

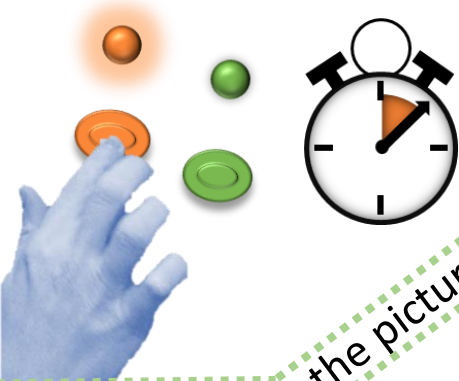


Option A: “Minimal Stop Watch”

- One RESET button + One START|STOP button
- Bubble Display shows the time e.g. in 1/100 seconds
- Additional features can be added

Option B: “Reaction Tester”

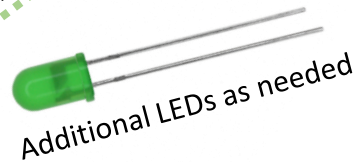
- The system randomly activates one or two of the attached LEDs
- The user will have to press a predefined button
=> Bubble display shows the users reaction time
- Additional features can be added



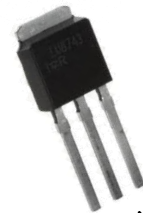
MG7013
Trimester 1
2017



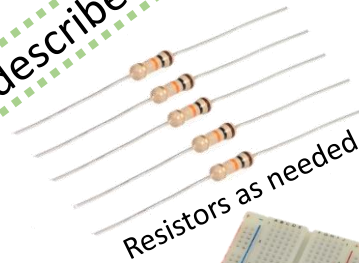
4-digit LED Display (QDSP6064)



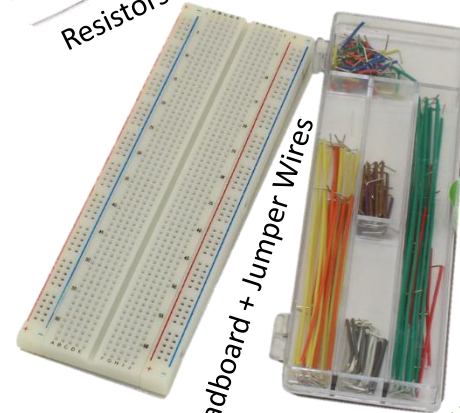
Additional LEDs as needed



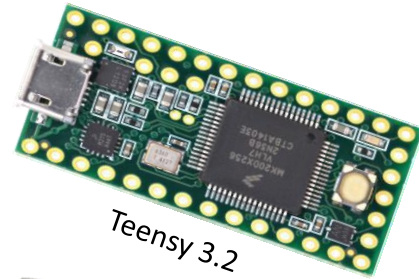
N-Channel Power MOSFETs
IRLU8743 IPAK – as needed



Resistors as needed



Breadboard + Jumper Wires



Teensy 3.2



Buttons as needed

Use the pictured components to build one of the two described Embedded Systems Options.

NEXTPAGE

RULES

REQUIRED PROJECT OUTPUT

RULES:

- Time measurement precision (max. 100ms in a 10s timespan)
- Proof the working debouncing of your buttons
- No delay() function
- Use of external interrupts
- Use the provided MOSFETs as the provided uC-Boards IOs can only sink and source a limited current

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Questions:

This Project accounts for 20% of your overall course mark.

REQUIRED PROJECT OUTPUT:

- Working hardware prototype
- Video of yourself explaining the operation of your system
- Project report including
 - General project description (purpose, ...)
 - Description of your design process steps
 - Schematic (e.g. Fritzing) + Why did you choose certain components and their values
 - Source Code (well commented)
 - Limitations of your project + possible future improvements
 - Appendix with relevant datasheets
 - Use of proper APA referencing

