

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 2nd/3rd floor Kanwal Rekhi Building (KRESIT)
- Website: <u>http://aiti.mit.edu/program/india-iitb-summer-2013/</u>
- 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!!

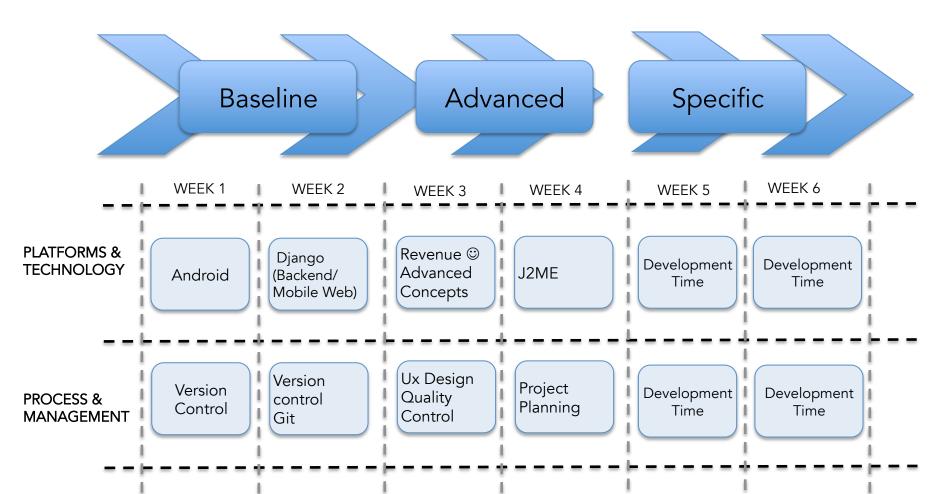


Class Content

- 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

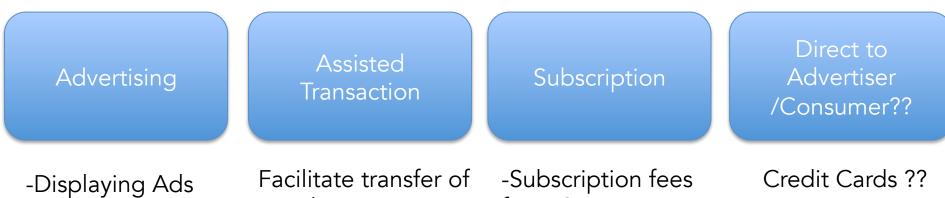


Class Content (Visual)





