

ASSIGNMENT 2 – FRUIT APP FOR CHILDREN (iFRUIT APP)

COMP-47330 : PRACTICAL ANDROID PROGRAMMING

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ASSIGNMENT 2 – REQUIREMENTS

Link <https://csimoodle.ucd.ie/moodle/mod/assign/view.php?id=27249>

Overview Essential (68 points max):

You are designing a learning app for kids. Pick at least 3 of your favorite pieces of fruit, and show a list of them on the main page. When each fruit name is clicked, a new page opens up that has a photo/picture of the fruit and its name.

- Design 3 different layouts for your app, so it works on budget phone, typical phone, and a tablet. Also, use different picture sizes for drawables. Fix screen orientation to either portrait or landscape for each version. Make sure activity is not recreated when phone or emulator is rotated!
- Localize your programme into another language of your choice. Make sure that all the strings are translated. Use of Google Translate (<http://translate.google.com/>) for string translation is OK for this exercise.
- Use Listview to help generate your list.

Essential 1 Additional (8+8+8+8 points max):

- Design additional layouts for portrait and landscape versions of your app. If you implement this optional task, *get rid of fixed screen orientation options specified in 'Essential'* (8 points max).
- Substitute the initial list of fruit names with their clickable pictures (8 points max)
- Add a big capital letter (first letter of the word that fruit name starts with) for the fruit along with its name on the fruit pages (8 points max)
- Make the app as attractive as possible for kids (use bright colours and big font) (8 points max).

Essential 2 Screen Sizes for the emulators

As per the previous **Practicals and Assignments** (<https://csimoodle.ucd.ie/moodle/mod/page/view.php?id=26059>).

- budget phone : 2.7" QVGA (240x320: ldpi)
- typical phone : Nexus S (4", 480x800, hdpi)
- tablet : Nexus 7 (7.27", 800x1280: hdpi)

AVD Name:	Phone_Budget
Device:	3.2" QVGA (ADP2) (320 × 480: mdpi)
Target:	Android 2.3.3 - API Level 10
CPU/ABI:	ARM (armeabi)
Keyboard:	<input checked="" type="checkbox"/> Hardware keyboard present
Skin:	Skin with dynamic hardware controls

AVD Name:	Phone_Typical_
Device:	5.1" WVGA (480 × 800: mdpi)
Target:	Android 4.4.2 - API Level 19
CPU/ABI:	Intel Atom (x86)
Keyboard:	<input checked="" type="checkbox"/> Hardware keyboard present
Skin:	Skin with dynamic hardware controls

AVD Name:	Phone_Tablet
Device:	10.1" WXGA (Tablet) (1280 × 800: mdpi)
Target:	Android 4.0 - API Level 14
CPU/ABI:	ARM (armeabi-v7a)
Keyboard:	<input checked="" type="checkbox"/> Hardware keyboard present
Skin:	Skin with dynamic hardware controls

Submission Submit your Eclipse project as a single .zip or .tgz file.

ASSIGNMENT 2 – SUBMISSION DETAILS

This assignment will accept submissions from

Due date	Monday, 23 March 2015, 11:00 AM
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APP STRUCTURE

