

Gebze Technical University

Computer Engineering

CSE 222
2017 Spring

HOMEWORK 2 REPORT

BURAK KAĞAN KORKMAZ 141044041

https://github.com/burakkorkmaz/CSE222_HWs

1. Answers

I.

a)

```
for (int i = 0; i < n - 1; i++) {  
    for (int j = i + 1; j < n; j++) {  
        3 simple statements  
    }  
}
```

İç içe iki döngü olduğu için döngülerin karmaşıklık denklemleri (T_n) çarpılır. Buna göre L döngüleri ifade ederse;

*İlk döngü sıfırdan $n - 1$ e kadar gittiği için $(n-1)$ kez dönecektir.

$$L1(n) = n - 1$$

*ikinci döngü 1 den n ye kadar gittiğinden toplam $n/2$ kez dönecektir.

$$L2(n) = n/2$$

* Döngü içindeki üç basit ifade karmaşıklığı etkilemeyeceğinden yok sayılabilir. Bu durumda

$$T(n) = n \times (n - 1)$$

$$T(n) = \frac{n^2 - n}{2}$$

$$T(n) = \theta(n^2)$$

$n=1$ için sıfır olup n^2 ile aynı oranda arttığından $T(n)$ teta ile gösterilir.

b)

```
public static int length(String str) {  
    if (str == null || str.equals(""))  
        return 0;  
    else  
        return 1 + length(str.substring(1));  
}
```

Fonksiyon verilen dizinin uzunluğunu recursive olarak hesaplamaktadır.

*Base case te constant iki işlem gerçekleştiriliyor. Buna göre;

$$T(n) = 2$$

*Diğer kısımda bir operasyon ve recursive çağrı bulunuyor.

$$T(n) = T(n - 1) + 1$$

$$T(n) = T(n - 1) + 1$$

$$T(n - 1) = T(n - 2) + 1$$

⋮

$$T(n - k) = T(n - k - 1) + 1$$

$$T(n) = T(n - k - 1) + (k + 1), (n - k - 1) = 1 \text{ olsun}$$

$k = n - 2$ olduğundan;

$$T(n) = T(1) + n - 1 \text{ ve } T(1) = 2$$

$$T(n) = n + 1 = \theta(n) \text{ olur.}$$

II.

a) Bu fonksiyon küçükten büyüğe sıralama işlemi yapar.

b) Best case -> Dizini sıralı olması durumu

$$T(n) = (n-1) \times (n/2)$$

Worst Case -> Dizinin tüm elemanlarının sırasız olması durumu

$$T(n) = (n-1) \times (n/2) \times 1$$

Her iki taraftan $T(n)$ eşit olduğundan

$$T(n) = (n^2 - n) / 2 = \theta(n^2) \text{ olur.}$$

SOME_FUNCTION (A)

$n \leftarrow \text{length}[A]$

for $j \leftarrow 1$ **to** $n - 1$

do $\text{smallest} \leftarrow j$

for $i \leftarrow j + 1$ **to** n

do if $A[i] < A[\text{smallest}]$

then $\text{smallest} \leftarrow i$

 exchange $A[j] \leftrightarrow A[\text{smallest}]$

III.

1. METOD

$$f(n) = O(g(n)) \Leftrightarrow g(n) = \theta(f(n))$$

$$f(n) \leq c_1 g(n) \Leftrightarrow g(n) \geq c_2 f(n) \quad \text{sol tarafı } c_1 \text{ e bölersek}$$

$$1/c_1 f(n) \leq g(n) \Leftrightarrow g(n) \geq c_2 f(n) \quad \text{olur.}$$

C_2 , $1/c_1$ için sağlanır. Aynı şekilde;

$$f(n) = \Omega(g(n)) \Leftrightarrow g(n) = \theta(f(n))$$

$$f(n) \leq c_3 g(n) \Leftrightarrow g(n) \geq c_4 f(n) \quad \text{yine sol tarafı } c_3 \text{ e bölersek}$$

$$1/c_3 f(n) \leq g(n) \Leftrightarrow g(n) \geq c_4 f(n) \quad \text{olur.}$$

C_3 , $1/c_3$ için sağlanır.

Buna göre

$$T(n) = \theta(h(n)) \Leftrightarrow T(n) = O(h(n)) \text{ ve } T(n) = \Omega(h(n)) \text{ olur.}$$

2. METOD

$$T(n) = O(f(n)) \text{ ise}$$

$$T(n) \leq c_1 \cdot f(n), \quad n \geq n_0 \quad \text{olsun.}$$

$$T(n) = \Omega(g(n)) \text{ ise}$$

$$T(n) \leq c_2 \cdot g(n), \quad n \geq n_0 \quad \text{olsun.}$$

$$T(N) = \theta(h(n)) \Leftrightarrow T(N) = O(h(n)) \text{ ve } T(n) = \Omega(h(n))$$

$$T(n) = O(h(n)) = O(f(n)) \text{ ve } T(n) = \Omega(h(n)) = \Omega(g(n)) \text{ olsun.}$$

Buna göre ;

$$c_2 g(n) \leq T(n) \leq c_1 f(n)$$

$$c_2 g(n) \leq \theta(h(N)) \leq c_1 f(n)$$

$$\Omega(g(n)) \leq \theta(h(N)) \leq O(f(n))$$

şeklinde eşitlik sağlanır.

