SoftUni Foundation

android development

for beginners

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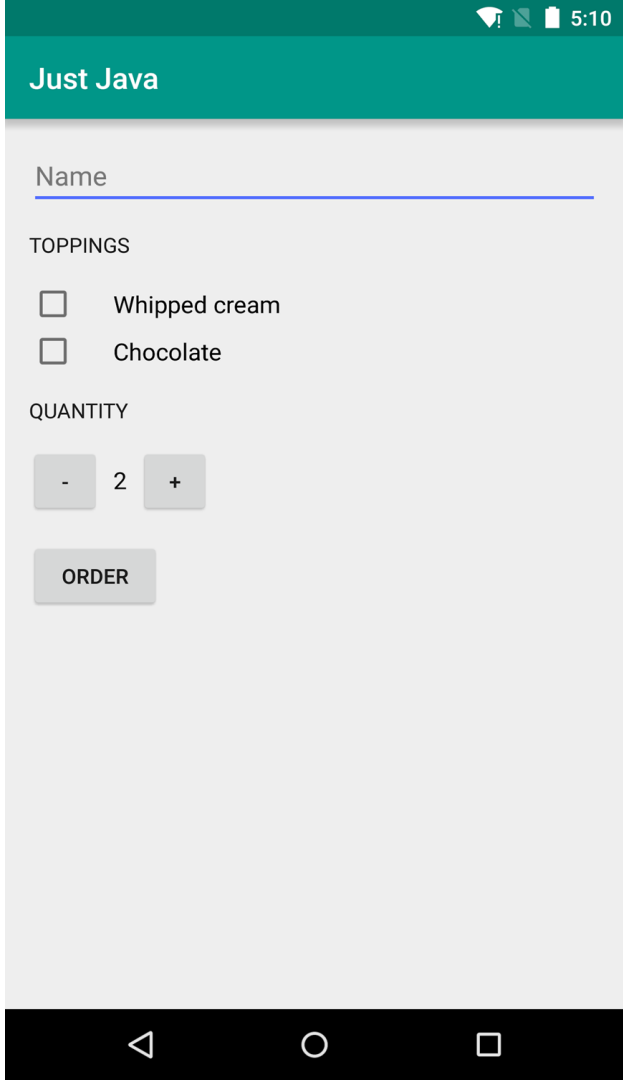
Part 2
connecting to Java

What we'll learn

- We'll have the user interact with our app
- Collect data
- Send it
- We'll make a simple coffee ordering app



CREATE NEW PROJECT

- [ ] create new project and run it on your device

Application Name: Just Java

Domain Name: android.example.com

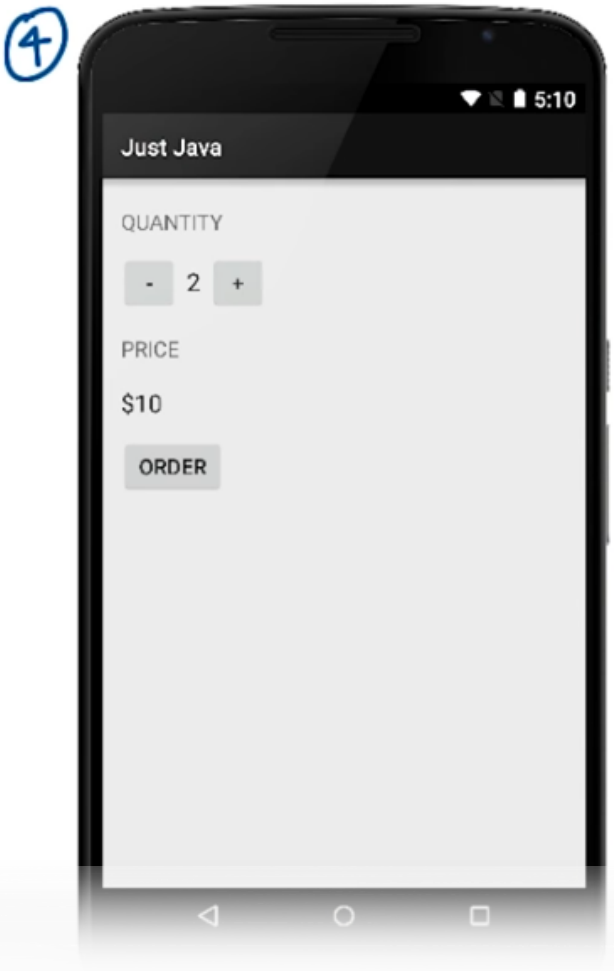
Package Name: com.example.android.justjava

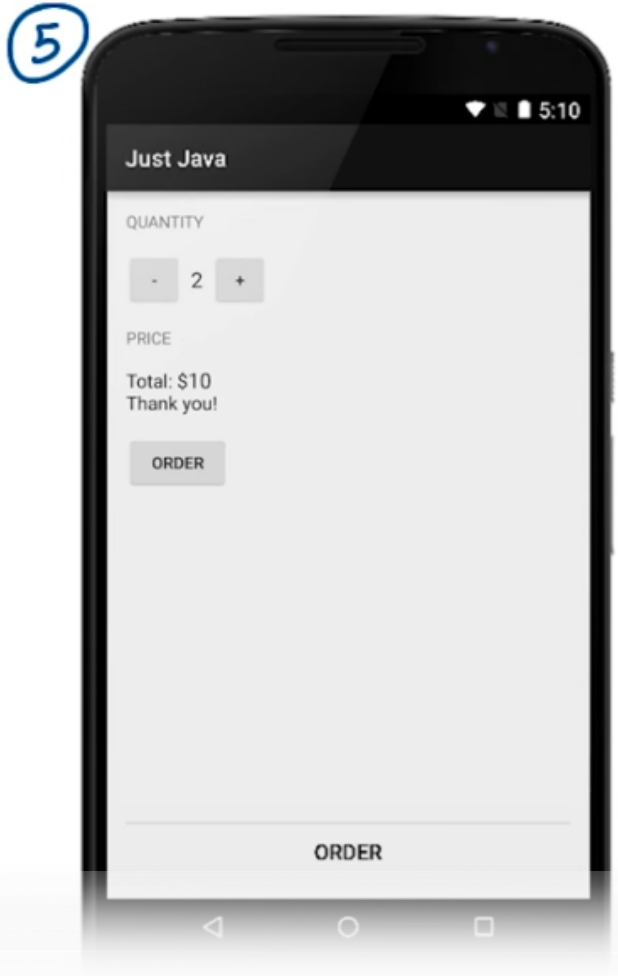
Use Empty Activity template

Minimum SDK Level: API 15 Android 4.0.3 Ice Cream Sandwich

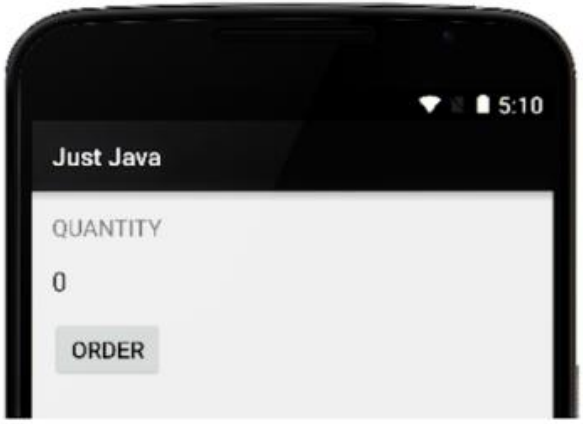
ui first


1
5:10
Just Java
QUANTITY
2
ORDER
2
5:10
Just Java
QUANTITY
2
PRICE
$10
ORDER
3
5:10
Just Java
QUANTITY
+
2
-
PRICE
$10
ORDER


4
5:10
Just Java
QUANTITY
-
2
+
PRICE
$10
ORDER


5
5:10
Just Java
QUANTITY
-
2
+
PRICE
Total: $10
Thank you!
ORDER
ORDER

PLAN! HOW TO BUILD THIS LAYOUT



STEP 1: Select Views (which views?)

STEP 2: Position Views (Which ViewGroup will be root view?)

STEP 3: Style Views (Anything we need to do here?)

