Android Projects

Luca Bedogni

Dipartimento di Informatica: Scienza e Ingegneria

Università di Bologna

- The following proposals must be considered just **hints**.

- All the main functionalities listed must be implemented (**minimal requirements** to have the project accepted).

- We strongly encourage to **expand/ customize the proposal based on your creativity.**

- Projects described in the following must be deployed by a single student. Group projects are not allowed.

- Project implementation must be **original and 100% student work** (no code share or reuse).

- Submit the project by email **(lam-projects@cs.unibo.it**) including all code, a technical report, and a short presentation (10-15 slides)

- Read and follow the instructions about projects submission policies (deadlines, validity, etc) on the course website:

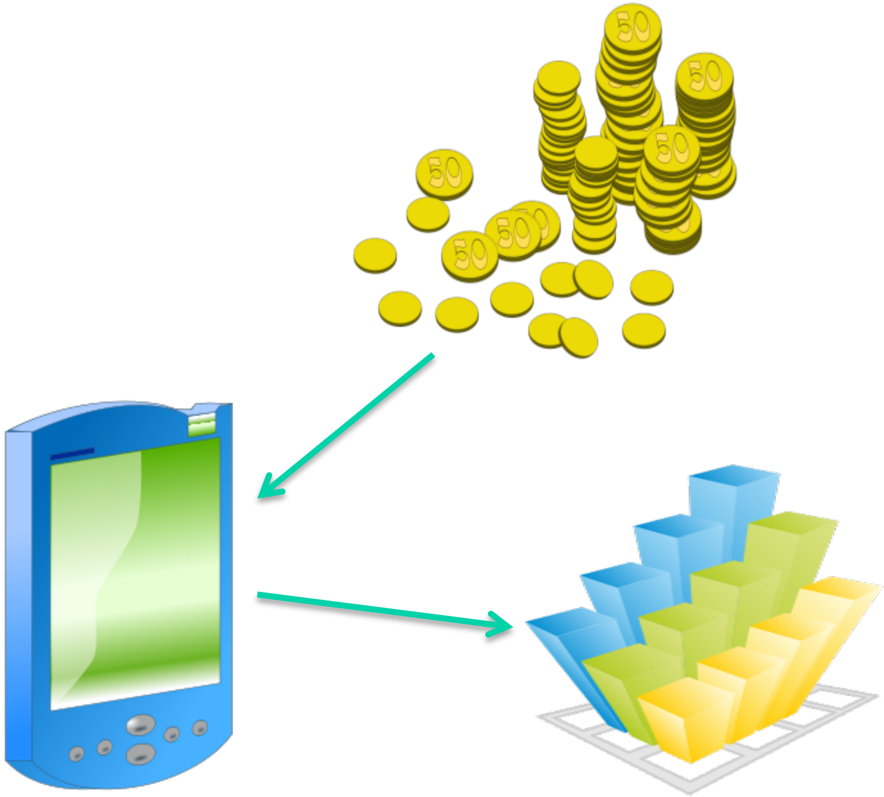
http://www.cs.unibo.it/bononi

PROPOSAL 1

Android **Project Proposals**

➢ Android **Budget Tracking** Application

- ➢ Track **current/periodic expenses**
- ➢ **Browse data and generate reports**
- ➢ Compute and display **useful statistics** to keep personal finances in order.



Android Project Proposals

Android **Budget Tracking** Application

Functionality1: Allow tracking of everyday's expenses

- Add information about a current expense (e.g. date, amount, category, description, etc)
- Save all the information on a local database
- Track location (e.g. shop's location)
- **Optional**: Save a picture of the item, acquired through the photocamera

Android **Project Proposals**

➢ Android **Budget Tracking** Application

Functionality2: Manage periodic/planned expenses

- ➢ Add information about periodic expenses (e.g. loan)
- ➢ Add information about planned expenses (e.g. bill)
- ➢ Budget must be updated at the payment date
- ➢ Periodic reminders should be shown 1 and 2 days before (e.g. through notifications or alert dialogs)

Android **Project Proposals**

➢ Android **Budget Tracking** Application

Functionality3: Visualize and browse expenses by date

- ➢ Visualize and enable browsing the list of expenses day by day, weekly or monthly
- ➢ Allow the creation of **PDF** report (saved locally)
- ➢ Display locations on the Google Maps