IV. RECURSIVE INSERTION SORT

```
public class Insertion {
    public void insertion(int [] arr, int size){
        if(size > 1) {
            insertion(arr, size - 1);
            int key = arr[size - 1];
            int i = size - 2;
            insertElement(arr, key, i);
        }
    }
    public void insertElement(int [] arr, int element, int index){
        int i = index;
        while (i >= 0 && arr[i] > element){
            int temp = arr[i];
            arr[i] = element;
            arr[i + 1] = temp;
            --i;
        }
    }
}
```

V.

a) $f(n) = n^{0.1}$, $g(n) = (\log n)^{10}$

$$\lim_{n \rightarrow \infty} \frac{f(n)}{g(n)} = \lim_{n \rightarrow \infty} \frac{n^{0.1}}{\log(n)^{10}} = \lim_{n \rightarrow \infty} \frac{n^{\frac{1}{10}}}{10 \log(n)} = \infty$$

Limiti sonsuz olduğundan $f(n) = \Omega(g(n))$ olur.

b) $f(n) = n!$, $g(n) = 2^n$

$$\lim_{n \rightarrow \infty} \frac{f(n)}{g(n)} = \lim_{n \rightarrow \infty} \frac{n!}{2^n} \rightarrow \lim_{n \rightarrow \infty} \frac{(n+1)!}{2^{n+1}} \cdot \frac{n!}{2^n} = \lim_{n \rightarrow \infty} \frac{n+1}{2} = \infty$$

Limiti sonsuz olduğundan $f(n) = \Omega(g(n))$ olur.

c) $f(n) = (\log n)^{\log n}$, $g(n) = 2 (\log_2 n)^2$

$$\lim_{n \rightarrow \infty} \frac{f(n)}{g(n)} = \lim_{n \rightarrow \infty} \frac{\log(n)^{\log(n)}}{2^{\log_2(n)^2}} = \lim_{n \rightarrow \infty} \frac{n^{\log(\log(n))}}{n^2} = \infty$$

Limiti sonsuz olduğundan $f(n) = \Omega(g(n))$ olur.

2. Problem Solutions Approach

ArrayList ile yaptığım projeyi değişkenleri değiştirerek Liinked List oluşturdum. Array i ayrıca yazmam gerekti. Add,get remove metodları olmadığından tek tek döngüyle bastırdım.

Süre olarak Array ile arrayList yaklaşık aynı çalışmaktadır.

Linked list diğerlerine göre daha hızlı çalışır.(Constant zamanda)

Karmaşıklıkları ölçerken intellij idea dan yararlandım. Grafikleri oluşturdum.

3. Test Cases

*Mevcut csv dosyaları ile Kullanıcı adı staff şifre pwd girerek Personel girişi yapılır.

*Kullanıcı girişi için de kullanıcı adı: user ve şifre:pass ile giriş yapılabilir.

*Kullanıcı iken veritabanındaki kitapları ID'leri ile birlikte görebilir, kitap ödünç alabilirsiniz. Alacağınız kitap başka bir kullanıcı tarafından alınmış ise ödünç alınamayacaktır. Ayrıca yanlış bilgi girildiğinde tekrar denemenizi isteyecektir. Ödünç verme seçeneği de benzer şekilde çalışmaktadır. Geçersiz girdiler kontrol edilmektedir.

*Personel iken veritabanına gerekli bilgileri verdiğiniz takdirde yeni bir kitap eklenebilir. Herhangi bir kullanıcı ödünç almadıysa bir kitabı veritabanından kaldırabilirsiniz. Bununla birlikte yeni kullanıcı eklerken id si uX (u1,u2 ...), personel eklerken id si sX(s1,s2...) şeklinde olmalı. Kullanıcı adı ve şifresi en az üç karakterden oluşmalı. Bu şartlar sağandığında başarılı bir şekilde işlem gerçekleştirilir.

4. Running and Results

* İlk durumda books.csv ve users.csv

	A	B	C	D	E
1	1	Book	1999	Author	user
2	2	Data Structures	2013	Koffman	-
3	3	OOP Programming	2015	Sawitch	-
4					
5					

```
1 1;Book;1999;Author;user
2 2;Data Structures;2013;Koffman;-
3 3;OOP Programming;2015;Sawitch;-
4
```

	A	B	C	D	E
1	s1	John	Clerk	staff	pwd
2	s2	Burak Kagan	Korkmaz	bkorkmaz	123asd
3	u1	User	One	user	pass
4	u2	Hasan	Men	hmen	qwerty
5					

```
1 s1;John;Clerk;staff;pwd
2 s2;Burak Kagan;Korkmaz;bkorkmaz;123asd
3 u1;User;One;user;pass
4 u2;Hasan;Men;hmen;qwerty
5
```

*staff ile giriş -> Kitap ve Kullanıcı ekleme

```
/usr/lib/jvm/java-8-oracle/bin/java ...
Welcome to the Library Management System!

Username:staff
Password:pwd
Staff Login is Successful!
Choice a operation
1. Add a new Book
2. Remove a Book
3. Register a new Person
4. Remove a Person
5. Show the Database
6. Exit

1
Enter book id:4
Enter book name:UNIX Systems Programming
Enter book year:2003
Enter book author:Kay Robbins
Adding book in progress...

The book has been added successfully.

Choice a operation
1. Add a new Book
2. Remove a Book
3. Register a new Person
4. Remove a Person
5. Show the Database
6. Exit
```

```
7
Please enter a valid input
Choice a operation
1. Add a new Book
2. Remove a Book
3. Register a new Person
4. Remove a Person
5. Show the Database
6. Exit

3
Enter user id:u4
Enter name:Murat
Enter surname:Aktas
Enter username:mrt
Enter password:123
Registering User in progress...

Registering User in progress...

The New User added to the Database.

Choice a operation
1. Add a new Book
2. Remove a Book
3. Register a new Person
4. Remove a Person
5. Show the Database
6. Exit

6
User Records added to CSV file Successfully.
```