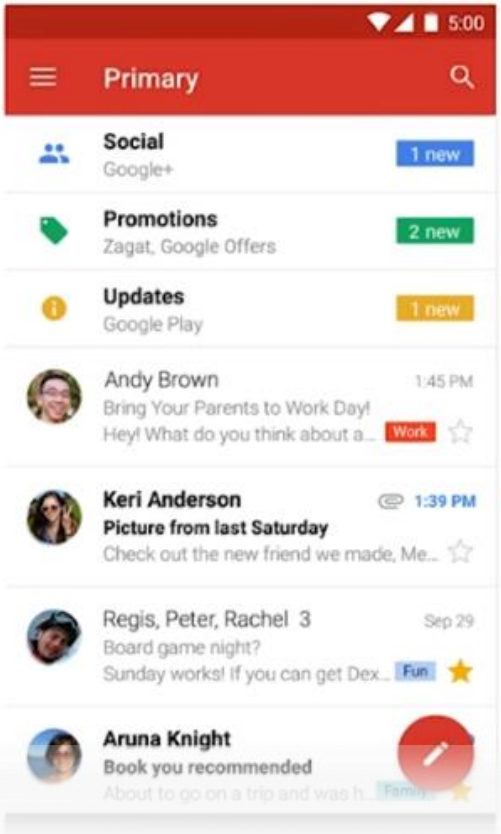
BUILD THIS LAYOUT

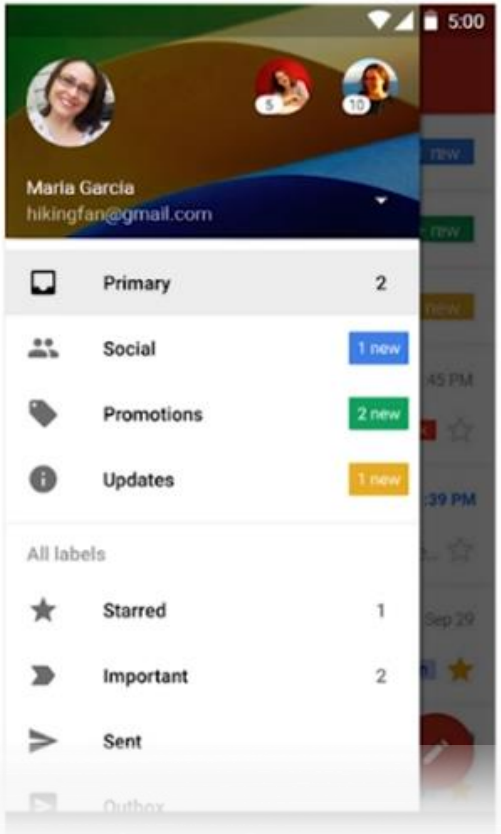
1. Modify activity_main.xml to build this layout.
2. Assign the second TextView (that shows 0) a view ID name of @+id/quantity_text_view
3. Run the app on your device.

What happens when you click on the Button?

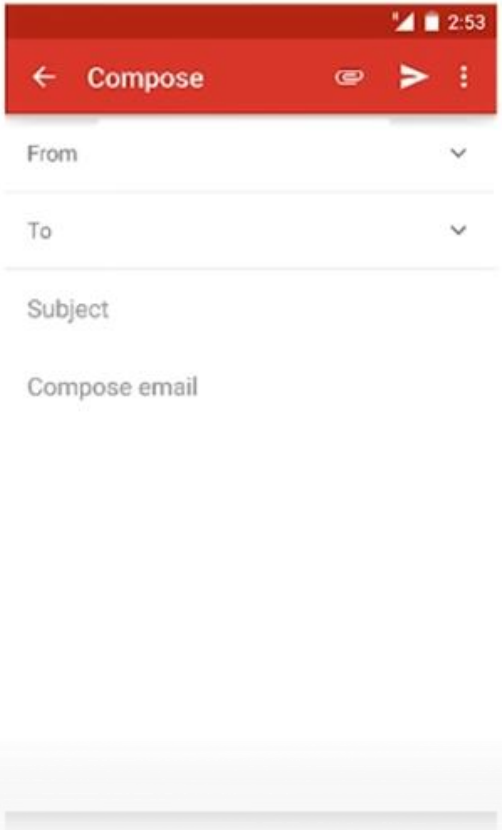
java code

ConversationListActivity





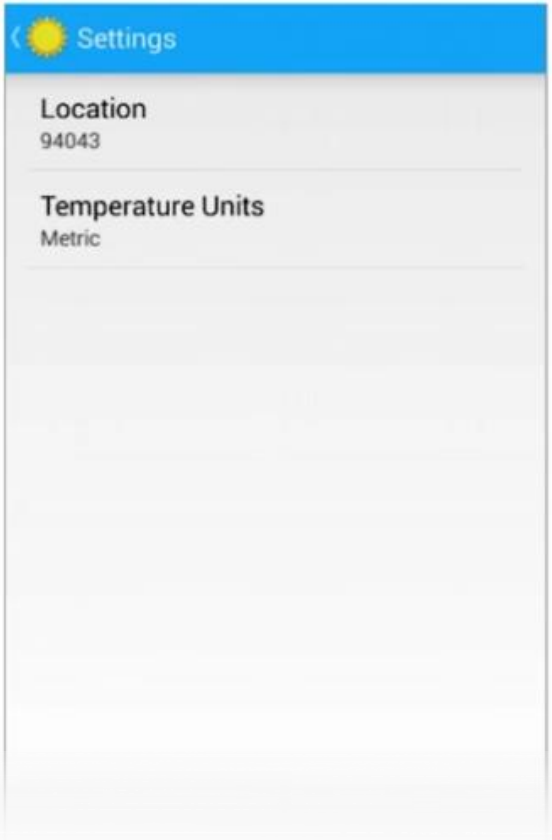
Compose Activity



MainActivity

DetailActivity

SettingsActivity



Open our MainActivity.java

Find it in app/your_package_name/MainActivity

And Don’t Panic!

Steps to follow

1. Delete the code in your MainActivity
2. Open this link: https://gist.github.com/udacityandroid/83242daf8a43b743d05e98733a35b19f
3. Copy the new code and paste it inside your MainActivity
4. Add to your xml button the line: android:onClick=”submitOrder”
5. Run the app

BUTTON CLICK

1. Modify activity_main.xml to add this Button XML attribute.

   android:onClick="submitOrder"

2. Replace entire MainActivity.java file with the file provided in the link in instructor notes.

3. Run app on device.

What happens when you click on the Button?

DISPLAYING A NUMBER

Experiment with the line of code in MainActivity.java that says:

```
display(1);
```

- [ ] Try changing the number inside the parentheses.

ANDROID WILL DO THE MATH FOR YOU

ARITHMETIC OPERATORS

Addition + Subtraction -

Multiplication * Division /

Experiment with different math expressions.

```
display(18 * 3 + 4 / (2 + 2) - 1);
```

?

Display # of coffees needed if...
There are 77 Android developers who drink 2 cups each and 1 person walks in late and needs a cup too.

ADD TEXTVIEW FOR PRICE $

- [ ] 1. Add 2 TextViews to layout

assign view ID

`@+id/price_text_view`

to view displaying price →

- [ ] 2. Modify MainActivity to include the new `displayPrice(View view)` method (see link in notes)

*Make sure Auto Import is on in Android Studio

- [ ] 3. Add another line of code in `submitOrder(View view)`

example →

```
display(2);
displayPrice(2*5);
```

Link: here

variables

USING LITERAL

Quantity is:

2

Price is:

2 * 5

Paper cup charge is:

2 * 2

USING VARIABLE

Quantity is:

numberOfCoffees

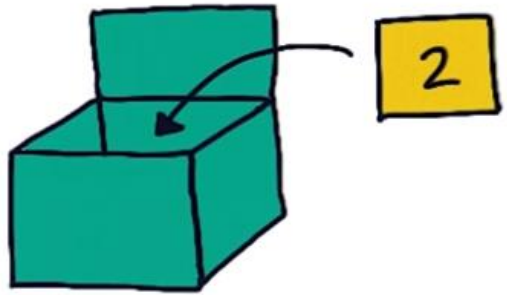
Price is:

numberOfCoffees * 5

Paper cup charge is:

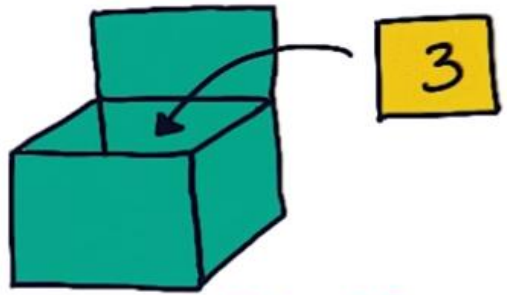
numberOfCoffees * 2

USING VARIABLE




```
int numberOfCoffees = 2;

display(numberOfCoffees);

displayPrice(numberOfCoffees * 5);
```

USING VARIABLE



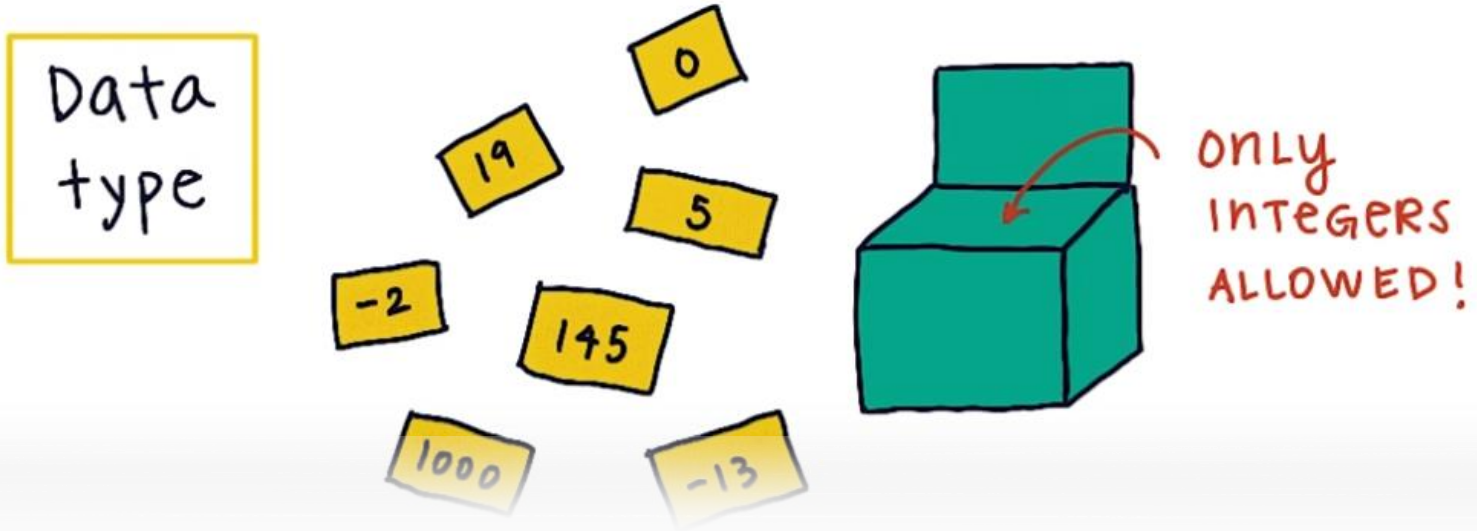

```
int numberOfCoffees = 3;

display(numberOfCoffees);

displayPrice(numberOfCoffees * 5);
```

DECLARE A VARIABLE

```
int numberOfCoffees = 2;
```

DECLARE A VARIABLE

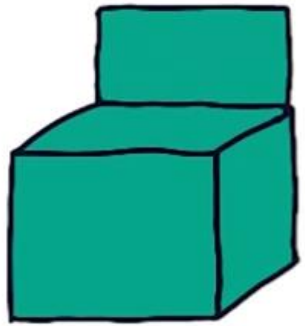
```
int numberOfCoffees = 2;
```



DECLARE A VARIABLE

```
int numberOfCoffees = 2;
```

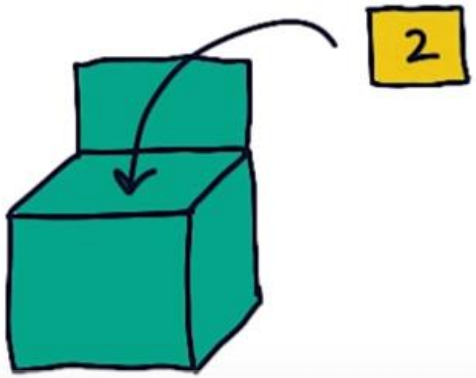
Variable name



number Of Coffees

DECLARE A VARIABLE

```
int numberOfCoffees = 2;
```



Assignment operator

"Assign value to variable"

DECLARE A VARIABLE

```
int numberOfCoffees = 2;
```

CREATE AND USE VARIABLES, CONT'D

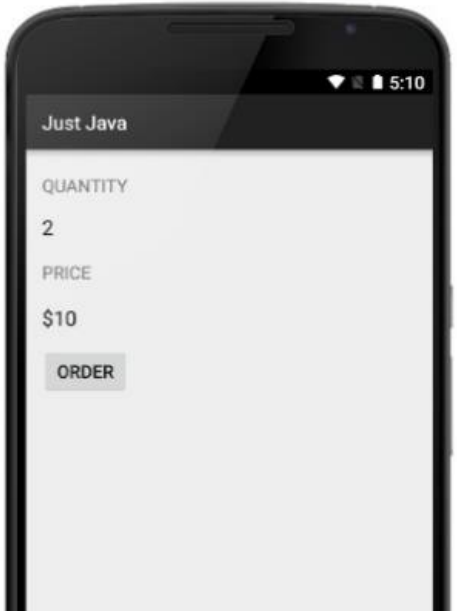
- [ ] 1. Create an integer variable to store # of coffees

```
int numberOfCoffees = 2;
```

- [ ] 2. Use variable

```
display(numberOfCoffees);
displayPrice(numberOfCoffees * 5);
```

- [ ] 3. Check app



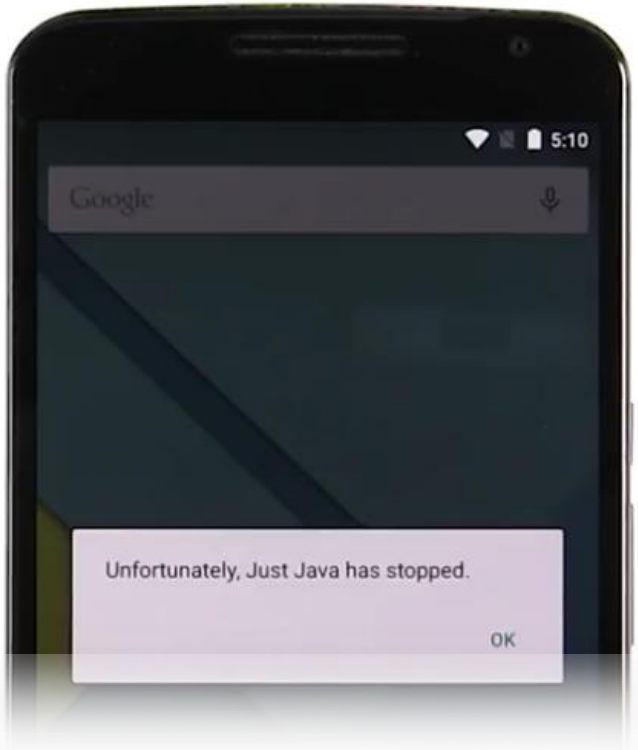
- [ ] 4. Assign a new initial value

```
int numberOfCoffees = 2;
```

- [ ] 5. Assign a new variable name like quantity

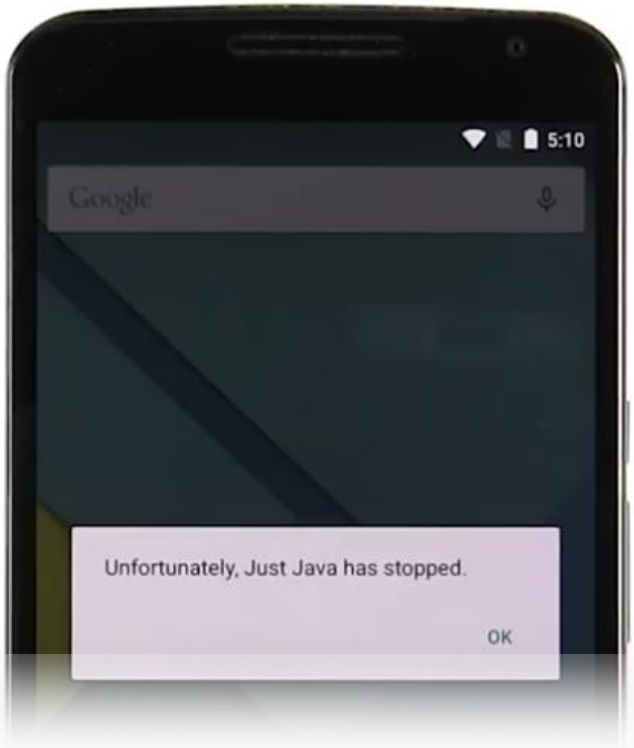
crashes

UH OH ... THE APP CRASHED !



