



Welcome, आपका स्वागत है

AITI IIT Bombay Class of 2013



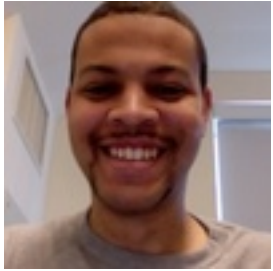
# Agenda

- Introductions
- Logistics
- Goals & Expectations
- Class Structure & Content
- Why Mobile?
- What will we cover?
- Android!!!
- End of the lecture contains troubleshooting tips

# Introductions

- Name
- Where are you from?
- What do you do for fun?

# Introductions (Technical Team)



- Jon Gibbs (Technical Lead)  
jaygibbs at gmail  
jaygibbs at mit.edu



- Yuta Kato (Technical TA)  
dorayuta at mit.edu

# Logistics

- Room #: Lecture Hall 2<sup>nd</sup>/3<sup>rd</sup> floor Kanwal Rekhi Building (KRESIT)
- Website: <http://aiti.mit.edu/program/india-iitb-summer-2013/>
- Class time: 10am – 3pm (Please arrive on time)
  - Entrepreneurship / Technical / Lab time will vary
- Please bring your laptops everyday
- Internet Access: See Vijay
- Hostels: Non-IITB students MUST VACATE by ???

# Goals and Expectations

- Form teams of 3-4 and develop a business plan & functional software for a mobile business or service
- Software must include Android, other platforms are optional
- Come to all classes on and complete lab work individually (with assistance from others)
- Participate in class discussions

# Class Structure

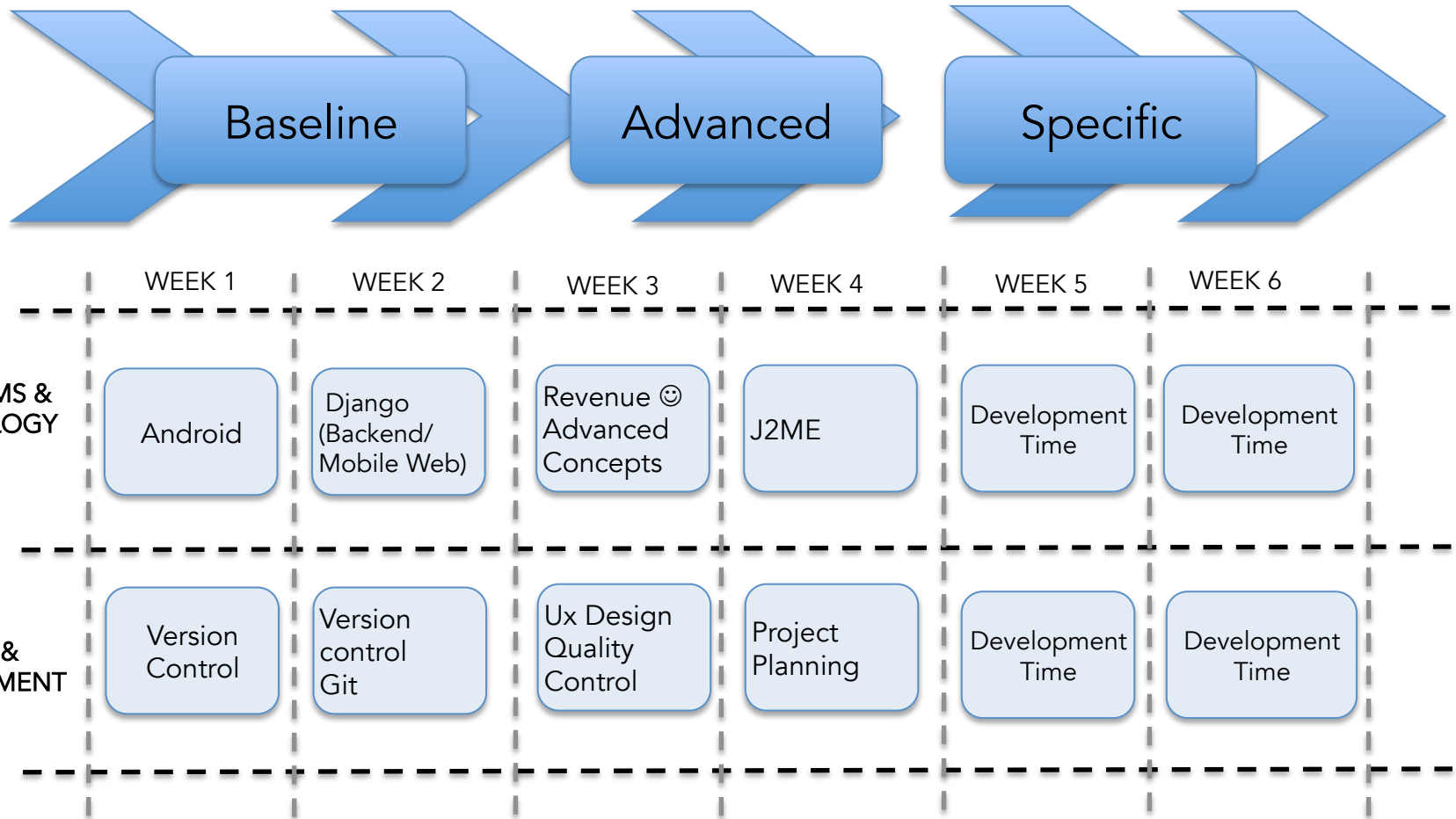
- Lecture / In class labs:
  - Concept & platform introduction
  - Managing software development
  - Monetization SDK
- Development time
  - Develop software for your mobile business
  - We will provide assistance / help answer questions
  - Use this time wisely, 6 weeks is NOT LONG!!

# Class Content

- Week 1: Android, Version control, Interface design, 25% Development time
- Week 2: Python/Django, Quality control, 25%-50% Development time
- Week 3: Revenue 😊, advanced concepts, 75% Development Time
- Week 4: J2ME, 75% Development time
- Weeks 5-6: 100% Development time, Final presentations



