Project Intelligent Robotics
Assignment #3

In this assignment, you get to work as a whole group and utilize the ROS communication interfaces to implement a simple task.

Task 3.1 Write a simple ROS Service server and client node:

In previous assignments, you already sent and received existing messages to communicate with other nodes. For synchronous (blocking) communication, on the other hand, ROS provides service interfaces.

3.1.1: Implement a service with a request and a response. You will find useful information in this tutorials:

```
http://wiki.ros.org/ROS/Tutorials/WritingServiceClient(python)
http://wiki.ros.org/ROS/Tutorials/WritingServiceClient(c++)
```

Define a common service type with all project members!

3.1.2: Individually, write a simple server that receives an integer and responds with $integer + 1$.

3.1.3: Commit your code to the common git repository for this project:

```
https://gogs.mafiasi.de/TAMS/project19
```

You should

1. make sure to use an appropriate subfolder in the repository to keep your code separated from the other groups,
2. checkout the repository inside your local workspace to develop there,
3. coordinate the structure of your repository with the other groups in advance.

3.1.4: Write a Service client that uses a service **from one of the other groups**.

If you encounter problems resolve them with the respective group.

Task 3.2 Count collaboratively:

Write several nodes (one per group) to collaboratively count from 1 to 20. Each group has to provide a node that performs at least one counting step. Each counting step has to be triggered by a human operator through some external input signal that can be perceived through a sensor on the robot.

Run the nodes on different computers/robots.

For this task the whole group has to work together. Make sure that everybody has accomplished assignment #1 and #2. Discuss the assignment in a group meeting before you start.

3.2.1: Gather as a group and work on a concept to reach this goal. Plan your communication.

3.2.2: Write the nodes in small groups

3.2.3: Integrate and demonstrate successful counting