Introduction

**Course Overview**

(Copies adapted from Prof. H. Roumani)

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**Topics & Technologies**

- Abstraction & Separation of Concerns
- The Software Development Cycle
- Object Oriented Programming [OOP]

- Android App Development
- User Interface [UI] Design
- The Java Programming Language

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**Approach**

- Builds on EECS1012
  Separation of Concerns, Computational thinking.

- **Industrial-Strength Tools**
  UI via XML (not HTML), Behavior via Java (not JS).

- **Solid Platform**
  O/S is Android, IDE is Studio.

- **Experiential Pedagogy**
  Foundational concepts in class + real-life projects in lab

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**Android: The Stack**
Introduction

**Android Versions [A/B in 2008]**

- Like a Generalized HTML
  But 100% strict.
- Well-Formed XML
  Obeys the syntax rules:
  See: http://www.w3schools.com/xml/xml_syntax.asp
- Valid XML
  Must be well-formed and obeys a schema that dictates
  the names of tags and attributes (namespace) and sets
  the types of their values.

**XML Example – An Android Layout**

```xml
<LinearLayout layout_width="match_parent" orientation="vertical">
  <EditText layout_width="match_parent" id="width"/>
  <EditText layout_width="match_parent" id="height"/>
  <Button layout_width="match_parent" text="Compute" id="button"/>
</LinearLayout>
```

Locate:
- Document root, tag, closing tag, attribute, attribute value

Note the naming style for multi-word identifiers:
- Pascal, Camel, or underscore.

**Java**

- Adopts the C Syntax
  Same as JavaScript
- Strongly-Typed
  Syntax errors exposed as you type. Static checking of
  potential runtime and logic errors.
- OOP
  Programming by Delegation.
- Platform-Independent
  Write once, run anywhere.
Java Example - A Class

```java
public class Rectangle {
    private int width;
    private int height;
    public Rectangle(int w, int h) {
        this.width = w;
        this.height = h;
    }
    public int getArea() {
        int result = this.width * this.height;
        return result;
    }
}
```

Android Studio

Makes writing code easier (compile-as-you-type); designing UI easier (drag widgets, set properties); running and debugging.

- Start your Vbox
  Open a terminal and note the AndroidStudioProjects folder

- Launch Studio
  From the Application, Programming menu.

- Start a New Project
  Programming by Delegation.

- Project Location
  `/home/user/AndroidStudioProjects/`