

Mobile Application Development

Higher Diploma in Science in Computer Science

Produced
by

Eamonn de Leastar (edeleastar@wit.ie)

Department of Computing, Maths & Physics
Waterford Institute of Technology

<http://www.wit.ie>

<http://elearning.wit.ie>



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Donation Models

UML Class Diagrams: Taxonomy

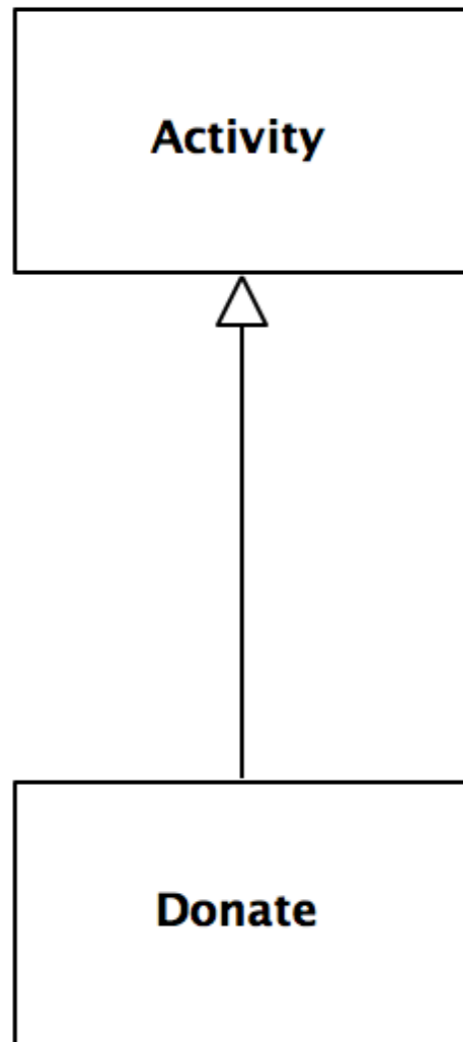
- Class
 - 3 Relationship Types
 - Inheritance
 - Association
 - Uses
 - For Associations - optional levels of detail:
 - Simple
 - Navigable
 - Roles
 - Multiplicity
 - Aggregation

Class

Donate

```
public class Donate  
{  
    ...  
}
```

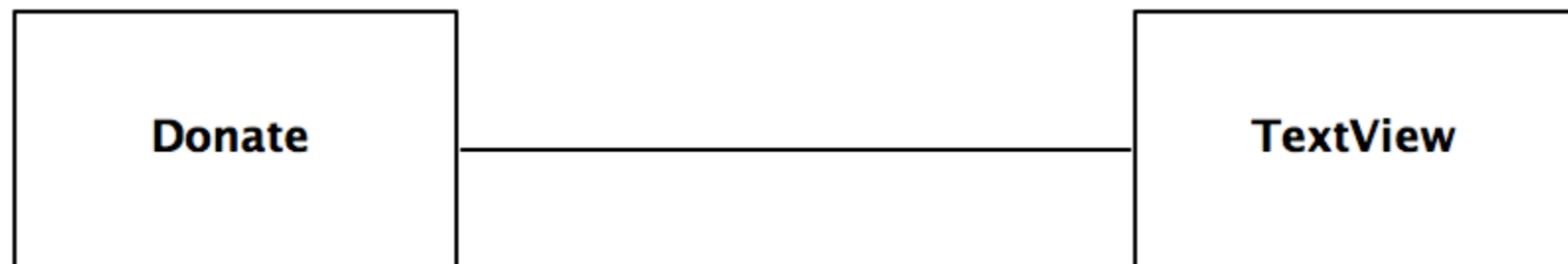
Inheritance Relationship



```
public class Donate extends Activity
{
    ...
}
```

Association: Simple

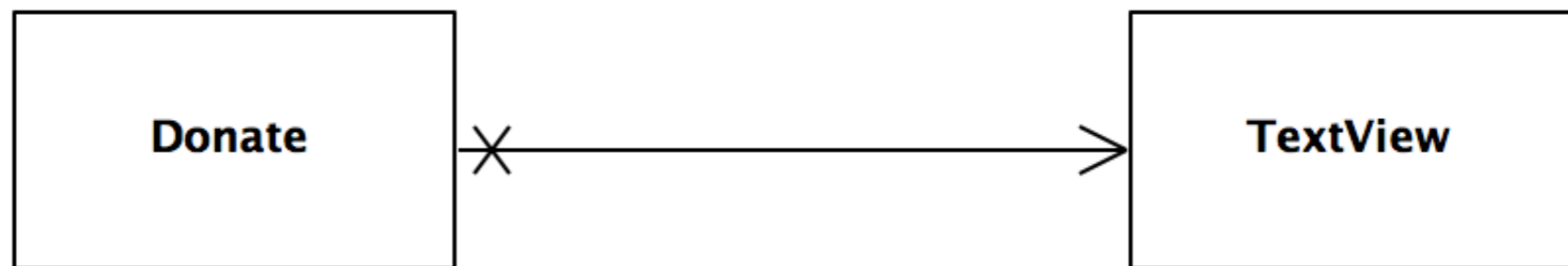
- No details of relationship specified



```
public class Donate extends Activity
{
    private TextView    amountTotal;
    ...
}
```

Association: Navigable

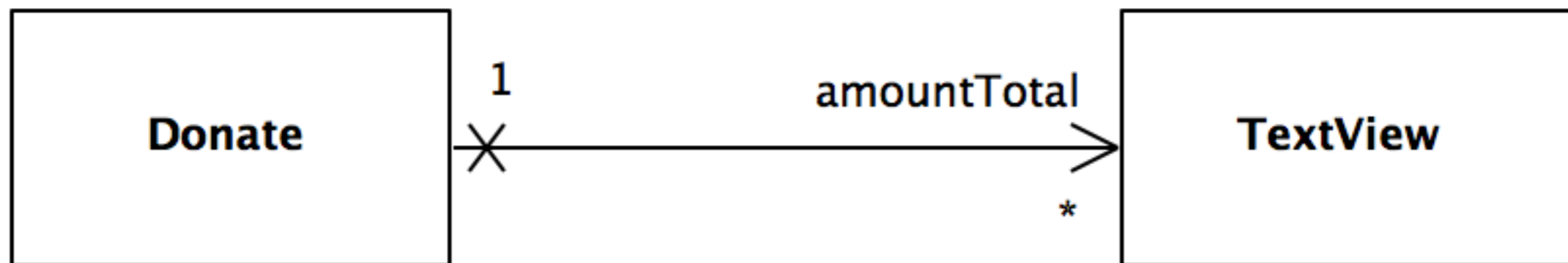
- We can reach the TextView object from Donate, but not vice versa



```
public class Donate extends Activity
{
    private TextView    amountTotal;
    ...
}
```