Revenue 🙂

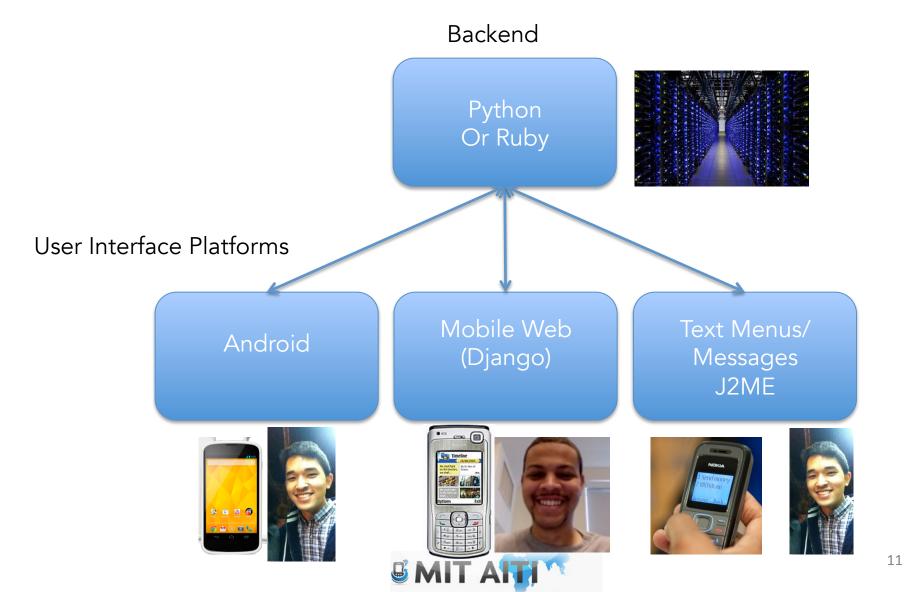


-Delivering Relevancegoods or money

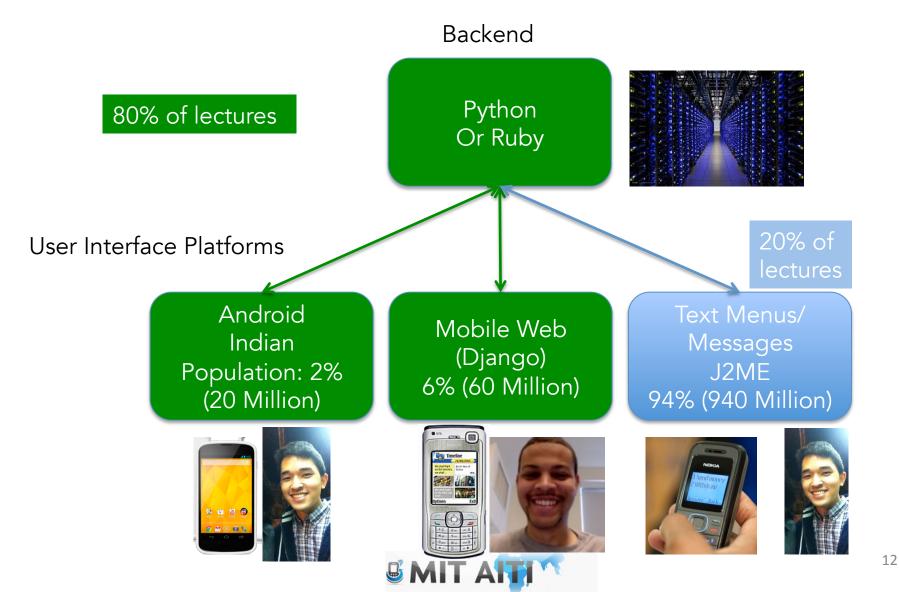
from Consumers



Mobile Platform Curriculum



Mobile Platform Curriculum



Why do we use mobile phones?



Why do we use computers?