UH OH ... THE APP CRASHED !

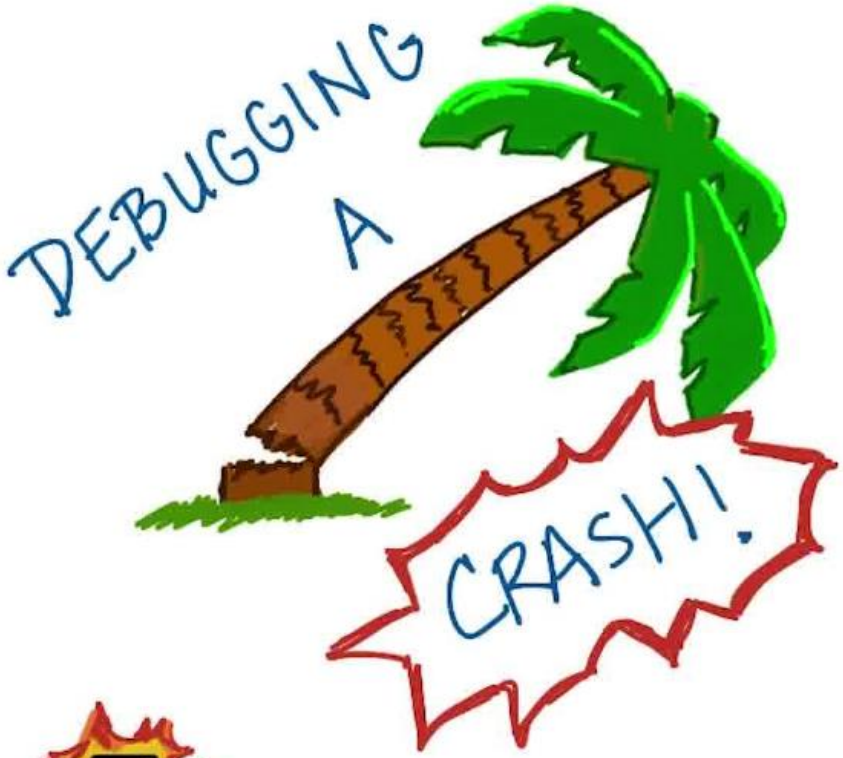
What do I do?



Debug the app!

How to make it crash

- Change the method name submitOrder to something else
- Run the app
- Click the Order button
- Observe the crash log



Check this box when you're done!

1. Create a crash in your app by changing `submitOrder`
2. Check the logs for the error stack trace & read the error message
3. Fix the error so your app works again

Quantity Picker

- [ ] 1. Modify activity_main
  - change layout
  - when + call increment
  - when - call decrement
- [ ] 2. For increment method
  - create quantity variable and initialize to 3
  - display quantity
- [ ] 3. For decrement method
  - create quantity variable and initialize to 1
  - display quantity

debugging

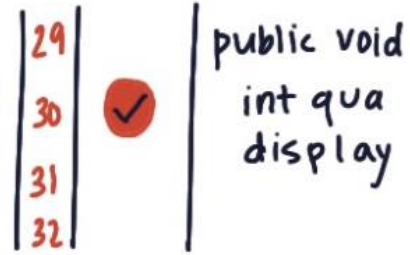
Debugging in Android

Steps

- Click in front of the code to add a breakpoint
- Add a breakpoint on the first lines of the increment and decrement methods
- Run the app in debug mode (bug icon)
- Use F8 to step over lines of code and F7 to step into code
- Observe the behavior of the app while you are debugging

DEBUGGING IN ANDROID

- [ ] Add red breakpoint in first line of `increment` & `decrement` methods



- [ ] Run in Debug Mode

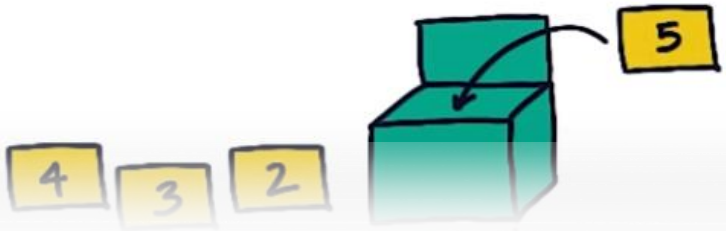
- [ ] Step through each line of code.

  Click ▶ to resume execution of app.

updating variables

UPDATING A VARIABLE in the app!

```
int quantity = 2;

quantity = 3;

quantity = 4;

quantity = 5;
```



UPDATING A VARIABLE

- [ ] Modify the `increment()` method in the `MainActivity.java` file to update the `quantity` variable.

```
int quantity = 2;
quantity = 3;
display(quantity);
```

- [ ] Use the debugger to step through and verify that `quantity` variable is updated as expected.

- [ ] Repeat above steps for the `decrement()` method. Initialize `quantity` to 2, then update to 1 cup of coffee.

UPDATING A VARIABLE

Pseudocode

Create quantity variable, set it to 2.

Take current quantity value, add 1,
and make that the new quantity value.

Take current quantity value, add 1,
and make that the new quantity value.

Java Code

```
int quantity = 2;
```

```
quantity = quantity + 1;
```

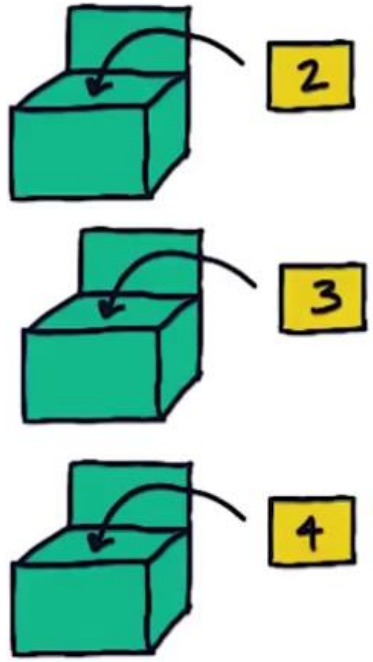
```
quantity = quantity + 1;
```

UPDATING A VARIABLE

```
int quantity = 2;

quantity = quantity + 1;

quantity = quantity + 1;
```

2+1=3

3+1=4



UPDATING A VARIABLE

To completely new value

```
int quantity = 2;

quantity = 3;

quantity = 4;
```

Based on current value of variable

```
int quantity = 2;

quantity = quantity + 1;

quantity = quantity + 1;
```

INCREMENT METHOD

- [ ] Modify the `increment()` method in the `MainActivity.java` file to update the `quantity` variable.

```
int quantity = 2;
quantity = quantity + 1;
display(quantity);
```

- [ ] Use the debugger to step through and verify that `quantity` variable is updated as expected.

- [ ] Experiment with updating the `quantity` variable with other expressions like `quantity = 2 * quantity;` Then revert code back.

DECREMENT METHOD

- [ ] Modify the `decrement()` method in the `MainActivity.java` file to initialize the `quantity` variable to 2 cups of coffee. Then decrease `quantity` by 1 coffee cup.

