# Distributed Systems
# Exercise Sheet 5, Monday, 17:45
# Klingemann, SS 2022

Deadline: 13th June 2022

### 2nd Assessed Exercise

**1. Date-Service using Java RMI**
Understand the example code and test the programs. Client and server can run on the same machine. The nameservice has to be started by means of the rmiregistry command.

**2. Distributed system for the management of articles of newspapers using Java RMI**
Extend your simple system for the management of articles of newspapers from Sheet 3 to create a client-server-based system using Java RMI. Therefore, you have to transform the objects of the classes newspaper and article into remote objects. All newspaper- and article-objects exist only on the server! For each article there exists a separate object. Similar to the description in Sheet 3, we require that each newspaper has two private attributes: a name and a set of articles. This set should represent the articles that belong to the newspaper. (Note that it is a set of objects and not just a number!) Each article has three private attributes: a name, a category and a page number.
A newspaper should have methods with the following functionality. All these methods can be invoked from the client.

- Search for an article with a particular name. You can assume that there exists at most one. The method returns a reference to the corresponding article object.
- Add an article to the newspaper. The method has three parameters: the name of the article, the category and the page number. A corresponding article object is created and added to the set of articles of the newspaper.
- Return the set of all article objects of the newspaper. (The return value has to be a collection of references to article objects and not just a number!)
- Return the name of the newspaper.

An article should have methods with the following functionality. All these methods can be invoked from the client.

- Return the name
- Return the category
- Return the page number
- Change the page number

Implement a client that is calling all methods of the objects on the server in a sensible manner. In particular, your client should be able to calculate based on the methods above the largest page number of all articles of a newspaper. Your application should use two newspaper objects. The nameservice has to be started by means of the rmiregistry command.

### Organisatorical matters

- You have to solve the exercise completely on your own! (No working in groups!)
- It is necessary but not sufficient to present a working program. Moreover, you have to be able to explain all parts of your program, be able to answer questions with respect to your program and make small extensions of you program.
- Your program has to be created completely within the exercise slot.
- If you violate one of the rules above, this implies that you definitely fail in this exercise.
- You can only present solutions that correspond to the exercise slot you are assigned to.
- It is in your responsibility to present your solution in time before the deadline. The assessment of your solution can only be guaranteed if you finish your program 60 minutes before the end of the exercises.
- To take part in the exam it is required to solve at least three of five assessed exercise sheets.