

# E0 202: Automated Software Engineering with Machine Learning (Jan-Apr 2018)

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## Programming assignment 1 (Announced Jan 8)

A multi-modal messaging app with accompanying automated UI tests (25 pts)

**The demo/evaluation will be on Feb 14 in the regular class hours.**

### Goal

The goal of this assignment is to design, implement and test a simple Android application. The proposed functionality of the application requires understanding and use of Activity class, UI design through XML file, event handlers and lifecycle callbacks, persistent storage, string analysis, and intent-based communication within and across applications.

### Problem statement

- 1) Implement a multi-modal messaging app for Android. It should consist of two activities. The first activity takes some string as input from the user and when the “Send” button is clicked, it opens another activity. The second activity takes as input a phone number or an email ID, and checks that the entered string is a valid email or phone. When the “Confirm” button is clicked, it opens a Chooser menu to select one of the installed email clients or SMS clients - depending on whether the user entered an email ID or a phone number. Once the user selects a client application, the message (entered on the first activity) and the receiver (entered on the second activity) should be automatically set into the client application. If the user presses the back button on the second activity, you will go back to the first activity. You have to make sure that the text the user has entered in the first activity is displayed again.

Install the sample APK from [www.iisc-seal.net/courses/e0202-2018/](http://www.iisc-seal.net/courses/e0202-2018/) and explore it on your phone. It implements the specification above completely. You have to implement a similar app yourself. The name of the app should be “MyApp by <your name>”.

- 2) Implement two sets of UI tests using the Espresso framework as specified below.
  - a) Test set 1: Should check that from the second activity, if you press the back button then the text entered by the user is automatically displayed in the editText widget. Should also check that when the “Send” button is pressed, the second activity does receive the intent with the user’s message.
  - b) Test set 2: Should check that if the user enters an invalid email ID then an error message is displayed. Do the same for an invalid phone number.

## Grading

- 1) [10 pts] You have to give a demo of your app on your phone and explain the code. You will receive points proportionate to the specifications satisfied by your implementation and whether you can explain the code.
- 2) [5 pts] You will be asked to change the code and rerun the app.
- 3) [5 pts] If your test set 1 runs on the phone and you can explain/change the test scripts, you will receive points proportionate to the test specifications checked.
- 4) [5 pts] If your test set 2 runs on the phone and you can explain/change the test scripts, you will receive points proportionate to the test specifications checked.

## Resources

- 1) Set up Android studio IDE and enable developer mode on the phone, build the UI  
<https://developer.android.com/training/basics/firstapp/index.html>
- 2) Android APIs you may need  
<https://developer.android.com/training/basics/data-storage/index.html>  
<https://developer.android.com/training/basics/intents/index.html>
- 3) Set up Espresso for UI testing  
<https://developer.android.com/training/testing/espresso/setup.html>
- 4) Write UI tests  
<https://developer.android.com/training/testing/ui-testing/index.html>

Note that the versions of IDEs and APIs you use may differ from those mentioned at the links above. If the above resources are not adequate for your requirements, you should look for other resources on the web. You may find excellent tutorials on YouTube.