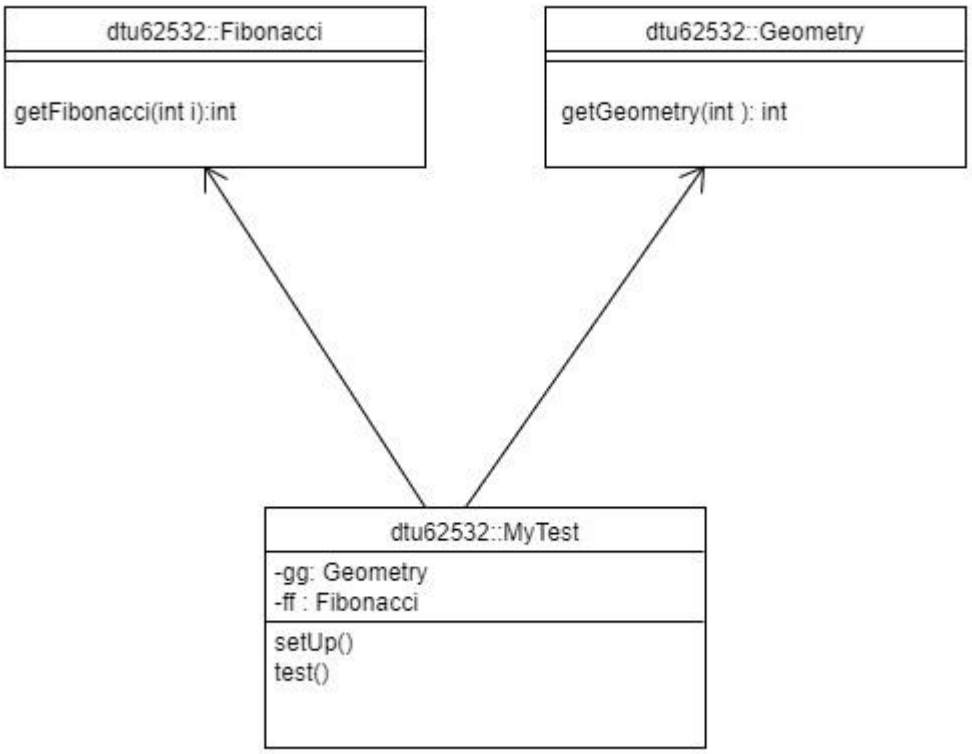
UML and Junit crash course

UML is a graphical tool to demonstrate a software structure. Each class is shown as a rectangle, with its name, attribute, functions. The classes are linked by some lines, like this

