HOCHSCHULE
HAMM-LIPPSTADT

ELE Prototyping SoSe 2021

Programming – Task 2

If you have any questions during the week, send an email to

kristian.rother@hshl.de

ELE Prototyping Programming Task 2 - Overview

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- Deadline: **10th of June 2021, 15:00h**
  - Send your files **via email** to kristian.rother@hshl.de (subject: ELE Prototyping Task 2)
  - **AND uploaded the files to your GitHub account**
- **Presentation of results: 11th of June 2021 (WebEx, see schedule)**
- **Code in C** (not C++)
- Feel free to use any programming environment you like. If you're unsure, you can use Visual Studio Code
  - https://code.visualstudio.com/
  - Install the extension for C/C++
  - Optionally install the Code Runner extension
  - Install/setup the compiler for your platform
  - Windows: https://www.javatpoint.com/how-to-run-a-c-program-in-visual-studio-code
  - Mac: https://code.visualstudio.com/docs/cpp/config-clang-mac

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Task 2 – Description 1/3

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- The world that your robot navigates in gets a little more complex in this task. In addition to the things from the previous task it can now
  - Contain **walls (‘#’) inside the map**, not just on the outside
  - Contain **water (‘~’)**
- Additionally, **your robot will now be defined in its own file**
  - **Write your code in robot_teamname.c**
  - To help you understand how to do that, we provided robot_example.c and the header file robot_example.h
  - Do not change anything except your robot_teamname.c file (and the corresponding .h file). Feel free to define any varibales etc. you might need there. **Do not change the function signature of the move function!**

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Task 2 – Description 2/3

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- To drive through water, you have to **toggle the driving mode**
- In addition to 1,2,3,4 for the directions **you can now return 5** in the move function to toggle the driving mode
- Your robot starts in “land mode”. If you return a 5, it will stay in it’s current location but switch to “water mode”
- If you’re in “water mode” and return a 5, your robot will stay in the current location and switch back to “land mode” and so on
- **You can only drive, to a target location if you’re in the correct drive mode. Otherwise, your robot will fail the map.**

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Task 2 – Description 3/3

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- We have provided some maps to test your robot. For example, to change from map 1 to map 2, change line 188 from *memcpy(world, world1, sizeof(world1));* to *memcpy(world, world2, sizeof(world2));*
- **Your task is to write a robot, that can handle different maps that contain water, outside walls and inside walls**

ELE Prototyping Programming
Task 2 – Your Task

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- **Send** your final robot_teamname.c file and robot_teamname.h file to kristian.rother@hshl.de **via email AND upload the code to your GitHub** before the deadline
- **Prepare a presentation for Friday** to explain your code
- Important note: I will test your robot in my test environment. The environment contains different maps, not just the ones provided to you. **Do not hard code a solution**. The robot should handle different maps
- The maps can now contain
  - Outside walls (‘#’) and inside walls (‘#’)
  - One Robot (‘R’) and one target (‘T’)
  - Water (‘~’)