- [ ] Use the debugger to step through and verify that `quantity` variable is updated as expected.

variable scope

LOCAL VARIABLE SCOPE

```
public class MainActivity {

  public void increment(View view){
        int quantity = 2;
        quantity = quantity + 1;
        display(quantity);
  }

  public void decrement(View view) {
        int quantity = 2;
        quantity = quantity - 1;
        display(quantity);
  }
  ...
}
```

GLOBAL VARIABLE SCOPE

```
public class MainActivity {

  int quantity = 2;

  public void increment(View view){
        quantity = quantity + 1;
        display(quantity);
  }

  public void decrement(View view) {
        quantity = quantity - 1;
        display(quantity);
  }
  ...
}
```

CREATE A GLOBAL VARIABLE

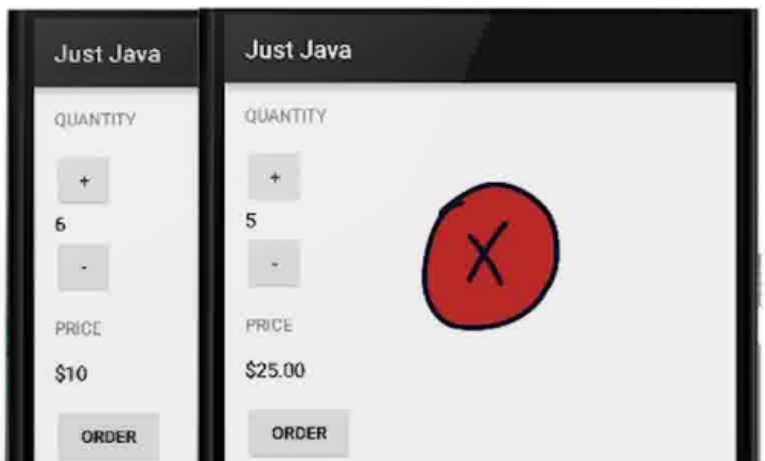
- [ ] Replace 2 local quantity variables with 1 global quantity variable.
- [ ] Use the debugger to verify that quantity variable is updated as expected.
- [ ] Experiment. Try different initial quantity value like 0. Or try doubling or halving quantity each time + or − is clicked.

FIX THE ORDER BUTTON

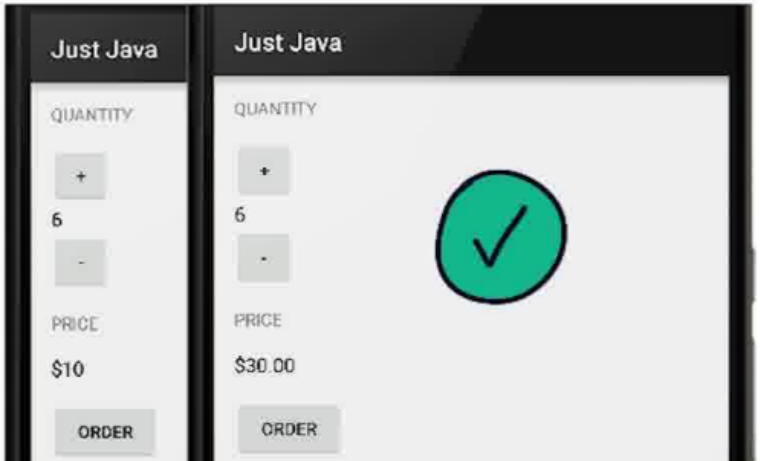
Incorrect

FIX THE ORDER BUTTON

Describe the gap between what we have now and what we want.



DONE!



variable scope

QUANTITY PICKER

Makin' it look better

PLAN! HOW TO BUILD THIS LAYOUT

STEP 1: Select Views (which views?)

STEP 2: Position Views (Which ViewGroups are relevant?)

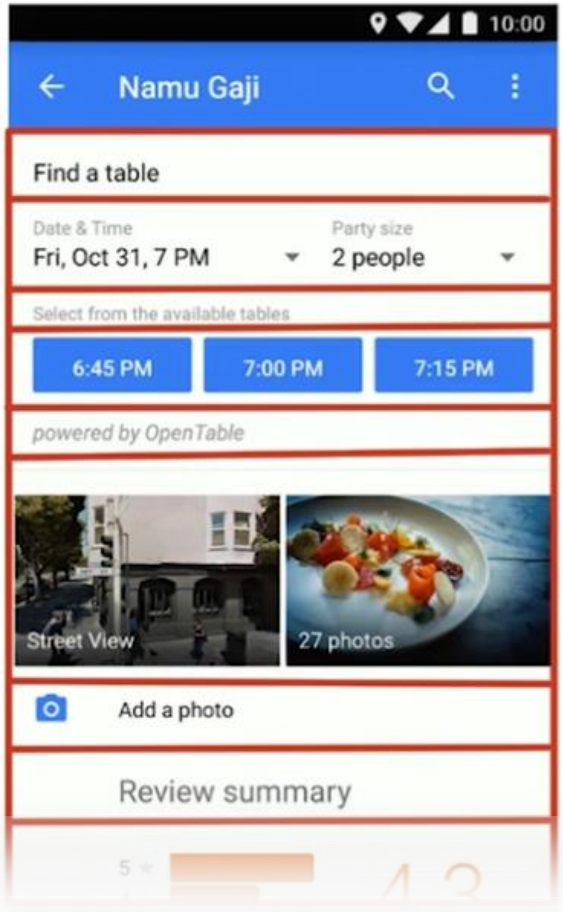
STEP 3: Style Views (Anything we need to do here?)

NESTED VIEWGROUPS


11:42
The Light
SBTRKT (feat. Denai Moore)
0:04
3:06

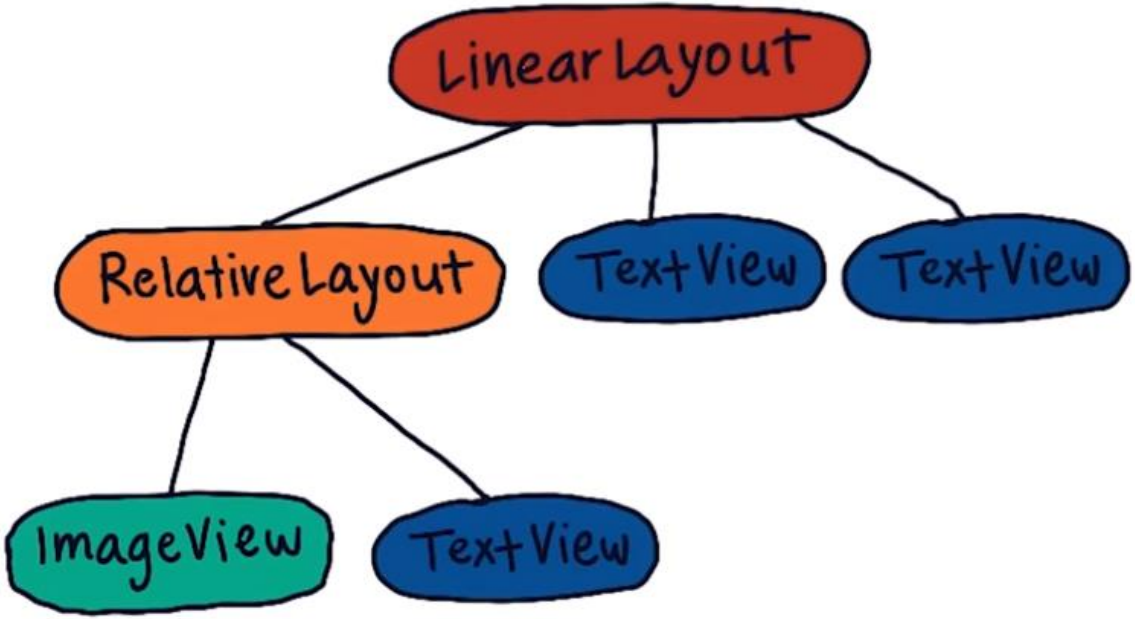

11:42
The Light
SBTRKT (feat. Denai Moore)
0:04
3:06


10:00
Namu Gaji
4.3 ★★★★½ 48 reviews · $$
19 min
Asian Restaurant
CALL
SAVE
WEBSITE
An open kitchen turns out innovative dishes by way of local produce & Korean culinary traditions.
499 Dolores St, San Francisco, CA 94110
11:30 AM – 4:00 PM · 5:00 PM – 11:0...