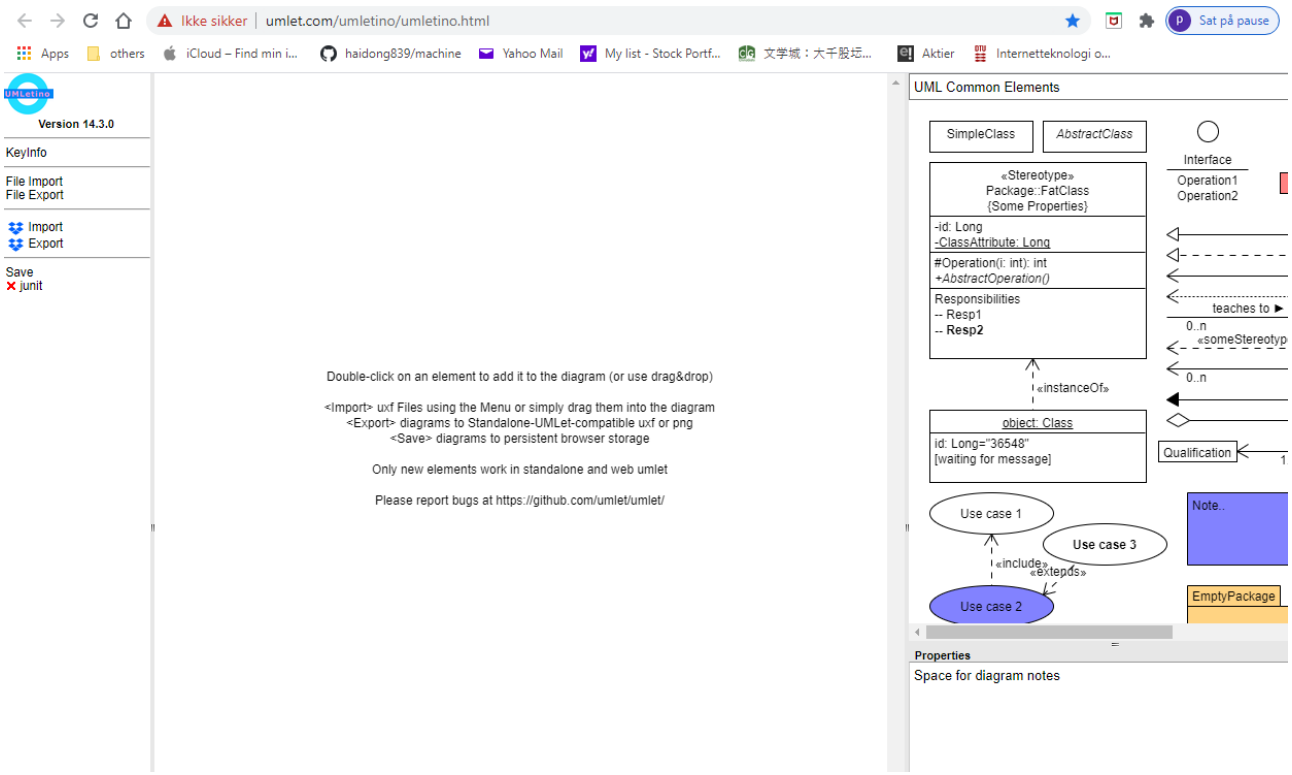


This UML diagram shows a class Fibonacci and a class Geometry, they are used by the class MyTest. The details of the class and operation is not shown in the diagram. The idea of the diagram is to let user knows the structure of the software.

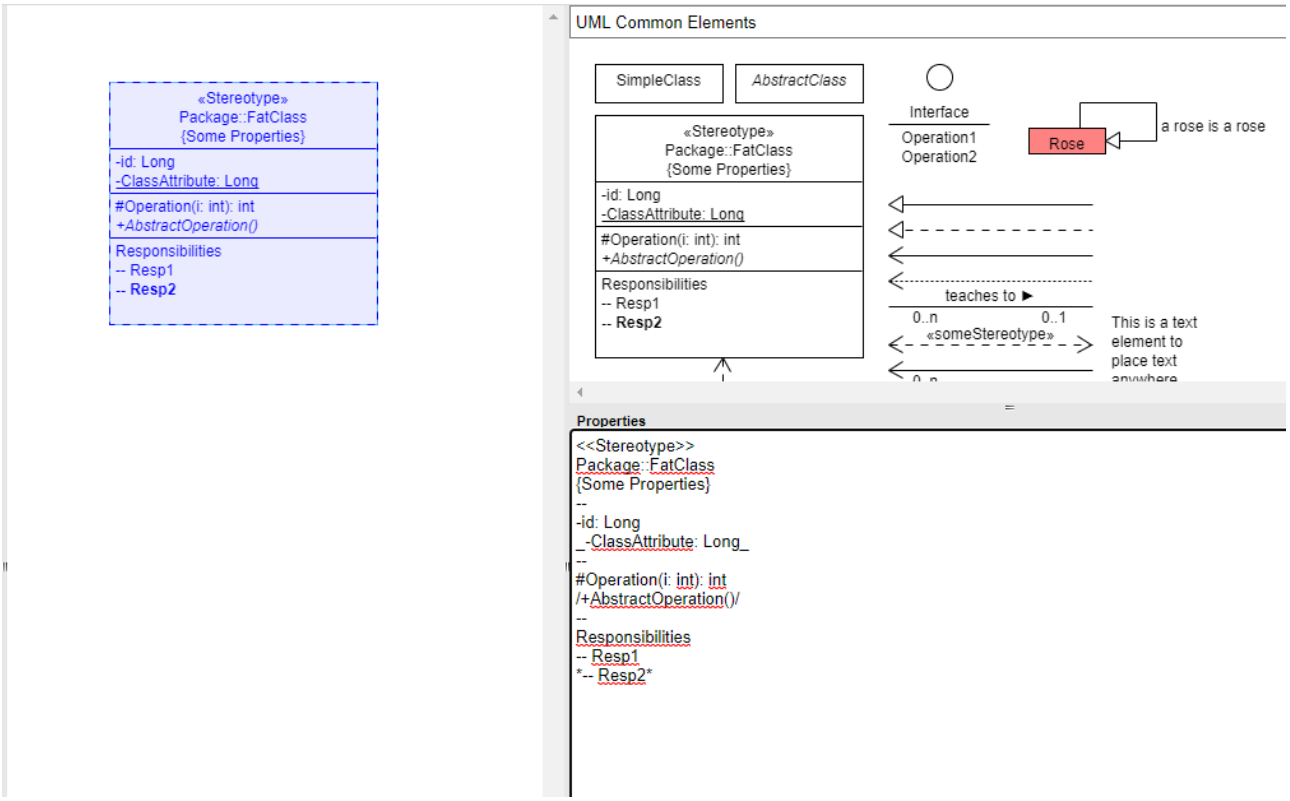
To draw a UML diagram, one can use some free online tool, like this,