Files used and how each interacts with the others

Directory	File/s	Used for
/res/..		
Layout-small-land/ layout-normal-land/ layout-xlarge-land/	activity_ifruit_app_main.xml activity_ifruit_app_more_info.xml	Landscape layout for each of the device sizes, where : <ul style="list-style-type: none"> activity_ifruit_app_main.xml → FruitAppMain.java activity_ifruit_app_more_info.xml → FruitAppSpecificInfo.java budget → small, typical → normal & tablet → x-large
layout-small-port/ layout-normal-port/ layout-xlarge-port/	activity_ifruit_app_main.xml activity_ifruit_app_more_info.xml	Portrait layout for each of the device sizes, where : <ul style="list-style-type: none"> activity_ifruit_app_main.xml → FruitAppSpecificInfo activity_ifruit_app_more_info.xml → FruitAppSpecificInfo.java budget → small, typical → normal & tablet → x-large
values/	arrays.xml list_item.xml strings.xml	<string-array> used for both EN and SV ListView customised view for ImageView & TextView EN strings as used for English-US locale
values-sv/	strings.xml	SV specific strings – localised equivalent of those in values/strings.xml
drawable-hdpi/ drawable-mdpi/ drawable-xhdpi/ drawable-xxhdpi/	fruit_apple.png fruit_banana.png fruit_orange.png fruit_strawberries.png	Images of the fruits included : dependant on size hdpi → small, mdpi → medium, xhdpi → large & xxhdpi → x-large
drawable-hdpi/ drawable-mdpi/ drawable-xhdpi/ drawable-xxhdpi/	ic_launcher.png	App logo <i>hdpi → small, mdpi → medium, xhdpi → large & xxhdpi → x-large</i>
drawable-hdpi/ drawable-mdpi/ drawable-xhdpi/ drawable-xxhdpi/	ic_apple.png ic_orange.png ic_banana.png ic_strawberry.png	Icons for the different fruits <i>same size for each android device (75 x ??)</i>
drawable-hdpi/ drawable-mdpi/ drawable-xhdpi/ drawable-xxhdpi/	recipe_appleworm.png recipe_bananasplit.png recipe_orangejuiceglass.png recipe_strawberriespancakes.png	Images for the recipe for each fruit included in the app <i>hdpi → small, mdpi → medium, xhdpi → large & xxhdpi → x-large</i> <i>(May not be coded into actual submission, time dependant.)</i>
/java/org/dwan/paula/..		
a2_fruitapp_textonly/	FruitAppMain.java FruitAppSpecificInfo.java	activity files containing java code
a2_fruitapp_textonly/	FruitItem.java FruitAdapter.java	ListView customiser custom ArrayAdapter

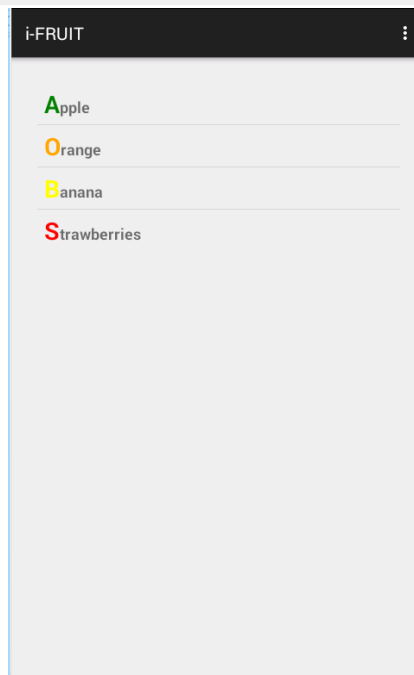
SCREENS : PHONE_TYPICAL AVD & NO IMAGEVIEW IN MAINACTIVITY

activity_ifruit_app_main.xml →
FruitAppMain.java

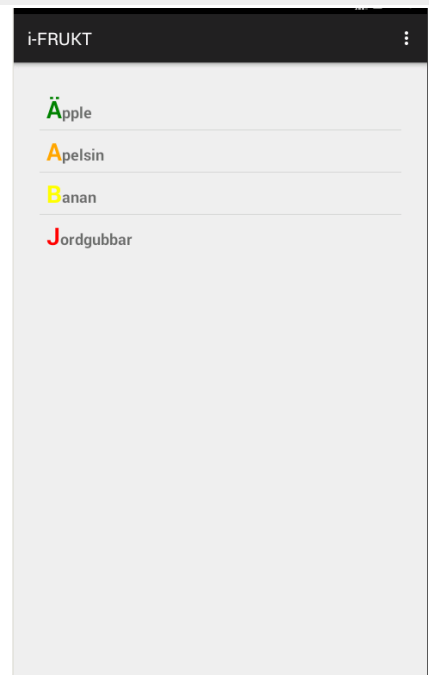
*ListView of four sample fruits
chosen*

Note small original sized text.

