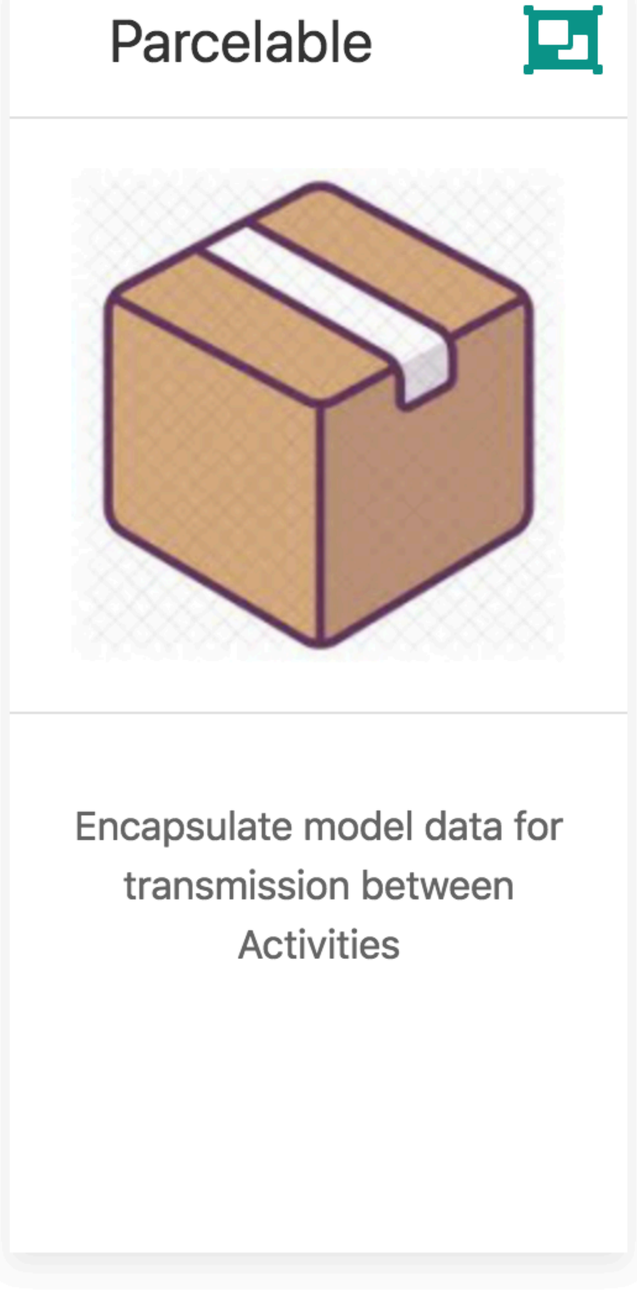
Parcelable


Parcelable
Encapsulate model data for transmission between Activities

Kotlin Android Extensions

build.gradle

```
apply plugin: ‘kotlin-android-extensions’

androidExtensions {
  experimental = true
}
```

Enable advanced Kotlin features to simplify android patterns

Kotlin Android Extensions

Edit Page

https://kotlinlang.org/docs/tutorials/android-plugin.html

This tutorial describes how to use Kotlin Android Extensions to improve support for Android development.

View Binding ← Already using this feature

Parcelable ← We want to start using this

View Binding

Background

Every Android developer knows well the `findViewById()` function. It is, without a doubt, a source of potential bugs and nasty code which is hard to read and support. While there are several libraries available that provide solutions to this problem, those libraries require annotating fields for each exposed `View`.

The Kotlin Android Extensions plugin allows us to obtain the same experience we have with some of these libraries, without having to add any extra code.

In essence, this allows for the following code:

```
// Using R.layout.activity_main from the 'main' source set
import kotlinx.android.synthetic.main.activity_main.*

class MyActivity : Activity() {
    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)

        // Instead of findViewById<TextView>(R.id.textView)
        textView.setText("Hello, world!")
    }
}
```

`textView` is an extension property for `Activity`, and it has the same type as declared in `activity_main.xml` (so it is a `TextView`).

