

---

*Nadine Hazem: 20216144*

*Basma khaled: 20216027*

*Abdalrahman atia: 20206128*

*Sherouk ashraf: 20206131*

---

Maintenance Project

Phase2

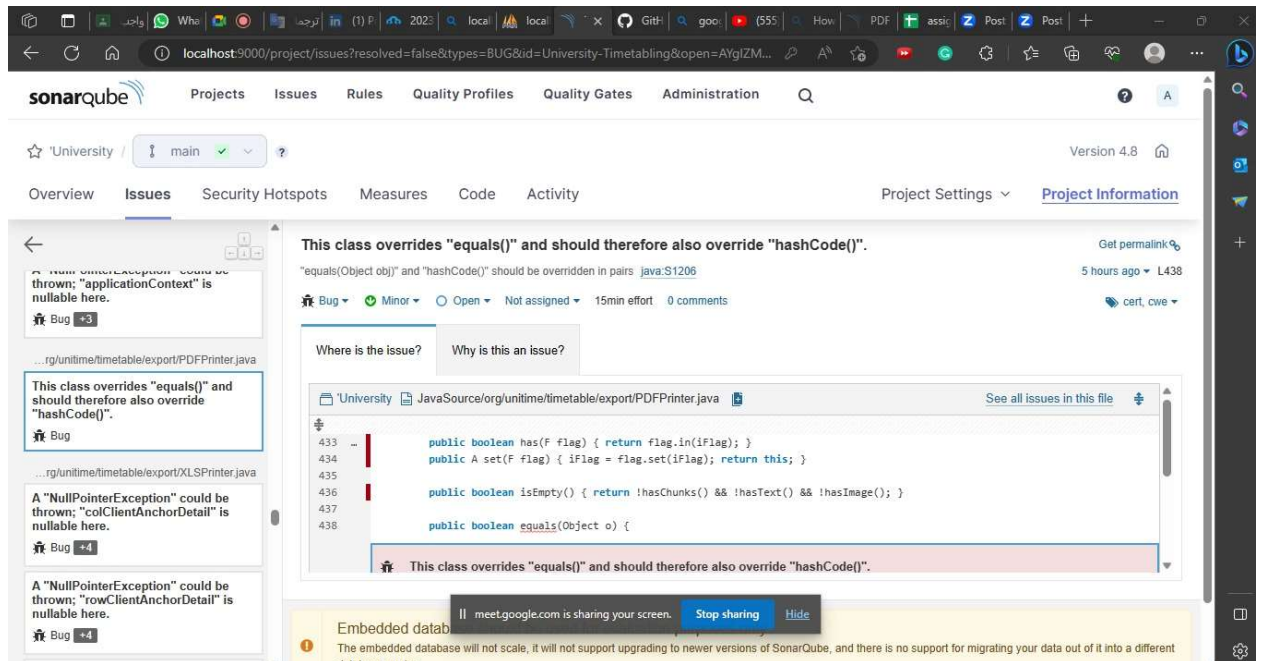
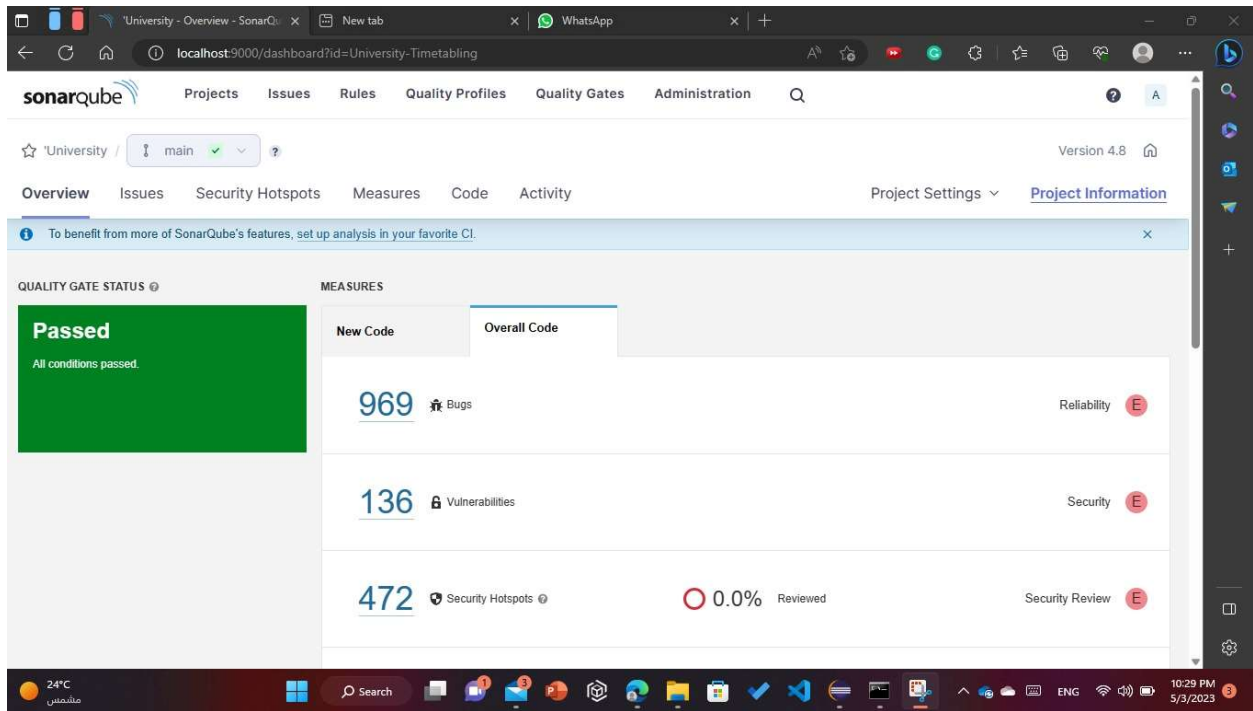
1) GitHub Repo:

<https://github.com/nadinehazem200/University-Time-Tabling>

2) Link to ticketing system:

<https://trello.com/w/universitytimetablingcode>

3) Static Analysis Report for code before changes:



## Remove this "return" statement or make it conditional.

Get permalink

Loops with at most one iteration should be refactored [java:S1751](#)

1 hour ago L250

Bug Major Open Not assigned 5min effort 0 comments

No tags

Where is the issue?

Why is this an issue?

University JavaSource/org/unitime/timetable/api/connectors/EventsConnector.java See all issues in this file

```
245 ...  
246 c.setLastName(person.getLastName());  
247 c.setAcademicTitle(person.getAcademicTitle());  
248 c.setEmail(person.getEmail());  
249 c.setPhone(person.getPhone());  
250 c.setExternalId(person.getId());  
    return;
```

Remove this "return" statement or make it conditional.

sonarqube Projects Issues Rules Quality Profiles Quality Gates Administration

University / main Version 4.8

Overview Issues Security Hotspots Measures Code Activity Project Settings Project Information

Change this condition so that it does not always evaluate to "false"

Conditionally executed code should be reachable [java:S2583](#) 5 hours ago L655

Bug Major Open Not assigned 15min effort 0 comments cert, cwe, pitfall, suspicious, unused

Where is the issue? Why is this an issue?

University JavaSource/org/unitime/timetable/export/students/StudentSchedulingDashboardExportCSV.java See all issues in this file

```
650 ...  
651 public String enrollment(int enr1, int tenr1, int swap, int tSwap) {  
652     if (tSwap == 0 || tSwap == tenr1) { // no swaps or all swaps  
653         return number(enr1, tenr1) + (tSwap > 0 ? MESSAGES.csvWaitlistSign() : "");  
654     } else if (swap == tSwap && enr1 == tenr1) { // same total  
655         return (swap == 0 ? String.valueOf(enr1) : swap == enr1 ? swap + MESSAGES.csvWaitlistSign() : (enr1 - swap) + " +  
        " + swap + MESSAGES.csvWaitlistSign());
```

Embedded database  
The embedded database will not scale, it will not support upgrading to newer versions of SonarQube, and there is no support for migrating your data out of it into a different database engine.

