

16TIN2054 – Teknik Pemrograman Praktek

Defensive Programming Assert – Week 12



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1AD4 Jurusan Teknik Komputer dan Informatika

Tugas ini dikumpulkan untuk memenuhi sebagian persyaratan kelulusan mata kuliah Teknik Pemrograman Praktek

Program Studi D4 Teknik Informatika

Jurusan Teknik Komputer dan Informatika

Politeknik Negeri Bandung

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Defensive Programming Case

1. How to display custom message of assertion using command line?

Dengan menggunakan “-ea” dengan aturan penulisan “java -ea <packagename> <classname> seperti berikut :

```
PS D:\02 ZHAR'S PROJECT\JTK POLBAN\SEMESTER 2\Teknik Pemrograman\PRAKTEK\Week12\Praktikum ke-12\assert> java -ea DataRoles
Exception in thread "main" java.lang.AssertionError: Data Oops is invalid engineer role
    at EngineerRoles.displayRoleDesc(DataRoles.java:100)
    at DataRoles.main(DataRoles.java:52)
PS D:\02 ZHAR'S PROJECT\JTK POLBAN\SEMESTER 2\Teknik Pemrograman\PRAKTEK\Week12\Praktikum ke-12\assert> █
```

2. How to display custom message of assertion ONLY for Researcher Roles Class using command line?

Dengan menggunakan “java -ea:class name” atau karena hanya mengaktifkan assertion pada class Researcher Roles sehingga menggunakan “java -ea:ResearcherRoles DataRoles”

```
PS D:\02 ZHAR'S PROJECT\JTK POLBAN\SEMESTER 2\Teknik Pemrograman\PRAKTEK\Week12\Praktikum ke-12\assert> java -ea:ResearcherRoles DataRoles
Exception in thread "main" java.lang.AssertionError: Data Engineer is invalid research role
    at ResearcherRoles.displayRoleDesc(DataRoles.java:128)
    at DataRoles.main(DataRoles.java:56)
PS D:\02 ZHAR'S PROJECT\JTK POLBAN\SEMESTER 2\Teknik Pemrograman\PRAKTEK\Week12\Praktikum ke-12\assert> █
```

3. Is it possible to show all custom message of assertions? If it is possible how to do it? – OR – Is it ONLY possible to show custom message of the assertion that was first discovered (assertion in the earlier line)? WHY?

Tentu mungkin2 saja, yakni dengan menggunakan try catch method yang bisa menghasilkan AssertionError

```
class DataRoles {
    public static void main(String[] args) {
        EngineerRoles EngRole = new EngineerRoles();
        ResearcherRoles ResRole = new ResearcherRoles();

        EngRole.setRole("Data Oops");
        EngRole.getRole();
        try{
```

```

        EngRole.displayRoleDesc();
    }catch(AssertionError e){
        System.out.println(e.getMessage());
    }

    ResRole.setRole("Data Engineer");
    ResRole.getRole();
    try{
        ResRole.displayRoleDesc();
    }catch(AssertionError e){
        System.out.println(e.getMessage());
    }

    EngRole.setRole("Machine Learning Engineer");
    EngRole.getRole();
    try{
        EngRole.displayRoleDesc();
    }catch(AssertionError e){
        System.out.println(e.getMessage());
    }

    EngineerTools EngTools = new EngineerTools();
    EngTools.removeDataOpsTools();
    EngTools.displayDataOpsTools();
}
}

```

4. Update Engineer Tools Class using EXCEPTION (Try-Catch) with "AssertionError" and show the message!

```

class EngineerTools {
    ArrayList<String> EngTools;
    ArrayList<String> DataOpsTools;

    EngineerTools() {
        this.EngTools = new ArrayList<>(Arrays.asList(
            "Docker", "Kubernetes", "OpenShift",
            "Tableau", "MongoDB", "ElasticSearch",
            "Spark", "TensorFlow", "PyTorch"
        ));
        this.DataOpsTools = new ArrayList<>(Arrays.asList("Docker", "Kubernetes", "OpenShift"));
        // this.DataOpsTools = new ArrayList<>(Arrays.asList("Pandas"));
    }
}

```

```

void removeDataOpsTools() {
    try{
        assert this.EngTools.removeAll(this.DataOpsTools): "Failed to remove!"
;
    }catch(AssertionError e){
        System.out.println(e.getMessage());
    }
}

void displayDataOpsTools() {
    System.out.println(Arrays.toString(this.EngTools.toArray()));
}
}

```

5. FIX the codes, make sure you don't have any error! Take a look to Engineer Tools Class. We want to remove selected elements of array list.
 - If the assertion is ENABLED, removing elements of array list WORKS PERFECTLY.
 - BUT if the assertion is DISABLED, the elements of array list are NOT REMOVED. WHY?
 - The elements of array list should be able to be removed with both the ENABLED and DISABLED assertion. How to FIX the issue? Give your solution!

```

class EngineerTools {
    ArrayList<String> EngTools;
    ArrayList<String> DataOpsTools;

    EngineerTools() {
        this.EngTools = new ArrayList<>(Arrays.asList(
            "Docker", "Kubernetes", "OpenShift",
            "Tableau", "MongoDB", "ElasticSearch",
            "Spark", "TensorFlow", "PyTorch"
        ));
        this.DataOpsTools = new ArrayList<>(Arrays.asList("Docker", "Kubernetes", "OpenShift"));
        // this.DataOpsTools = new ArrayList<>(Arrays.asList("Pandas"));
    }

    void removeDataOpsTools() {
        try{

```

```

        // assert this.EngTools.removeAll(this.DataOpsTools): "Failed to remov
e!";
        boolean result = this.EngTools.removeAll(this.DataOpsTools);
        assert result: "Failed to remove!";
    }catch(AssertionError e){
        System.out.println(e.getMessage());
    }
}

void displayDataOpsTools() {
    System.out.println(Arrays.toString(this.EngTools.toArray()));
}
}

```

- At line 38, remove the package comment. Create nested packages according to the codes at the line. Then execute file DataRoles.java using the java command accompanied by an "assertion parameter for the package".

Dengan menggunakan "-ea" dengan aturan penulisan "java -ea <packagename> <classname> seperti berikut :

```

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Exception in thread "main" java.lang.AssertionError: Data Oops is invalid engineer role
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PS D:\02 ZHAR'S PROJECT\JTK POLBAN\SEMESTER 2\Teknik Pemrograman\PRAKTEK\Week12\Praktikum ke-12\assert> 

```