Parcel

A Parcel is a message container. A message being data and object references. Parcel, like Parcelable, Intents, and Bundles are part of the IPC family in android. IPC stands for inter-process communication — ***it is Androids' framework for moving data from one component of an app to another component of the same app***.

https://medium.com/@rayacevedo45/android-parcel-and-parcelable-865c398d5053

Parcel

added in API level 1

Summary: Fields | Methods | Protected Methods | Inherited Methods | [Expand All]

```
public final class Parcel
extends Object
```

java.lang.Object

↳ android.os.Parcel

Container for a message (data and object references) that can be sent through an IBinder. A Parcel can contain both flattened data that will be unflattened on the other side of the IPC (using the various methods here for writing specific types, or the general `Parcelable` interface), and references to live `IBinder` objects that will result in the other side receiving a proxy IBinder connected with the original IBinder in the Parcel.

Parcelable

added in API level 1

Summary: Nested Classes | Constants | Methods | [Expand All]

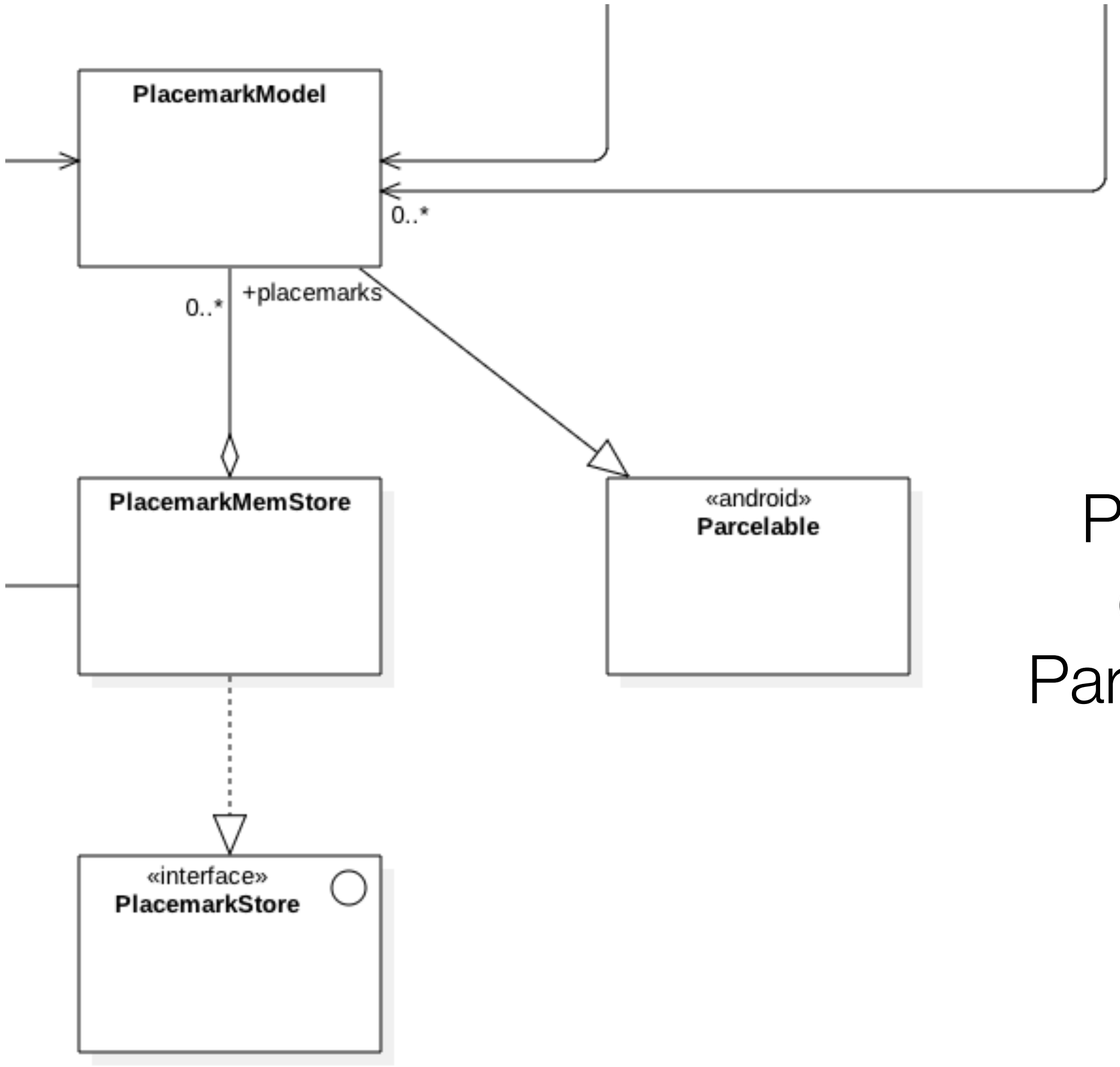
```
public interface Parcelable
```

android.os.Parcelable

Known Indirect Subclasses

AbsSavedState,AbsoluteSizeSpan,AccessibilityEvent,AccessibilityNodeInfo,AccessibilityServiceInfo,Acce
332 others.

