

RTS Assignment B Kick Off - Q2 2024/25

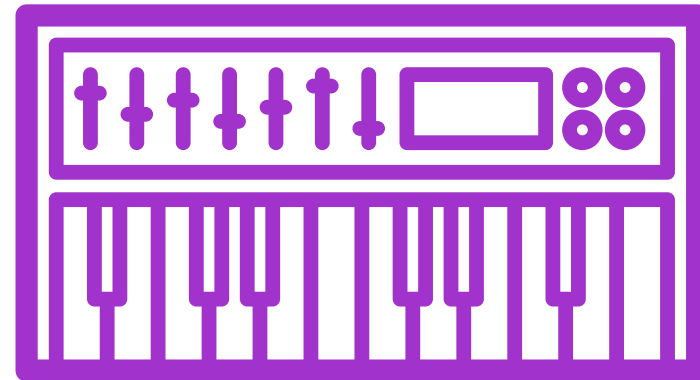
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2024-12-10

TU Delft Synthesizer - an overview

- 2 oscillators with the 4 standard sound waves
- Amplitude and pitch encoders for these oscillators
- Low Frequency Oscillation for
 - Oscillator pitch and amplitude modulation
 - LPF Cut-off frequency modulation
- Amplitude modulation



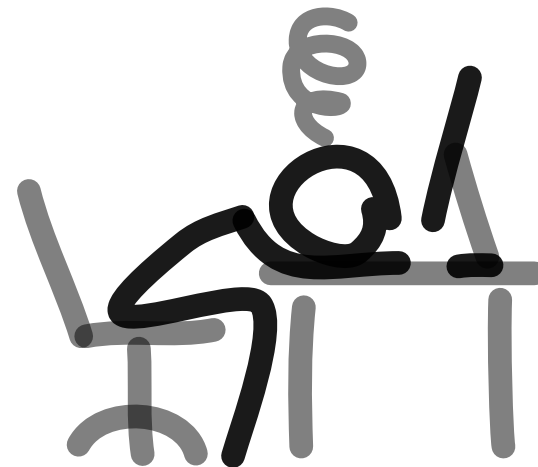
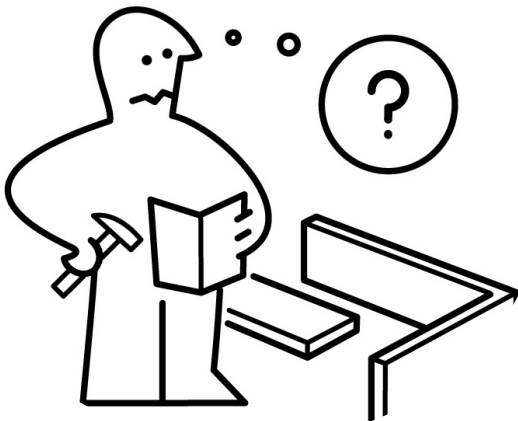
Assignment B

- Fix and improve the application code, such that the synthesizer works correctly by:
 - Characterizing the tasks
 - Separate the tasks into threads
 - Handling overload
 - Using an interrupt driven peripherals interface

Assignment B

Important

You will interact with hardware and software at the same time, and probably face some unexpected real-life hardware issues



Sound Generation

In the lab

- Connect the 3.5 stereo output to your headphones

Outside the lab

- Connect the 3.5 stereo output to speakers
- Connect it to an oscilloscope

Note

Only verification of parts II, III and IV require headphones

Quick demo...

Practical matters

Grading and Deadline

- Assignment B is **60%** of the lab grade
- Deadline: **Saturday, 18th of January at 23:59**
- **Last commit on `main` before the deadline** is your submission
- There is a report component
 - Use the provided template
 - Place the **report in the `assignment-b` directory** of your repository

Toolchain updates

- This assignment requires you to use Zephyr 3.7.1
- Here are the commands you need to run

```
1 cd ~/zephyrproject/
2 source ./venv/bin/activate
3 cd zephyr/
4 git pull
5 git checkout v3.7.1
6 west update
```

bash

- Website has these commands and IDE specific instructions

Hardware Check

- Merge the merge request we created on GitLab
- Switch 1 in **up** position
- Upload assignment-b code
- Connect to the serial monitor
- Send a valid keynote to the board
- You should hear the music note
- Move one of the top encoders to hear how the sound changes

Christmas Break

- You **do not have to** work during the holidays
- The hardware **must not** leave the country



Note

Failing to return the hardware will result in automatically failing the course

Buddycheck

Important

If you have had issues with your teammate during Assignment A, please talk to us during the lab!

If you faced any of the below, then now is the time to address them:

- Uneven work distribution
- Teammate did not contribute at all
- Issues with communication

Feedback Group



Group of volunteers that will provide feedback on the assignment and labs

If you want to know more
please talk to one of the TAs
We will be meeting at 10:00
to discuss Assignment A

Enjoy the lab!