SonarQube interface showing a bug report for the issue "Make sure 'lastLike' can't be zero before doing this division." The bug is categorized as Critical and is located in the file `University-Timetable/gwt/client/curricula/CurriculumProjectionRulesPage.java`. The description states: "Zero should not be a possible denominator java:S3518". The code snippet shows a division operation where `lastLike` is used as a denominator, and a comment indicates that `lastLike` should not be zero.

```
public void update() {
    int lastLike = 0;
    float projected = 0.0f;
    boolean allDefault = true;
    for (MyCell cell: iCells) {
        if (allDefault && !cell.getRow().isDefaultProjection(cell.getClassification())) allDefault = false;
        if (!Vertical && cell.getRow().getParent() == null) continue;
    }
}
```

SonarQube interface showing a bug report for the issue "Change this condition so that it does not always evaluate to 'false'". The bug is categorized as Major and is located in the file `University-Timetable/export/students/StudentSchedulingDashboardExportCSV.java`. The description states: "Conditionally executed code should be reachable java:S2583". The code snippet shows a conditional statement that always evaluates to false, leading to unreachable code.

```
public String enrollment(int enr1, int tEnr1, int swap, int tSwap) {
    if (tSwap == 0 || tSwap == tEnr1) { // no swaps or all swaps
        return number(enr1, tEnr1) + (tSwap > 0 ? MESSAGES.csvWaitListSign() : "");
    } else if (swap == tSwap && enr1 == tEnr1) { // same total
        return (swap == 0 ? String.valueOf(enr1) : swap == enr1 ? swap + MESSAGES.csvWaitListSign() : (enr1 - swap) + " + " + swap + MESSAGES.csvWaitListSign());
    }
}
```

sonarqube Projects Issues Rules Quality Profiles Quality Gates Administration

University / main

Overview Issues Security Hotspots Measures Code Activity Project Settings Project Information

Change this condition so that it does not always evaluate to "false"

Conditionally executed code should be reachable java:S2583

5 hours ago L67

Where is the issue? Why is this an issue?

```
return (unsg + " / " + tUnsg) + (tWait > 0 ? MESSAGES.csvWaitListSign() : "") +
(topWaitingPriority != null ? MESSAGES.csvFirstWaitListedPrioritySign(topWaitingPriority) : "");
}
} else {
if (wait == tWait && unsg == tUnsg) {
return (wait == 0 ? String.valueOf(unsg) : wait == unsg ? wait + MESSAGES.csvWaitListSign() : (unsg -
wait) + " + " + wait + MESSAGES.csvWaitListSign()) +
```

Embedded database

meet.google.com is sharing your screen. Stop sharing Hide

The embedded database will not scale, it will not support upgrading to newer versions of SonarQube, and there is no support for migrating your data out of it into a different database engine.

sonarqube Projects Issues Rules Quality Profiles Quality Gates Administration

University / main

Overview Issues Security Hotspots Measures Code Activity Project Settings Project Information

Change this condition so that it does not always evaluate to "false"

Conditionally executed code should be reachable java:S2583

5 hours ago L675

Where is the issue? Why is this an issue?

```
return (unsg + " / " + tUnsg) + (tWait > 0 ? MESSAGES.csvWaitListSign() : "") +
(topWaitingPriority != null ? MESSAGES.csvFirstWaitListedPrioritySign(topWaitingPriority) : "");
}
} else {
if (wait == tWait && unsg == tUnsg) {
return (wait == 0 ? String.valueOf(unsg) : wait == unsg ? wait + MESSAGES.csvWaitListSign() : (unsg -
wait) + " + " + wait + MESSAGES.csvWaitListSign()) +
```

Embedded database

meet.google.com is sharing your screen. Stop sharing Hide

The embedded database will not scale, it will not support upgrading to newer versions of SonarQube, and there is no support for migrating your data out of it into a different database engine.