http://www.umlet.com/umletino/umletino.html

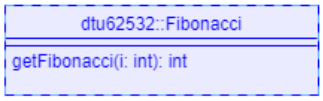
The user interface of the tool is like this

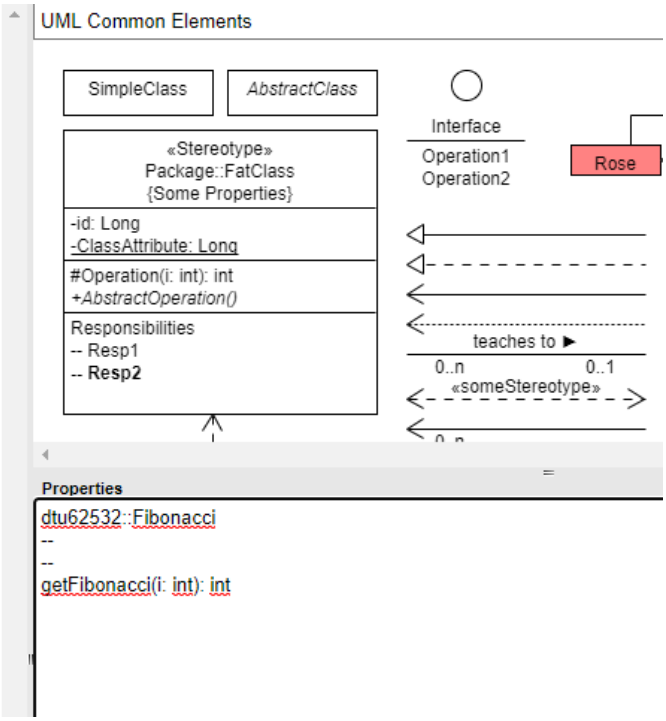


You can add the class one by one to the diagram like this, first double click on the rectangle on the right side with the text “<<Sterortype>>”, it will be added to the middle