	A	B	C	D	E
1	s1	John	Clerk	staff	pwd
2	s2	Burak Kagan	Korkmaz	bkorkmaz	123asd
3	u1	User	One	user	pass
4	u2	Hasan	Men	hmen	qwerty
5	u4	Murat	Aktas	mrt	123
6					

	A	B	C	D	E
1	1	Book	1999	Author	user
2	2	Data Structures	2013	Koffman	-
3	3	OOP Programming	2015	Sawitch	-
4	4	UNIX Systems Programming	2003	Kay Robbins	-
5					
6					

*user ile giriş -> Kitap ödüş alma

```
/usr/lib/jvm/java-8-oracle/bin/java ...
Welcome to the Library Management System!

Username: user
Password: pass
User Login is Successful!
Choice a operation
1. Borrow a Book
2. Return a Book
3. Show Books
4. Exit

3
Book id: 1 Name: Book
Book id: 2 Name: Data Structures
Book id: 3 Name: OOP Programming
Book id: 4 Name: UNIX Systems Programming
Choice a operation
1. Borrow a Book
2. Return a Book
3. Show Books
4. Exit

1
Enter a book name: OOP Programming
Borrowing the Book in progress...

The book has been borrowed successfully.

Choice a operation
1. Borrow a Book
2. Return a Book
3. Show Books
```

```
1
Enter a book name: OOP Programming
Borrowing the Book in progress...

The book has been borrowed successfully.

Choice a operation
1. Borrow a Book
2. Return a Book
3. Show Books
4. Exit

1
Enter a book name: Book
You have already borrowed the book.
Borrowing the Book in progress...

Please try again or exit
Choice a operation
1. Borrow a Book
2. Return a Book
3. Show Books
4. Exit

4
User Records added to CSV file Successfully.

Book Records added to CSV file Successfully.

Process finished with exit code 0
```

	A	B	C	D	E
1	1	Book	1999	Author	user
2	1	Data Structures	2013	Sawitch	-
3	3	OOP Programming	2015	Sawitch	user
4	4	UNIX Systems Programming	2003	Kay Robbins	-
5					

*Borrowed book error

```
/usr/lib/jvm/java-8-oracle/bin/java ...
Welcome to the Library Management System!

Username: hmen
Password: qwert
User Login is Successful!
Choice a operation
1. Borrow a Book
2. Return a Book
3. Show Books
4. Exit

3
Book id: 1 Name: Book
Book id: 2 Name: Data Structures
Book id: 3 Name: OOP Programming
Book id: 4 Name: UNIX Systems Programming
Choice a operation
1. Borrow a Book
2. Return a Book
3. Show Books
4. Exit

1
Enter a book name: OOP Programming
Borrowing the Book in progress...
The book has been borrowed earlier by another user.

Please try again or exit
Choice a operation
```

```
1
Enter a book name: Data Structures
Borrowing the Book in progress...

The book has been borrowed successfully.

Choice a operation
1. Borrow a Book
2. Return a Book
3. Show Books
4. Exit

2
Enter the book name to return: Data Structures
Returning the Book in progress...
The book has returned to library successfully
Choice a operation
1. Borrow a Book
2. Return a Book
3. Show Books
4. Exit

4
User Records added to CSV file Successfully.

Book Records added to CSV file Successfully.

Process finished with exit code 0
```


bkorkmaz (Staff) ile giriş -> kitap silme

```
Username:bkorkmaz
Password:123asd
Staff Login is Successful!
Choice a operation
1. Add a new Book
2. Remove a Book
3. Register a new Person
4. Remove a Person
5. Show the Database
6. Exit

5
USERS DATABASE
| ID: s1 | Name: John | Surname: Clerk | Username: staff | Password: pwd |
| ID: s2 | Name: Burak Kagan | Surname: Korkmaz | Username: bkorkmaz | Password: 123asd |
| ID: u1 | Name: User | Surname: One | Username: user | Password: pass |
| ID: u2 | Name: Hasan | Surname: Men | Username: hmen | Password: qwerty |
| ID: u4 | Name: Murat | Surname: Aktas | Username: mrt | Password: 123 |

BOOKS DATABASE
| ID: 1 | Name: Book | Year: 1999 | Author: Author | Borrower: user |
| ID: 2 | Name: Data Structures | Year: 2013 | Author: Koffman | Borrower: - |
| ID: 3 | Name: OOP Programming | Year: 2015 | Author: Sawitch | Borrower: user |
| ID: 4 | Name: UNIX Systems Programming | Year: 2003 | Author: Kay Robbins | Borrower: - |

Choice a operation
1. Add a new Book
```

```
1. Add a new Book
2. Remove a Book
3. Register a new Person
4. Remove a Person
5. Show the Database
6. Exit
```

```
2
Enter BOOK ID to remove:1
Removing book in progress...
The book can not remove if borrowed!
```

```
Choice a operation
1. Add a new Book
2. Remove a Book
3. Register a new Person
4. Remove a Person
5. Show the Database
6. Exit
```

```
2
Enter BOOK ID to remove:2
Removing book in progress...
```

```
Book removed from Database
SS
```

```
Choice a operation
1. Add a new Book
2. Remove a Book
3. Register a new Person
4. Remove a Person
5. Show the Database
6. Exit
```

	A	B	C	D	E	
1	1	Book	1999	Author	user	
2	3	OOP Programming	2015	Sawitch	user	
3	4	UNIX Systems Programming	2003	Kay Robbins	-	
4						
5						

Karmaşıklık grafikleri

The screenshot shows an IDE window with a file explorer on the left and a complexity metrics table on the right. The file explorer shows the project structure: HW02, src, tr, edu, gt, bkorkmaz, array, and Book. The complexity metrics table is titled 'Metrics Complexity metrics for Project 'HW02' from Sat, 7 Mar 2017 20:05:33 EET'. The table has columns for 'Method', 'ev(G)', 'v(G)', and 'iv(G)'. The methods listed include various getters and setters for the Book and Database classes, as well as login and read methods for the Database class. The complexity values are shown in the rightmost columns.