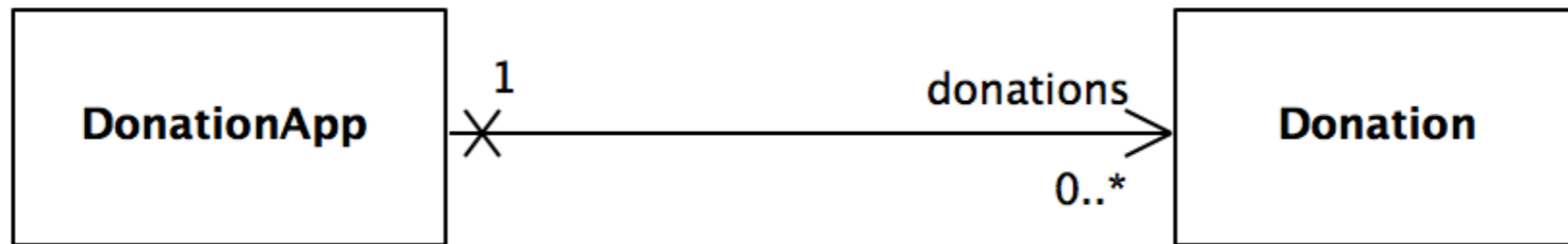
Association: Roles

- The association is specifically named - the attribute name in this example



```
public class Donate extends Activity
{
    private TextView    amountTotal;
    ...
}
```

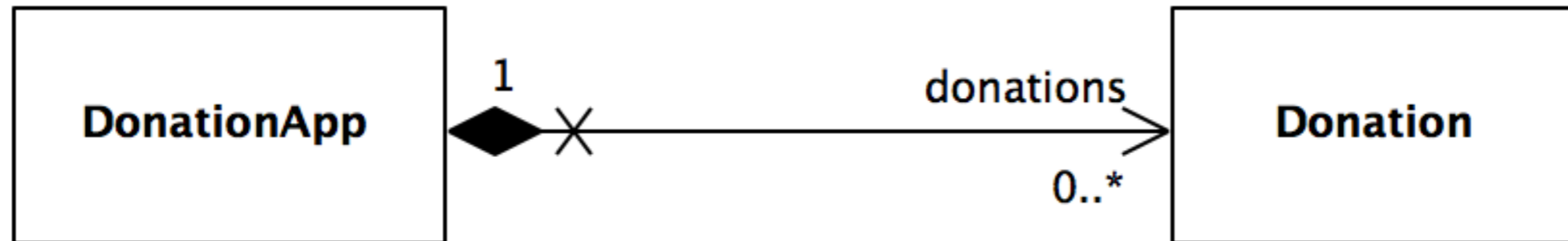

UML Association - Multiplicity



```
public class DonationApp extends Application
{
    ...
    public List <Donation> donations = new ArrayList<Donation>();
    ...
}
```

- DonationApp can have many Donation objects
- We deliberately do not show the ArrayList class
- Focus instead on the one-to-many relationship between DonationApp and Donation classes

UML Association - Aggregation

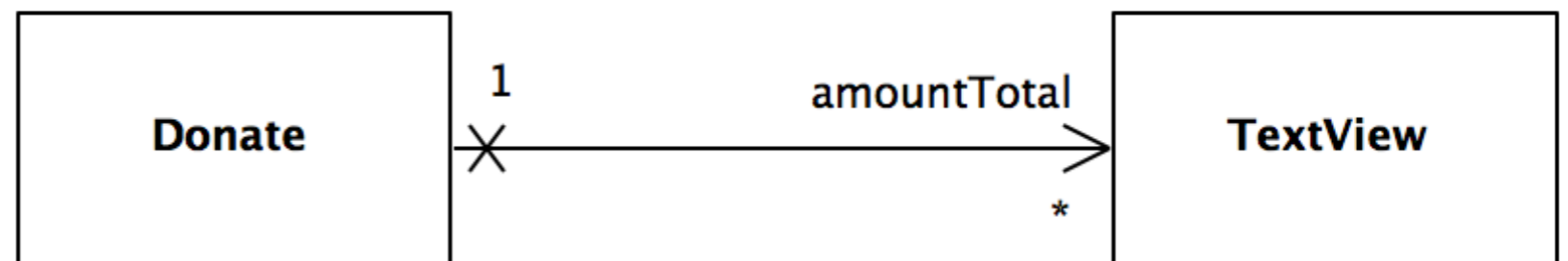
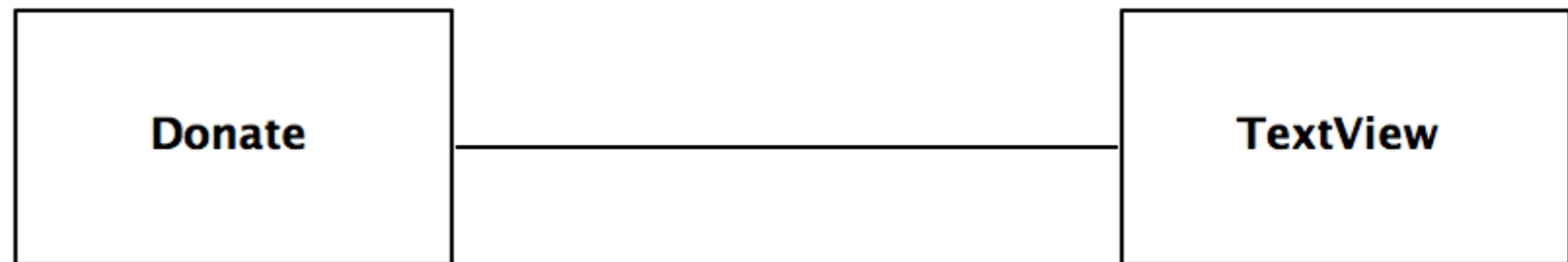


```
public class DonationApp extends Application
{
    ...
    public List <Donation> donations = new ArrayList<Donation>();
    ...
}
```

- The aggregation kind (composited) indicates that the DonationApp somehow controls the lifespan of the donation objects
- DonationApp 'is composed of' donation objects, and is responsible for creating them and perhaps also destroying them

