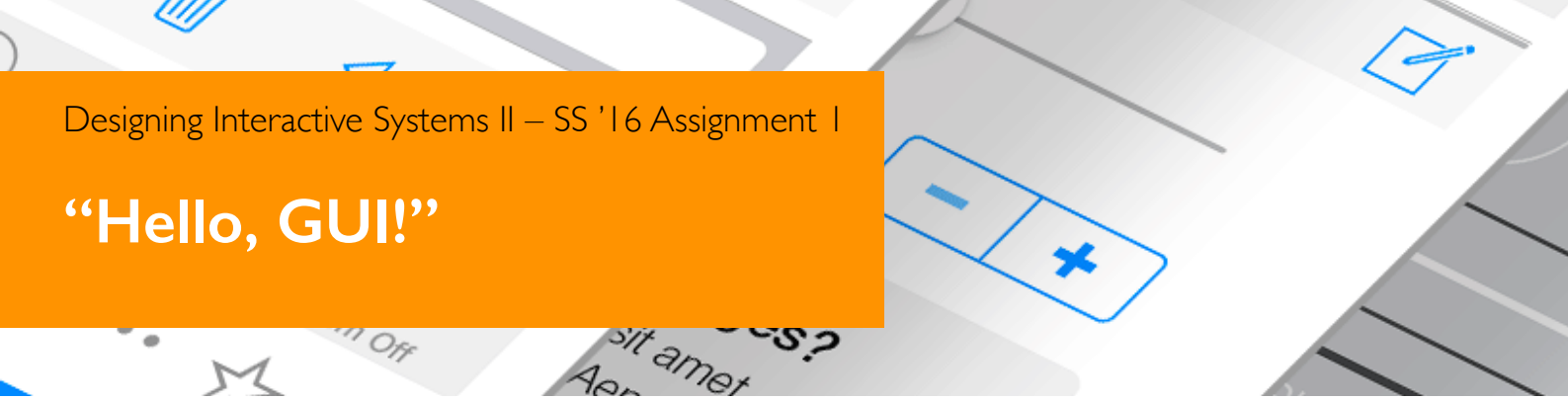

Designing Interactive Systems II – SS '16 Assignment 1

"Hello, GUI!"

Due: Monday, April 25, 2016, **08:00 am**, in groups of 2 students via L2P.
Next Lab session: Monday, April 25, 2:15pm–3:45pm, room 2222

Σ 10 points

Description
In this assignment, you will be introduced to the basics of GUI programming by developing a console UI application and its corresponding graphical UI application.

Tasks

1. Console UI Application (3 points)

As a warm-up exercise, we will ask you to first write a simple console (text-based) UI program in Java. This program should present the user with a list of languages. After the user selects an option by typing in the first letter of that language, followed by "*enter*", the system will output "*Hello*" in that language. Make sure that both lower and upper case work (e.g., it should not matter whether the user types "D" or "d"). Furthermore, you should consider that the user could enter other characters than those represented in the menu.

A usage session should look the following:

```
Macintosh:~/$ java HelloWorldConsole

Select one of the following:
  [D]eutsch
  [E]nglish
  [F]rancais
[Q]uit
>d
Guten Tag!

Select one of the following:
  [D]eutsch
  [E]nglish
  [F]rancais
[Q]uit
>q
Quitting...
Macintosh:~/$
```

Place your code into the class `HelloWorldConsole`. *Hint*: Use `System.in.read()`.

2. Graphical UI Application (4 points)

Now you will take the same functionality and place it into a simple *graphical* user interface, `HelloWorldGraphical`. This graphical user interface should look something like this:

The text label in the window should reflect which button was last pressed, similar to your HelloWorldConsole program. Provide a decent layout that adjusts accordingly when the window is resized (e.g., the "Beenden" button should always be positioned at the bottom right corner). The UI should be developed using Java Swing (Java Version 8). If you have never programmed in Java Swing before, don't despair! There are a number of resources on the web to help get you started with Java Swing programming – you can find these resources via Google. *Hint*: Use event listeners.

3. Expert Question: Testing Your Understanding (3 points)

Answer the following questions:

1. What is the key difference in the way HelloWorldConsole retrieves user input from the way HelloWorldGraphical retrieves user input?
2.
   2.(a) What is the *minimum* number of event listeners required to implement the functionality in `HelloWorldGraphical`? Explain!
   2.(b) What is the *maximum* number of event listeners that could be used to implement the required functionality in `HelloWorldGraphical`? Explain!
   2.(c) If your answers to part (a) and (b) are different, what are some possible reasons for using more or less event listeners for a particular application, if they all result in the same functionality?

Submission

Put all files *directly* in a folder called groupNumber (no sub folders(!), replace **`groupNumber`** with the group number that was assigned to your group, see L2P) and zip the folder. Submit the resulting **`groupNumber.zip`** in a group of two through the L2P classroom.

Your assignment archive should include your source code and **PDF document** with the name **`README.pdf`** (not more than 1/2 DIN A4 page, 12pt font size) that contains:

- names and matriculation numbers of the two group members in the header
- answers to the questions (see Testing Your Understanding)
- non-obvious things you did in your code (if any)

Be sure to document your source code. An incomplete or missing documentation in the source code will lead to point deductions.

Your code must be compilable and executable as follows:

Task	How to compile	How to execute
1	javac HelloWorldConsole.java	java HelloWorldConsole
2	javac HelloWorldGraphical.java	java HelloWorldGraphical

We will **not** start installing your favorite IDE or any other library you might want to use. Please note that assignments that do not meet the above submission criteria will not be graded. We will be using a script to compile and run your code based on the conventions mentioned in the table. Be prepared to discuss your solution in the next lab. If you copy code without proper reference we will consider this as plagiarism.

You will get your group number on Friday – therefore, you cannot submit your solution before that.

Grading

The assignment will be graded on the following scale:

Points:	10	9	8	7	6	5	4	3	2	1	0
Grade:	1.0	1.3	1.7	2.0	2.3	2.7	3.0	3.3	3.7	4.0	5.0

Late assignments will *not* be graded.