Method	ev(G)	v(G)	iv(G)
tr.edu.gtu.bkorkmaz.array.Book.Book(String,String,Str	1	1	1
tr.edu.gtu.bkorkmaz.array.Book.equals(Object)	2	2	2
tr.edu.gtu.bkorkmaz.array.Book.getAuthor()	1	1	1
tr.edu.gtu.bkorkmaz.array.Book.getBorrower()	1	1	1
tr.edu.gtu.bkorkmaz.array.Book.getID()	1	1	1
tr.edu.gtu.bkorkmaz.array.Book.getName()	1	1	1
tr.edu.gtu.bkorkmaz.array.Book.getYear()	1	1	1
tr.edu.gtu.bkorkmaz.array.Book.setAuthor(String)	1	1	1
tr.edu.gtu.bkorkmaz.array.Book.setBorrower(String)	1	1	1
tr.edu.gtu.bkorkmaz.array.Book.setID(String)	1	1	1
tr.edu.gtu.bkorkmaz.array.Book.setName(String)	1	1	1
tr.edu.gtu.bkorkmaz.array.Book.setYear(String)	1	1	1
tr.edu.gtu.bkorkmaz.array.Book.toString()	1	1	1
tr.edu.gtu.bkorkmaz.array.Database.add()	1	1	1
tr.edu.gtu.bkorkmaz.array.Database.Database()	1	1	1
tr.edu.gtu.bkorkmaz.array.Database.getBooks()	1	1	1
tr.edu.gtu.bkorkmaz.array.Database.getUsers()	1	1	1
tr.edu.gtu.bkorkmaz.array.Database.login(String,String)	3	4	3
tr.edu.gtu.bkorkmaz.array.Database.readBookFile(Stri	4	9	7
tr.edu.gtu.bkorkmaz.array.Database.readUserFile(Stri	4	10	7
tr.edu.gtu.bkorkmaz.array.Database.showBookIDs()	1	2	2
tr.edu.gtu.bkorkmaz.array.Database.showBooks()	1	2	2
tr.edu.gtu.bkorkmaz.array.Database.showUsers()	1	2	2
tr.edu.gtu.bkorkmaz.array.Database.writeBookFile(Str	1	5	5
tr.edu.gtu.bkorkmaz.array.Database.writeUserFile(Stri	1	5	5
tr.edu.gtu.bkorkmaz.array.Person.equals(Object)	2	2	2
tr.edu.gtu.bkorkmaz.array.Person.getDb()	1	1	1
tr.edu.gtu.bkorkmaz.array.Person.getID()	1	1	1

Unregistered VCS root detected: The directory /home/eksor/GitHub/CSE222_HWs is under Git, but is not registered in the Settings. // Add root: Configure Ignore (11 minutes ago)

23:12 LF+ UTF-8

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

HW02 src tr edu gtu bkorkmaz array Book

Test array

Metrics Complexity metrics for Project 'HW02' from Sat, 7 Mar 2017 20:05:33 EET

Method metrics	Class metrics	Package metrics	Module metrics	Project metrics	
method			ev(G)	v(G)	iv(G)
tr.edu.gtu.bkorkmaz.array.Database.writeBookFile(String)			1	5	5
tr.edu.gtu.bkorkmaz.array.Database.writeUserFile(String)			1	5	5
tr.edu.gtu.bkorkmaz.array.Person.equals(Object)			2	2	2
tr.edu.gtu.bkorkmaz.array.Person.getDb()			1	1	1
tr.edu.gtu.bkorkmaz.array.Person.getId()			1	1	1
tr.edu.gtu.bkorkmaz.array.Person.getName()			1	1	1
tr.edu.gtu.bkorkmaz.array.Person.getPassword()			1	1	1
tr.edu.gtu.bkorkmaz.array.Person.getSurname()			1	1	1
tr.edu.gtu.bkorkmaz.array.Person.getUsername()			1	1	1
tr.edu.gtu.bkorkmaz.array.Person.initializeDB(Database)			1	1	1
tr.edu.gtu.bkorkmaz.array.Person.Person()			1	1	1
tr.edu.gtu.bkorkmaz.array.Person.Person(String,String)			1	1	1
tr.edu.gtu.bkorkmaz.array.Person.setID(String)			1	1	1
tr.edu.gtu.bkorkmaz.array.Person.setName(String)			1	1	1
tr.edu.gtu.bkorkmaz.array.Person.setPassword(String)			1	1	1
tr.edu.gtu.bkorkmaz.array.Person.setSurname(String)			1	1	1
tr.edu.gtu.bkorkmaz.array.Person.setUsername(String)			1	1	1
tr.edu.gtu.bkorkmaz.array.Person.toString()			1	1	1
tr.edu.gtu.bkorkmaz.array.Staff.addBook(String,String)			3	4	4
tr.edu.gtu.bkorkmaz.array.Staff.registerUser(String,String)			5	8	8
tr.edu.gtu.bkorkmaz.array.Staff.removeBook(String)			4	5	4
tr.edu.gtu.bkorkmaz.array.Staff.removeUser(String)			2	5	3
tr.edu.gtu.bkorkmaz.array.Staff.Staff(String,String,String)			1	1	1
tr.edu.gtu.bkorkmaz.array.Test.main(String[])			1	22	22
tr.edu.gtu.bkorkmaz.array.User.borrowBook(String)			5	10	7
tr.edu.gtu.bkorkmaz.array.User.returnBook(String)			5	10	7
tr.edu.gtu.bkorkmaz.array.User.User(String,String,String)			1	1	1