SonarQube interface showing a project issue titled "Change this condition so that it does not always evaluate to 'false'". The issue is categorized as a Bug and is located in the file `JavaSource/org/unitime/timetable/export/students/StudentSchedulingDashboardExportCSV.java`. The issue description states: "Conditionally executed code should be reachable" with a reference to `java:S2583`. The issue was reported 5 hours ago by L688. The issue is currently open, with 15 minutes of effort and 0 comments. The issue is tagged with `cert, cwe, pitfall, suspicious, unused`.

The issue is located in the file `JavaSource/org/unitime/timetable/export/students/StudentSchedulingDashboardExportCSV.java`. The code snippet shows a conditional execution that always evaluates to false:

```
683 ... } else if (twait == 0) {
684 // no wait-lists -- like before, but with no-sub
685 if (tNoSub == 0 || tNoSub == tUnasg) {
686 // no no-sub or all no-sub
687 if (unasg == tUnasg) {
688 return (unasg == 0 ? "-" : String.valueOf(unasg)) + (tNoSub > 0 ? MESSAGES.csvNoSubSign() : "");
689 }
```

The issue is highlighted in the code editor, and the message "Change this condition so that it does not always evaluate to 'false'" is displayed below the code snippet.

SonarQube interface showing a project issue titled "Change this condition so that it does not always evaluate to 'false'". The issue is categorized as a Bug and is located in the file `JavaSource/org/unitime/timetable/export/students/StudentSchedulingDashboardExportCSV.java`. The issue description states: "Conditionally executed code should be reachable" with a reference to `java:S2583`. The issue was reported 5 hours ago by L688. The issue is currently open, with 15 minutes of effort and 0 comments. The issue is tagged with `cert, cwe, pitfall, suspicious, unused`.

The issue is located in the file `JavaSource/org/unitime/timetable/export/students/StudentSchedulingDashboardExportCSV.java`. The code snippet shows a conditional execution that always evaluates to false:

```
694 return (noSub == 0 ? String.valueOf(unasg) : noSub == unasg ? noSub + MESSAGES.csvNoSubSign() : (unasg -
noSub) + " + " + noSub + MESSAGES.csvNoSubSign());
695 }
```

The issue is highlighted in the code editor, and the message "Change this condition so that it does not always evaluate to 'false'" is displayed below the code snippet.

Embedded database should be used for evaluation purposes only  
The embedded database will not scale, it will not support upgrading to newer versions of SonarQube, and there is no support for migrating your data out of it into a different database engine.

SonarQube interface showing a project issue. The issue is a Bug, Major, Open, Not assigned, 15min effort, 0 comments. The issue title is "Change this condition so that it does not always evaluate to 'false'". The issue is located in the file `JavaSource/org/unitime/timetable/export/students/StudentSchedulingDashboardExportCSV.java`. The issue is highlighted in the code snippet below:

```
noSub) + " + " + noSub + MESSAGES.csvNoSubSign());  
    }  
    } else {  
        return ((noSub == 0 ? String.valueOf(unacc) : noSub == unacc ? MESSAGES.csvUnSubSign() : (unacc -
```

SonarQube interface showing a list of issues. The list shows 1 / 969 issues, 17d effort. The issues are sorted by severity (Bug, Major, Open, Not assigned, 10min effort). The issues are:

- NullPointerException could be thrown; decoded is nullable here.** (Bug, Major, Open, Not assigned, 10min effort, Comment)
- Remove this "return" statement or make it conditional.** (Bug, Major, Open, Not assigned, 5min effort, Comment)
- Throw this exception or remove this useless statement.** (Bug, Major, Open, Not assigned, 2min effort, Comment)
- Throw this exception or remove this useless statement.** (Bug, Major, Open, Not assigned, 2min effort, Comment)
- A "NullPointerException" could be thrown; "op" is nullable here.** (Bug, Major, Open, Not assigned, 10min effort, Comment)
- "NullPointerException" will be thrown when invoking method "findClassAndUpdateQueryData[]".** (Bug, Major, Open, Not assigned, 10min effort, Comment)