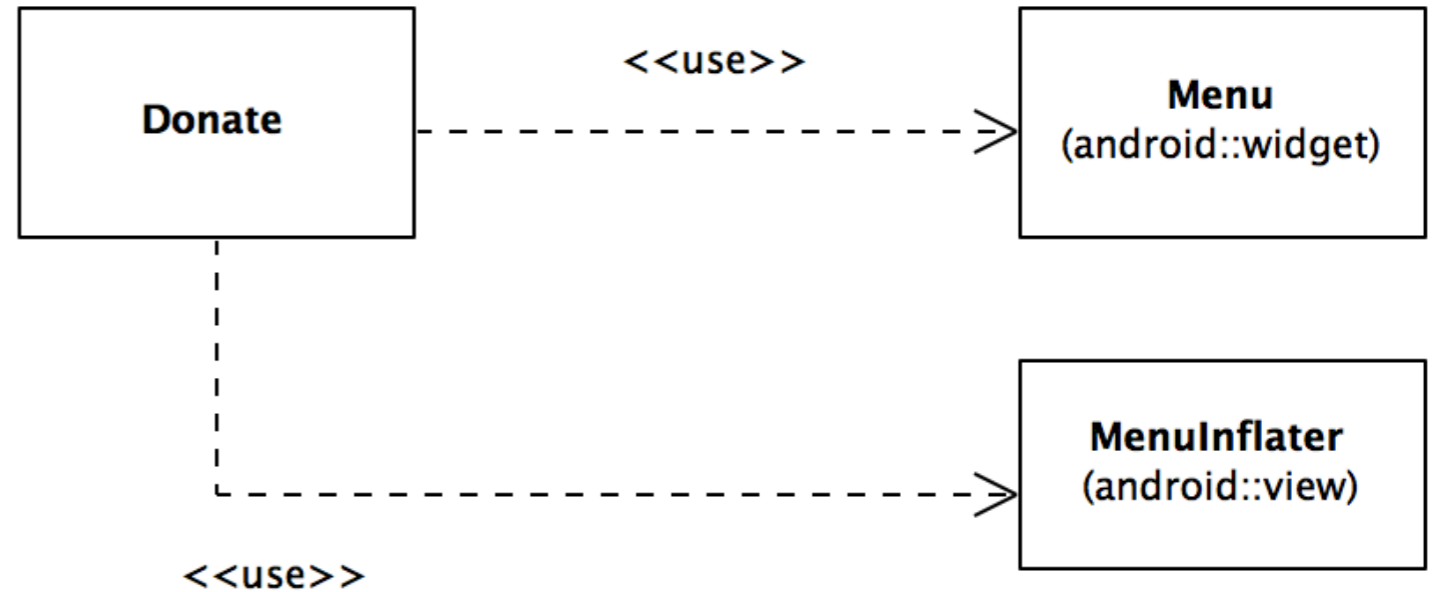
Resolution

- All three models are valid
- Which one we use depends on the level of detail we wish to communicate
- This is a judgement call, often based on the level of detail that is useful in a given diagram



Uses Relationship

- Indicates that Donate 'use' a Menu object
- However, it will not retain a reference to the Menu object as a class member



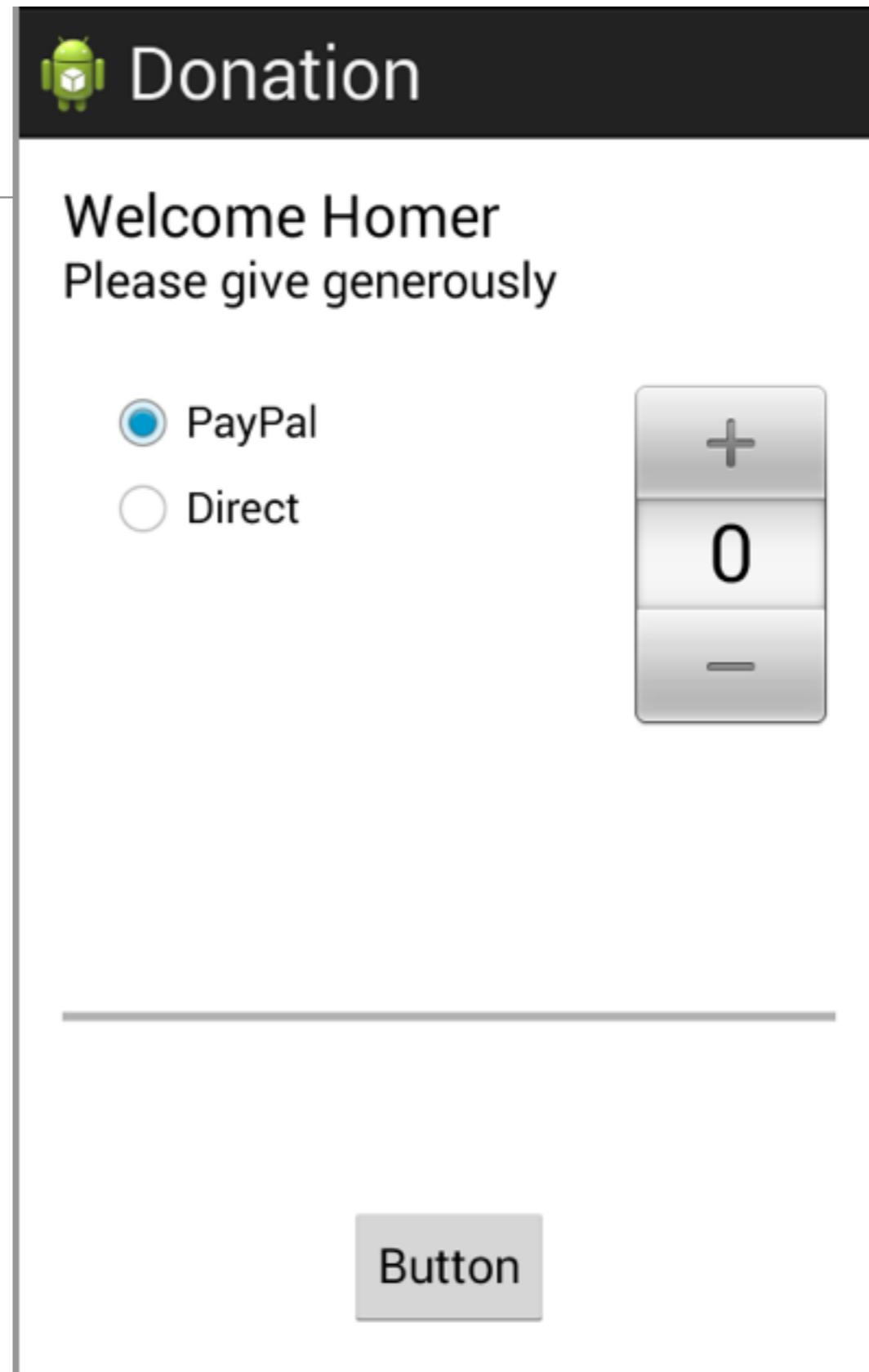
```
public class DonationApp extends Application
{
    ...
    @Override
    public boolean onCreateOptionsMenu(Menu menu)
    {
        getMenuInflater().inflate(R.menu.donate, menu);
        return true;
    }
    ...
}
```