EN screens

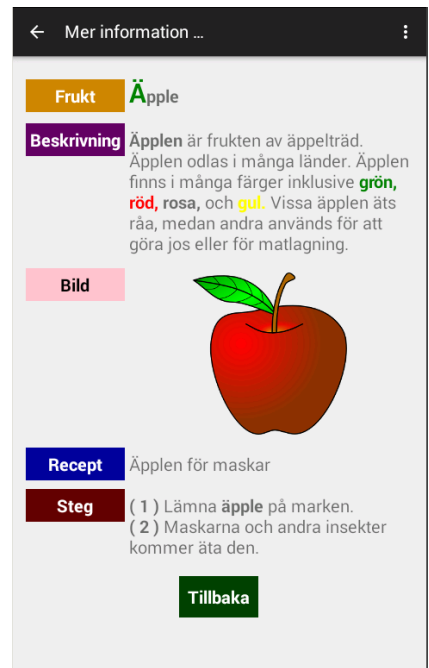
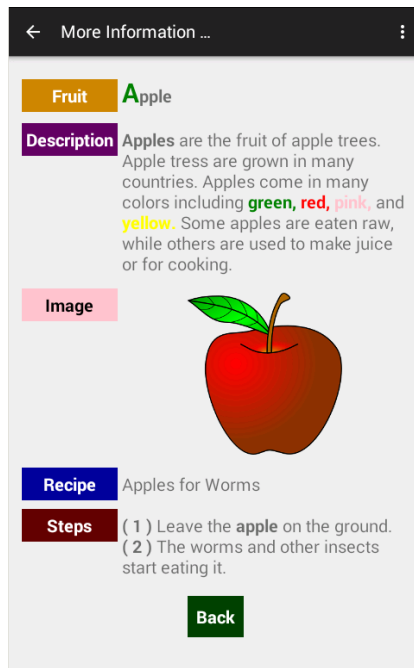


SV screens



Apple at position = 0.

- Click on **A**pple in i-FRUIT to get More Information on the fruit.
- Click on ← or on [**BACK**] to return to i-FRUIT (main Activity).



Orange at position = 1.

- Click on **Orange** in i-FRUIT to get More Information on the fruit.
- Click on ← or on [**BACK**] to return to i-FRUIT (main Activity).

← More Information ...

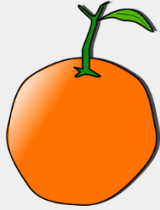
Fruit

Orange

Description

Oranges are citrus fruits. The Orange is a *Pomelo* and *Mandarin* cross. Oranges are **orange** in color and are mainly grown in Brazil. Oranges have lots of vitamin C. Lack of vitamin C causes a disease called Scurvy. A disease sailors used to suffer from during long sea voyages in the 16th to 18th centuries.

Image



Recipe

Orange Juice

Steps

(1) Cut each **orange** in half (or ask someone who is allowed to use a knife to do so).

← Mer information ...

Frukt

Apelsin

Beskrivning

Apelsiner är citrusfrukter. En apelsin är en *grapefrukt* och *mandarin* korsning. Apelsiner är **orange** i färg och odlas främst i Brasilien. Apelsiner har massor av vitamin C. Brist på C-vitamin orsakar en sjukdom som kallas skörbjugg. En sjukdom som sjömän brukade drabbas av under långa resor under 16 - 18 talen.

Bild



Recept

Apelsinjos

Steg

(1) Skär en eller flera **apelsiner** i hälften (eller fråga någon som är ...)

Banana at position = 2.

- Click on **Banana** in i-FRUIT to get More Information on the fruit.
- Click on ← or on [**BACK**] to return to i-FRUIT (main Activity).

← More Information ...


Fruit

Banana

Description

Bananas are the fruit produced by various banana plants and come in many colours including **red**. The bananas we buy are usually **yellow**. Banana plants are not trees but actually herbs.

Image



Recipe

Banana Split

Steps

(1) Peel a **banana**.
 (2) Put the two halves into a long dish.
 (3) Add three scoops of ice-cream between them.
 (4) Add cream, grated chocolate and cherries.
 (5) Eat and enjoy!

Back

← Mer information ...


Frukt

Banan

Beskrivning

Bananer är frukten som produceras av olika bananplanter och finns i många färger inklusive **röd**. Bananerna vi köper är oftast **gula**. Bananplanter inte träd men egentligen örter.

