Software Engineering Principles

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Mandatory Exercise 1

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Software Project Management

Ceiling Projection Travel Alarm Clock

Product description: Small battery driven alarm clock that projects current time on ceiling. The alarm signal is audio-visual: it produces a beeping sound and flashes the clock projection in a stroboscope fashion.
Measures: 6.8 cm (w) * 3.4 (d) * 1.8 (h)
Case: brushed metal for improved durability
Battery: 1 * AAA (in compartment on the back/bottom)
Top: 7 Buttons: ON PRJ TI ALM SET RPT HH MM
1 Projection laser
1 LED display: `[O-HH:MM]` (shows alarm time – no repeat)
`[R-HH:MM]` (shows alarm time – repeat)
`[T-HH:MM]` (shows current time)
Bottom: partially rubberised surface to prevent sliding
Connectivity: USB 2 earphone jack
Functionality:

- Device ON/OFF: press button ON to toggle between states
- Projector ON/OFF: press button PRJ to toggle between states
- Set current time: press TI, press SET, press HH to change hour, press MM to change minute, press SET to finish
- Set alarm time: press TI, press SET, press HH to change hour, press MM to change minute, press SET to finish
- Toggle display: To show the current time press TI
- Toggle display: To show the alarm time press ALM
- Set Alarm repeat: Pressing RPT while the display shows the alarm time toggles the alarm repeat: The alarm will reappear three times every five minutes and then stop. The non-repeat alarm only sounds once for 10 seconds.
- The projector always shows the current time.

Problems

You have already verified that all of the physical components are readily available. It only remains to develop the software for controlling operation of the alarm clock that runs on a low-voltage embedded processor. You have 2 software developers, 1 test engineer, 1 hardware designer and 1 system engineer available. The software engineers and the hardware engineer have small children. The product is to be sold at airports and train stations throughout Europe and must be on the market within 10 to be profitable.

(1) Plan and schedule the necessary activities.
(2) What are the risks and how do you deal with them?
(3) Assign the staff to the activities. It is spring time and development will commence on 1 September.
(4) How do you achieve the appropriate level of quality?
(5) It is important that you are on time. Otherwise the company is expected to suffer substantial financial loss. Which work could you sacrifice in order to meet the deadline in case unexpected delays occur?

Instructions

- Work on the mandatory exercises in groups of 2 to 4, where 3 is best.
- Mark clearly your answers to different problems.
- Clearly state your names on your hand-ins.