Donation Models

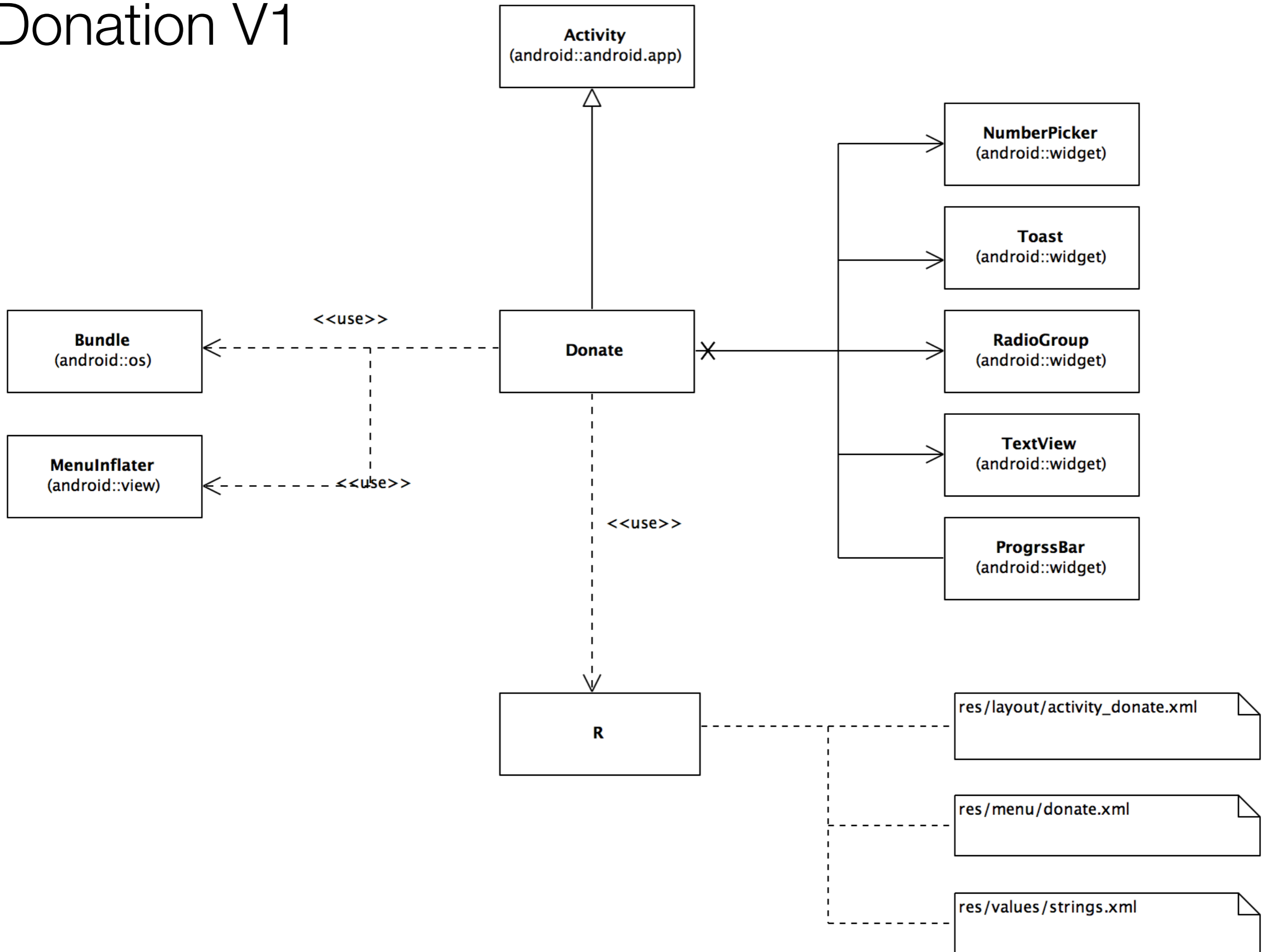
- V1 - single activity, no model
- V2 - 2 activities + app + donation model
- V3 - 5 activities + app + user & donation model

Donation V1

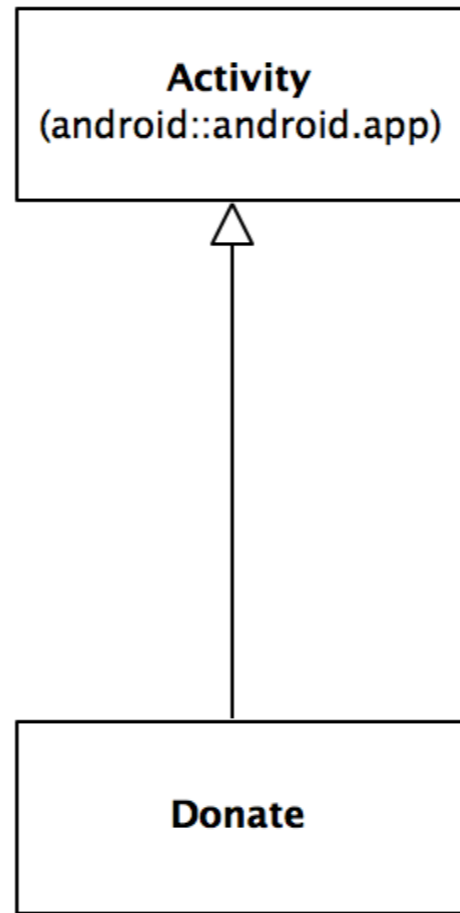
- ▼ donation-android-v1
 - ▼ src
 - ▼ activities
 - ▶ Donate.java
 - ▶ gen [Generated Java Files]
 - ▶ Android 4.4.2
 - ▶ Android Private Libraries
 - ▶ assets
 - ▶ bin
 - ▶ libs
 - ▶ res
 - ▶ AndroidManifest.xml
 - ▶ ic_launcher-web.png
 - ▶ proguard-project.txt
 - ▶ project.properties



Donation V1




Donation V1: Simplified



Donation V2

- ▼ donation-android-v2
 - ▼ src
 - ▼ app.activities
 - ▶ Donate.java
 - ▶ Report.java
 - ▼ app.main
 - ▶ DonationApp.java
 - ▼ app.models
 - ▶ Donation.java
 - ▶ gen [Generated Java Files]
 - ▶ Android 4.4.2
 - ▶ Android Private Libraries
 - assets
 - ▶ bin
 - ▶ libs
 - ▶ res
 - AndroidManifest.xml
 - ic_launcher-web.png
 - proguard-project.txt
 - project.properties


 Donation

Donation App
Please give generously

PayPal 1000
 Direct 0

Amount:

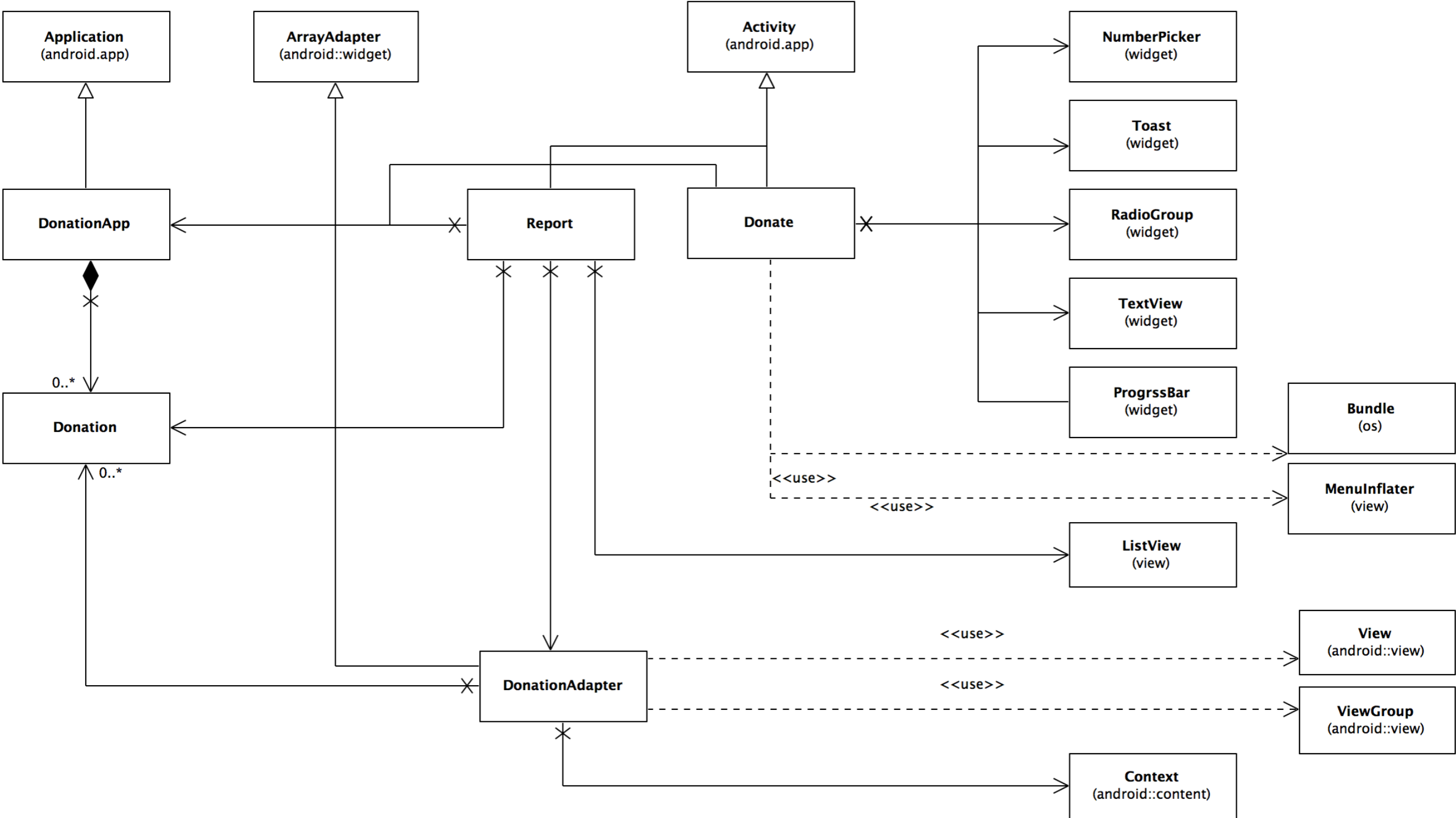
Total so far: 0

 Donation App

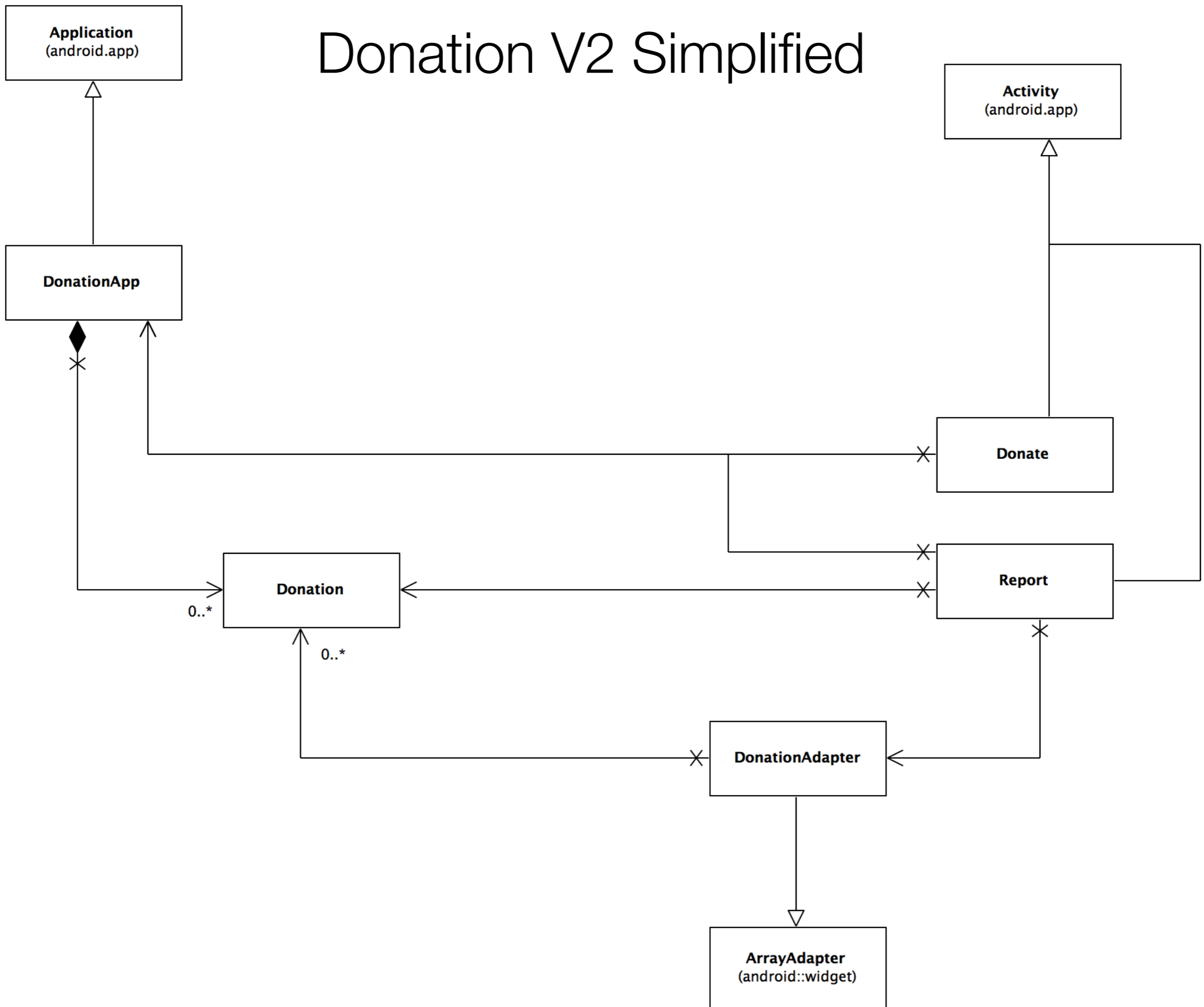
Report

3	PayPal