# Class Content (Visual)



# Revenue 😊

Advertising

- Displaying Ads
- Delivering Relevance

Assisted  
Transaction

Facilitate transfer of  
goods or money

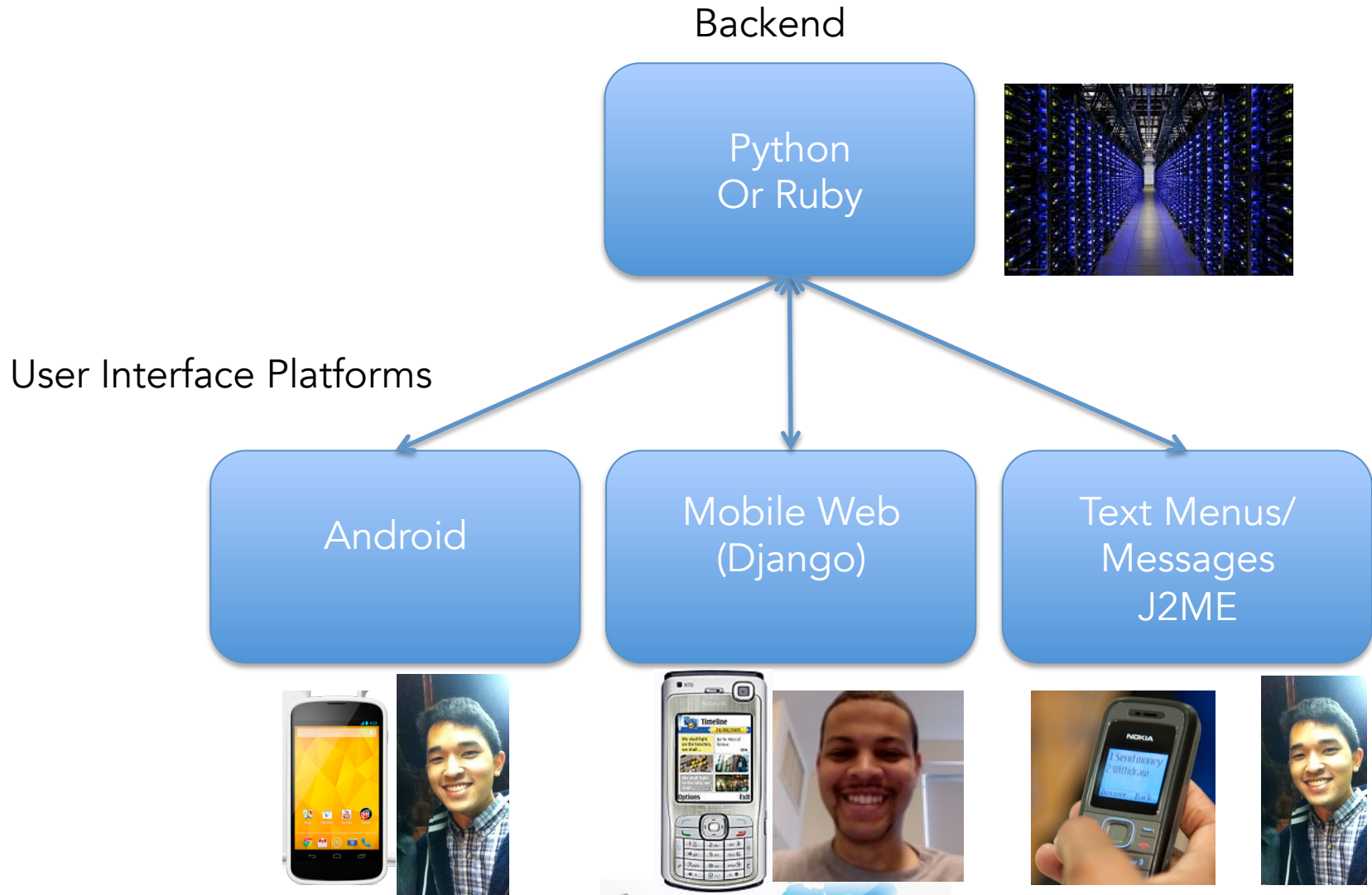
Subscription

-Subscription fees  
from Consumers

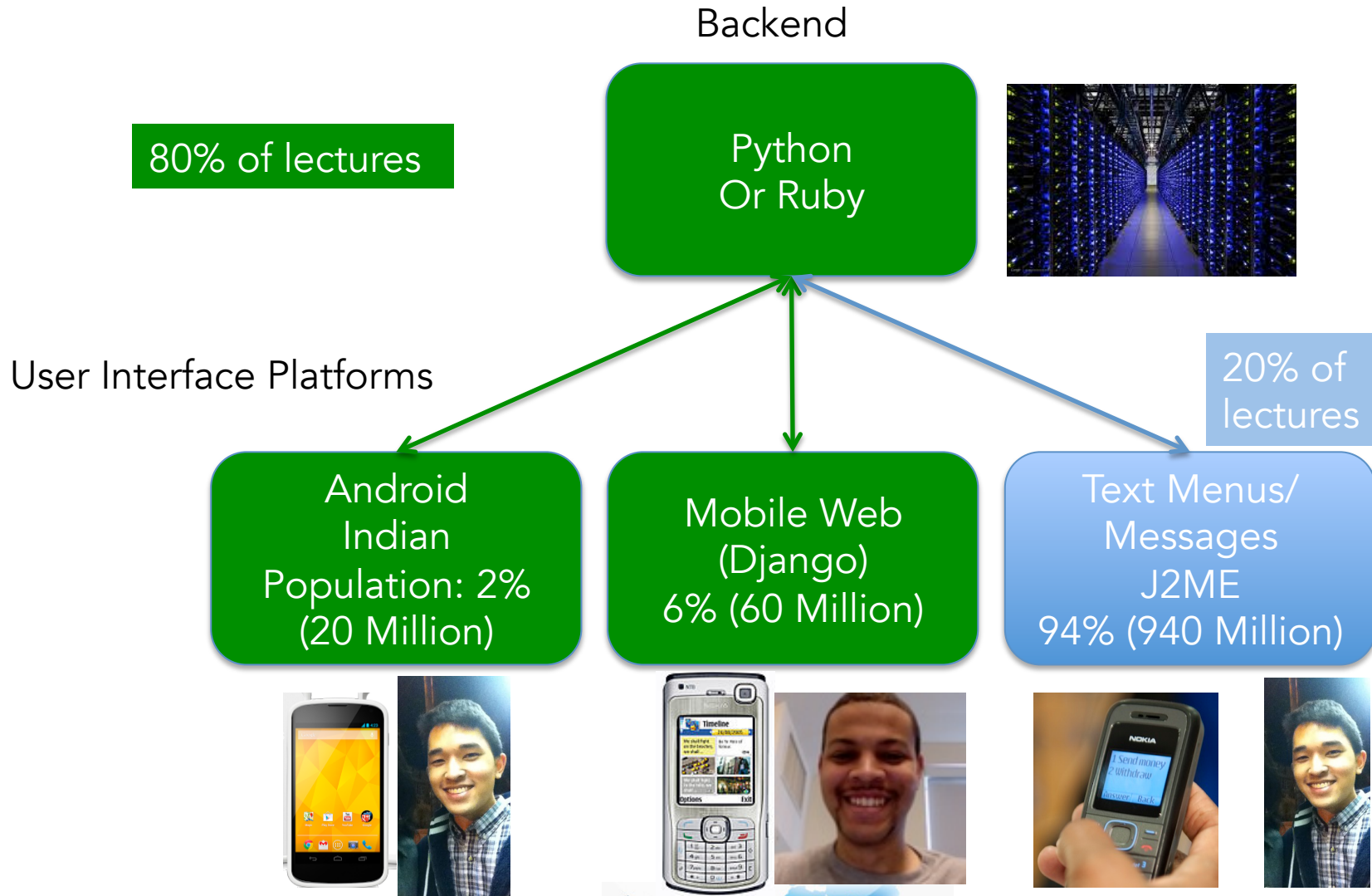
Direct to  
Advertiser  
/Consumer??

Credit Cards ??

# Mobile Platform Curriculum



# Mobile Platform Curriculum



# Why do we use mobile phones?

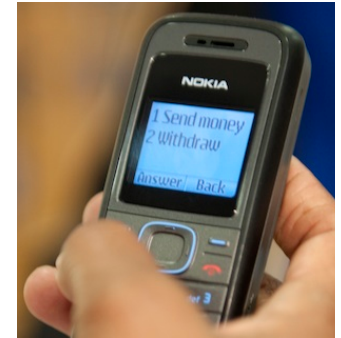
# Why do we use computers?

What can you do with a smart  
phone?

