# Assignment 1

This is an individual assignment! You have to commit it on your own!

Deadline: see Student Guide TCIF-V2PAFR1-10 v0.7.docx

Deliverables for each scenario:

1. UML Class diagram & motivation (which design principles are followed)
2. Java code that implements the UML Class diagram

Deliverables to: [jeroen.weber@hu.nl](mailto:jeroen.weber@hu.nl)

Weight: 20%

### Design and implement the following three scenario’s

***Scenario 1***

Think about an application like Word, it may have menu options like these:

* Save as Word '97
* Save as Word (XML)
* Save as RTF
* Save as HTML
* Save as Plain Text

This gives you the options to save a file in a specific format.

Suppose you have to design and implement this module with the following requirements.

1. If a new format comes in in which a file can be “Saved as” it should be fairly easy (without changing existing code) to add this new format. The same is true for removing an existing format if it becomes “obsolete”.
2. The number of formats is not limited
3. There is no need for a graphical implementation, a list of options can be shown with indices, based on a number the format is chosen and displayed.

Create a design that meets the requirements and explain what needs to be done to add a new format and which classes are affected. Next to that create a java program that implements the design.

***Scenario 2***

A legacy application offers functionality to display several types of mathematical objects. To draw a rectangle one has to call a method display() with four parameters: x, y, w, h (bottom left coordinates, width and height). A client program would like to call the display method with top-left coordinates and bottom right coordinates. In the future possible other clients can be added, with again different drawing methods for the different objects.

Create a design that meets the requirements and explain what needs to be done to add a new client. Next to that create a java program that implements the design.

***Scenario 3***

A marketing company has to deal with many high resolution pictures for their commercial activities. They are using software that loads these pictures such that they can be viewed and judged. They notice delays when quickly switching between these high resolution pictures. They have asked you if this can be optimized. The programmer is looking for a solution that is smarter than the current solution in which pictures are loaded when needed.

Create a design that meets the requirements and explain why this is a smart solution. Next to that create a java program that implements the design.

### Improve the following program: design and code.

Import the java project in zip file “employee.zip”. The program is a small salary system for employees. The program lacks design principles and is difficult to adjust. Improve the design by using “favour composition over inheritance”. Create both the design and the improved code.