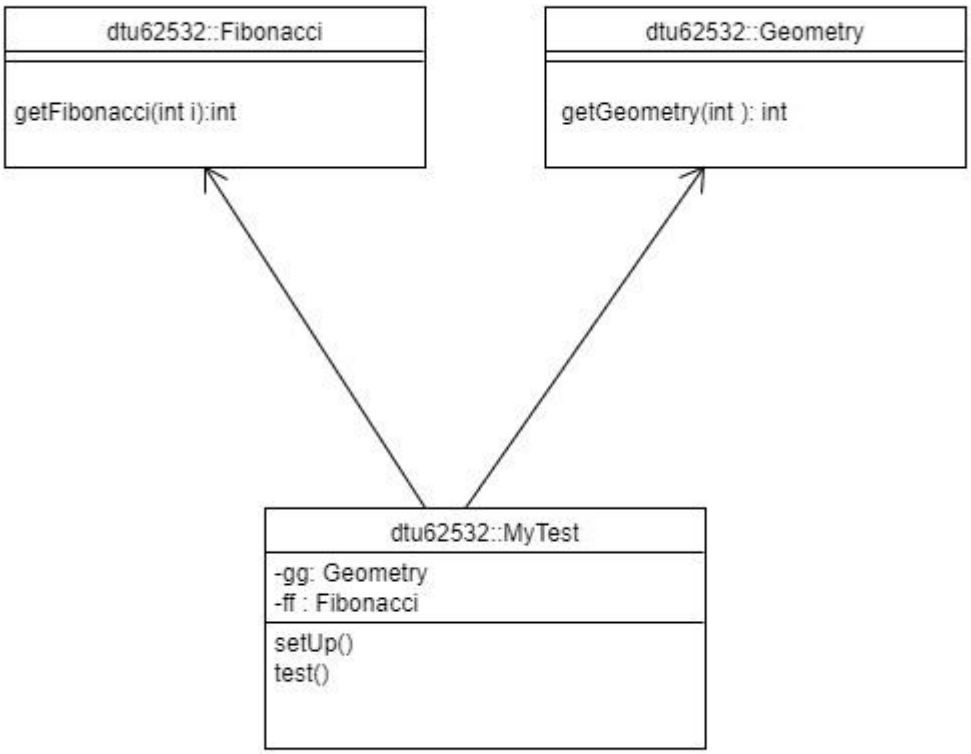


Then you can modify the text in the right bottom area with “<<StereoType>>” and remove most of them, change it into





Do the same for Geometry class and MyTest, so in the end, the diagram is complete



This UML diagram provides the following information:

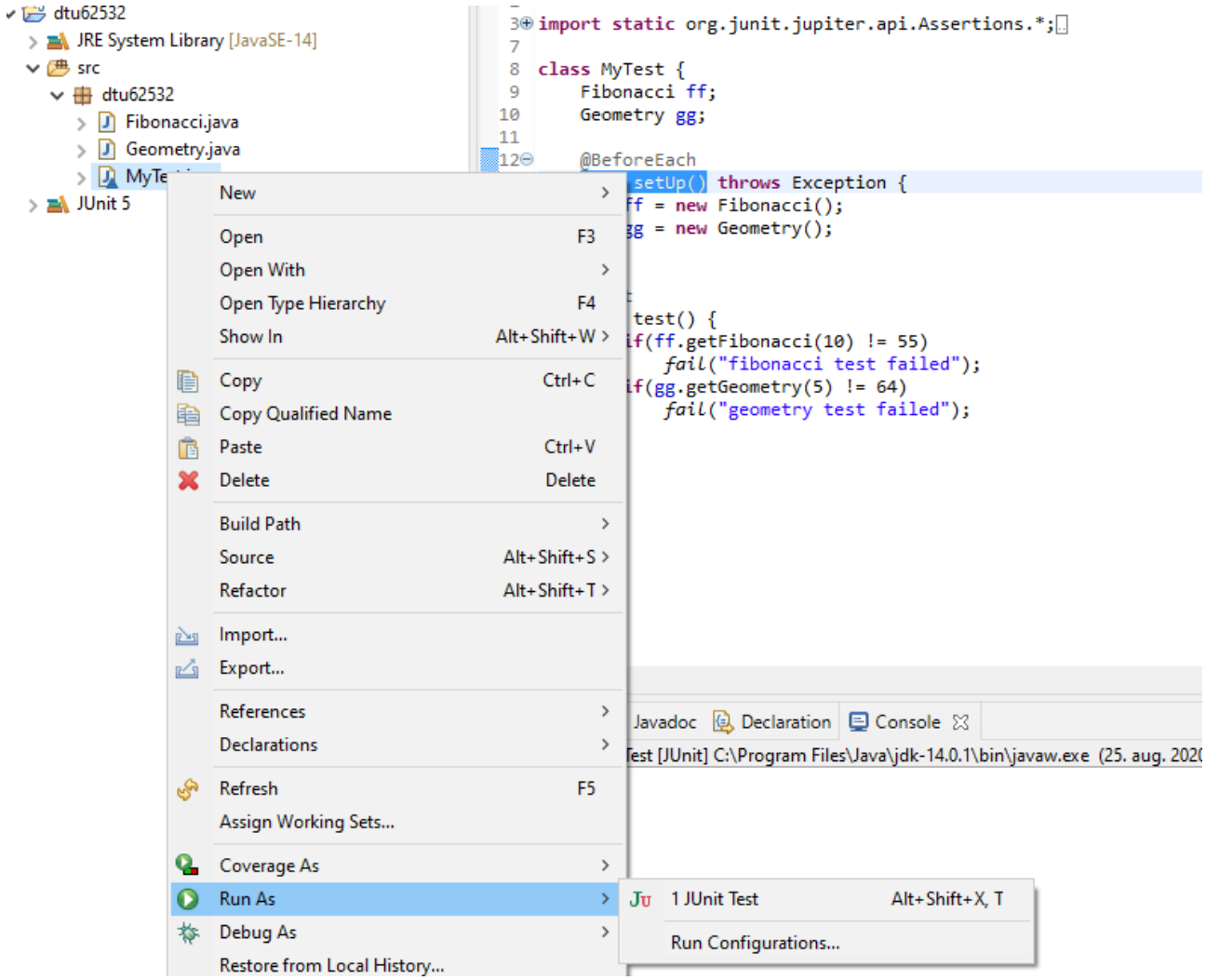
1. Fibonacci class has a method getFibonacci that takes integer as parameter and returns integer
2. Geometry has a method getGeometry that takes integer as parameter and returns integer
3. MyTest class has two attributes, gg and ff, which is an instance of Geometry and Fibonacci.
4. MyTest has two methods, setup and test.

Junit is a Java tool that can do the unit test for some Java classes. It tests some methods of the class so that it can verify that the class is implemented correctly.

The junit structure uses setUp to provide initialization of all classes, and each test function will test one or more methods of the class that to be test. If the tests are made in method test1(), test2(), ….test(), they will be executed one by one if one choose to run the junit test from Eclipse.

To run the junit example, you need to

1. create a new project in Eclipse
2. create a package dtu62532
3. Copy all 3 java files from https://github.com/haidong839/test into the src folder under the package
4. Run the MyTest as junit test like the picture below


dtu62532
JRE System Library [JavaSE-14]
src
dtu62532
Fibonacci.java
Geometry.java
JUnit 5
import static org.junit.jupiter.api.Assertions.*;
class MyTest {
Fibonacci ff;
Geometry gg;
@BeforeEach
setUp() throws Exception {
ff = new Fibonacci();
gg = new Geometry();
test() {
if(ff.getFibonacci(10) != 55)
fail("fibonacci test failed");
if(gg.getGeometry(5) != 64)
fail("geometry test failed");
Javadoc
Declaration
Console
Test [JUnit] C:\Program Files\Java\jdk-14.0.1\bin\javaw.exe (25. aug. 202
New
Open F3
Open With
Open Type Hierarchy F4
Show In Alt+Shift+W
Copy Ctrl+C
Copy Qualified Name
Paste Ctrl+V
Delete Delete
Build Path
Source Alt+Shift+S
Refactor Alt+Shift+T
Import...
Export...
References
Declarations
Refresh F5
Assign Working Sets...
Coverage As
Run As
Debug As
Restore from Local History...
1 JUnit Test Alt+Shift+X, T
Run Configurations...