**SonarQube Interface - Bugs List**

**Filters:**

- Type:** BUG (969), Vulnerability (136), Code Smell (51k)
- Severity:** Blocker (36), Critical (25), Major (546), Minor (362), Info (0)

**Bugs List:**

File Path	Description	Severity	Effort	Resolution
JavaSource/.../timetable/export/students/StudentSchedulingDashboardExportCSV.java	Strings and Boxed types should be compared using "equals()".	Major	5min effort	cert, cwe
	Change this condition so that it does not always evaluate to "false"	Major	15min effort	cert, cwe, pitfall, suspicious, unused
	Change this condition so that it does not always evaluate to "false"	Major	15min effort	cert, cwe, pitfall, suspicious, unused
	Change this condition so that it does not always evaluate to "false"	Major	15min effort	cert, cwe, pitfall, suspicious, unused
	Change this condition so that it does not always evaluate to "false"	Major	15min effort	cert, cwe, pitfall, suspicious, unused
	Change this condition so that it does not always evaluate to "false"	Major	15min effort	cert, cwe, pitfall, suspicious, unused
	Change this condition so that it does not always evaluate to "false"	Major	15min effort	cert, cwe, pitfall, suspicious, unused

#### 4) Static Analysis Report for changed code:

**SonarQube Interface - Bugs List**

**Filters:**

- Type:** BUG (961), Vulnerability (136), Code Smell (51k)
- Severity:** Blocker (36), Critical (25), Major (538), Minor (362), Info (0)

**Bugs List:**

File Path	Description	Severity	Effort	Resolution
	A "NullPointerException" could be thrown; "decoded" is nullable here.	Major	10min effort	cert, cwe
JavaSource/.../timetable/api/connectors/OnlineStudentSchedulingConnector.java	Throw this exception or remove this useless statement.	Major	2min effort	error-handling
	Throw this exception or remove this useless statement.	Major	2min effort	error-handling
	A "NullPointerException" could be thrown; "op" is nullable here.	Major	10min effort	cert, cwe
JavaSource/.../timetable/api/connectors/VariableTitleCourseConnector.java	"NullPointerException" will be thrown when invoking method "findClassAndUpdateQueryData()".	Major	10min effort	cert, cwe



SonarQube interface showing project issues for 'University'.

Navigation: Projects, Issues, Rules, Quality Profiles, Quality Gates, Administration

Project: University / main

Overview: Issues, Security Hotspots, Measures, Code, Activity

Filters: My Issues, All, Clear All Filters

Issues in new code

Type: BUG (961)

Severity: Minor (362), Info (0), Major (538)

Scope: Resolution

Issues list:

- Cast one of the operands of this addition operation to a "float". (Bug, Minor, Open, Not assigned, 5min effort, Comment)
- Cast one of the operands of this subtraction operation to a "float". (Bug, Minor, Open, Not assigned, 5min effort, Comment)
- Strings and Boxed types should be compared using "equals()". (Bug, Major, Open, Not assigned, 5min effort, Comment)
- A "NullPointerException" could be thrown; "applicationContext" is nullable here. (Bug, Major, Open, Not assigned, 10min effort, Comment)
- A "NullPointerException" could be thrown; "applicationContext" is nullable here. (Bug, Major, Open, Not assigned, 10min effort, Comment)

SonarQube interface showing project quality gate status and measures for 'University'.

Navigation: Projects, Issues, Rules, Quality Profiles, Quality Gates, Administration