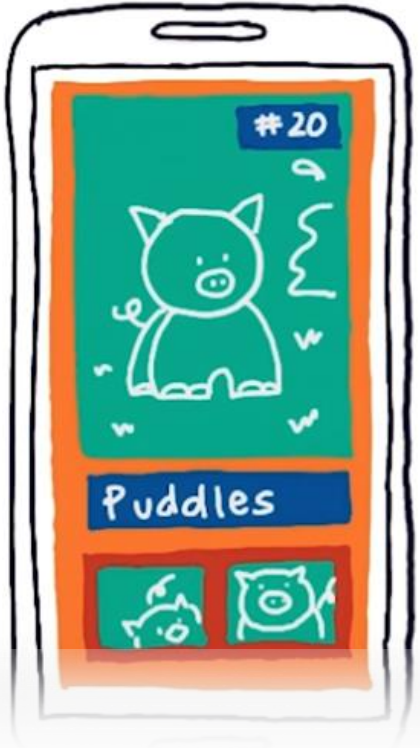

10:00
Namu Gaji
Find a table
Date & Time
Fri, Oct 31, 7 PM
Party size
2 people
Select from the available tables
6:45 PM
7:00 PM
7:15 PM
powered by OpenTable
Street View
27 photos
Add a photo
Review summary

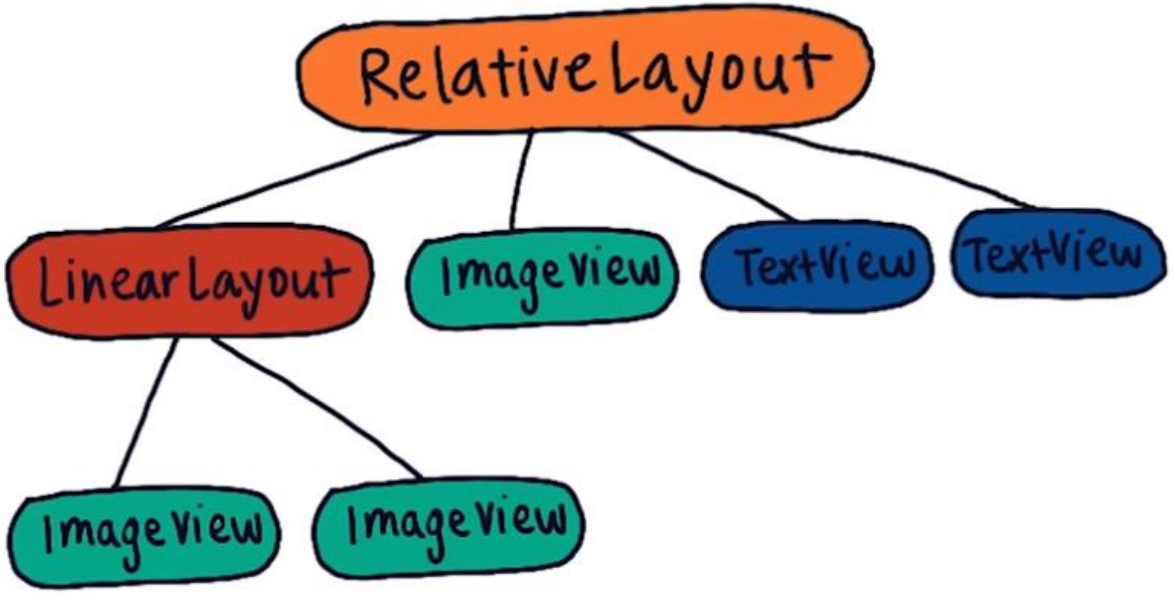
view hierarchy

NESTED VIEWGROUPS



NESTED VIEWGROUPS

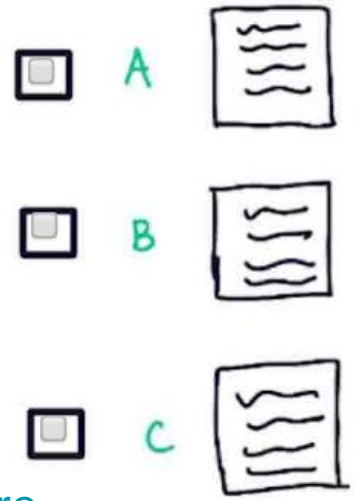




quiz time

NESTED VIEWGROUPS

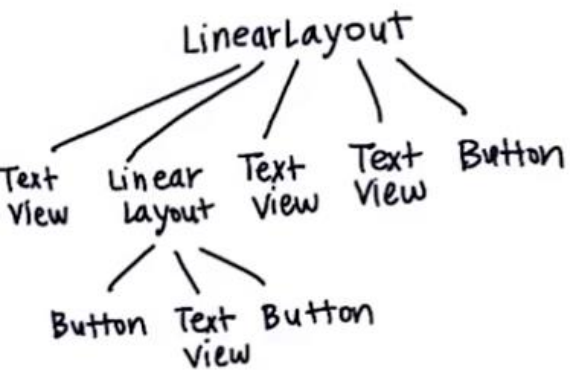
To determine correct XML layout, first draw out view hierarchy diagram for each option.



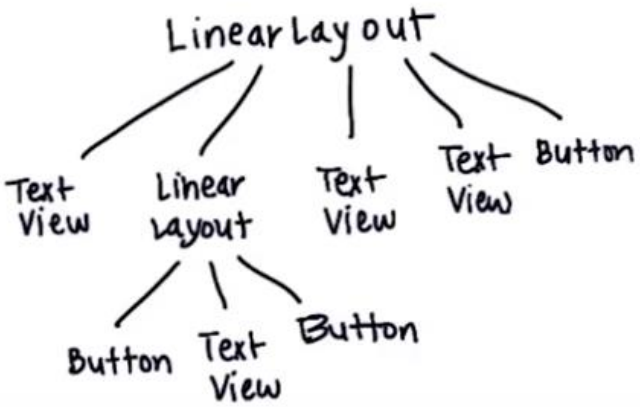
Link: here

NESTED VIEWGROUPS

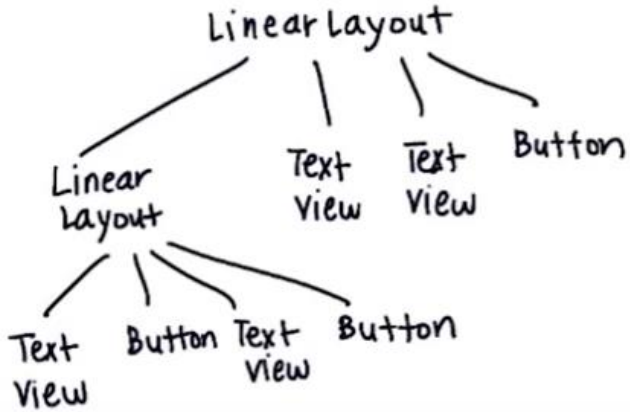
OPTION A



OPTION B



OPTION C



NESTED VIEWGROUPS

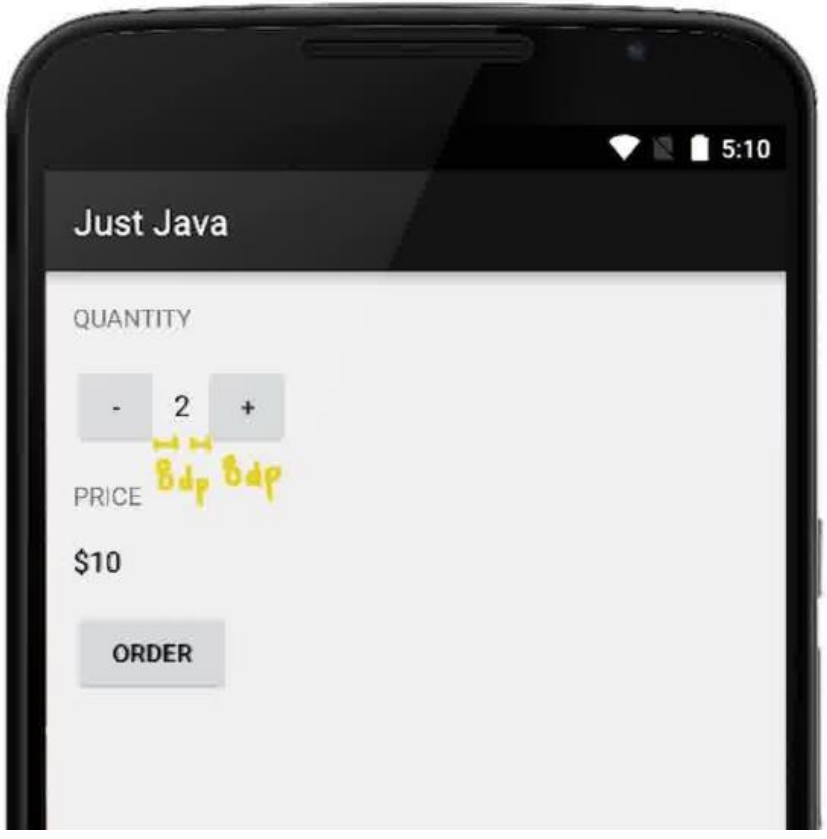
Sketch out what each option would look like on a device.