# What can you do with a smart phone??



Very Expensive

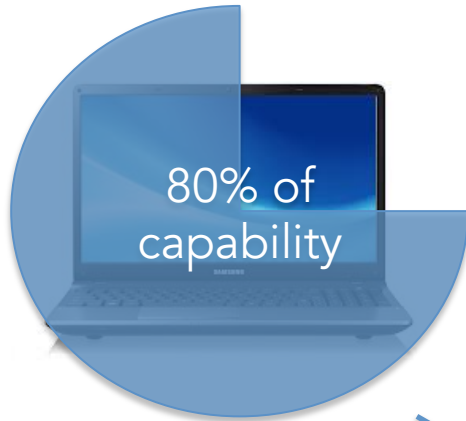


Low Cost





# What can you do with a smart phone??



Very Expensive

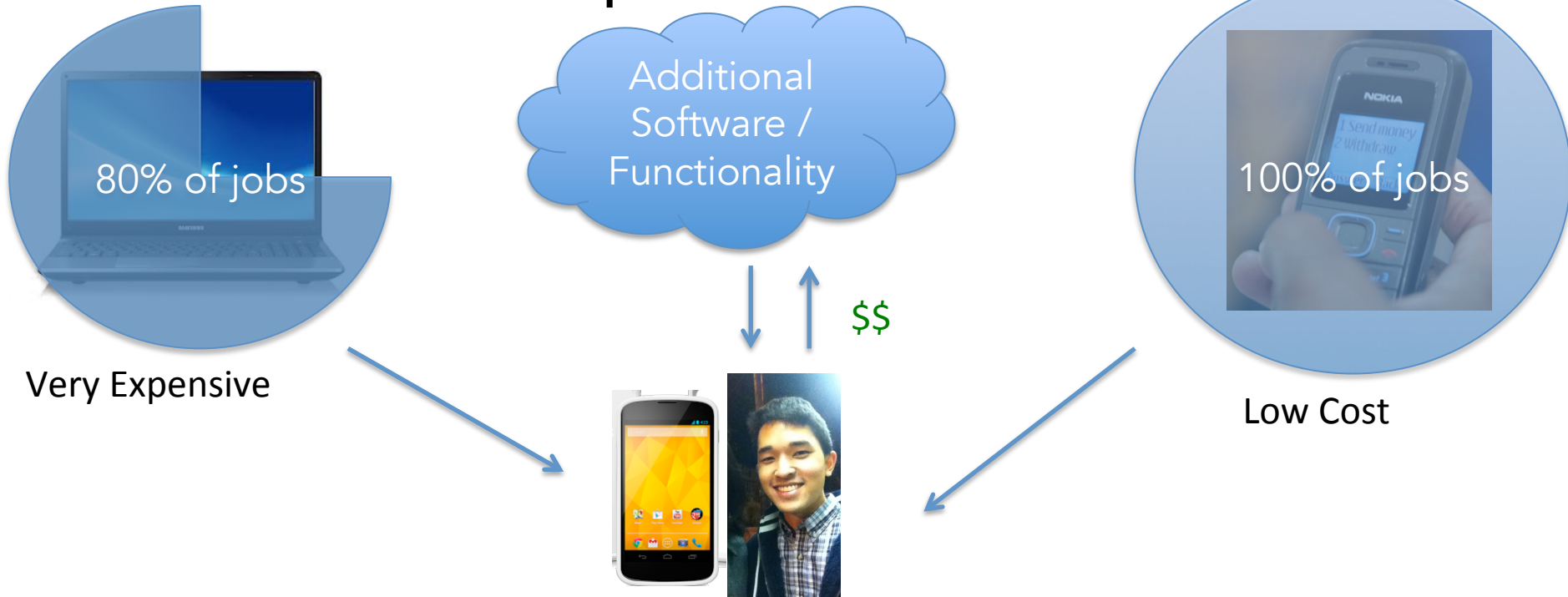


Low Cost



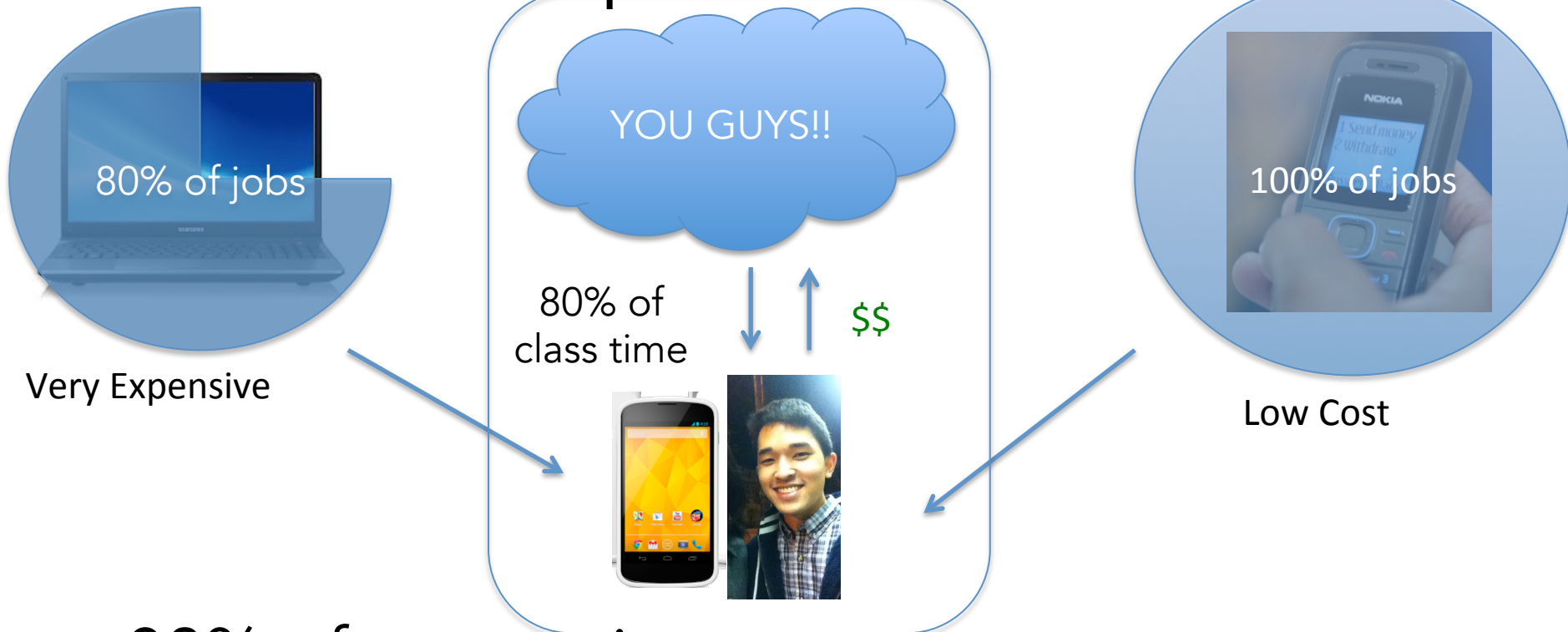
- 80% of computing power
- 10%-80% of the cost
- Portable

# What can you do with a smart phone??



- 80% of computing power
- 10%-80% of the cost
- Portable

# What can you do with a smart phone??



- 80% of computing power
- 10%-80% of the cost
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# Mobile Platform Curriculum in 10

years  
Backend

80% of lectures

Python  
Or Ruby



Vodaphone  
Airtel  
↑  
\$\$

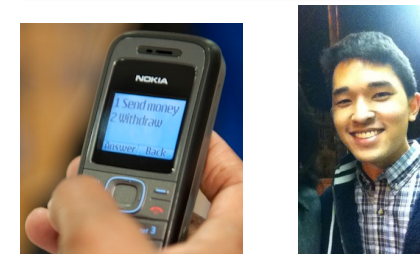
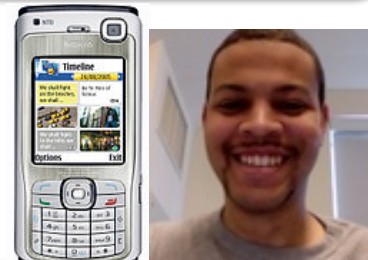
User Interface Platforms

20% of  
lectures

Android  
Indian  
Population: 12%  
(120 Million)

Mobile Web  
(Django)  
20% (200 Million)


Text Menus/  
Messages  
J2ME  
80% (800 Million)



# Your First Android App!

- Download the Android Development Kit
  - <http://developer.android.com/sdk/index.html>
- Install Egit from ADK (Eclipse)
  - Preferences->Install/Update->Available Software Sites-> Add
  - <http://download.eclipse.org/egit/updates>
  - [http://wiki.eclipse.org/EGit/User\\_Guide#Getting\\_Started](http://wiki.eclipse.org/EGit/User_Guide#Getting_Started)

