MIT
Global Startup Labs

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Indonesia Summer 2013
Meetup 03 – Activity Lifecycle, Intents and Event Handlers

MISTI

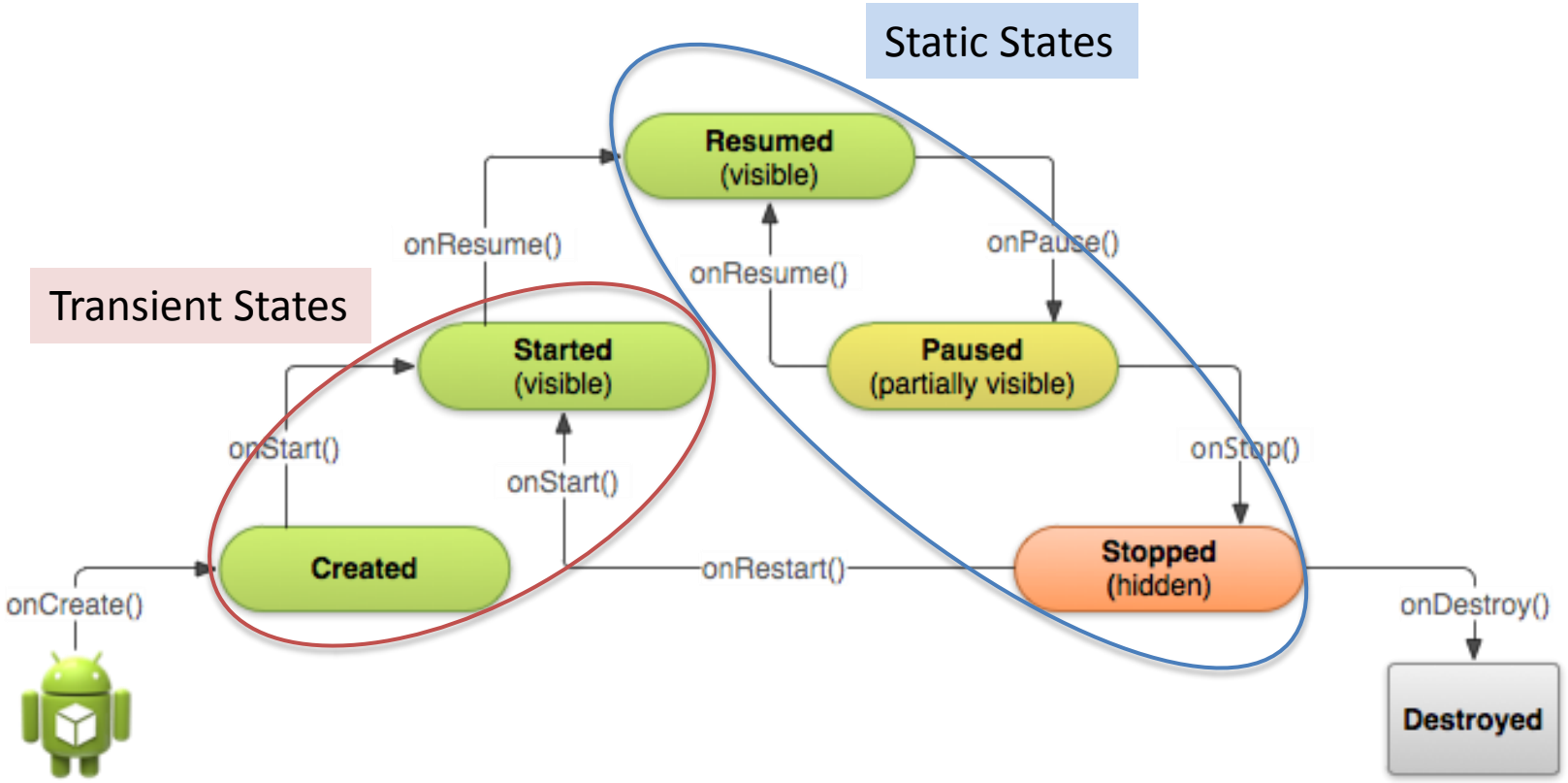
Google

Today‘s Meetup

- The Activity Lifecycle
- Intents
- Event handlers: OnClick, OnLongClick, etc
- Using your own Android device
- Handing in the Assignment

Activity Lifecycle

Basic Activity Lifecycle



http://developer.android.com/training/basics/activity-lifecycle/index.html

Static States

- Resumed (visible): Running State
  - Initialize System recources
- Paused (partially visible)
  - Stop animations or other ongoing actions that could consume CPU
  - Commit unsaved changes
  - Release system resources (e.g. GPS, Camera)
- Stopped (hidden)
  - Release all unneeded resources

Specify State Transition

We have to specify what happens when our activity enters different states

Java Code

```
@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
}

public void onPause() {
    //define what happens if activity enters the pause state
    //e.g. stop camera
}

public void onResume() {
    //define what happens if activity enters the resume state
    //e.g. initialise camera
}
```

OnCreate(): UI is inflated from XML code

OnPause(): Stop actions/release resources

OnResume(): Start actions/ Initialise resources

For most simple activities OnStop(), OnRestart(), OnStart() don‘t have to be implemented

Intents

Intents

- *Object* that carries communications between the major components of application
  - Activities (mostly used to start another activity)
  - Services
  - Broadcast Receivers
- Distinguish between explicid and implicid intents

Explicid Intent

- Specifies the exact recipient activity or application
- Add additional information to intent
- Example: starting another activity