5	PayPal
10	PayPal
100	PayPal

Donation V2

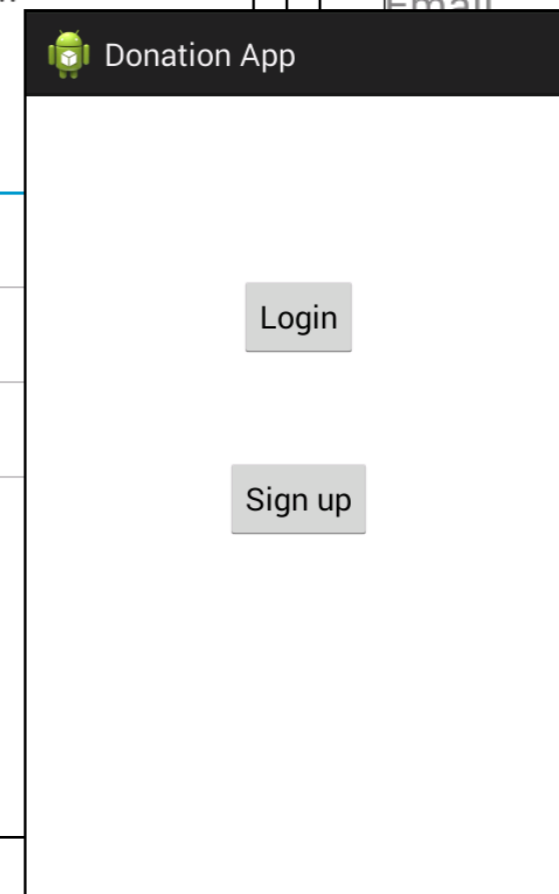
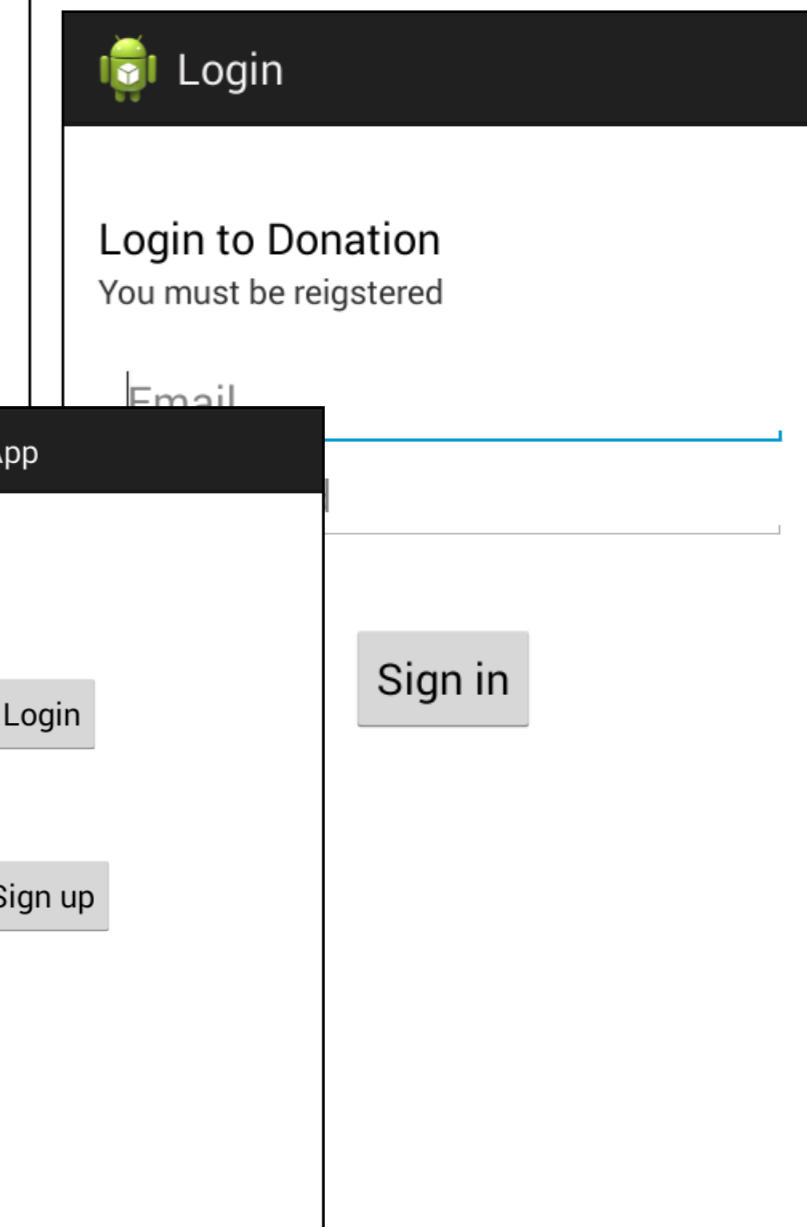