# Create an Android Virtual Device

- Click the AVD Icon: The icon shows a smartphone with a green Android robot on the screen.
- Window -> AVD Manager -> New
- Name & start the virtual device (this may take a minute or two)

Create new Android Virtual Device (AVD)

AVD Name:

Device:

Target:

CPU/ABI:

Keyboard:  Hardware keyboard present

Skin:  Display a skin with hardware controls

Front Camera:

Back Camera:

Memory Options: RAM:  VM Heap:

Internal Storage:

SD Card:

Size:

File:

Emulation Options:  Snapshot  Use Host GPU

Override the existing AVD with the same name

ANDROID

Basic Controls



Hardware Buttons not enabled in AVD



DPAD not enabled in AVD



Hardware Keyboard  
Use your physical keyboard to provide input



# You can also use your android phone!! (Much faster if you have one)

## Run on a Real Device

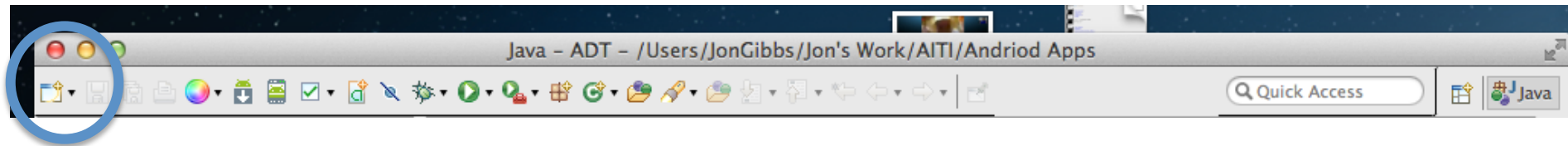
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If you have a real Android-powered device, here's how you can install and run your app:

1. Plug in your device to your development machine with a USB cable. If you're developing on Windows, you might need to install the appropriate USB driver for your device. For help installing drivers, see the [OEM USB Drivers](#) document.
2. Enable **USB debugging** on your device.
  - On most devices running Android 3.2 or older, you can find the option under **Settings > Applications > Development**.
  - On Android 4.0 and newer, it's in **Settings > Developer options**.

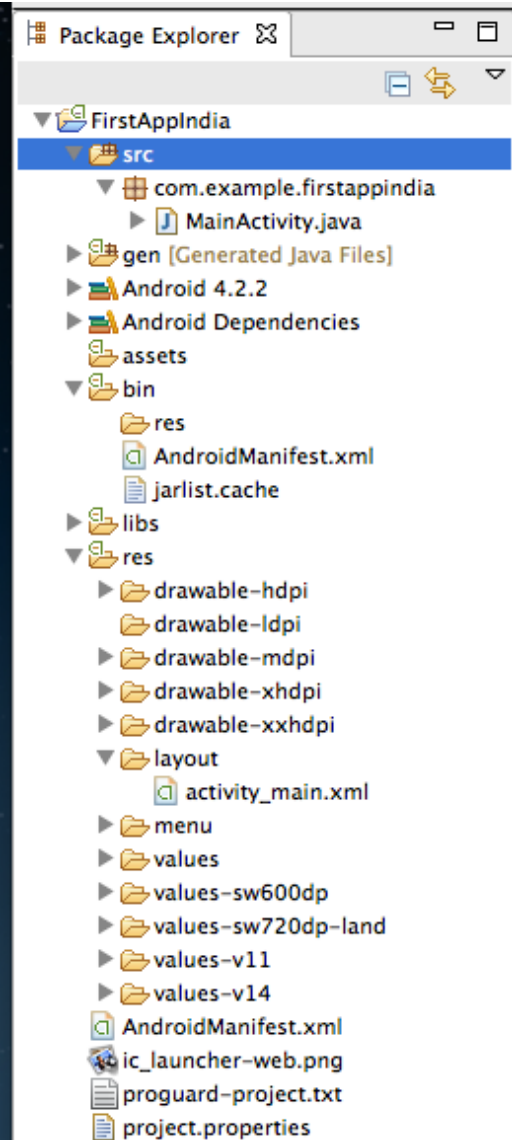
**Note:** On Android 4.2 and newer, **Developer options** is hidden by default. To make it available, go to **Settings > About phone** and tap **Build number** seven times. Return to the previous screen to find **Developer options**.

# Start a New Project



- Select "Android Application Project"
- Click "Next" and name your project
- Everything else is ok by default click next until you reach finish

# What do all these files do?



## Main Activity:

- Contains the starting point of the application
- Respond to events, clicks switch between activities
- “Main Control Room” for your app

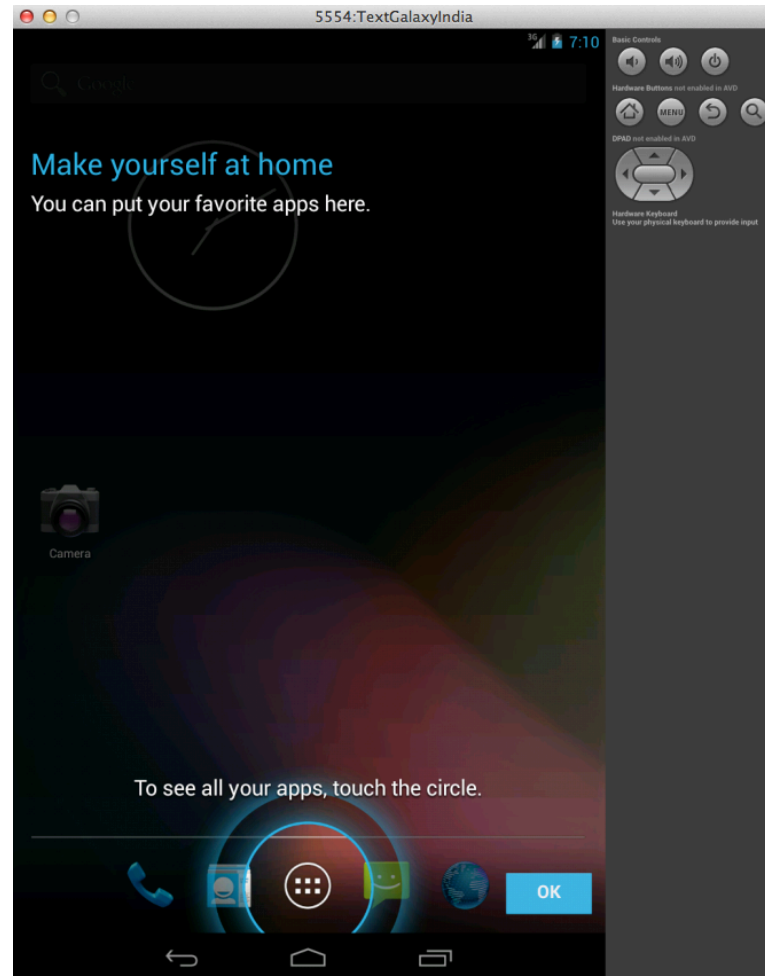
## Android Manifest:

- XML file containing build information
- Keeps track of activities and other app content
- Similar to a ship manifest

