SRS LCD
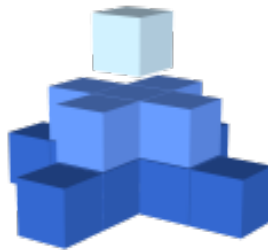
System Requirements Specification

Status: Draft

Author: automatically generated from the SiSy model

Table of contents

1 Purpose

All elements of this project are parts of a course for the professional development of embedded systems. This Embedded Systems Engineering course is intended to develop a broad interdisciplinary understanding and knowledge of the participants as well as to develop practical skills for the realization of embedded systems.

The hardware platform for this course is the mySTM32 Board lite. It has a microcontroller of the STM32 family and all required input and output devices or add-ons.

2 Overall description of the task

A microcontroller solution is to be developed in which an analog value is visualized on a text display.
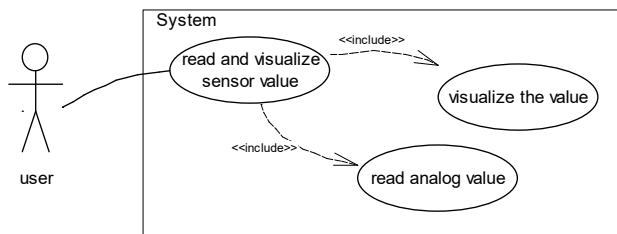

figure 1: uc: LCD tasks, user's perspective

List of top level requirements:
- System: visualize the value
- System: read and visualize sensor value
- System: read analog value

3 Functional requirements

After switching on the system, the LCD is initialized and a greeting is displayed. As long as the system is switched on, it reads the analog value from the sensor and visualizes it on the display.
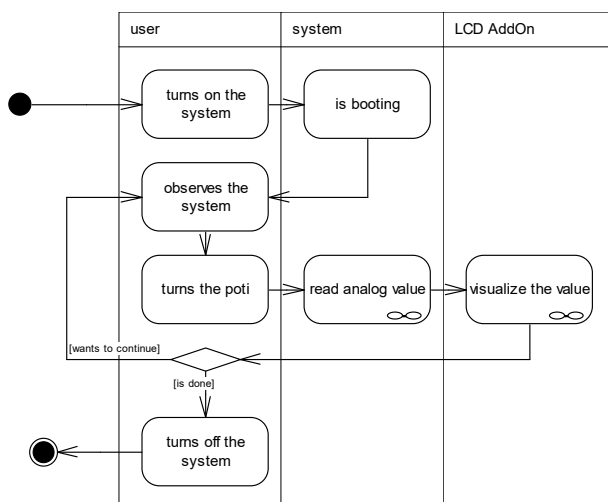

figure 2: read and visualize sensor value

4 Hardware requirements

The hardware platform for this course is the mySTM32 Board lite. It has a microcontroller of the STM32 family and all required input and output devices or add-ons.
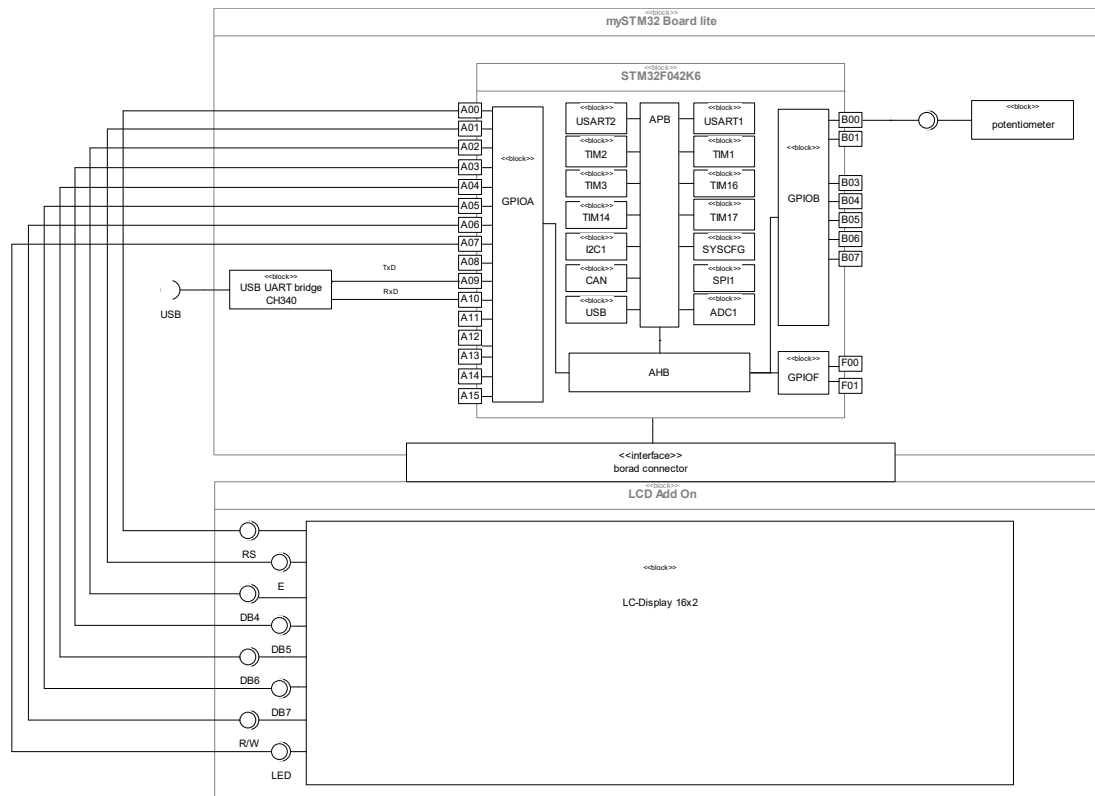