Unregistered VCS root detected: The directory /home/eksor/GitHub/CSE222_HWs is under Git, but is not registered in the Settings. // Add root Configure Ignore (11 minutes ago)

23:12 LF+ UTF-8+

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

HW02 src tr edu gtu bkorkmaz array Book

Test array

Metrics Complexity metrics for Project 'HW02' from Sat, 7 Mar 2017 20:05:33 EET

Method metricsClass metricsPackage metricsModule metricsProject metrics

method	ev(G)	v(G)	iv(G)
tr.edu.gtu.bkorkmaz.arraylist.Book.Book(String,String,	1	1	1
tr.edu.gtu.bkorkmaz.arraylist.Book.equals(Object)	2	2	2
tr.edu.gtu.bkorkmaz.arraylist.Book.getAuthor()	1	1	1
tr.edu.gtu.bkorkmaz.arraylist.Book.getBorrower()	1	1	1
tr.edu.gtu.bkorkmaz.arraylist.Book.getId()	1	1	1
tr.edu.gtu.bkorkmaz.arraylist.Book.getName()	1	1	1
tr.edu.gtu.bkorkmaz.arraylist.Book.getYear()	1	1	1
tr.edu.gtu.bkorkmaz.arraylist.Book.setAuthor(String)	1	1	1
tr.edu.gtu.bkorkmaz.arraylist.Book.setBorrower(Strin	1	1	1
tr.edu.gtu.bkorkmaz.arraylist.Book.setID(String)	1	1	1
tr.edu.gtu.bkorkmaz.arraylist.Book.setName(String)	1	1	1
tr.edu.gtu.bkorkmaz.arraylist.Book.setYear(String)	1	1	1
tr.edu.gtu.bkorkmaz.arraylist.Book.toString()	1	1	1
tr.edu.gtu.bkorkmaz.arraylist.Database.Database()	1	1	1
tr.edu.gtu.bkorkmaz.arraylist.Database.getBooks()	1	1	1
tr.edu.gtu.bkorkmaz.arraylist.Database.getUsers()	1	1	1
tr.edu.gtu.bkorkmaz.arraylist.Database.login(String,St	3	4	3
tr.edu.gtu.bkorkmaz.arraylist.Database.readBookFile(t	4	8	7
tr.edu.gtu.bkorkmaz.arraylist.Database.readUserFile(S	4	9	7
tr.edu.gtu.bkorkmaz.arraylist.Database.showBookIDs()	1	2	2
tr.edu.gtu.bkorkmaz.arraylist.Database.showBooks()	1	2	2
tr.edu.gtu.bkorkmaz.arraylist.Database.showUsers()	1	2	2
tr.edu.gtu.bkorkmaz.arraylist.Database.writeBookFile(1	5	5
tr.edu.gtu.bkorkmaz.arraylist.Database.writeUserFile(t	1	5	5
tr.edu.gtu.bkorkmaz.arraylist.Person.equals(Object)	2	2	2
tr.edu.gtu.bkorkmaz.arraylist.Person.getDb()	1	1	1
tr.edu.gtu.bkorkmaz.arraylist.Person.getId()	1	1	1
tr.edu.gtu.bkorkmaz.arraylist.Person.setName()	1	1	1

Unregistered VCS root detected: The directory /home/eksor/GitHub/CSE222_HWs is under Git, but is not registered in the Settings. // Add root Configure Ignore (12 minutes ago)