Interface for classes whose instances can be written to and restored from a `Parcel`. Classes implementing the Parcelable interface must also have a non-null static field called `CREATOR` of a type that implements the `Parcelable.Creator` interface.



PlacemarkModel equipped with Parcelable capability

Parcelable

```
@Parcelize
data class PlacemarkModel(var title: String = "",
                          var description: String = "") : Parcelable
```

"***Parcelabe***" equips our data class with Parcelize implementation
PlacemarkModel objects can now be passed between Activities

PlacemarkListActivity

Previously, we start PlacemarkActivity without passing any values to it

```
override fun onPlacemarkClick(placemark: PlacemarkModel) {
  startActivityForResult(intentFor<PlacemarkActivity>(), 0)
}
```

Revised to pass PlacemarkModel object

```
override fun onPlacemarkClick(placemark: PlacemarkModel) {
  startActivityForResult(intentFor<PlacemarkActivity>().putExtra("placemark_edit",
                                                                 placemark), 0)
}
```

This is via ***putExtra*** method, which can send a Parcebable object to another activity

PlacemarkActivity

```
override fun onCreate(savedInstanceState: Bundle?) {

  ...
  if (intent.hasExtra("placemark_edit")) {
    placemark = intent.extras.getParcelable<PlacemarkModel>("placemark_edit")
    placemarkTitle.setText(placemark.title)
    description.setText(placemark.description)
  }
  ...
}
```

In PlacemarkActivity, recover the placemark (if present), and update UI with pacemark values

(Look for ‘placemark_edit’ key injected by PlacemarkListActivity)

IDs

```
@Parcelize
data class PlacemarkModel(var id: Long = 0,
                          var title: String = "",
                          var description: String = "") : Parcelable
```

PlacemarkModel objects need a unique ID if we are to manage them effectively

This ID can be used for update / delete methods in PlacemarkStore methods

Generate a unique ID

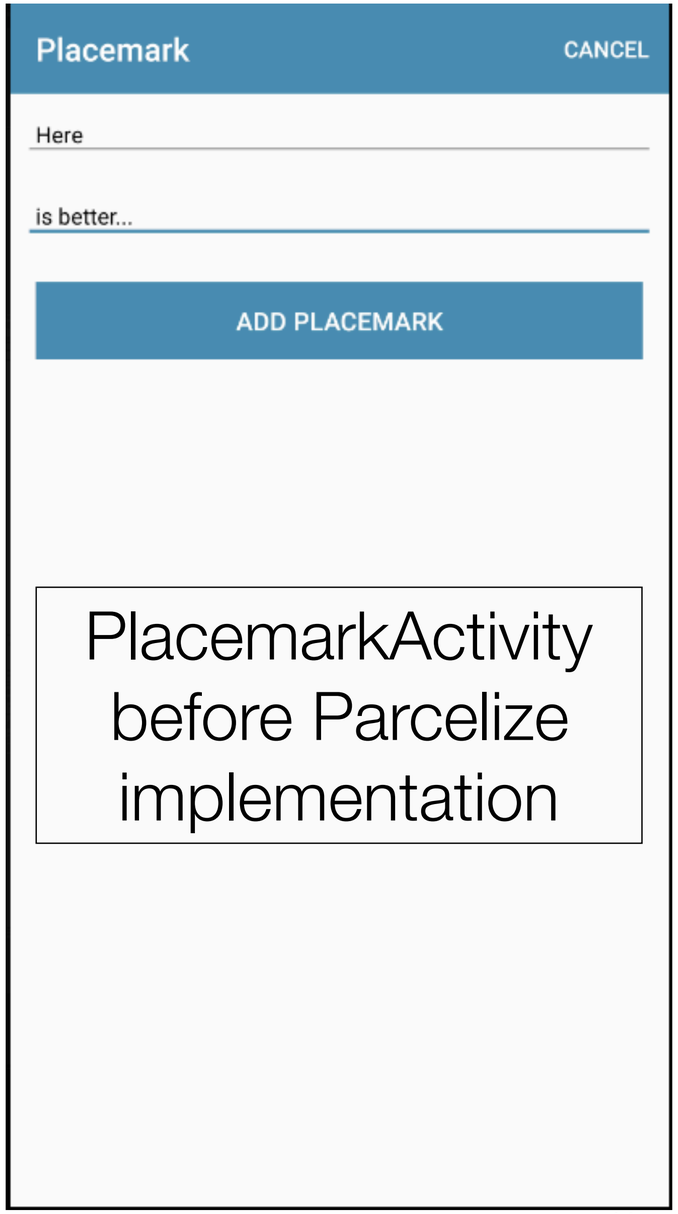
Insert ID into place mark before insertion