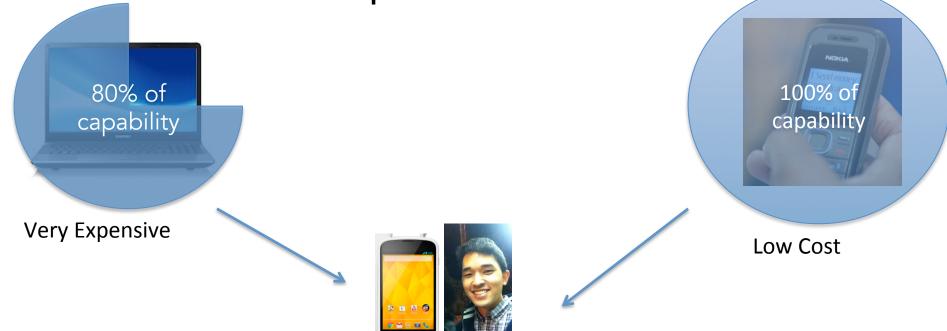
Very Expensive





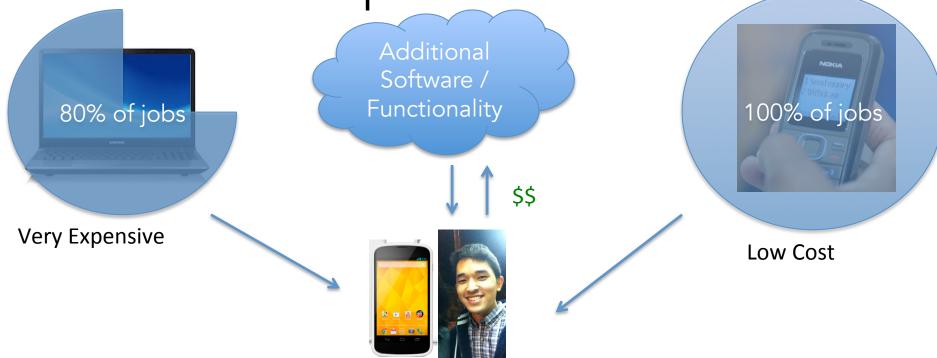
Low Cost





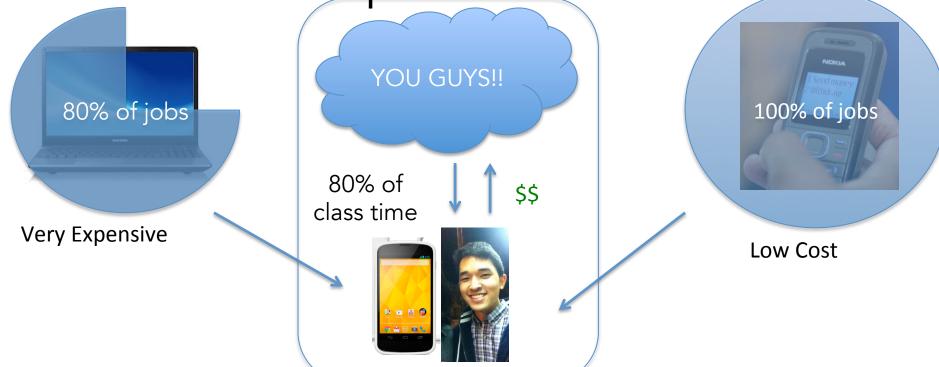
- 80% of computing power
- 10%-80% of the cost
- Portable





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

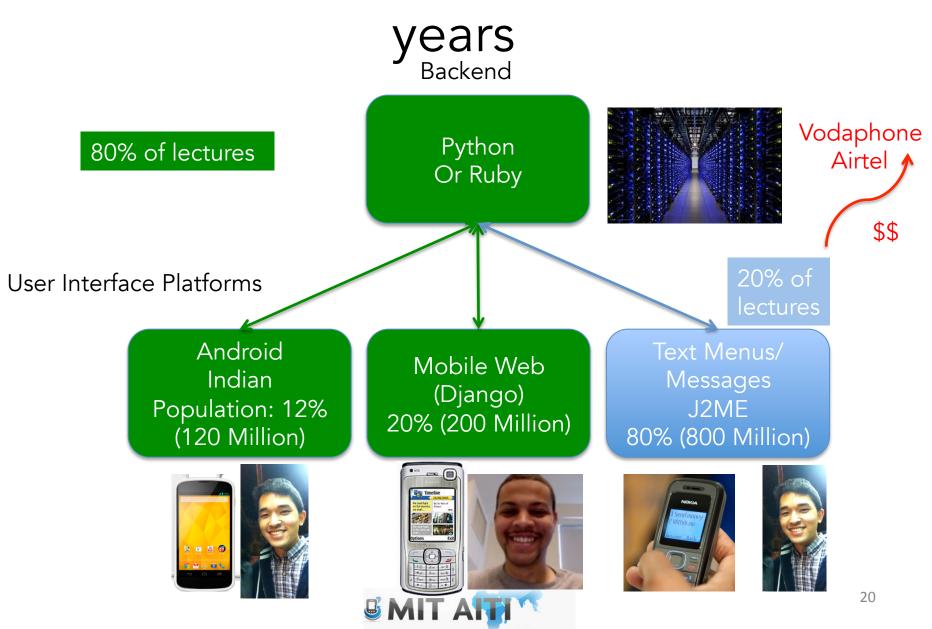




- 80% of computing power
- 10%-80% of the cost
- Portable



Mobile Platform Curriculum in 10



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
 - <u>http://download.eclipse.org/egit/updates</u>
 - http://wiki.eclipse.org/EGit/ User_Guide#Getting_Started