Bild



Recept

Banana split

Steg

(1) Skala en **banan**.
 (2) Placera de två halvorna i en lång skål.
 (3) Lägg tre skopor av glass mellan dem.
 (4) Tillsätt grädde, riven choklad och körsbär.
 (5) Ät och njut!

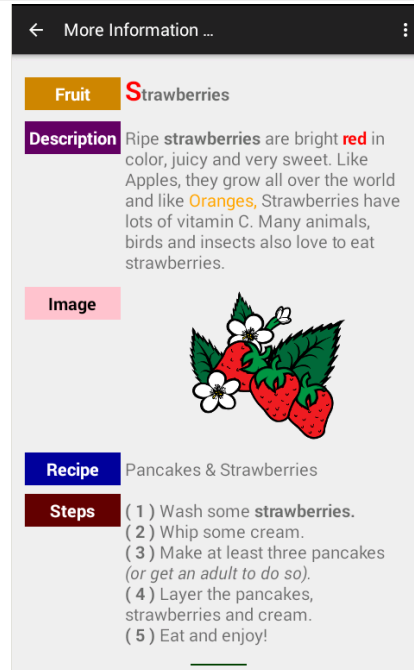
Tillbaka

EN screens

SV screens

Strawberries at position = 3.

- Click on **S**trawberries in i-FRUIT to get **More Information** on the fruit.
- Click on ← or on [**BACK**] to return to i-FRUIT (main Activity).



SAMPLE IMPLEMENTATION

Full sample implementation is given for one phone type layout only. Single sample screens only are included for the other phone type layouts.

ANDROIDMANIFEST.XML UPDATES FOR PORTRAIT & LANDSCAPE

- Added screen support confirmation :

```
<supports-screens
    android:smallScreens="true"
    android:normalScreens="true"
    android:largeScreens="true"
    android:xlargeScreens="true"/>
```

- Also added configChanges confirmations to the two activities : <activity android:name=".FruitAppMain" ...> and <activity android:name=".FruitAppSpecificInfo" ...>

```
android:configChanges="keyboardHidden|screenSize"
```

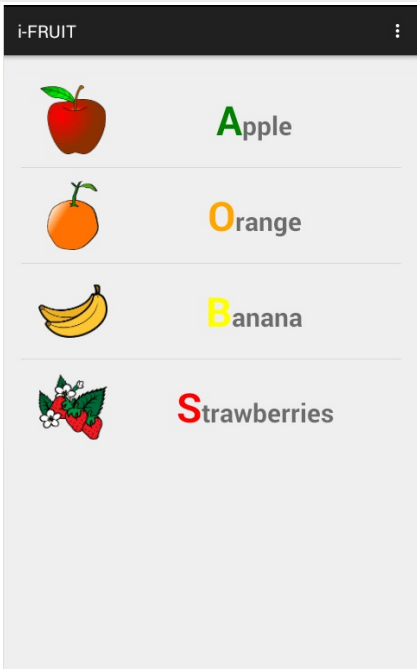
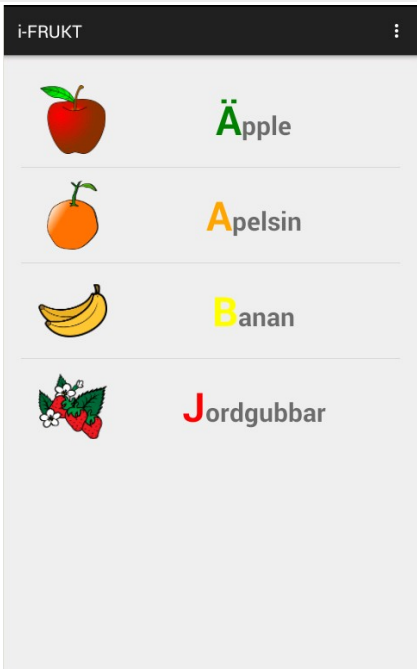
PHONE_TYPICAL – PORTRAIT WITH ICONS

Implementing the icons proved more difficult than I had expected. While creating the layout.xml for the list_item in each row was fine, as was customising an ArrayAdapter (FruitItem.java and FruitAdapter.java) to contain the Fruit ImageView and TextView information .