Android Project Proposals

➢ Android **Budget Tracking** Application

Functionality4: Provide weekly and monthly statistics

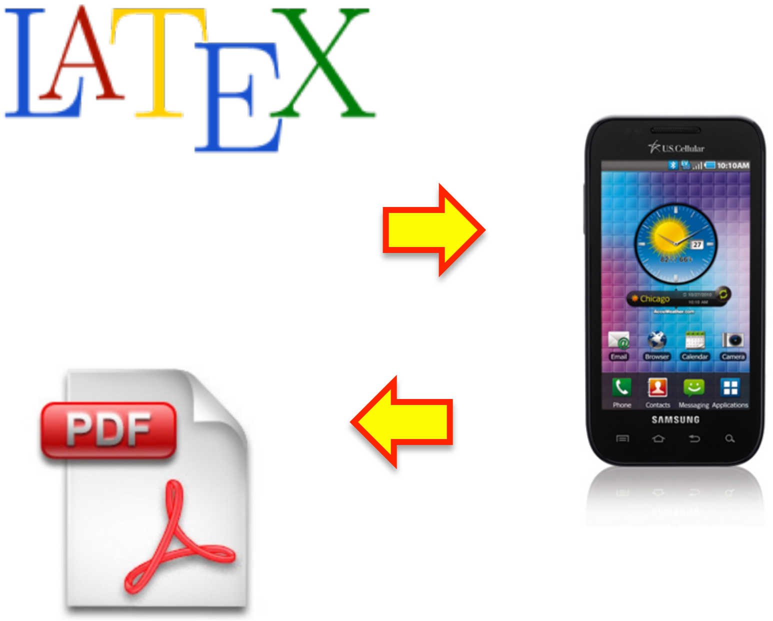
- ➢ Compute and visualize useful statistics about weekly and monthly expenses (e.g. total expenses for each category, budget over weeks, etc).
- ➢ Charts can be generated to visualize data.

PROPOSAL 2

Android **Project Proposals**

➢ Implement a **LaTeX Editor** for Android

- ➢ Provide the possibility to **edit** a text file.
- ➢ Provide **support** for LaTeX commands/syntax.
- ➢ Enable remote **PDF compiling** and file transfer.



Implement a LaTeX Editor for Android

Functionality 1: Typical **Editor Functionalities**

- Open a text file
- Edit the file
- Save the file
- Close the file
- ..

Android **Project Proposals**

➢ Implement a LaTeX Editor for Android

Functionality 2: Support to **LaTeX syntax/ commands**

- Highlight the LaTeX commands/symbols (e.g. with colored text).
- Help the user in inserting the LaTeX symbols (e.g. math symbols) on the text.

Android Project Proposals

➢ Implement a LaTeX Editor for Android

Functionality 3: Enable **remote PDF compiling**.

- ➢ The app must transfer the .tex file to a remote server, where a PDF compiler is working.
- ➢ Once the PDF is ready, it must be transferred back to the mobile device. An Intent should be generated to open the File.

➢ Implement a LaTeX Editor for Android

Functionality 3: Enable **remote PDF compiling**.

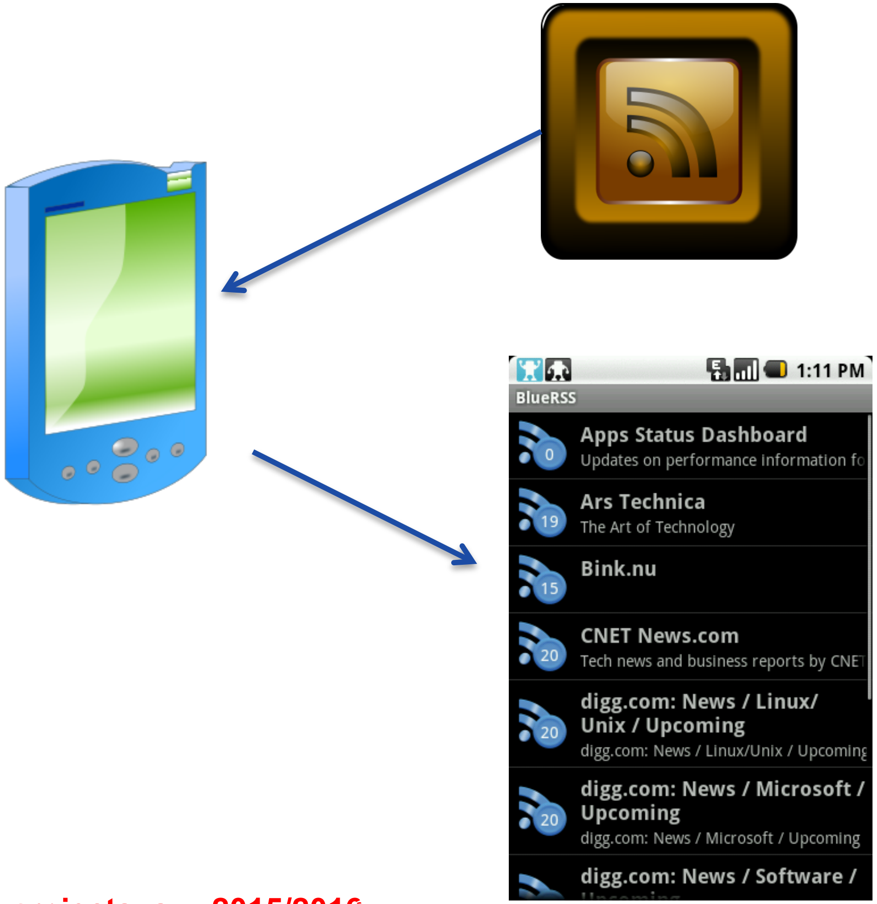
- (Optional) Manage also the compiler log (e.g. to handle the presence of errors).
- (Optional) Allow the users to insert images to the .tex document. In this case, a .zip archive should be produced and sent to the remote server.