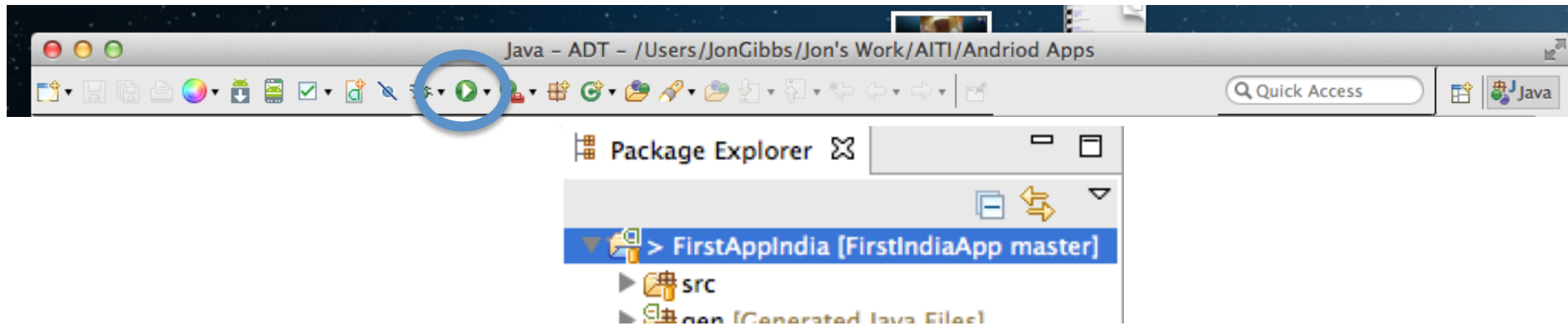
## Activity Main:

- XML file containing GUI information for a given activity or screen in your app

# Is your AVD Ready?

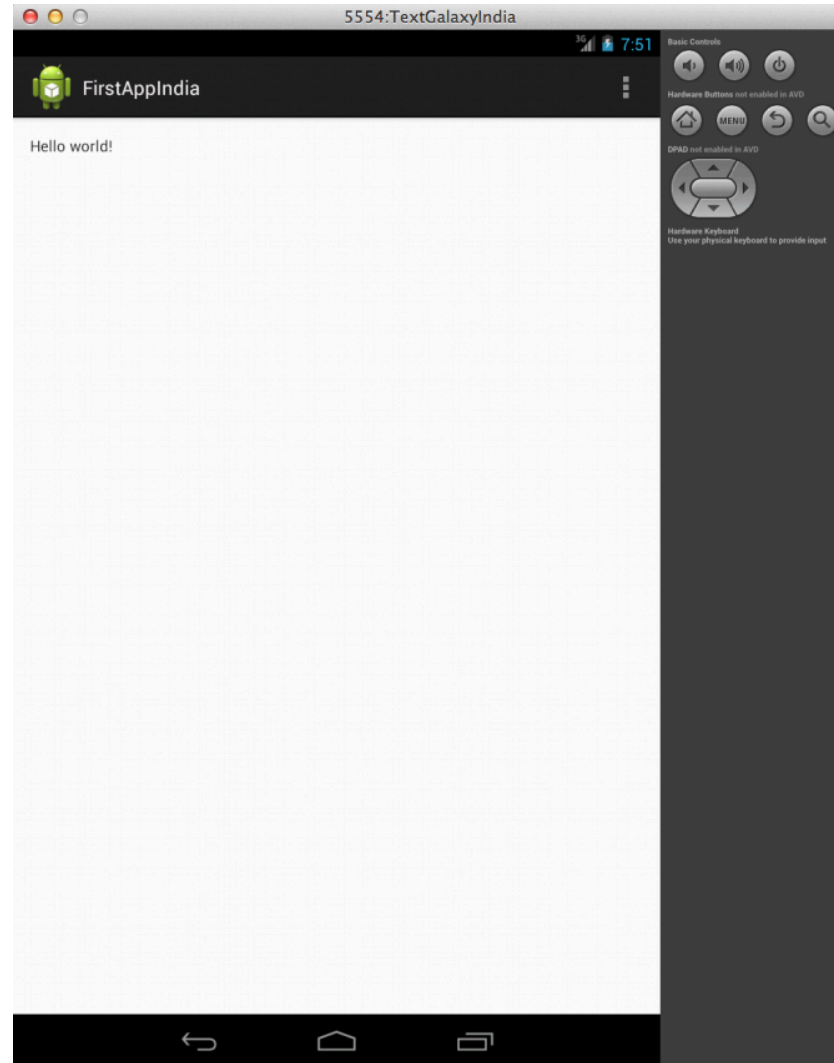


# Run Your App!!!



- Click the project folder so that it is highlight (very important – You must run your app from here)
- Run as an Android App
- The app will install on your android virtual device
- Find your app name by clicking the apps icon and start it
- Check the troubleshooting slide at the end of this deck for help

# Hello World




# Lets Hack it!!

- Exit and uninstall your app from the AVD (keep the AVD open)
- Change the text to say "Hello <your name>"
- Strings can be found in the strings.xml file (Project->res->values)
- Re-run your project, does the string look correct??
- If so, go ahead and uninstall the app. We'll make some changes using version control and then re-run it.

# Install EGit (Version Control)

## Adding a new software site

There are several different ways to add a software site to the list of sites that are used when browsing available software and checking for updates. You must know the Web Site location (URL) of the site that you want to add. To add the site, use one of the following procedures:

- Add a new site using the  [Install/Update > Available Software Sites](#) preference page.
  1. Click the **Add...** button.
  2. Type a name into the **Name** text box.
  3. If the software site is located on the web, type the Web Site location (URL) of the site into the **Location** text box. You may also paste or drag and drop a URL from a web browser into this text box.
  4. If the software site is in your local file system (including a CD), click **Local...** to specify the directory location of the site.
  5. If the software site is in your local file system but is packaged as a jar or zip file, click **Archive...** to specify the name of the file.

- <http://download.eclipse.org/egit/updates>

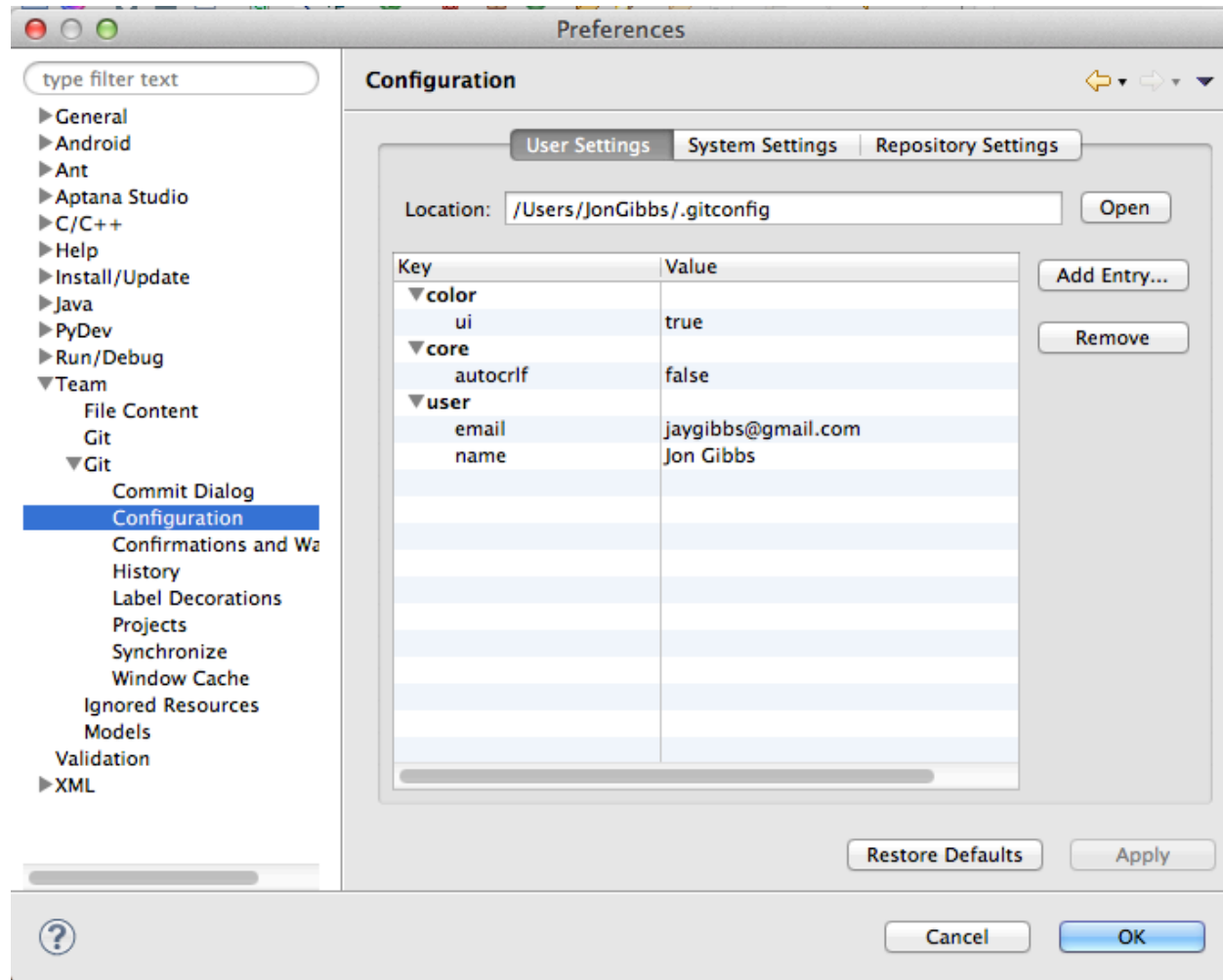


# Setting up Egit

Add your information:

- Select Preferences->Team-> Git -> Configuration
- Add your name and email in two separate new entries
- Use user.email and user.name in the "key" field

# Setting up Egit



# If using windows:

## Setting up the Home Directory on Windows

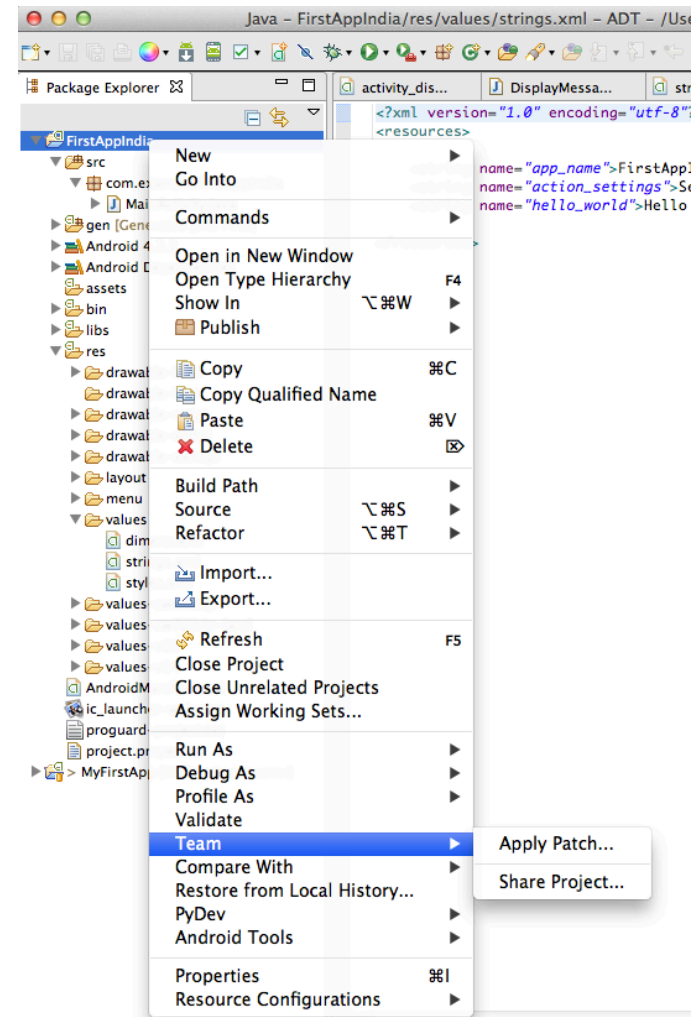
Add the environment variable `HOME` to your environment variables.

1. In Windows 7, type "environment" at the start menu
2. Select "Edit environment variables for your account"
3. Click the "New" button.
4. Enter "HOME" in the name field
5. Enter "%USERPROFILE%" or some other path in the value field.
6. Click OK, and OK again. You have just added the Home directory on Windows.

# Using EGit

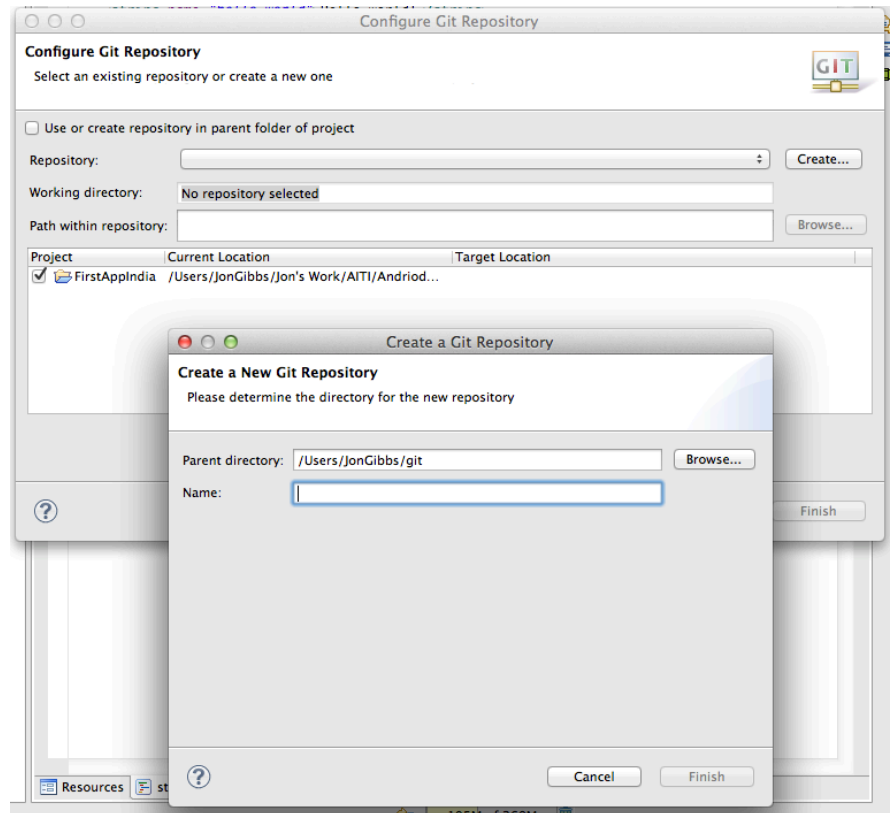
Create a repository

- Right Click on the Project, Select Team -> Share Project



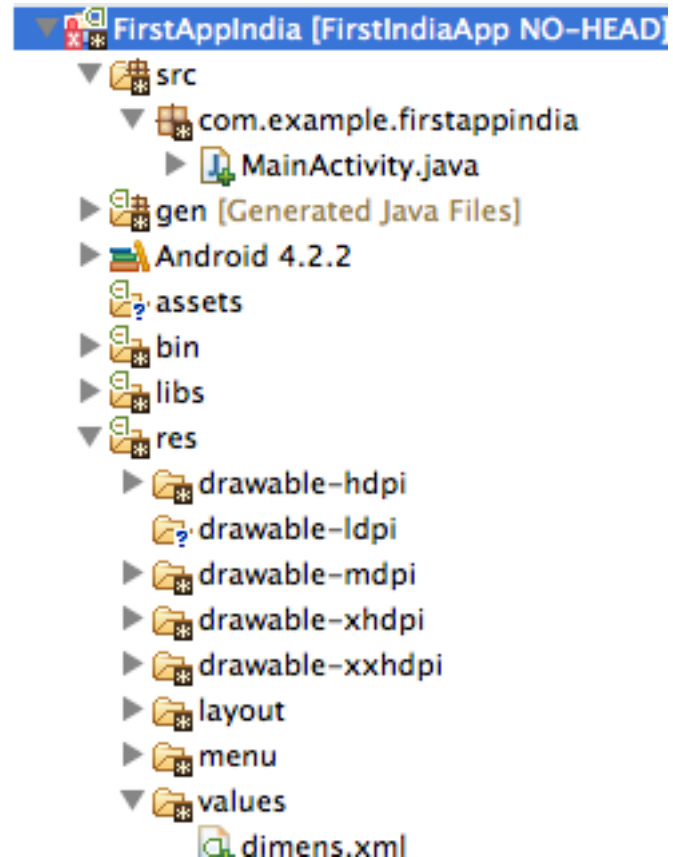
# Create a repository

- Select “Git” on the next screen, click next
- Create a new directory OUTSIDE of your working directory
- Click through to “Finish”



