Modeling for Quality Assurance: Case Study Kloc

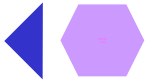
You are developing a digital wristwatch called „Kloc“.

Note that Kloc is not only „clock“ spelled a little differently, but KLOC is also the abbreviation for 1000 lines of code.

The document below describes the design of Kloc.

It was created after eliciting the customer requirements like

- „The watch shall have an alarm“ or
- „The watch shall always display the time in seconds, not just minutes.“



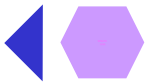
Case Study: Kloc

Kloc has a time display (hour, minute, second) and four buttons:

- LIGHT
- UP
- MODE
- SET

Case Study: Glossary

Term	German	Description	...	...
Kloc		1) Clock spelled wrong. 2) 1000 Lines of Code.	…	…
Second Display	Sekunden-anzeige	Part of the display that shows seconds.	…	…
…	…	…	…	…

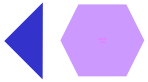


Case Study: Kloc / 2

- The watch always is in one of the following modes
  - *time display mode* (displays the current time)
  - *time set mode* (to set the current time)
  - *alarm set mode* (to set the alarm)
  - *alarm activation mode* (to switch the alarm on and off)

- To get from *time display mode* to *time set mode*, you press MODE.
- To get from *time display mode* to *alarm set mode*, you press SET.
- To get from *time display mode* to *alarm activation mode*, you press UP.

- If you want to return to *time display mode* from any other mode, you press exactly the same button again that moved you to that other mode.



Case Study: Kloc / 3

- In the *time set mode* the buttons have the following functions:
  - At first, the hour display flashes. To increase the value of the hour, UP must be pressed (23 will not be increased to 24, but to 0).
  - By pressing SET, the minute display starts flashing. Again, UP raises the value (59 will be raised to 0).
  - By pressing SET again, the second display starts flashing and can be altered by pressing UP as described above.
- The alarm is set similarly in the *alarm set mode*.
- In the *alarm activation mode*, you can switch the alarm on and off by repeatedly pressing UP.
- If the alarm is activated and the alarm time is reached, an alarm is triggered. It can be turned off by pressing UP.
- Pressing LIGHT illuminates the display.

Modeling Kloc for Quality Assurance

Draw one or more **diagrams** (UML is not required)
that contain the same information
as the verbal design document.

What **errors** (esp. incompleteness and contradictions)
of the design document did you discover
when drawing those diagrams?

You should be able to present your results,
therefore they should be available in electronic form.