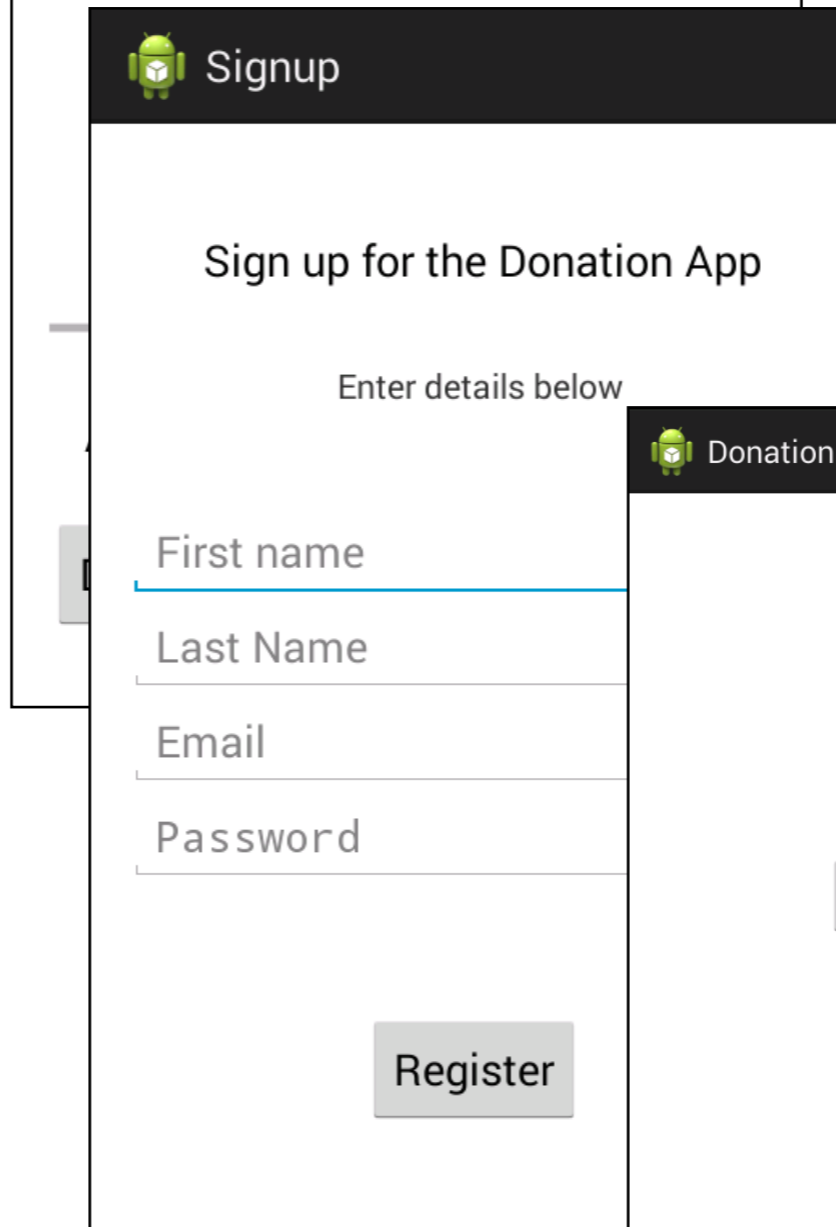
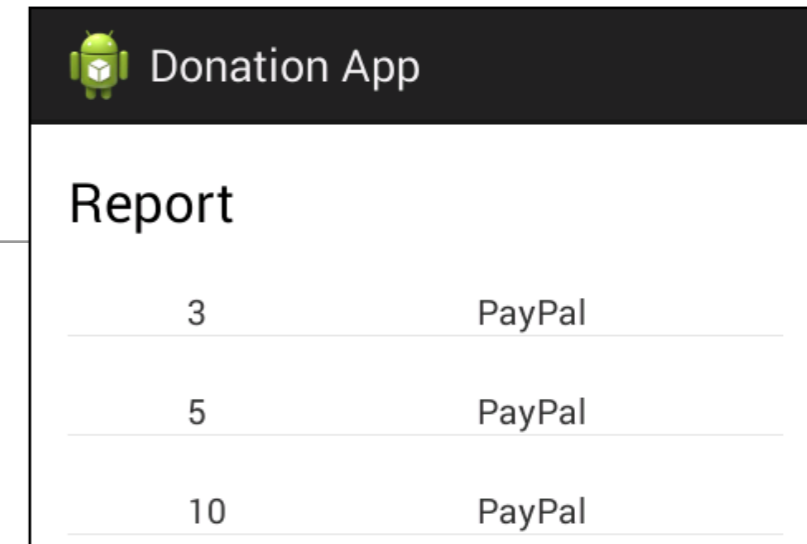
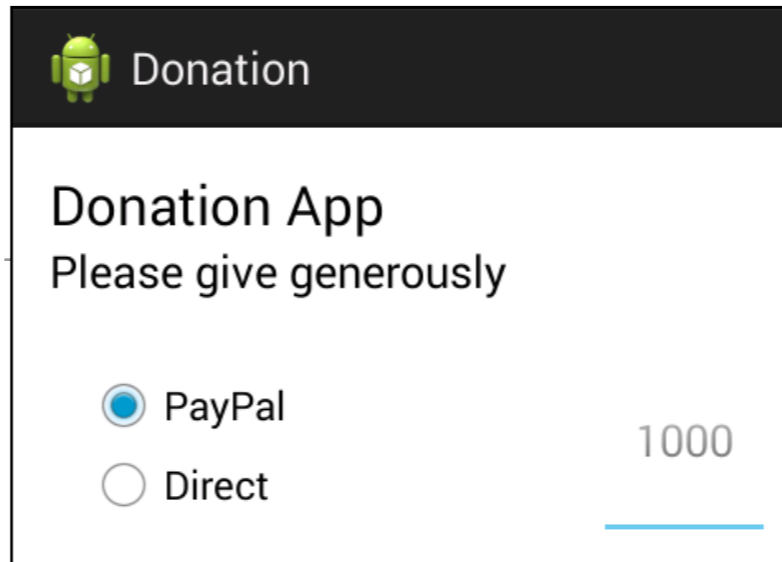