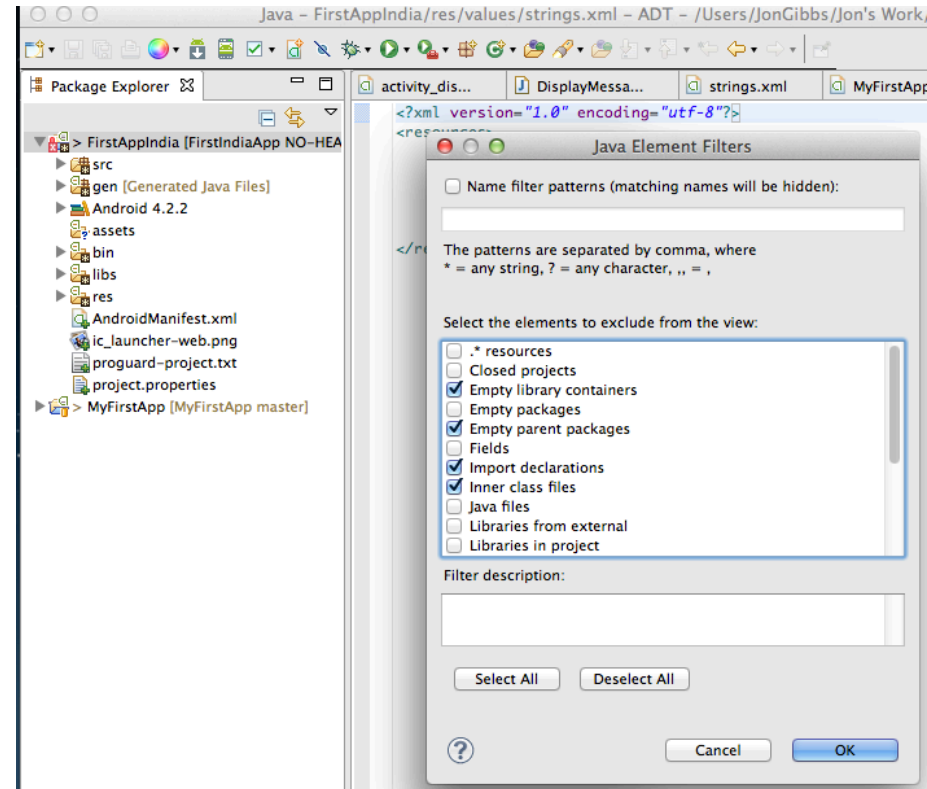
# Create a repository

- You should see an error in your app (Don't worry)
- Select Team->Add to Index
- Right click the bin folder and select Team->Ignore



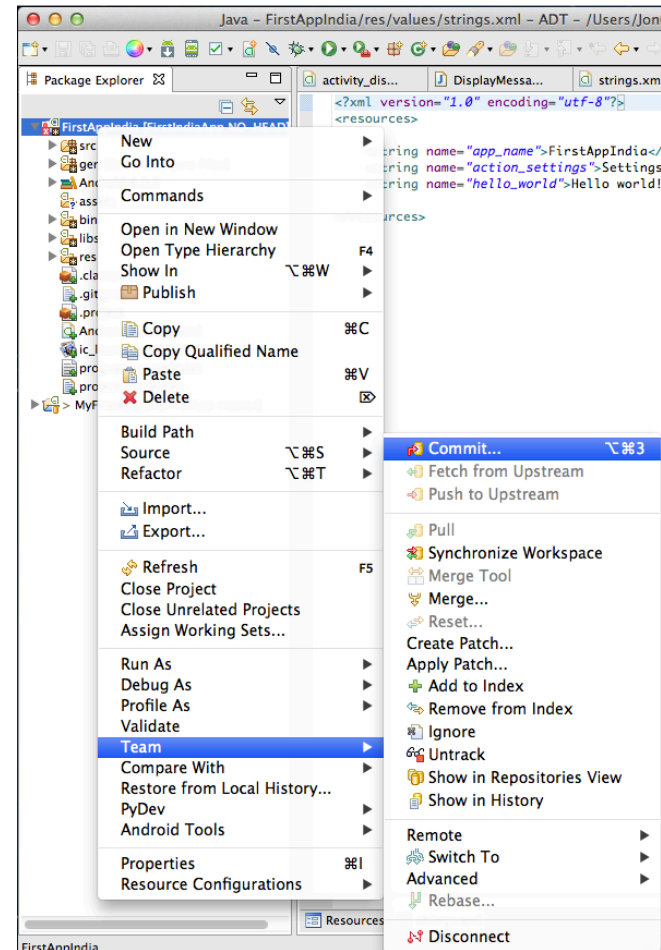
# Add the .gitignore file

- Select the down arrow in package explorer -> select filters
- Uncheck the resources box
- Add the .gitignore file to the index



# Commit the changes to your repository

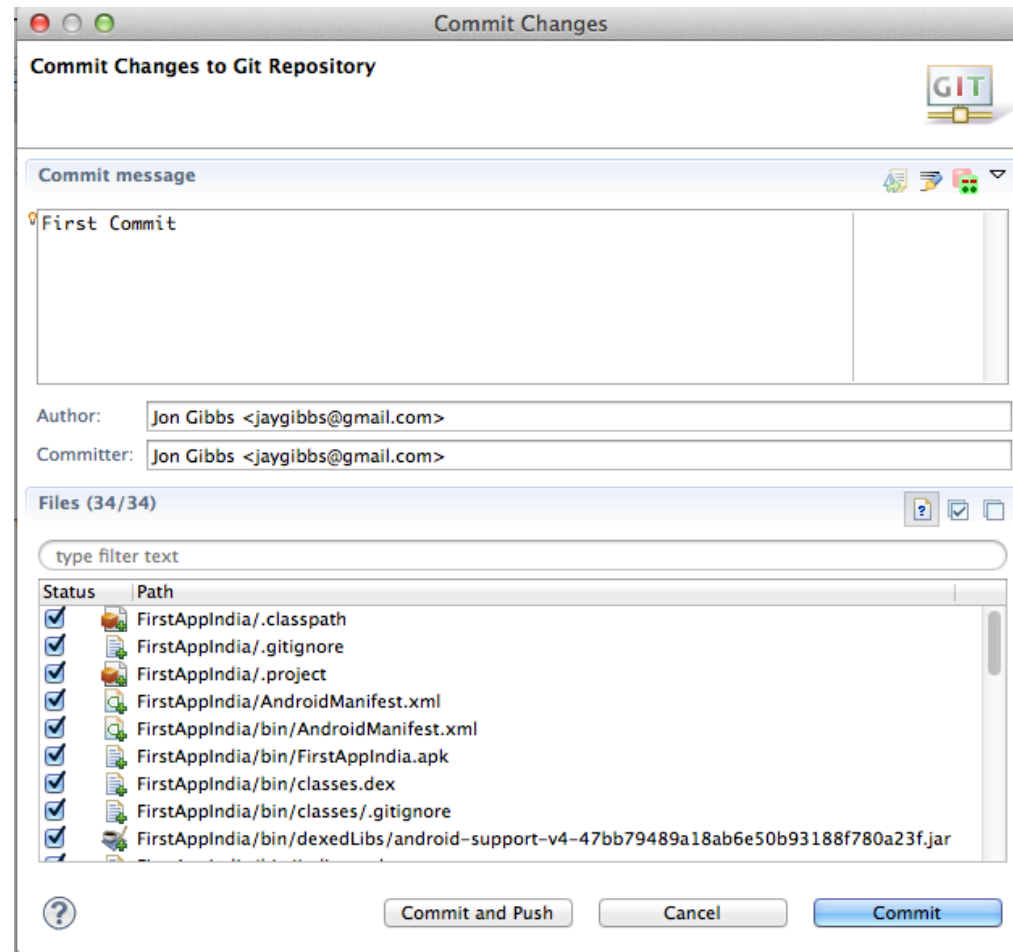
- Right click your project and select Team -> Commit