23:12 LF+ UTF-8+

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

HW02 src tr edu gtg bkorkmaz array Book

Metrics Complexity metrics for Project 'HW02' from Sal, 7 Mar 2017 20:05:33 EET

Method metrics Class metrics Package metrics Module metrics Project metrics

method	ev(G)	v(G)	iv(G)
tr.edu.gtu.bkorkmaz.linkedlist.Book.Book(String,String)	1	1	1
tr.edu.gtu.bkorkmaz.linkedlist.Book.equals(Object)	2	2	2
tr.edu.gtu.bkorkmaz.linkedlist.Book.getAuthor()	1	1	1
tr.edu.gtu.bkorkmaz.linkedlist.Book.getBorrower()	1	1	1
tr.edu.gtu.bkorkmaz.linkedlist.Book.getID()	1	1	1
tr.edu.gtu.bkorkmaz.linkedlist.Book.getName()	1	1	1
tr.edu.gtu.bkorkmaz.linkedlist.Book.getYear()	1	1	1
tr.edu.gtu.bkorkmaz.linkedlist.Book.setAuthor(String)	1	1	1
tr.edu.gtu.bkorkmaz.linkedlist.Book.setBorrower(String)	1	1	1
tr.edu.gtu.bkorkmaz.linkedlist.Book.setID(String)	1	1	1
tr.edu.gtu.bkorkmaz.linkedlist.Book.setName(String)	1	1	1
tr.edu.gtu.bkorkmaz.linkedlist.Book.setYear(String)	1	1	1
tr.edu.gtu.bkorkmaz.linkedlist.Book.toString()	1	1	1
tr.edu.gtu.bkorkmaz.linkedlist.Database.Database()	1	1	1
tr.edu.gtu.bkorkmaz.linkedlist.Database.getBooks()	1	1	1
tr.edu.gtu.bkorkmaz.linkedlist.Database.getUsers()	1	1	1
tr.edu.gtu.bkorkmaz.linkedlist.Database.login(String,String)	3	4	3
tr.edu.gtu.bkorkmaz.linkedlist.Database.readBookFile()	4	8	7
tr.edu.gtu.bkorkmaz.linkedlist.Database.readUserFile()	4	9	7
tr.edu.gtu.bkorkmaz.linkedlist.Database.showBookIDs()	1	2	2
tr.edu.gtu.bkorkmaz.linkedlist.Database.showBooks()	1	2	2
tr.edu.gtu.bkorkmaz.linkedlist.Database.showUsers()	1	2	2
tr.edu.gtu.bkorkmaz.linkedlist.Database.writeBookFile()	1	5	5
tr.edu.gtu.bkorkmaz.linkedlist.Database.writeUserFile()	1	5	5
tr.edu.gtu.bkorkmaz.linkedlist.Person.equals(Object)	2	2	2
tr.edu.gtu.bkorkmaz.linkedlist.Person.getDb()	1	1	1
tr.edu.gtu.bkorkmaz.linkedlist.Person.getID()	1	1	1
tr.edu.gtu.bkorkmaz.linkedlist.Person.getName()	1	1	1

Unregistered VCS root detected: The directory /home/eksor/GitHub/CSE222_HWs is under Git, but is not registered in the Settings. // Add root Configure Ignore (13 minutes ago)

23:12 LF+ UTF-8

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help				
HW02 src tr edu gtu bkorkmaz array Book				
Metrics Complexity metrics for Project 'HW02' from Sat, 7 Mar 2017 20:05:33 EET				
Method metrics Class metrics Package metrics Module metrics Project metrics				
method		ev(G)	v(G)	iv(G)
tr.edu.gtu.bkorkmaz.linkedlist.Database.writeUserFile		1	5	5
tr.edu.gtu.bkorkmaz.linkedlist.Person.equals(Object)		2	2	2
tr.edu.gtu.bkorkmaz.linkedlist.Person.getDb()		1	1	1
tr.edu.gtu.bkorkmaz.linkedlist.Person.getId()		1	1	1
tr.edu.gtu.bkorkmaz.linkedlist.Person.getName()		1	1	1
tr.edu.gtu.bkorkmaz.linkedlist.Person.getPassword()		1	1	1
tr.edu.gtu.bkorkmaz.linkedlist.Person.getSurname()		1	1	1
tr.edu.gtu.bkorkmaz.linkedlist.Person.getUsername()		1	1	1
tr.edu.gtu.bkorkmaz.linkedlist.Person.initializeDB(DataBase)		1	1	1
tr.edu.gtu.bkorkmaz.linkedlist.Person.Person()		1	1	1
tr.edu.gtu.bkorkmaz.linkedlist.Person.Person(String,String)		1	1	1
tr.edu.gtu.bkorkmaz.linkedlist.Person.setID(String)		1	1	1
tr.edu.gtu.bkorkmaz.linkedlist.Person.setName(String)		1	1	1
tr.edu.gtu.bkorkmaz.linkedlist.Person.setPassword(String)		1	1	1
tr.edu.gtu.bkorkmaz.linkedlist.Person.setSurname(String)		1	1	1
tr.edu.gtu.bkorkmaz.linkedlist.Person.setUsername(String)		1	1	1
tr.edu.gtu.bkorkmaz.linkedlist.Person.toString()		1	1	1
tr.edu.gtu.bkorkmaz.linkedlist.Staff.addBook(String,String)		3	3	3
tr.edu.gtu.bkorkmaz.linkedlist.Staff.registerUser(String,String)		5	8	8
tr.edu.gtu.bkorkmaz.linkedlist.Staff.removeBook(String,String)		4	5	5
tr.edu.gtu.bkorkmaz.linkedlist.Staff.removeUser(String,String)		2	5	4
tr.edu.gtu.bkorkmaz.linkedlist.Staff.Staff(String,String)		1	1	1
tr.edu.gtu.bkorkmaz.linkedlist.Test.main(String[])		1	22	22
tr.edu.gtu.bkorkmaz.linkedlist.User.borrowBook(String,String)		5	10	8
tr.edu.gtu.bkorkmaz.linkedlist.User.returnBook(String,String)		5	10	8
tr.edu.gtu.bkorkmaz.linkedlist.User.User(String,String)		1	1	1
Total		232	412	379
Average		1,57	2,78	2,56
Unregistered VCS root detected: The directory /home/eksor/GitHub/CSE222_HWs is under Git, but is not registered in the Settings. // Add root Configure Ignore (13 minutes ago)				
23:12 LF UTF-8				