Donation V2 Simplified

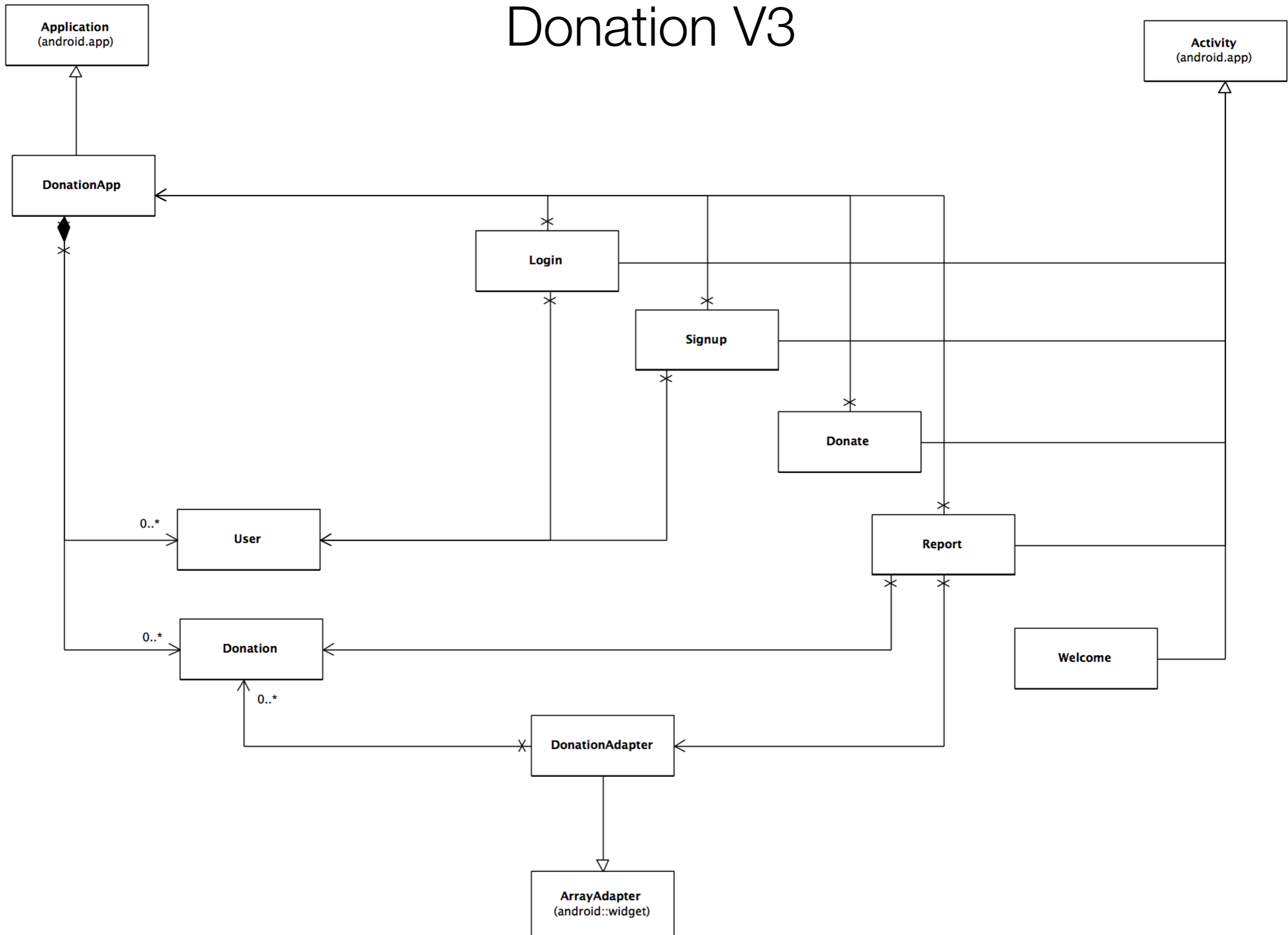


Donation V3

- ▼ donation-android-v3
 - ▼ src
 - ▼ app.activities
 - ▶ Donate.java
 - ▶ Login.java
 - ▶ Report.java
 - ▶ Signup.java
 - ▶ Welcome.java
 - ▼ app.main
 - ▶ DonationApp.java
 - ▼ app.models
 - ▶ Donation.java
 - ▶ User.java
 - ▶ gen [Generated Java Files]
 - ▶ Android 4.4.2
 - ▶ Android Private Libraries
 - ▶ bin
 - ▶ libs
 - ▶ res
 - AndroidManifest.xml
 - ic_launcher-web.png
 - proguard-project.txt
 - project.properties



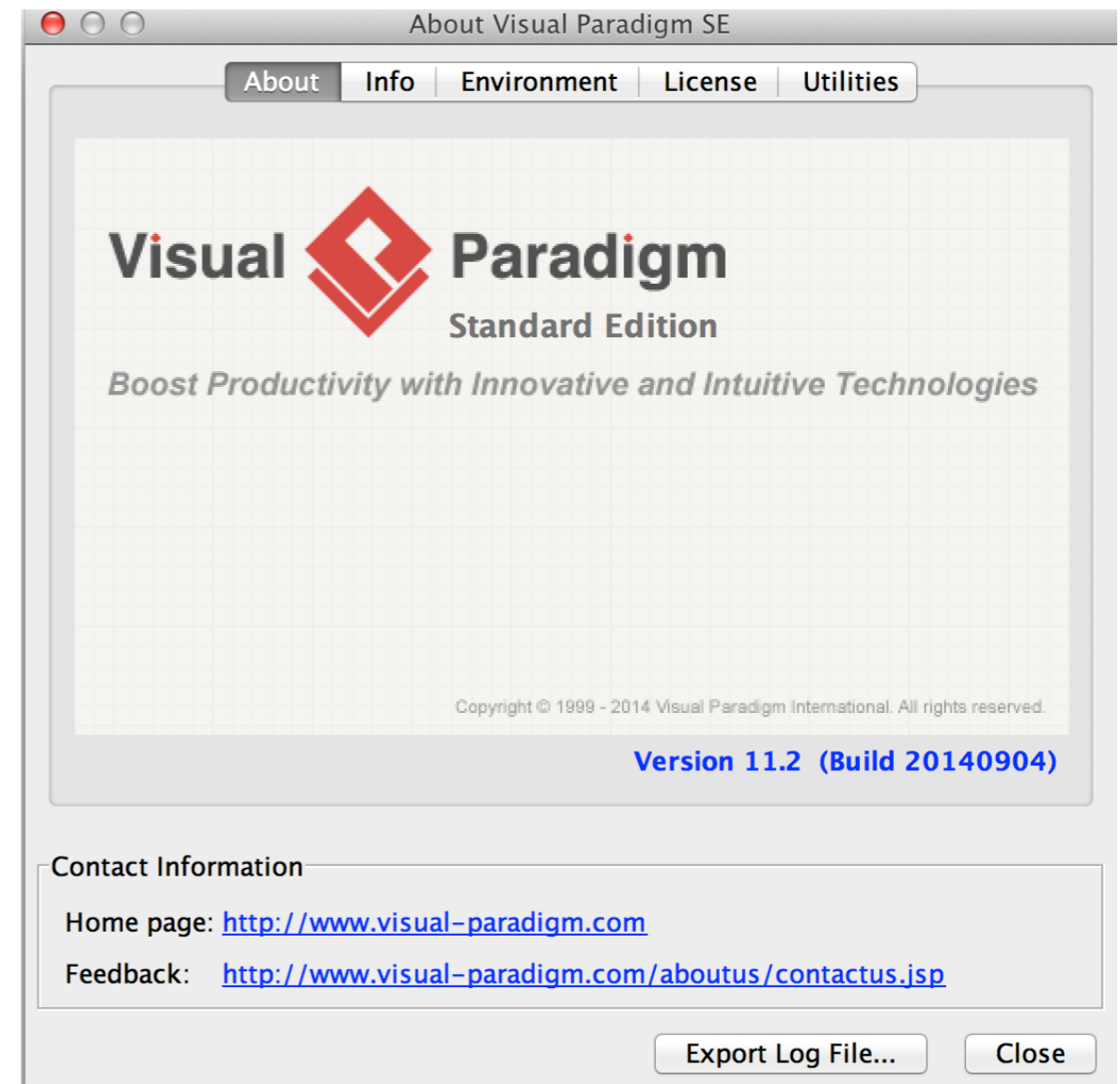
Donation V3



UML Tools

- All diagrams on these slides were designed using:

- Visual Paradigm 11.2



- Academic usage key:

- U8XHD-LE49E-765X4-B5HGU-2R7RS



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