Create an Android Virtual Device

• Click the AVD Icon:

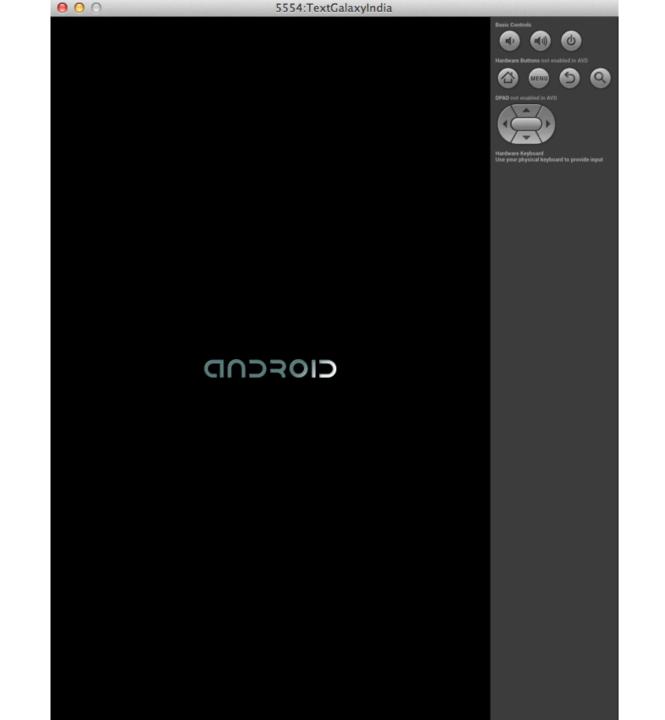


• Window -> AVD Manager -> New

• Name & start the virtual device (this may take a minute or two)



O O Create new Android Virtual Device (AVD)				
AVD Name:	TextGalaxyIndia			
Device:	Nexus 7 (7.27", 800 × 1280: tvdpi) ‡			
Target:	Android 4.2.2 – API Level 17 ‡			
CPU/ABI:	ARM (armeabi-v7a) \$			
Keyboard:	Iardware keyboard present			
Skin:	S Display a skin with hardware controls			
Front Camera:	None \$			
Back Camera:	None \$			
Memory Options:	RAM: 1024 VM Heap: 32			
Internal Storage:	200 MiB ‡			
SD Card:	● Size: MiB ‡			
	O File: Browse			
Emulation Options:	Snapshot Use Host GPU			
Override the existing AVD with the same name				
	Cancel			



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

Run on a Real Device

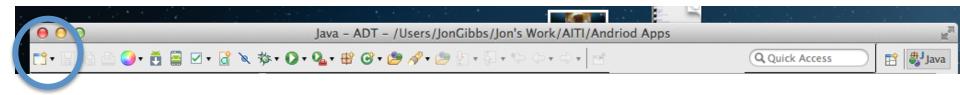
If you have a real Android-powered device, here's how you can install and run your app:

- 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?

l Package Explorer 🛛 ∇ E \$ 🔻 🚰 FirstAppIndia 🗯 src com.example.firstappindia MainActivity.java Gen [Generated Java Files] Android 4.2.2 Android Dependencies 冯 assets 🔻 📴 bin 🕞 res AndroidManifest.xml jarlist.cache Iibs ▼ 📴 res Arawable-hdpi 🗁 drawable-ldpi drawable-mdpi drawable-xhdpi drawable-xxhdpi 🔻 🕞 layout activity_main.xml menu Image: Provide the second s values-sw600dp values-sw720dp-land >values-v11 Contraction AndroidManifest.xml 🍓 ic_launcher-web.png proquard-project.txt project.properties

Main Activity:

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

Android Manifest:

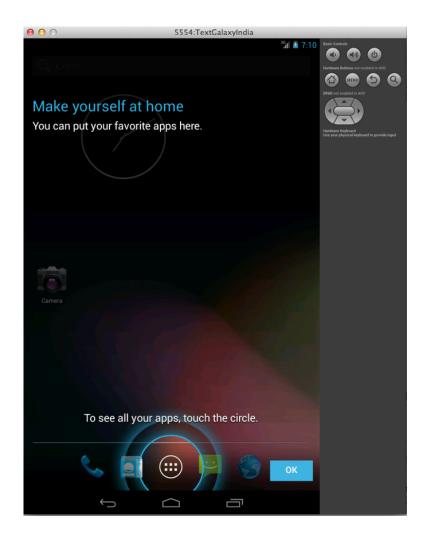
- XML file containing build information
- Keeps track of activities and other app content
- Similar to a ship manifest

Activity Main:

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

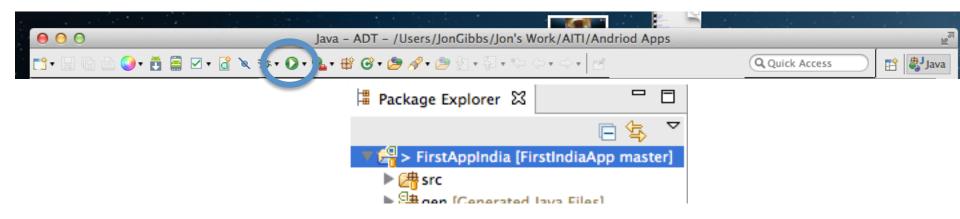


Is your AVD Ready?





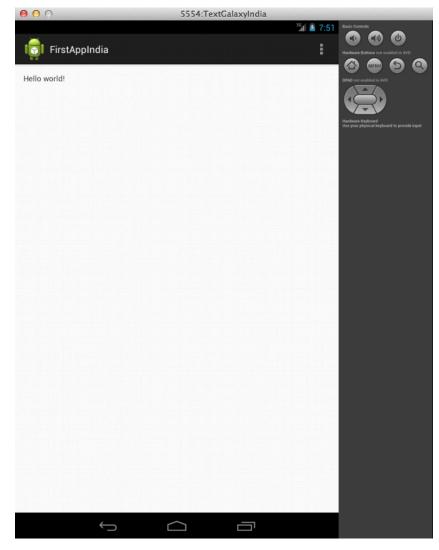
Run Your App!!!



- 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 image: Install/Update > Available Software Sites preference page.
 - 1. Click the Add... button.
 - 2. Type a name into the Name text box.
 - 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.

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



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

00	Pref	erences			
type filter text	Configuration	⇔ •⇔••			
▶ General ▶ Android ▶ Ant ▶ Aptana Studio	User Settings System Settings Repository Settings				
▶C/C++	Location: /Users/JonGibbs/.gitconfig Open				
►Help Install/Update	Key	Value	Add Entry		
 Java ÞyDev Run/Debug ▼Team File Content 	▼color ui ▼core	true	Remove		
	autocrif vser	false			
Git ▼Git	email name	jaygibbs@gmail.com Jon Gibbs			
Commit Dialog Configuration Confirmations and Wa					
History Label Decorations					
Projects Synchronize					
Window Cache Ignored Resources					
Models Validation ▶XML					
		Restore Def	aults Apply		
?		Cance	е ок		