PROPOSAL 3

Android Project Proposals

➢ Crowdsense Application

- ➢ Give a list of available sensors and configure which should be used
- ➢ Send periodically data to a webservice
- ➢ Show statistics directly on the phone



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BlueRSS

0 Apps Status Dashboard
Updates on performance information fo

19 Ars Technica
The Art of Technology

15 Bink.nu

20 CNET News.com
Tech news and business reports by CNET

20 digg.com: News / Linux/ Unix / Upcoming
digg.com: News / Linux/Unix / Upcoming

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Android **Project Proposals**

Crowdsense Application

Functionality 1. Give a list of available sensors and configure which should be used

- These include accelerometer, gyroscope, sound level etc.
- Add the option to track cellular and WiFi performance
- Users should be able to select which sensor she/he wants to use and report to the webservice

➢ Crowdsense Application

Functionality 2. Send periodically data to a webservice

- ➢ You can implement your own webservice, or use services like ThingSpeak
- ➢ The app should run at boot and report data in the background, with no human intervention
- ➢ The user should be able to configure the time between sensor readings
- ➢ The user should be able to configure whether to upload only when using WIFI or not

Crowdsense Application

Functionality 3. Show statistics directly on the phone

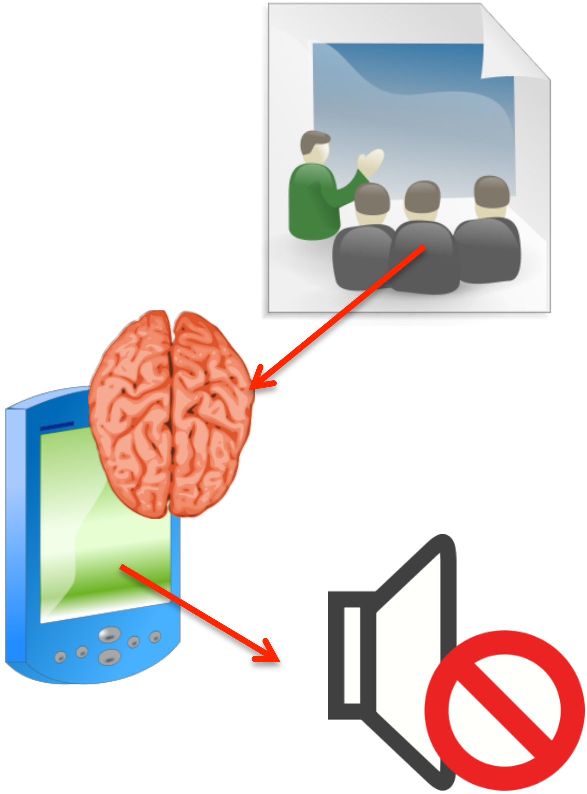
- Show statistics and charts about the last day/week/month regarding reported data
- Do not store values on the phone, download them from the webservice

PROPOSAL 4

Android **Project Proposals**

➢ Android **IFTTT (If-this-than-that)** Engine

- ➢ **Recognize** a set of pre-defined **contexts.**
- ➢ **Capture** a set of pre-defined **events**.
- ➢ **Define** a list of possible **actions.**
- ➢ Allow the creation of **rules:** **<Context,Event> → Action**



➢ Android IFTTT (If-this-than-that) Engine

Functionality 1: Recognize a set of contexts

- ➢ Allow user's defying context name (e.g. meeting) and characteristics.
- ➢ Basic characteristics:
  - ✧ Temporal information (e.g. date/time)
  - ✧ Spatial information (e.g. GPS location)
  - ✧ Mobility information (e.g. GPS speed, acceleration, etc)

➢ Android **IFTTT (If-this-than-that)** Engine

Functionality 1: Recognize a set of contexts

- ➢ Allow user’s defying context name (e.g. meeting) and characteristics.
- ➢ Optional (fine-grained) characteristics:
  - ✧ Sensor values and patterns (e.g. accelerometer)
  - ✧ Radio interface state (e.g. WiFi state)
  - ✧ Microphone/videocamera inputs

➢ Android IFTTT (If-this-than-that) Engine

Functionality 2: Event Recognition

➢ Capture and recognize a list of external events that might occurr on the smartphone..

➢ Examples of events:

- ✧ Phone call incoming
- ✧ SMS reception
- ✧ WiFi detected
- ✧ ….

Android **Project Proposals**

➢ Android **IFTTT (If-this-than-that)** Engine

Functionality 3: Provide a list of pre-defined actions and notifications that can be executed.

- Three categories of actions:
  - Modify the smartphone setting (e.g ring tones on/off)
  - Recall the user's attention through status-bar notifications
  - Perform operations on social media (e.g. publish a state update on Facebook)

Android **Project Proposals**

➢ Android **IFTTT (If-this-than-that)** Engine

Functionality 4: Allow a user speciying IFTTT rules.

- ➢ IFTTT Rule: <Context, Event> → Action
  - ✧ Continously monitor context/event and perform corresponding action
- ➢ Optional elements:
  - ➢ Allow combining multiple contexts/events through boolean operators (AND,OR, NOT)
  - ➢ Allow multiple actions on the same IFTTT rule