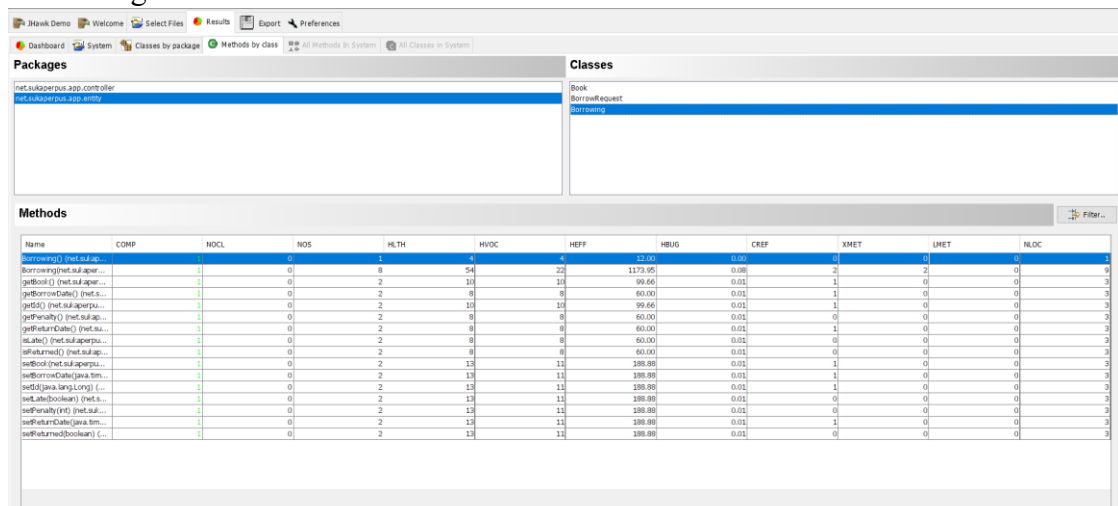
- BorrowingRequest



The screenshot shows the IDE interface with the 'net.sukaperpus.app.entity' package selected. The 'Classes' panel on the right lists 'Book', 'BorrowRequest', and 'Borrowing'. The 'Methods' table below displays various metrics for the selected package.

Name	COMP	NOCL	NOS	HLTH	HVDC	HEFF	HBUG	CREP	XMET	LMET	NLOC
BorrowingRequest() (net.s...	1	0	1	4	4	12.00	0.00	0	0	0	1
BorrowingRequest(net.su...	1	0	4	21	35	457.11	0.04	2	1	0	5
getBook() (net.sukaper...	1	0	2	8	8	60.00	0.01	1	0	0	3
getB() (net.sukaperpus...	1	0	2	8	8	60.00	0.01	1	0	0	3
getBorrowDate() (net...	1	0	2	8	8	60.00	0.01	1	0	0	3
isConfirmed() (net.su...	1	0	2	8	8	60.00	0.01	0	0	0	3
isBook() (net.sukaperpus...	1	0	2	13	11	188.88	0.01	1	0	0	3
isConfirmed() (net.su...	1	0	2	13	11	188.88	0.01	0	0	0	3
setB(java.lang.Long) [...]	1	0	2	13	11	188.88	0.01	1	0	0	3
setBorrowDate(java.l...	1	0	2	13	11	188.88	0.02	1	0	0	3

- Borrowing



The screenshot shows the IDE interface with the 'net.sukaperpus.app.controller' package selected. The 'Classes' panel on the right lists 'Book', 'BorrowRequest', and 'Borrowing'. The 'Methods' table below displays various metrics for the selected package.

Name	COMP	NOCL	NOS	HLTH	HVDC	HEFF	HBUG	CREP	XMET	LMET	NLOC
Borrowing() (net.sukap...	1	0	1	4	4	12.00	0.00	0	0	0	1
Borrowing(net.sukaper...	1	0	8	54	22	1173.95	0.08	2	2	0	9
getBook() (net.sukaper...	1	0	2	10	10	99.66	0.01	1	0	0	3
getBorrowDate() (net.s...	1	0	2	8	8	60.00	0.01	1	0	0	3
getB() (net.sukaperpus...	1	0	2	10	10	99.66	0.01	1	0	0	3
getPenalty() (net.sukap...	1	0	2	8	8	60.00	0.01	0	0	0	3
getReturnDate() (net.su...	1	0	2	8	8	60.00	0.01	1	0	0	3
isLate() (net.sukaperpu...	1	0	2	8	8	60.00	0.01	0	0	0	3
isReturned() (net.sukap...	1	0	2	8	8	60.00	0.01	0	0	0	3
isBook() (net.sukaperpus...	1	0	2	13	11	188.88	0.01	1	0	0	3
isBorrowDate(java.time...	1	0	2	13	11	188.88	0.01	1	0	0	3
isB() (net.sukaperpus...	1	0	2	13	11	188.88	0.01	1	0	0	3
isLate() (net.s...	1	0	2	13	11	188.88	0.01	0	0	0	3
isPenalty(int) (net.su...	1	0	2	13	11	188.88	0.01	0	0	0	3
isReturnDate(java.time...	1	0	2	13	11	188.88	0.01	1	0	0	3
isReturned() (net.su...	1	0	2	13	11	188.88	0.01	0	0	0	3