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\textsuperscript{nd}/3\textsuperscript{rd} floor Kanwal Rekhi Building (KRESIT)

• Website: [http://aiti.mit.edu/program/india-iitb-summer-2013/](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
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

Backend

Python
Or Ruby

User Interface Platforms

Android

Mobile Web
(Django)

Text Menus/
Messages
J2ME
Mobile Platform Curriculum

- **User Interface Platforms**
  - Android Indian Population: 2% (20 Million)
  - Mobile Web (Django): 6% (60 Million)
  - Text Menus/Messages: J2ME 94% (940 Million)

- **Backend**
  - Python or Ruby

80% of lectures

20% of lectures
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??

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

80% of capability

Very Expensive

80% of capability

Low Cost
What can you do with a smart phone??

- 80% of computing power
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What can you do with a smart phone??

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- 10%-80% of the cost
- Portable

YOU GUYS!!

80% of class time
$$

Very Expensive

Low Cost

100% of jobs

MIT AITI
Mobile Platform Curriculum in 10 years

User Interface Platforms

- Android
  - Indian Population: 12% (120 Million)
- Mobile Web (Django)
  - 20% (200 Million)
- Text Menus/Messages
  - J2ME
  - 80% (800 Million)

Backend

- Python
- Or Ruby

80% of lectures

20% of lectures

Vodafone
Airtel

$\$$
Your First Android App!

• Download the Android Development Kit

• Install Egit from ADK (Eclipse)
  – Preferences->Install/Update->Available Software Sites-> Add
  – http://download.eclipse.org/egit/updates
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)
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:

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?

Make yourself at home
You can put your favorite apps here.

To see all your apps, touch the circle.
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 EGiti (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!!
Tomorrow

• Android Activities, Layouts, Buttons
• Team Version Control
• 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!!