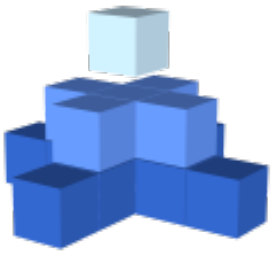
SRS GPIO lesson

System Requirements Specification



Status: Draft

Author: automatically generated from the SiSy model

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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

The user should be able to see that the microcontroller can read information from an input device and then control an output device. Develop a solution for this that reads the state of a button and then switches an LED on or off depending on the button state. The LED should be connected to port B0. The button must be connected to port A0.

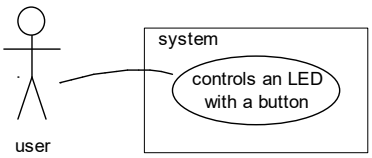

figure 1: uc: GPIO tasks, user's perspective

List of top level requirements:

- system: controls an LED with a button

3 Functional requirements

After switching on the system, the user should be able to press a button to switch on an LED. If the button is not pressed, the LED should be off.

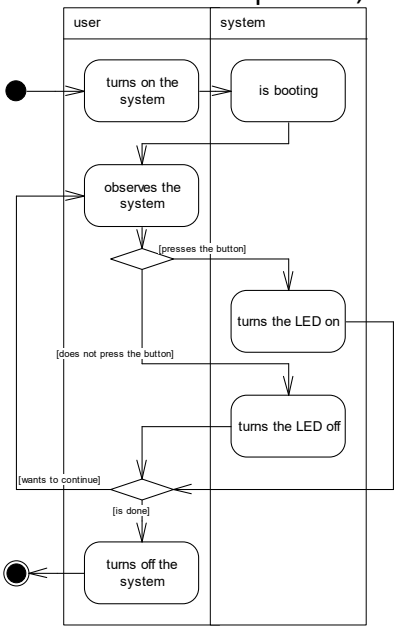

figure 2: activity model of controls an LED with a button

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.

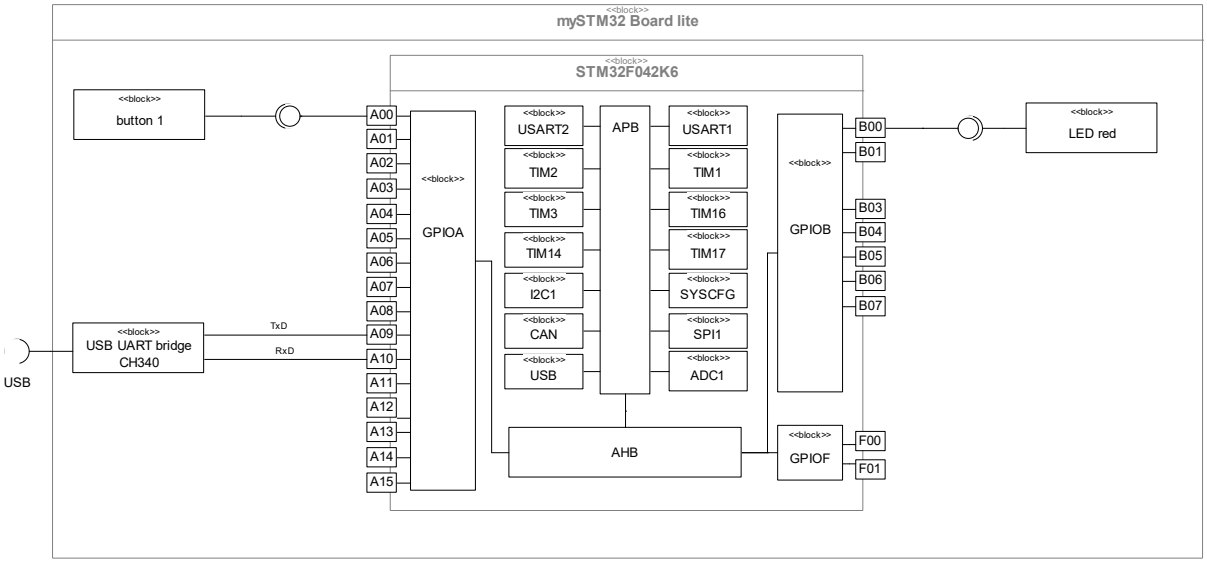

figure 3: Hardware resource model HRM of GPIO lecture

- connected USB
- connected pinA0 : button 1
- connected pinB0 : LED red

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.

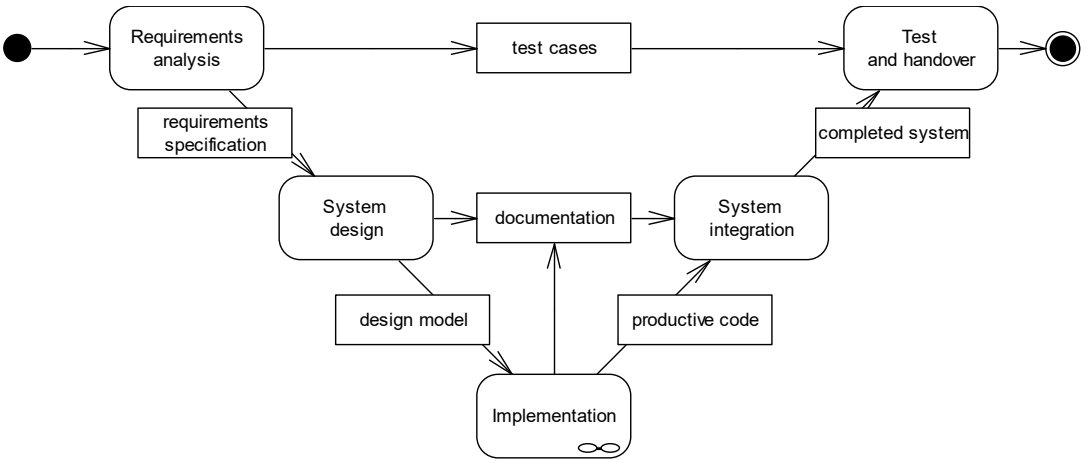

figure 4: act: lightweight model driven embedded software process

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