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

HW02 src tr edu gtg bkorkmaz array Book Test array

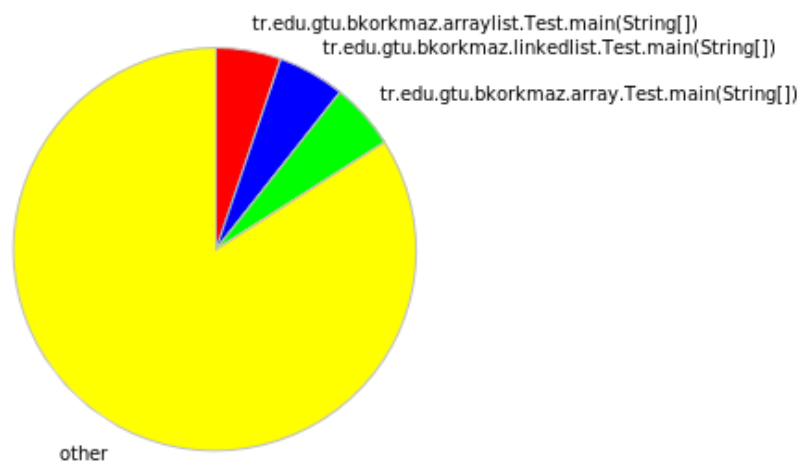
Metrics Complexity metrics for Project 'HW02' from Sat, 7 Mar 2017 20:05:33 EET

Method metrics	Class metrics	Package metrics	Module metrics	Project metrics
class			OCavg	WMC
tr.edu.gtu.bkorkmaz.array.Book			1,08	14
tr.edu.gtu.bkorkmaz.array.Database			2,67	32
tr.edu.gtu.bkorkmaz.array.Person			1,06	17
tr.edu.gtu.bkorkmaz.array.Staff			3,60	18
tr.edu.gtu.bkorkmaz.array.Test			20,00	20
tr.edu.gtu.bkorkmaz.array.User			6,33	19
tr.edu.gtu.bkorkmaz.arraylist.Book			1,08	14
tr.edu.gtu.bkorkmaz.arraylist.Database			2,64	29
tr.edu.gtu.bkorkmaz.arraylist.Person			1,06	17
tr.edu.gtu.bkorkmaz.arraylist.Staff			3,40	17
tr.edu.gtu.bkorkmaz.arraylist.Test			20,00	20
tr.edu.gtu.bkorkmaz.arraylist.User			6,33	19
tr.edu.gtu.bkorkmaz.linkedlist.Book			1,08	14
tr.edu.gtu.bkorkmaz.linkedlist.Database			2,64	29
tr.edu.gtu.bkorkmaz.linkedlist.Person			1,06	17
tr.edu.gtu.bkorkmaz.linkedlist.Staff			3,40	17
tr.edu.gtu.bkorkmaz.linkedlist.Test			20,00	20
tr.edu.gtu.bkorkmaz.linkedlist.User			6,33	19
Total				352
Average			2,38	19,56

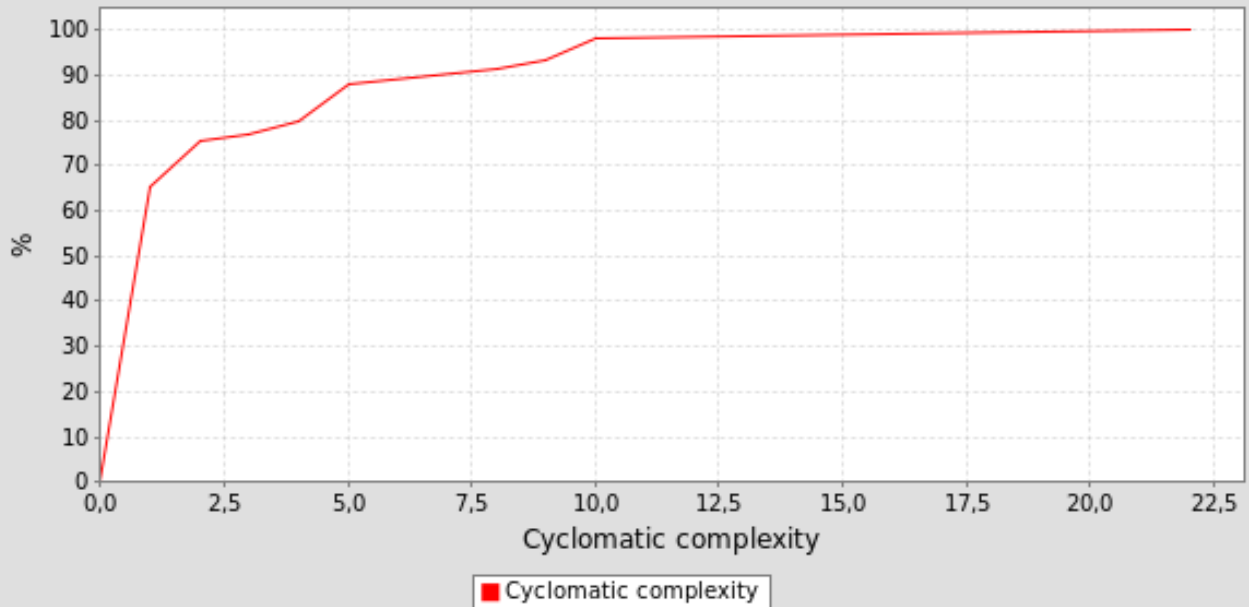
Unregistered VCS root detected: The directory /home/eksor/GitHub/CSE222_HWs is under Git, but is not registered in the Settings. // Add root Configure Ignore (13 minutes ago)