The main updates to FruitAppMain.java was to change from a simple_list_item_1 (android SDK provided) to a custom list_view.

From	To
<pre>fruitListView.setAdapter(new ArrayAdapter<CharSequence>(this, android.R.layout.simple_list_item_1, fruitNamesCS)); fruitListView.setOnItemClickListener(this);</pre>	<pre>int[] fruitImages = { R.drawable.ic_apple, R.drawable.ic_orange, R.drawable.ic_banana, R.drawable.ic_strawberries }; fruitItems = new ArrayList<FruitItem>(); for (int i = 0; i<fLen; i++) { FruitItem item = new FruitItem(fruitImages[i], fruitNamesCS[i]); fruitItems.add(item); } // display fruit image and fruit text in // ListView fruitListView = (ListView) findViewById(R.id.fruitList); fruitListView.setAdapter(new FruitAdapter(this, R.layout.list_item, fruitItems)); fruitListView.setOnItemClickListener(this);</pre>

This seemed to work the easiest – perhaps as it perceived as the default as the layout .xml files are in the default directory of layouts/.

	EN screens	SV screens
<p>activity_ifruit_app_main.xml → FruitAppMain.java</p> <p><i>ListView of four sample fruits together with icon-sized pictures for each.</i></p> <p><i>Also note the increased font size for the fruit names.</i></p>		

PHONE_BUDGET – PORTRAIT

There were issues in Android Studio as the budget phone .xml was not recognised as layout_small_port, nor in layout_smallll. I tried to code the directory name based on device size but this also did not work (layout_w350dp_port). Thus it appears as if the budget phone of size 320x480 is viewed as normal in size and uses the layout .xml file for phone_typical.

I used different colours to more easily differentiate between the different sizes and layouts .

EN screens

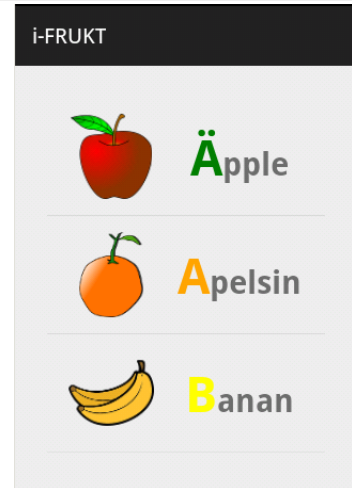
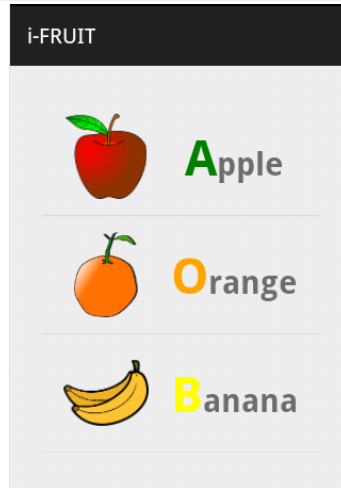
SV screens

activity_ifruit_app_main.xml → FruitAppMain.java

ListView of four sample fruits together with icon-sized pictures for each.

Also note the increased font size for the fruit names, thus causing the user to scroll.

It be possible to change the font size for the different devices but there is a requirement legibility in small devices and huge fonts in tablets might not be appreciated by the end user.



PHONE_TABLET – LANDSCAPE

This I presumed to be the default layout for the tablet and it behaved as such – I could not get to use own layout though. Again, even when I used xlarge nor when I used w1280dp as unique identifiers. Landscape was selected as the default and the Log.d I have in place noted it as Portrait.