figure 3: LCD HRM

- connected USB
- connected pinB0 : potentiometer
- connected Board connector : LED Add On
  - connected pinA1 : LCD-E
  - connected pinA0 : LCD-RS
  - connected pinA2 : LCD-DB4
  - connected pinA4 : LCD-DB6
  - connected pinA5 : LCD-DB7
  - connected pinA3 : LCD-DB5
  - connected pinA6 : LCD-R/W
  - connected pinA7 : LCD-LED

5 Process requirements

A software process is the defined sequence of activities, the agreed rules, techniques, tools and the expected results of the activities for the production of software. Defined software processes ensure the plannability, controllability and quality of results in the manufacture of software. The following simple software process is agreed as a binding workflow for this course.
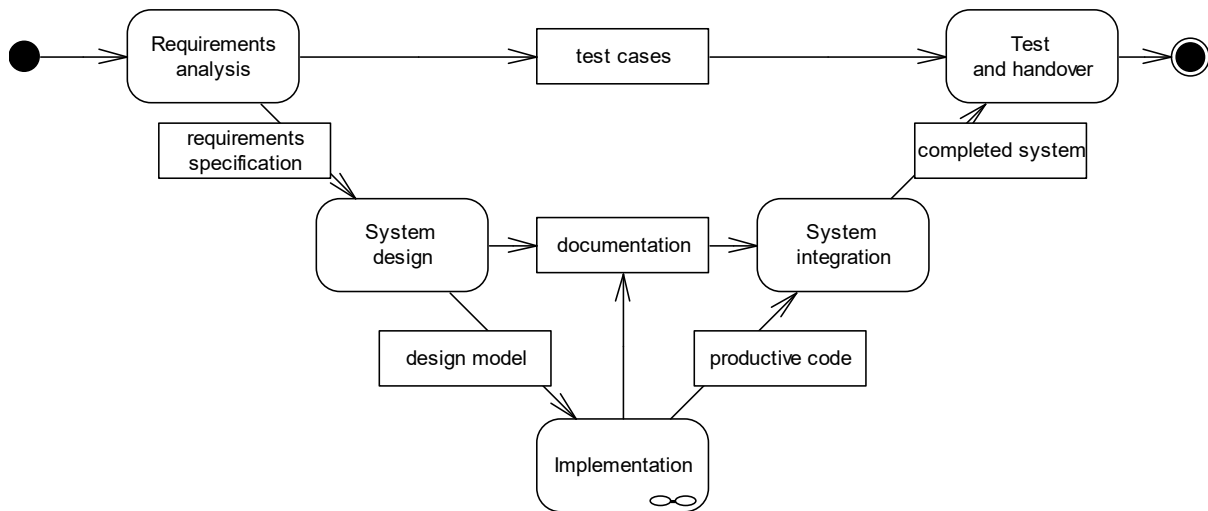
figure 4: act: lightweight model driven embedded software process

table 1: lightweight model driven embedded software process

Activity	Expected results
Requirements analysis	- User's perspective as use case diagram (as SysML / UML model) - required functionalities as activity diagrams (as SysML / UML model) - Test cases (as a document) - HRM hardware resource model (as SysML model) - SRS System Requirements Specification (as a document)
System design	- Class model of the concept level / architecture model (as UML model) - if necessary, state model (as UML model) - System documentation (as a document)
Implementation	- Class model of the realization (as UML model) - Behavioral models of the realization (as UML model) - Productive code (as a transferable format of the target platform, * .hex, * .elf) - System documentation (as a document)
System integration	- hardware software integration - the completed system
Test and handover	- the tested system - the technical system documentation (as a document) - the user documentation (as a document)

6 Attachment

List of figures

List of tables