23:12 LF UTF-8

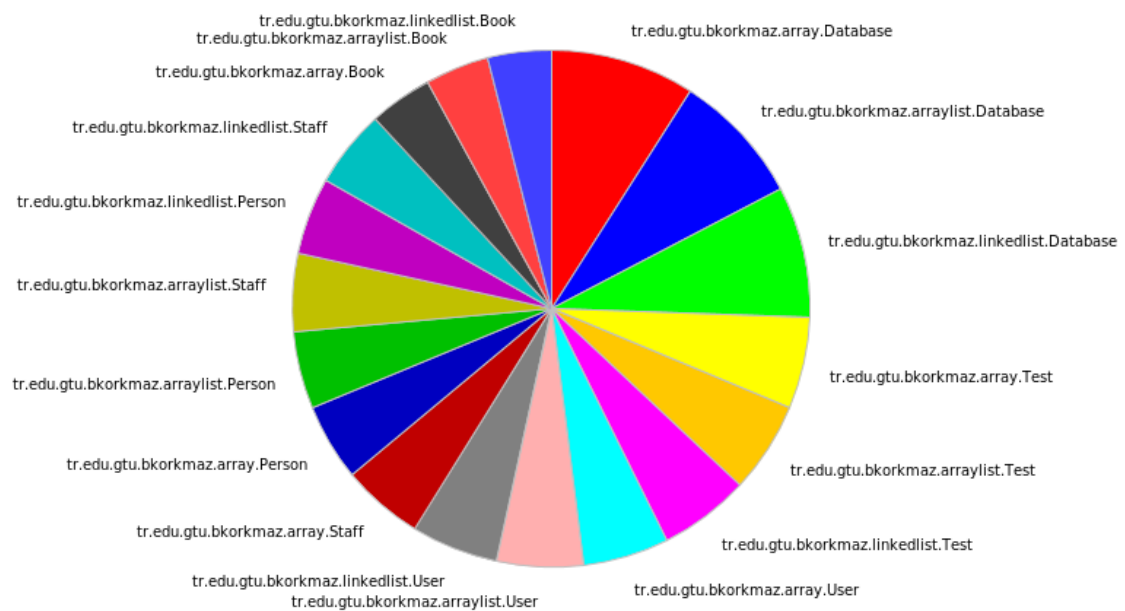
Cyclomatic complexity by method



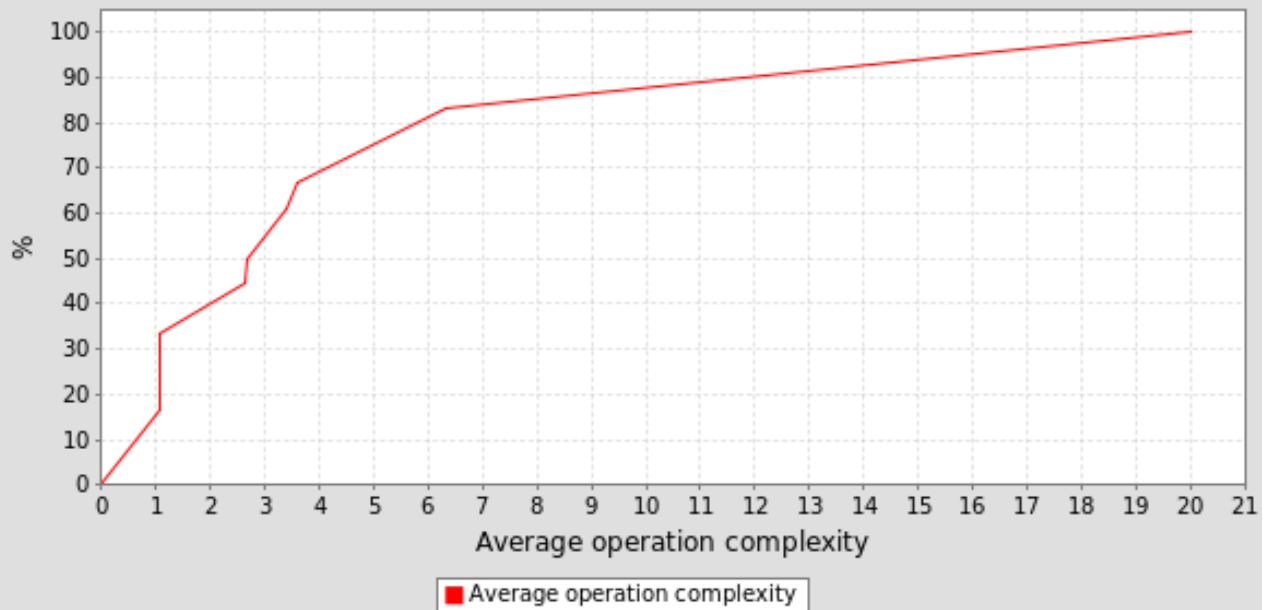
Distribution of cyclomatic complexity by method



Weighted method complexity by class



Distribution of average operation complexity by class



File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

HW02 src tr edu gtg bkorkmaz array Book Test array

Metrics Complexity metrics for Project 'HW02' from Sat, 7 Mar 2017 20:05:33 EET

Method metrics	Class metrics	Package metrics	Module metrics	Project metrics
package	v(G)avg	v(G)tot		
tr.edu.gtu.bkorkmaz.array	2,80	140		
tr.edu.gtu.bkorkmaz.arraylist	2,78	136		
tr.edu.gtu.bkorkmaz.linkedlist	2,78	136		
Total		412		
Average	2,78	137,33		

Unregistered VCS root detected: The directory /home/eksor/GitHub/CSE222_HWs is under Git, but is not registered in the Settings. // Add root Configure Ignore (28 minutes ago)

23:12 LF+ UTF-8