Method called when button is clicked

Java Code

```
public void new_activity(View v){
    Intent intent = new Intent(this, CalculatorActivity.class);
    //Can define information to pass on to new activity
    startActivity(intent);
}
```

Recipient specified

Implicid Intents

- Recipient not explicitly specified: Android needs to infer from the other parameters where to pass the intent onto

Example: opening a webpage

```
Uri webpage = Uri.parse("http://www.android.com");
Intent webIntent = new Intent(Intent.ACTION_VIEW, webpage);
```

Recipient (Browser) not specified
BUT: property webIntent defined

Example: starting a phone call

```
Uri number = Uri.parse("tel:5551234");
Intent callIntent = new Intent(Intent.ACTION_DIAL, number);
```

Recipient (Phone) not specified
BUT: property callIntent defined

Event Handlers

Basic Event Handlers

We want to define what happens when we perform an action:

- Click on a button (short or long)
- Press a Key on our Android Device
- Touch, gestures
- etc

OnClick() is easiest to implement: Can be defined in XML code since Android 5.0

OnClick()

Can be implemented in XML and called in Java

Java Code

```
import android.os.Bundle;
import android.app.Activity;
import android.view.Menu;
import android.view.View;
import android.widget.RelativeLayout;
import android.content.Intent;

public class MainActivity extends Activity {

    RelativeLayout background;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        background=(RelativeLayout)findViewById(R.id.background);
    }

    public void whiteClicked(View v){
            background.setBackgroundResource(R.color.white);
          }
```

ID „background“ set to RelativeLayout in XML

XML Code

```
<Button
    android:id="@+id/buttonwhite"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentTop="true"
    android:layout_centerHorizontal="true"
    android:layout_marginTop="132dp"
    android:text="@string/white"
    android:textColor="@color/white"
    android:onClick="whiteClicked"/>
```

Set out variable „background“ to our layout

Called when Button „white“ is clicked

Implement Event Listeners

For other events an EventListener has to be implemented:

- onClick()
- onLongClick()
- onFocusChange()
- onKey()
- onTouch()
- onCreateContextMenu()

Example: OnLongClick()

```
public class MainActivity extends Activity implements OnLongClickListener{

    RelativeLayout background;
    Button b1;
    Button b2;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

         b1 = (Button) findViewById(R.id.button1);
         b2 = (Button) findViewById(R.id.button2);
         b1.setOnLongClickListener(this);
         b2.setOnLongClickListener(this);

        background=(RelativeLayout)findViewById(R.id.background);
    }

    public boolean onLongClick(View v) {

        switch (v.getId()) {
            case R.id.button1:
                background.setBackgroundResource(R.color.White);
            break;
            case R.id.button2:
                background.setBackgroundResource(R.color.Black);
            break;
        }
        return false;
    }
```

Initiate variables

Assign EventListener to Button widgets

Define action triggered by our event

Java Code

Using your own Android Device

Android device instead of Emulator

You can use an Android device instead of the emulator (which should run faster)

- Enable USB-Debugging on your phone
- Connect it to your computer
- ADB should recognize it and you can use it the same way as a virtual device

http://developer.android.com/tools/device.html

Today‘s Assignment

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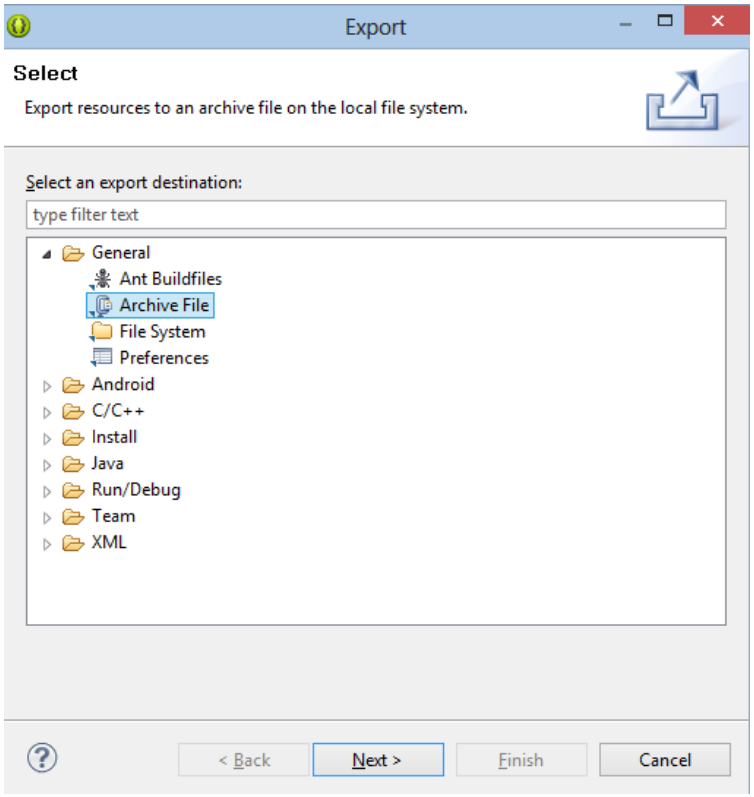
Hand in Lab02: Basic Calculator

- Zip your Project folder and submit it to the dropbox
- Tell us your MUST DO‘s in Yogyakarta!
- Have a good weekend!!

Export your project

Right click on your project folder -> Export



General -> Archive File Next

- Select project
- Include all files
- Save in zip format: calculator_*yourname*.zip
- Upload to Box

You should have gotten a DropBox invite (if not, see me!)