Mobile Application Programming: Android

Custom Layout
Activities

- Apps are composed of activities
- Activities are self-contained tasks made up of one screen-full of information
- Activities start one another and are destroyed commonly
- Apps can use activities belonging to another app
View & ViewGroup

TextView
Large Medium Small
Button Small OFF
CheckBox RadioButton
CheckedTextView
Spinner

firstname lastname
1...2...3
user@domain
(555) 0100

Address
Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor

Sync Browser
5/31/2012 4:58 PM

Off On OFF ON

Yes Maybe No
Android Layout

View Group

- GridLayout
- LinearLayout (Vertical)
- LinearLayout (Horizontal)
- RelativeLayout
- FrameLayout
- Include Other Layout
- Fragment
- TableRow
- Space
View Group
View Layout Directives

Gravity

Padding

LayoutParams
Custom View Group

- Subclass `ViewGroup`
  - Override Constructors
  - Override `onMeasure` to size `view group` itself
  - Override `onLayout` to layout each `child`
- Subclass `LayoutParams` as inner class (if needed)
Custom View Group

- Override `onMeasure` to size view group itself
  - Usually requires asking `children` for their size!
    - Use `getChildAt` and `measureChild` to find size
  - Respect suggested minimum size with `getSuggestedMinimumWidth` and `getSuggestedMinimumHeight`
- Must call `setMeasuredDimension` to report size
  - Use `resolveSizeAndState` to combine results
Custom View Group

- Override `onLayout` to layout each child
- Iterate over children using `getChildCount` and `getChildAt`
- Ask child for its requirements using `getMeasuredWidth` and `getMeasuredHeight`
- Calculate `layout rectangle` trying to respect the requirements and view group’s own padding
- Respect `gravity` by calling `Gravity.apply`
- Call `layout` on child with resulting rectangle
Custom View Group

- Subclass `LayoutParams` (if needed)
  - Make as a `public inner class` of custom view group
  - Include any `additional layout options` needed
  - Respect XML layout directives in constructors (later)
- Override required methods in `ViewGroup` subclass
  - `generateLayoutParams`
  - `generateDefaultLayoutParams`
  - `checkLayoutParams`