Which XML file option gives the desired layout?

- A 
- B 
- C 

BUILD IMPROVED QUANTITY PICKER

Back to Android Studio land



Done!

CHECKBOX FOR WHIPPED CREAM

STEP 1: Select Views

STEP 2: Position Views

STEP 3: Style Views

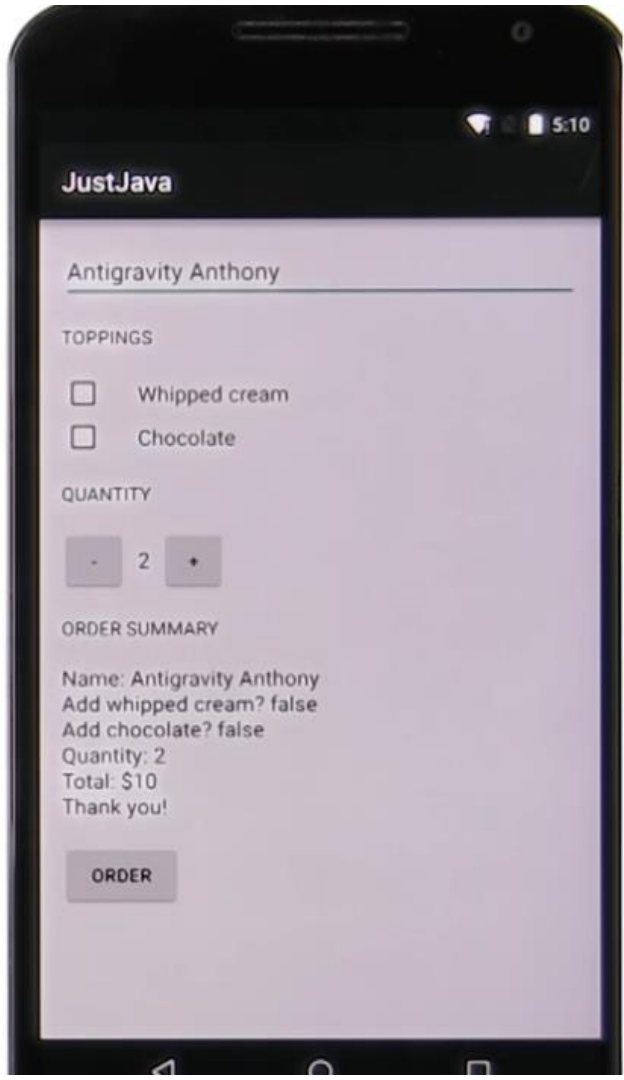
Then add this to your app!

NAME FIELD

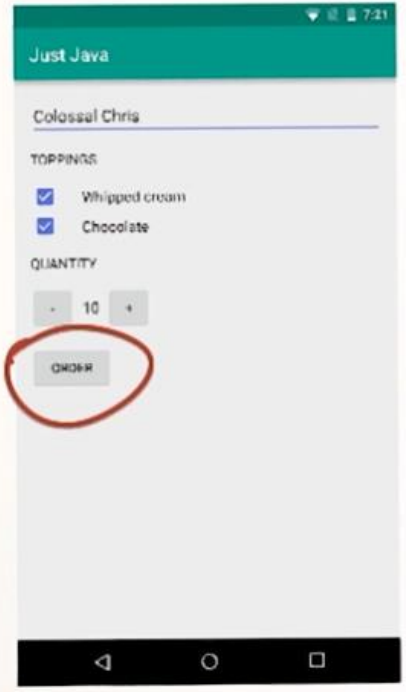
Allow the user to enter their name and update the order summary to include the name.

Plan out the steps you need to do:

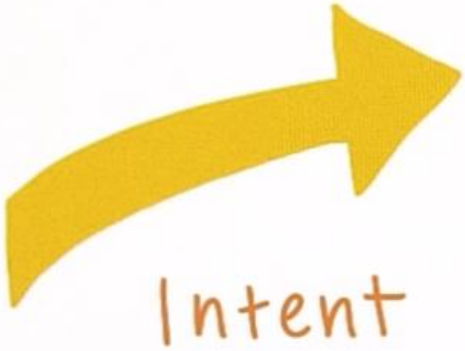
* Use Logging to verify values along the way

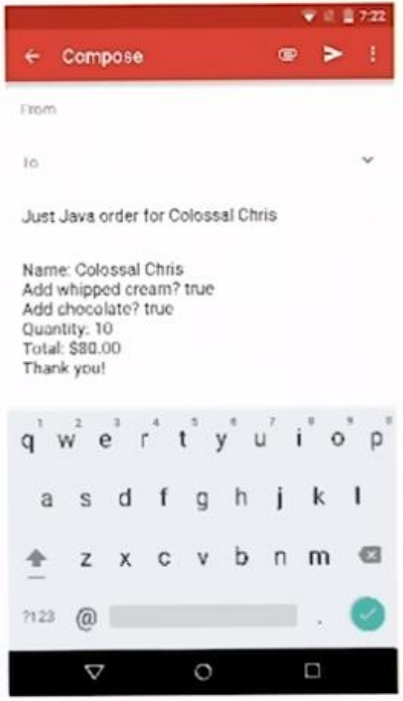


SENDING INTENTS



Just Java app



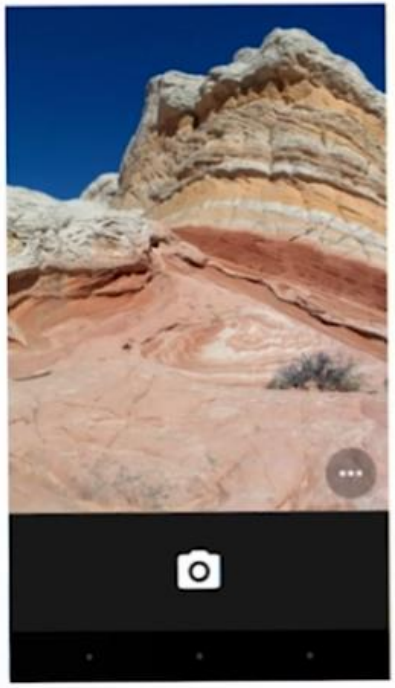


Email app

SENDING INTENTS

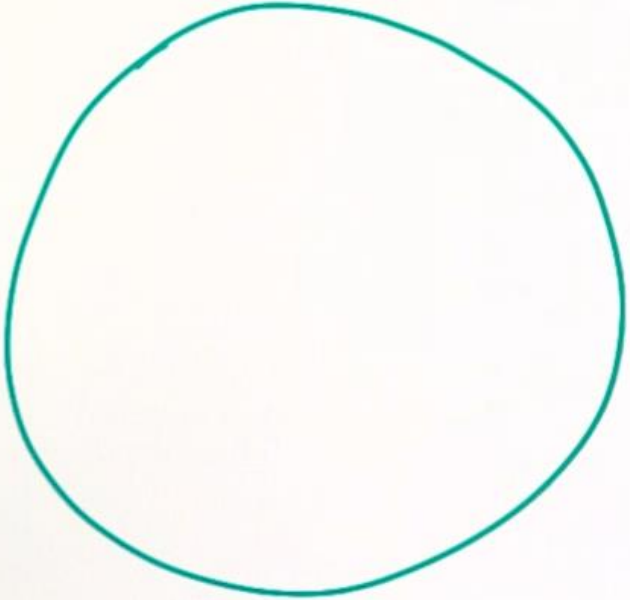
Google keep app

Intent



Camera app

WHAT'S INSIDE AN INTENT?



