

# Aakash application development

<http://aakashlabs.org>

Indian Institute of Technology, Bombay

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# Outline

# Introduction

- Aakash - a low cost access device
- Available for student at less than \$22

## Aakash-2 specs

- 1 Ghz Processor
- 512 MB RAM
- 4 GB ROM
- 3000 mAh battery
- Multi-touch, Capacitive
- Android ICS (4.0.4)
- Wifi connectivity
- Front camera
- Accelerometer



# Aakash Programming Lab

- Full fledged programming environment for Python-2.7.2 and other languages
- Scilab-5.4, an Open source software for numerical computation
- Was extended to C and C++ with GCC-4.6.3
- Offline docs and reference manual



# Aakash Business Tool

- It was from GNUkhata
- Portable accounting platform on Android intended for Accountants and Students.
- Easy to use UI
  - Android-xmlrcp client side (java))library
  - pysqlite2 binding



# Aakash Business Tool

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- **GNU/Linux** an alternate OS for students and teachers on Aakash
- runs entirely from external SDcard



# Arduino on Aakash

## Arduino Uno (<http://arduino.cc>)

- An open-source electronics prototyping platform
- ATmega328 microcontroller
- 16 MHz
- 32 KB flash memory





# expEyes on Aakash

## expEyes

- A tool for learning science by exploring and experimenting



# Android apps on Aakash

<https://github.com/androportal>

- Aakash Programming Lab /APL - apk
- Aakash Business Tool /ABT

## Documentation

<http://aakashlabs.org/docs>

# GNU/linux on Aakash

- <http://androportal.github.com/linux-on-aakash>
- <http://www.youtube.com/user/TheAakashTablet>

Questions?

## Developing overview

# Preparing your development system

- Android SDK
- IDE
- adding ADT plugin to your IDE

## dependencies (on Ubuntu 12.04 or later)

- `jdk6 sudo apt-get install openjdk-6-jdk`
- `sudo apt-get install ia32-libs-multiarch libc6`

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# **Android application development**



# AndroidManifest.xml

```
1<application
2    android:allowBackup="true"
3    android:icon="@drawable/ic_launcher"
4    android:label="@string/app_name"
5    android:theme="@style/AppTheme" >
6    <activity
7        android:name="com.icfoss.events.MainActivity"
8        android:label="@string/app_name" >
9        <intent-filter>
10            <action android:name="android.intent.action.MAIN"
11                />
12            <category android:name="android.intent.category.LAUNCHER" />
13        </intent-filter>
14    </activity>
15</application>
```

/src/com/icfoss/events/MainActivity.java

```
1 public class MainActivity extends Activity {  
2     @Override  
3     protected void onCreate(Bundle savedInstanceState) {  
4         super.onCreate(savedInstanceState);  
5         setContentView(R.layout.activity_main);  
6         // new DownloadFileAsync().execute();  
7     }
```

## /res/layout/activity\_main.xml

```
1<RelativeLayout xmlns:android="http://schemas.android.
  com/apk/res/android"
2    xmlns:tools="http://schemas.android.com/tools"
3    android:layout_width="match_parent"
4    android:layout_height="match_parent"
5    tools:context=".MainActivity" >
6
7    <TextView
8        android:layout_width="wrap_content"
9        android:layout_height="wrap_content"
10       android:layout_centerHorizontal="true"
11       android:layout_centerVertical="true"
12       android:text="@string/hello_world" />
13
14</RelativeLayout>
```

# Android debugging

## adb - *android debug bridge*

- lists all the devices attached to my system
- drop to android's *shell*
- install/uninstall apk's
- copying files to/from an emulator/device
- issue *shell* commands
  - pm - package manager
  - am - activity manager
- specify device with -d, -e, -s
- adb server

\*enable *USB debugging*

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## Android debugging cntd..

- Android Virtual Device (avd)
- Software Development Kit (sdk)
- logcat
- dmesg
- monitor

## References and links

- [developer.android.com](http://developer.android.com)
- [www.youtube.com/playlist?list=PL4CC7F724314E6C42](http://www.youtube.com/playlist?list=PL4CC7F724314E6C42)
- [www.mkkyong.com/tutorials/android-tutorial](http://www.mkkyong.com/tutorials/android-tutorial)
- <http://code.google.com/p/android-scripting>

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