# Commit the changes to your repository

- Add a message and commit the files!!
- Quit and Restart Eclipse ADK

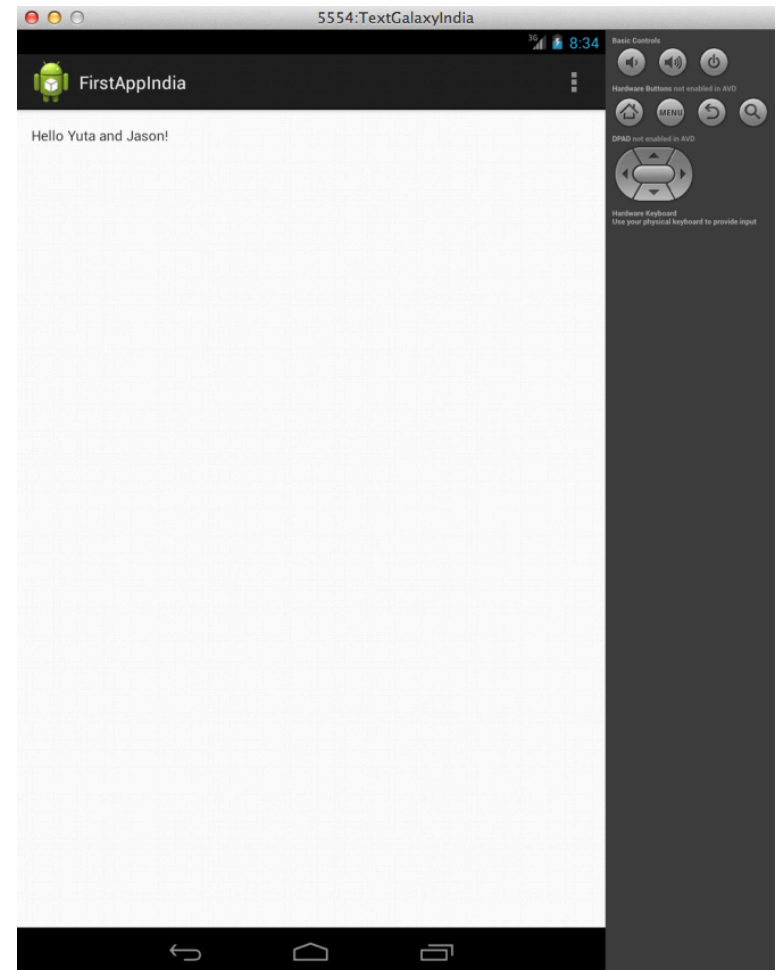


# Lets Hack again

- All errors should be gone at this point
- Change the string to say hello to the two people sitting next to you.
- Commit the project, what files were committed? Why might this be?

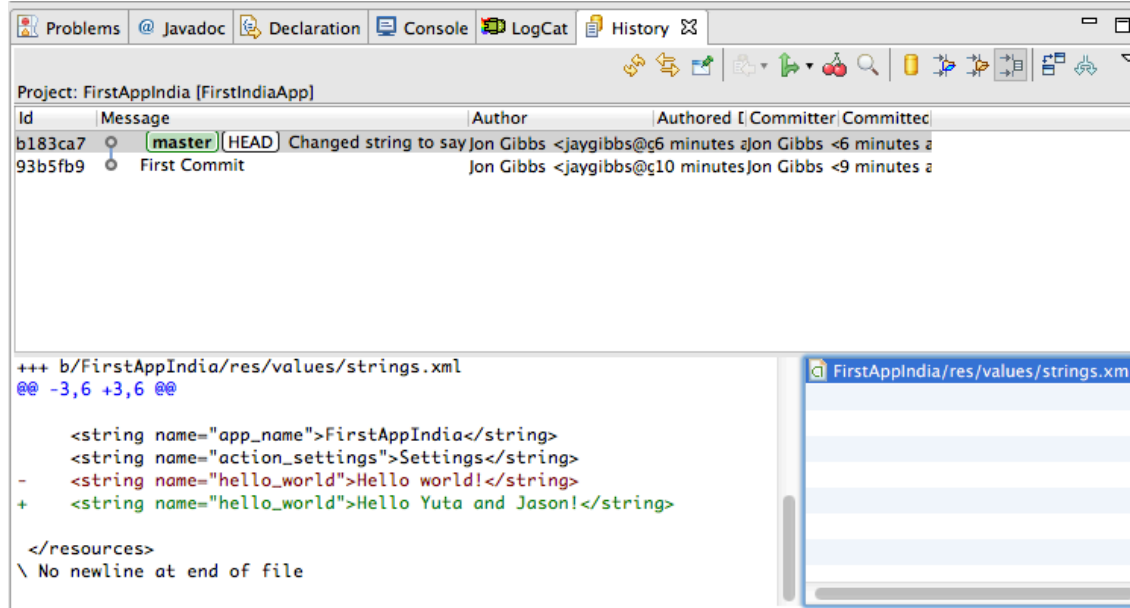
# Run the App again

- It should run a little faster this time



# Lets see what Git has

- Select Team->Show in History
- You can move the history window to where ever you desire, also use the minimize icon
- Git only stores changes to your code!!



The screenshot shows an IDE window with a tab labeled 'History'. Below the tab, the project name is 'FirstAppIndia [FirstIndiaApp]'. The history table shows two commits:

Id	Message	Author	Author'd [	Committer	Committe'd
b183ca7	Changed string to say Jon Gibbs	Jon Gibbs <jaygibbs@c6 minutes a	Jon Gibbs <6 minutes a		
93b5fb9	First Commit	Jon Gibbs <jaygibbs@c10 minutes	Jon Gibbs <9 minutes a		

Below the history table, a diff view is shown for the file 'b/FirstAppIndia/res/values/strings.xml'. The diff shows the following changes:

```
+++ b/FirstAppIndia/res/values/strings.xml
@@ -3,6 +3,6 @@
     <string name="app_name">FirstAppIndia</string>
     <string name="action_settings">Settings</string>
-    <string name="hello_world">Hello world!</string>
+    <string name="hello_world">Hello Yuta and Jason!</string>
</resources>
\ No newline at end of file
```

# Tomorrow

- Android Activities, Layouts, Buttons
- Team Version Control
- EGit Resources:  
[http://wiki.eclipse.org/EGit/  
User\\_Guide#Getting\\_Started](http://wiki.eclipse.org/EGit/User_Guide#Getting_Started)
- If you haven't used Android before, try playing with some of the apps in the AVD
- Begin forming teams!!

# Where is Gym Khana??

# Troubleshooting

- Do you have the corrected bit of ADK installed?? 32-bit or 64 bit version
- Error on the "R" object? Delete ADK and find the zip file then:
  - Move/Extract ADK to the folder you want, and THEN open it, if you open ADK then move it to a different folder, you will have problems.

# Troubleshooting

- Error in creating the AVD: PANIC: Could not find, do the following:

<http://stackoverflow.com/questions/15103782/avd-panic-could-not-open-not-a-path-issue>

- Check the path: Eclipse Windows -> Preferences, enter the correct SDK Path

Thanks Sagar for figuring this out!!