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

00	Java – Firs	tAppIndia/res/valu	ies/strings.xml – ADT – /Use		
ti• 🛛 🖻 单 🥥)• 🗄 🖀 🗹 • 🔐 🔌 :	րչ	🕉 • 🔁 🖋 • 😂 🖞 • 🗛 • 👳		
Backage Explore	r 🛛 🗖 🖓	activity_dis	🚺 DisplayMessa 🗋 str		
	□ 🔄 🏹		on="1.0" encoding="utf-8"		
🔻 🕮 FirstAppIndia		<resources></resources>			
▼ 🕮 src	New Go Into		name="app_name">FirstApp]		
Com.es	Go mto		<pre>name="action_settings">Se name="hello_world">Hello</pre>		
Mai Gene	Commands	•	name= nello_world >hello		
► 🛋 Android 4 ► 🛋 Android E	Open in New Wind	low	>		
assets	Open Type Hierar	chy F4			
▶ 🔁 bin	Show In	ר#W ►			
🕨 📴 libs	🛅 Publish	•			
🔻 🔁 res	E Carrie	89.0			
drawał	Copy	жC			
i i i i i i i i i i i i i i i i i i i	Copy Qualified				
Grawat	💼 Paste	жv			
Contraction	🗙 Delete	X			
🕨 🗁 layout	Build Path	•			
► 🗁 menu	Source	\ ₹ ₩\$			
♥	Refactor	ר#T ►			
	N. Invest				
	import				
	🛃 Export				
	& Refresh	F5			
values	Close Project				
AndroidM	Close Unrelated P	rojects			
ic_launch	Assign Working Sets				
project.pr	Run As				
► 🚰 > MyFirstAp	Debug As				
	Profile As Validate	•			
	Team		Apply Datch		
	Compare With		Apply Patch		
	Restore from Loca		Share Project		
	PvDev	li i i i i i i i i i i i i i i i i i i			
	Android Tools	•			
	Properties	жI			
	Resource Configu	rations 🕨			



Create a repository

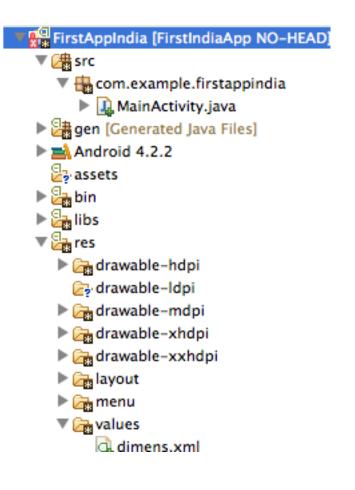
- Select "Git" on the next screen, click next
- Create a new directory OUTSIDE of your working directory
- Click through to "Finish"

000	Configure Git Repository	
Configure Git Reposi Select an existing repo	tory sitory or create a new one	GIT
Use or create reposit	ory in parent folder of project	
Repository:		Create
Vorking directory:	No repository selected	
ath within repository:		Browse
roject	Current Location Target Location	
?	Create a New Cit Repository Please determine the directory for the new repository Parent directory: //Users/JonGibbs/git Name:	Finish
🔚 Resources 🗲 st	Cancel 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

000 Java - Firs	tAppIndia	/res/value	s/strings.xml – AD	T – /Users/JonGi	bbs/Jon's Work
"	☆• ()• (⊾ • ₩ ©	• 😂 🖋 • 😂 🛃 • 🗄	2 • ♥ ♦ • ⇒ •	2
🖁 Package Explorer 🛿 🗌 🗖	activity	-	DisplayMessa	d strings.xml	MyFirstAp
🗆 🖕 🎽	-rei		n="1.0" encoding=	"utf-8"?>	
FirstAppIndia [FirstIndiaApp NO-HEA		$\Theta \cap \Theta$	Java Eler	nent Filters	
▶ 🚰 src ▶ 🚰 gen [Generated Java Files]		🗌 Name	filter patterns (matchi	ng names will be hig	iden):
Android 4.2.2				,	
assets	<td>The set</td> <td></td> <td></td> <td></td>	The set			
▶ 📴 bin ▶ 🚰 libs	<7 P		erns are separated by c tring, ? = any characte		
► 🚰 res					
AndroidManifest.xml		Select the	e elements to exclude f	from the view:	
🍇 ic_launcher-web.png 🔜 proguard-project.txt		🗌 .* res			
project.properties			d projects y library containers		
MyFirstApp [MyFirstApp master]		Empt	y packages		
		Empt	y parent packages		
		🗹 Impo	rt declarations		· · · ·
		Inner 🖸 Java f	class files		
			ries from external		
		🗌 Libra	ries in project		
		Filter des	cription:		
		Sele	ct All Deselect A		
					011
		?		Cancel	ОК
		Contraction of the local distance of the loc			