In Update method, find matching placemark and update its fields

```
var lastId = 0L

internal fun getId(): Long {
  return lastId++
}

class PlacemarkMemStore : PlacemarkStore, AnkoLogger {

  val placemarks = ArrayList<PlacemarkModel>()

  override fun findAll(): List<PlacemarkModel> {
    return placemarks
  }

  override fun create(placemark: PlacemarkModel) {
    placemark.id = getId()
    placemarks.add(placemark)
    logAll()
  }

  override fun update(placemark: PlacemarkModel) {
    var foundPlacemark: PlacemarkModel? = placemarks.find { p -> p.id == placemark.id }
    if (foundPlacemark != null) {
      foundPlacemark.title = placemark.title
      foundPlacemark.description = placemark.description
    }
  }

  internal fun logAll() {
    placemarks.forEach { info("${it}") }
  }
}
```

```
class PlacemarkActivity : AppCompatActivity(), AnkoLogger {

  var placemark = PlacemarkModel()
  lateinit var app: MainApp

  override fun onCreate(savedInstanceState: Bundle?) {
    super.onCreate(savedInstanceState)
    setContentView(R.layout.activity_placemark)
    app = application as MainApp

    toolbarAdd.title = title
    setSupportActionBar(toolbarAdd)

    btnAdd.setOnClickListener() {
      placemark.title = placemarkTitle.text.toString()
      placemark.description = description.text.toString()
      if (placemark.title.isNotEmpty()) {
        app.placemarks.create(placemark.copy())
        setResult(AppCompatActivity.RESULT_OK)
        finish()
      }
      else {
        toast("Please Enter a title")
      }
    }
  }

  override fun onOptionsItemSelected(item: MenuItem?): Boolean {
    when (item?.itemId) {
      R.id.item_cancel -> {
        finish()
      }
    }
    return super.onOptionsItemSelected(item)
  }
  ...
}
```