Project: University / main

Overview: Issues, Security Hotspots, Measures, Code, Activity

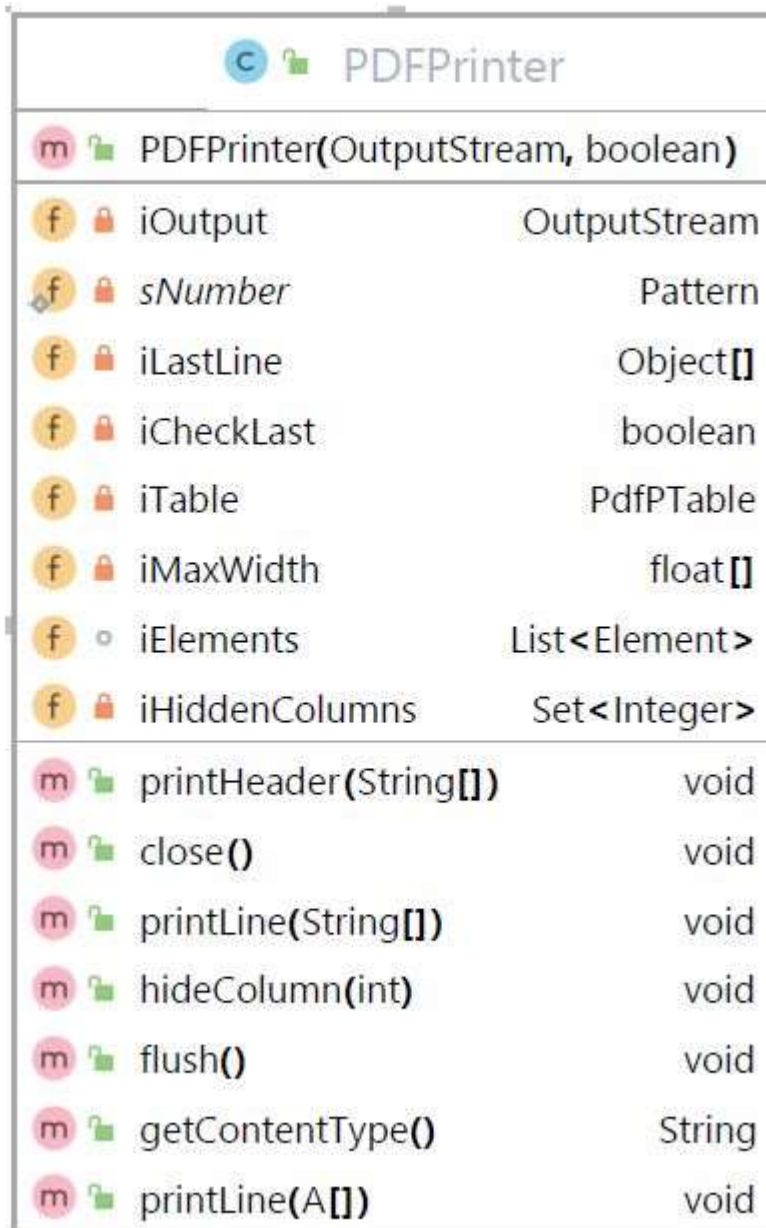
Project Settings, Project Information

Quality Gate Status: Passed (All conditions passed.)

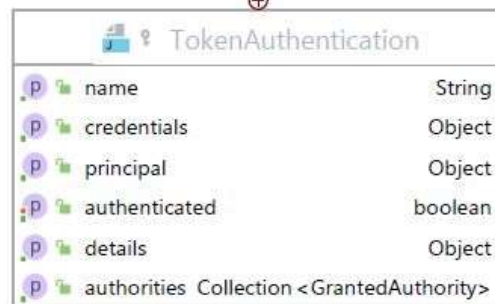
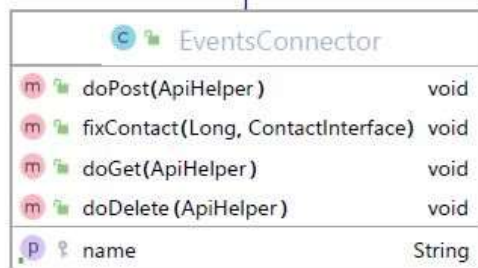
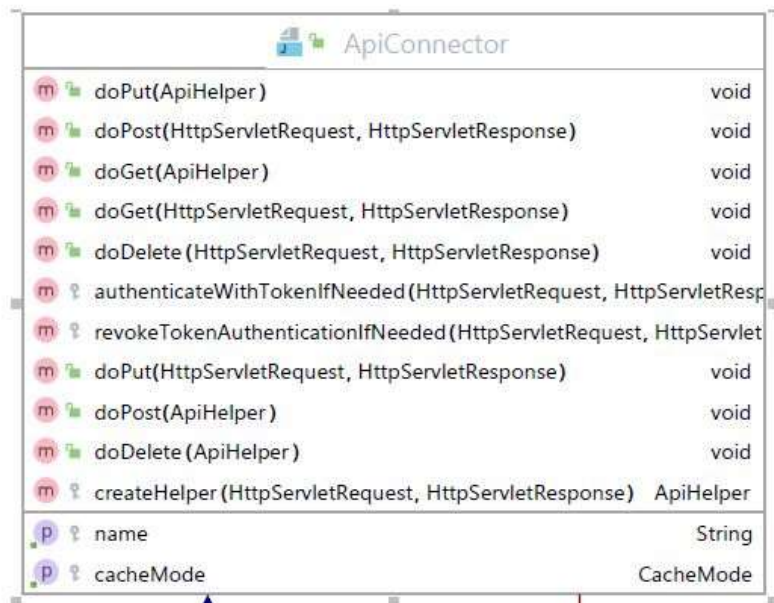
Measures:

