WATWatch Proposal

SE101 Fall 2015

Authors

Gagiu, Mara
20615805
mgagiu

Lin, Alston
20554474
a9lin

Lu, Yizhou (David)
20616954
y293lu

Mago, Anmol
20626912
a3mago

Wang, Shirui (Ryan)
20606111
s495wang

Objective

To create a functional smartwatch while experiencing and learning the software development cycle throughout the process.

Project Description

The WATWatch will be created to satisfy the requirements of the project given in SE101. WATWatch will help the user keep track of their time and fitness. To help the wearer keep track of their time, the watch will include a clock, alarm, timer, and a stopwatch. For fitness, WATWatch will help one measure the number of steps taken, distance walked, speed, calories burnt, and heart rate. There will also be a low battery indicator. WATWatch's hardware will primarily consist of the TI Launchpad (TM4C123GXL) and the Orbit Booster Pack add-on. Software for the WATWatch will be written in a modified version of C.

Hardware

Due to the software orientated nature of the project, only a few hardware components are required beyond the Launchpad and Booster Pack. The hardware that will be used are listed below.

- TM4C123 TI Launchpad
- Orbit Booster pack
- Piezo Beeper
- MicroUSB cable
- Wire
- Solder
- Batteries

Timeline

Item	Start Date - End Date
Proposal *Finalize details of product's features* *Identify possible challenges in the development process*	Oct. 8 - Oct. 16, 2015
Experimentation (accelerometer, thermometer, battery, etc.) *Test/calibrate basic hardware components* *Develop software to access hardware components*	Oct. 16 - Oct. 31, 2015
Basic functionality (time, display, etc.) *Create and design basic user interface for WATWatch* *Develop software to display/set time, record body temperature, and present fitness goals*	Oct. 23 - Oct. 31, 2015
Advanced Functionality (step counter, heart rate, etc.) *Develop advanced algorithms to recognize steps, and count heart beats* *These features will require extensive calibration and testing to ensure accuracy*	Nov. 1 - Nov. 15, 2015
Debugging/polishing *Verify through extensive testing that the WATWatch operates as intended* *Improve and polish user interface* *Develop capability of exporting data to PCs*	Nov. 15 - Nov. 26, 2015

Challenges

There will be many challenges in making WATWatch, primarily originating from the hardware constraints and the nature of the project itself. Since there is only a single Orbit Booster Pack to be shared by the entire team, members may not be able to immediately test their code on the hardware. Other challenges include hardware inaccuracies, specifically in the accelerometer and temperature sensor, which must be calibrated properly. Inconsistencies in calibration may cause noticeable discrepancies, such as incorrectly counting the number of steps, distance travelled, and calories burned. Finally, developing a simple yet fully functional user interface will be more difficult than other devices due to the small display area that is provided on the Orbit Booster Pack.