Commit the changes to your repository

 Right click your project and select Team -> Commit

values/strings.xml - ADT - /Users/J				
🖁 🞯 • 🕭 🖋 • 🅭 🖢 - 🖓 • 🖓 • 누				
🚺 DisplayMessa 🗋 strings.				
ersion="1.0" encoding="utf-8"?>				
ring name="app_name">FirstAppIn ring name="action_settings">Set ring name="hello_world">Hello world">Hello world				
•				
rces>				
pl Commit ℃#3 ≪i Fetch from Upstream				
Push to UpstreamPull				
 Synchronize Workspace Merge Tool Merge Reset Create Patch 				
Apply Patch Add to Index Semove from Index Ignore				
⁶ [€] Untrack				
ĝ Show in Repositories View 睂 Show in History				
Remote				
♣ Switch To Advanced Rebase				
∉ repase				



Commit the changes to your repository

• Add a message and commit the files!!

• Quit and Restart Eclipse ADK

00		Commit Chang	ges	
Commit Cl	hanges to Git Repository	/		GIT
Commit m	essage			7 🛃 🐔 🚱
First Co	mmit			
Author: Committer:	Jour groop (Ju) groop (e.g. m.			
Files (34/3				2
type filte	r text			
Status	Path			
	FirstAppIndia/.classpath FirstAppIndia/.gitignore FirstAppIndia/.project FirstAppIndia/AndroidMani	fest.xml		
	FirstAppIndia/bin/Android FirstAppIndia/bin/FirstApp			
	FirstAppIndia/bin/classes.c FirstAppIndia/bin/classes/			
9	FirstAppIndia/bin/dexedLib		47bb79489a18ab6e50b9	93188f780a23f.jar
?		Commit and Push	Cancel	Commit



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

0 0	5554:TextGalaxyIndia		
		36 👔 8:34	Basic Controls
👸 FirstAppIndia		:	
	i de place por la complete por la contra de la complete de la complete de la complete de la complete de la comp		Hardware Buttons not enabled in AVD
Hello Yuta and Jason!			DPAD not enabled in AVD
			Hardware Keyboard Use your physical keyboard to provide input
			оте уош ряузкая кеудоаго то рточное трих
내 기타 관계에 다 방법을 위해 집에 가지?			



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!!

Problems	@ Javadoc	😟 Declaration	📮 Console	🗊 LogCat	🗐 Histor	ry 🛛				
Project: FirstA	naladia (Eire	tindia A ani	^		S.	\$ 🖻	8 • 🖡	‡ 🛚 🔍 🍓 ء	▶ ⊉ ‡ ₽ ₼	~
	ssage			Author on Gibbs <ia< td=""><td></td><td></td><td></td><td>nitter Committed</td><td></td><td></td></ia<>				nitter Committed		
93b5fb9	First Comm							ibbs <9 minutes a		
<pre>+++ b/FirstAppIndia/res/values/strings.xml @@ -3,6 +3,6 @@</pre>			s! <td>></td> <td>g></td> <td></td> <td>d FirstAppIndia</td> <td>/res/values/strings</td> <td>.xml</td>	>	g>		d FirstAppIndia	/res/values/strings	.xml	
<td></td> <td>of file</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>		of file								



Tomorrow

- Android Activities, Layouts, Buttons
- Team Version Control
- EGit Resources: <u>http://wiki.eclipse.org/EGit/</u> <u>User_Guide#Getting_Started</u>
- 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:

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

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

Thanks Sagar for figuring this out!!