- New Code: 961 Bugs, Reliability (E)
- Overall Code: 136 Vulnerabilities, Security (E)
- Security Hotspots: 472, 0.0% Reviewed, Security Review (E)

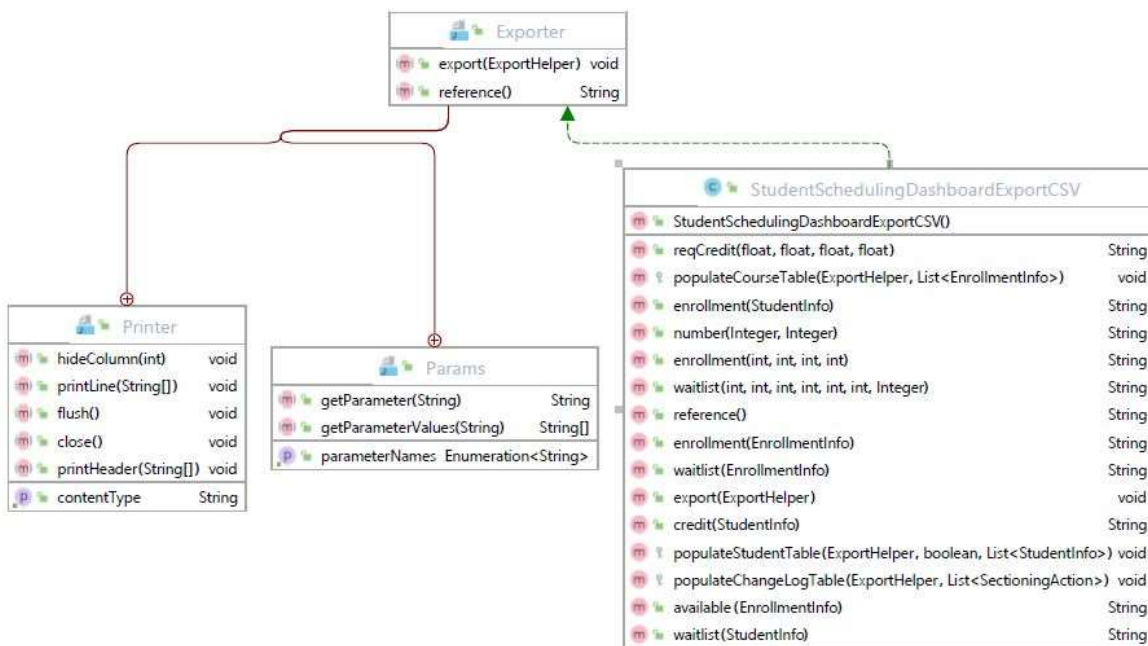
## 5) UML(Class Diagram):











## 6) Test case for division by zero bug:

Before alteration:

projected = 6.0, lastLike = 0

output: is Exception in thread "main"

java.lang.ArithmeticException: / by zero at  
example.main(main.java:4)

After fixing the bug:

Projected=6.0 , lastkLike=0

Output: Can not divide by zero.