screens

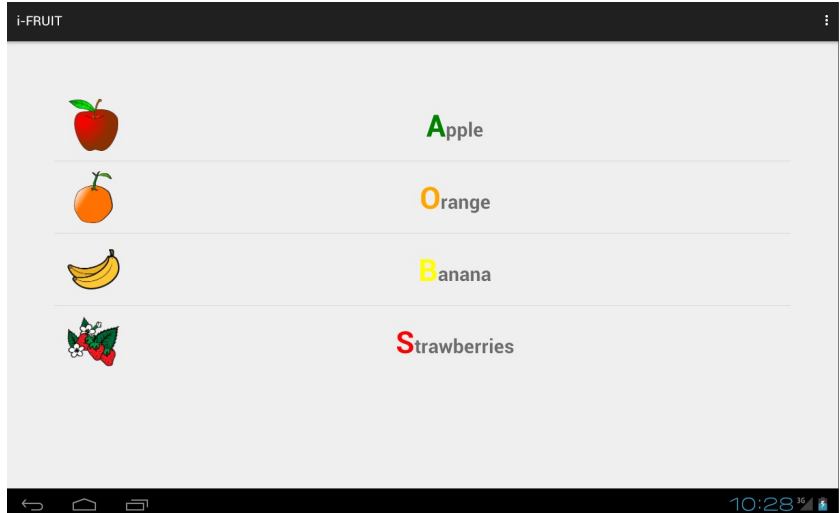
EN

activity_ifruit_app_main.xml → FruitAppMain.java

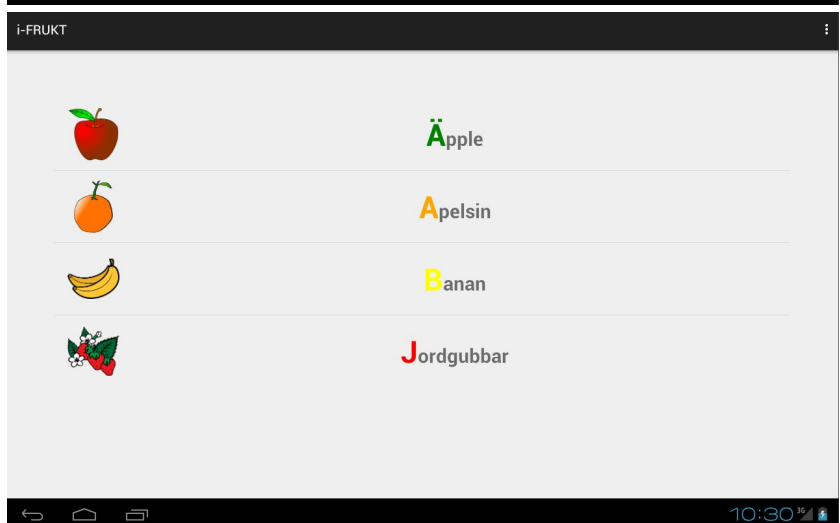
ListView of four sample fruits together with icon-sized pictures for each.

Also note the increased font size for the fruit names, thus causing the user to scroll.

I left the font sizes alone as it would have been too big otherwise.



SV



ACKNOWLEDGEMENTS

1. http://www.tutorialspoint.com/android/android_list_view.htm
<http://developer.android.com/reference/android/widget/ListView.html>
<http://developer.android.com/guide/topics/ui/layout/listview.html>
Android ListView tutorials & information
2. http://www.tutorialspoint.com/android/android_grid_view.htm
<http://developer.android.com/reference/android/widget/GridView.html>
<http://developer.android.com/guide/topics/ui/layout/gridview.html>
Android GridView information & tutorials
3. <http://developer.android.com/guide/topics/resources/localization.html>
Android Localization tutorial
4. http://developer.android.com/guide/practices/screens_support.html
Multiple Screens & UCD notes
5. <http://developer.android.com/guide/topics/resources/providing-resources.html>
<http://developer.android.com/training/multiscreen/screensizes.html>
<https://developer.amazon.com/public/solutions/devices/kindle-fire/app-development/01--screen-layout-and-resolution>
http://www.techotopia.com/index.php/Handling_Different_Android_Devices_and_Displays
Different resources for graphics and layouts for multiple screens
6. <https://openclipart.org/>
Open source pictures of fruit and resulting recipes for each fruit item
7. <http://www.sciencekids.co.nz/sciencefacts/food/apples.html>
<http://www.sciencekids.co.nz/sciencefacts/food/bananas.html>
<http://www.sciencekids.co.nz/sciencefacts/food/oranges.html>
<http://www.sciencekids.co.nz/sciencefacts/food/strawberries.html>
Used as base information on fruits for descriptions.
8. App name i-FRUIT / I-FRUKT, inspired by GTA V (<http://www.rockstargames.com/>)