Standard Projects for ESP1516

Last modified: March 17, 2016.

Choose one of the following Android topics not presented during classroom, and

1. perform a bibliographic search about the topic,
2. write a report about the topic,
3. design one or more mockup apps illustrating the main points of your report.

Each topic can be selected by more than one group of students. However, collaboration among such groups is not allowed.

You can write the report in English or in Italian, as you prefer.
The report must include a bibliography listing the references for your work.
The report should not be based solely on one source (e.g., Goggle's official documentation, albeit such documentation is the best starting point).
Cut-and-pasting from your sources is not allowed: the report should be an original rework of the sources, not a summary or a verbatim copy.
As source material is overabundant for all the topics, you should perform a selection: you must decide what should be included in your report and what should be left out.
It is not required for L students to log the project activity on Facebook.
The following aspects will be considered in the grading of the report: clarity, completeness, terseness (the report should be complete without being verbose or bloated by trivial details), quality of the bibliography, correspondence between the information selected for the report and the information showcased by the app(s).

In your app(s), verbatim reuse of sample code you can find online is forbidden.
The followings aspects will be considered in the grading of the apps: lack of bugs and glitches, ease of use, adherence to Android specifications, quality of the source code (modularity, use of appropriate language constructs, generous presence of comments).

The report and the apps are regarded as equally important in the grading process.

Notifications

To start your work

http://developer.android.com/design/patterns/notifications.html
http://developer.android.com/preview/features/notification-updates.html
http://developer.android.com/training/notify-user/index.html
http://developer.android.com/guide/topics/ui/notifiers/notifications.html

With your report, you should provide at least:

An app which periodically generates basic notifications (icon, title, message).
An app which periodically generates full-fledged notifications (photo, expanded layout, actions, etc.). The priority of notifications can be customized.

Widgets

To start your work:

http://developer.android.com/design/patterns/widgets.html
http://developer.android.com/guide/practices/ui_guidelines/widget_design.html
http://developer.android.com/guide/topics/appwidgets/index.html
http://developer.android.com/guide/topics/appwidgets/host.html

With your report, you should provide at least:
A widget for a calendar app. The widget should include text, picture, and controls. The widget should be resizable. The widget should periodically display reminders. Part of the calendar app should also be included, as appropriate, to showcase the widget.

Material Design

To start your work:
http://developer.android.com/design/index.html
https://developer.android.com/training/material/index.html
https://design.google.com/articles/evolving-the-google-identity/
https://medium.com/google-design/see-also-more-thoughts-on-design-tools-d4477bb1a1cb#.yu8b6c878
"Android Programming: The Big Nerd Ranch Guide," chapter 33.

With your report, you should provide at least:
An app showcasing all the main concepts of Material Design.

Further requirements:
The report should include a discussion (with examples) on prototyping tools.

Power-Saving Features in Android

To start your work:
http://developer.android.com/training/monitoring-device-state/index.html
http://developer.android.com/training/monitoring-device-state/doze-standby.html
http://developer.android.com/tools/performance/batterystats-battery-historian/index.html

With your report, you should provide at least:
An app and accompanying software that showcases batterystats and Battery Historian.

Camera2 API

To start your work:
https://developer.android.com/reference/android/hardware/camera2/package-summary.html
http://www.slideshare.net/lbk003/b-kaur-computationalphotographycamera2v3ss
https://www.nigeapptuts.com/android-camera2-api-looknfeel/

With your report, you should provide at least:
A basic app that displays a camera preview and makes it possible to take pictures.
A second app that exploits some of the advanced features of Camera2.

OpenGL ES

To start your work:
https://www.khronos.org/opengles/
http://catalogo.unipd.it/F?func=find-c&ccl_term=IDN=PUV1188103&local_base=SBP01
http://developer.android.com/guide/topics/graphics/opengl.html
https://developer.android.com/training/graphics/opengl/index.html

With your report, you should provide at least:
An app displaying a cube; the cube can be made to spin by touching the screen. It is not necessary for the cube to be shaded.

Connectivity & the Cloud

To start your work:

http://developer.android.com/training/building-connectivity.html
https://developer.android.com/training/backup/index.html
“Android Programming: The Big Nerd Ranch Guide,” chapter 23.

With your report, you should provide at least:

An app that parses data from a remote JSON server and displays them.
An app that showcases the Auto Backup function.