- Action
- Data
- Category
- Component
- Extras

Example dial intent

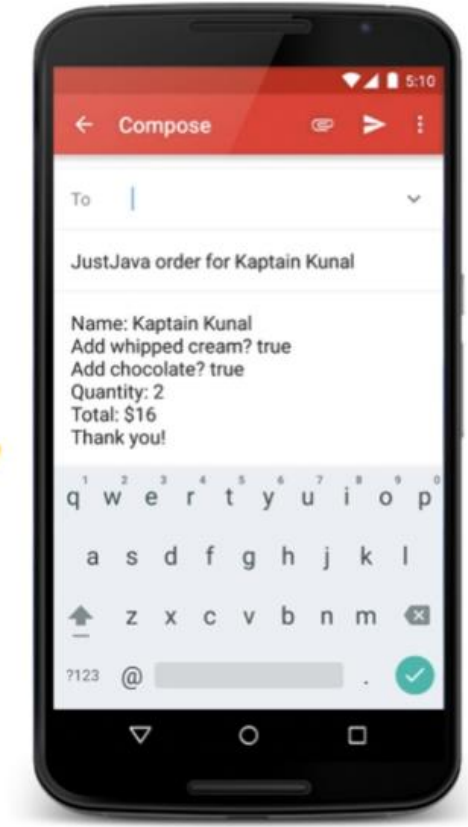
ACTION_DIAL

tel:2125551212

EMAIL OUT THE ORDER SUMMARY

Experiment with sending intents from the Common Intents guide.

- [ ] Use an intent to send the order summary to an email app
- [ ] Populate email message with this text
- [ ] Remove code that displays the order summary in the Just Java app



Design your own App!

GO CRAZY

Show it to everybody!

More resources

- https://blog.stylingandroid.com/
- https://android-developers.googleblog.com/
- https://www.youtube.com/user/GoogleDevelopers
- https://developer.android.com/design/index.html

homework #1
vacation time

LINEAR LAYOUT WEIGHT

- [ ] Build this layout !

Start with XML provided below.

1. Determine width of each view first
2. Determine height of each view
3. Make sure the image takes up any remaining height in parent Linear layout

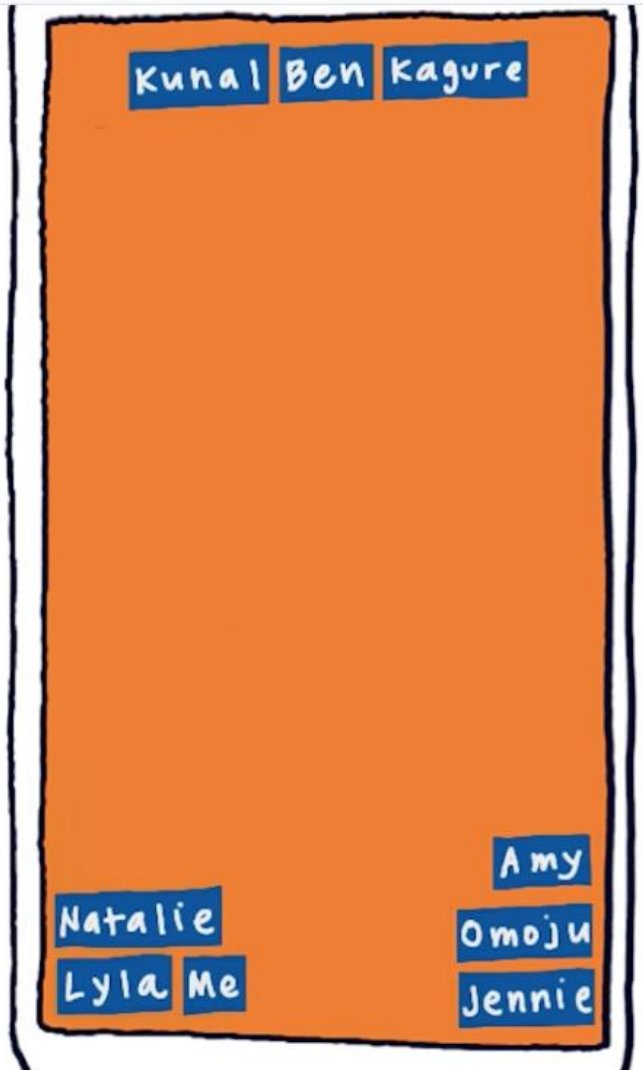
Link: http://labs.udacity.com/android-visualizer/#/android/linear-layout-weight

PADDING & MARGIN

- [ ] Modify the provided XML to build this desired layout

Link: http://labs.udacity.com/android-visualizer/#/android/padding-and-margin

homework #2
party



RELATIVE LAYOUT

Positioning children relative to other views

- [ ] Modify the provided XML layout to achieve this desired layout

Link: http://labs.udacity.com/android-visualizer/#/android/relative-layout-view-ids

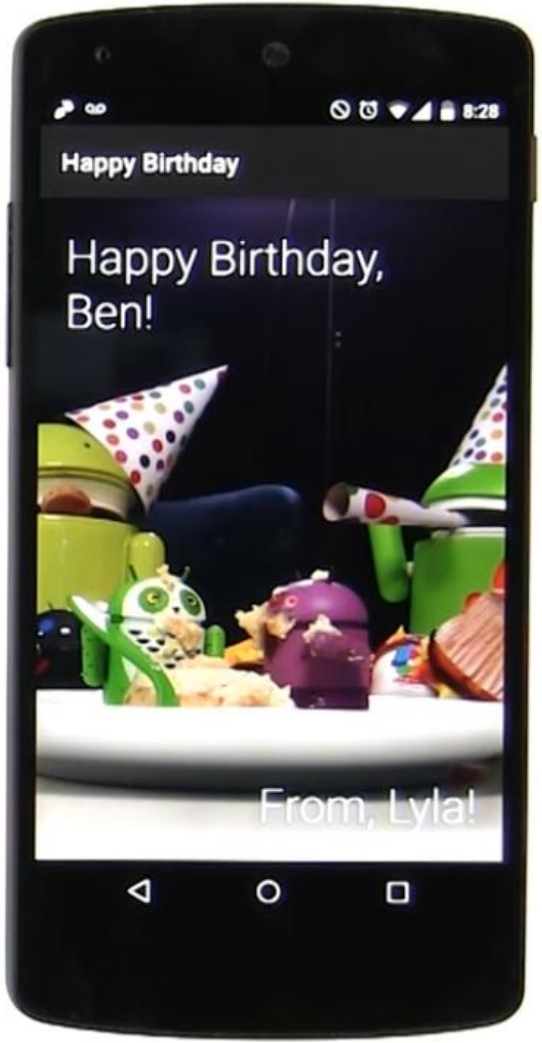
homework #3
your birthday card app

Drawing to App

Step 1: Select the Views

Step 2: Position the Views

Step 3: Style the Views



Step 1: Select the Views

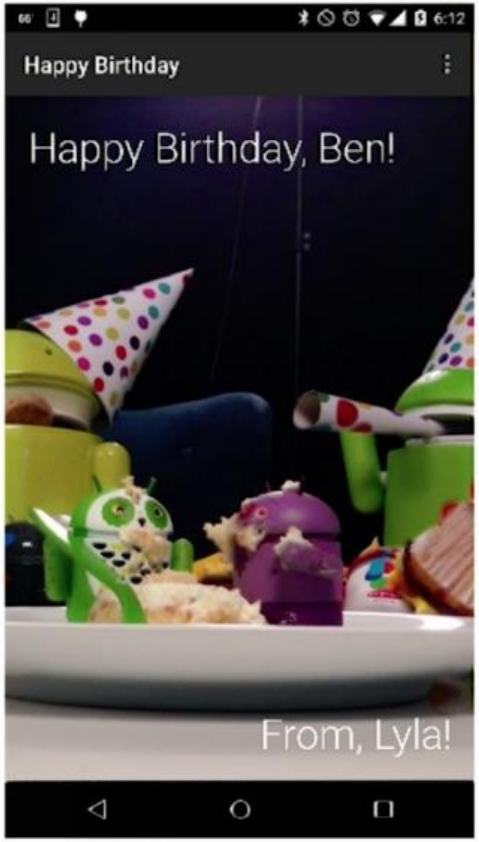
What Views are included in this layout?

Step 2: Position the Views

What View Group should you use?

- ○ Linear Layout
- ○ Relative Layout

Why?



Step 3: Style the Views

NOW

GOAL

Write down all the differences you see between what we have NOW and the end GOAL:

homework #4
some next level designs

Recreate the following design.
You must have a Toolbar and CardView and you must strive to be as accurate as possible.
The content (the card) may not be possible to be shown on the whole screen, so you should add the possibility of scrolling.

You will find resources for the design (icons) in the github of the course. (https://github.com/android-soft-uni/03-Views-Layouts)