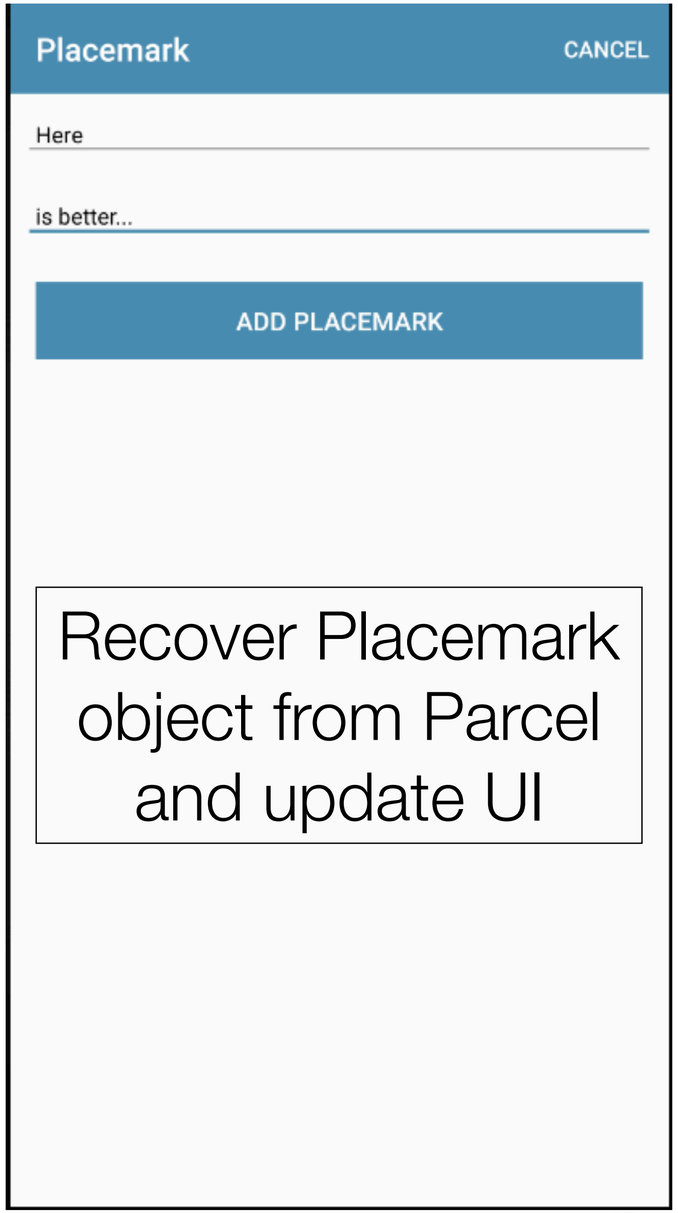
PlacemarkActivity



PlacemarkActivity before Parcelize implementation

```
class PlacemarkActivity : AppCompatActivity(), AnkoLogger {

  var placemark = PlacemarkModel()
  lateinit var app: MainApp

  override fun onCreate(savedInstanceState: Bundle?) {
    super.onCreate(savedInstanceState)
    setContentView(R.layout.activity_placemark)
    app = application as MainApp

    toolbarAdd.title = title
    setSupportActionBar(toolbarAdd)

    if (intent.hasExtra("placemark_edit")) {
      placemark = intent.extras.getParcelable<PlacemarkModel>("placemark_edit")
      placemarkTitle.setText(placemark.title)
      description.setText(placemark.description)
    }

    btnAdd.setOnClickListener() {
      placemark.title = placemarkTitle.text.toString()
      placemark.description = description.text.toString()
      if (placemark.title.isNotEmpty()) {
        app.placemarks.create(placemark.copy())
        finish()
      }
      else {
        toast("Please Enter a title")
      }
    }
  }

  override fun onOptionsItemSelected(item: MenuItem?): Boolean {
    when (item?.itemId) {
      R.id.item_cancel -> {
        finish()
      }
    }
    return super.onOptionsItemSelected(item)
  }
  ...
}
```

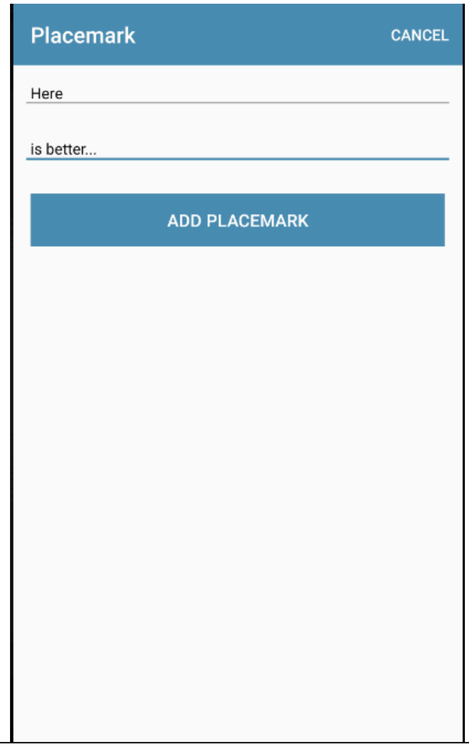
PlacemarkActivity



Recover Placemark object from Parcel and update UI

PlacemarkActivity

```
class PlacemarkActivity : AppCompatActivity(), AnkoLogger {

  var placemark = PlacemarkModel()
  lateinit var app: MainApp

  override fun onCreate(savedInstanceState: Bundle?) {
    super.onCreate(savedInstanceState)
    setContentView(R.layout.activity_placemark)
    toolbarAdd.title = title
    setSupportActionBar(toolbarAdd)
    info("Placemark Activity started..")

    app = application as MainApp
    var edit = false

    if (intent.hasExtra("placemark_edit")) {
      edit = true
      placemark = intent.extras.getParcelable<PlacemarkModel>("placemark_edit")
      placemarkTitle.setText(placemark.title)
      description.setText(placemark.description)
      btnAdd.setText(R.string.save_placemark)
    }

    btnAdd.setOnClickListener() {
      placemark.title = placemarkTitle.text.toString()
      placemark.description = description.text.toString()
      if (placemark.title.isEmpty()) {
        toast(R.string.enter_placemark_title)
      } else {
        if (edit) {
          app.placemarks.update(placemark.copy())
        } else {
          app.placemarks.create(placemark.copy())
        }
      }
      info("add Button Pressed: $placemarkTitle")
      finish()
    }
  }
```



Change the behaviour based on weather in Edit mode

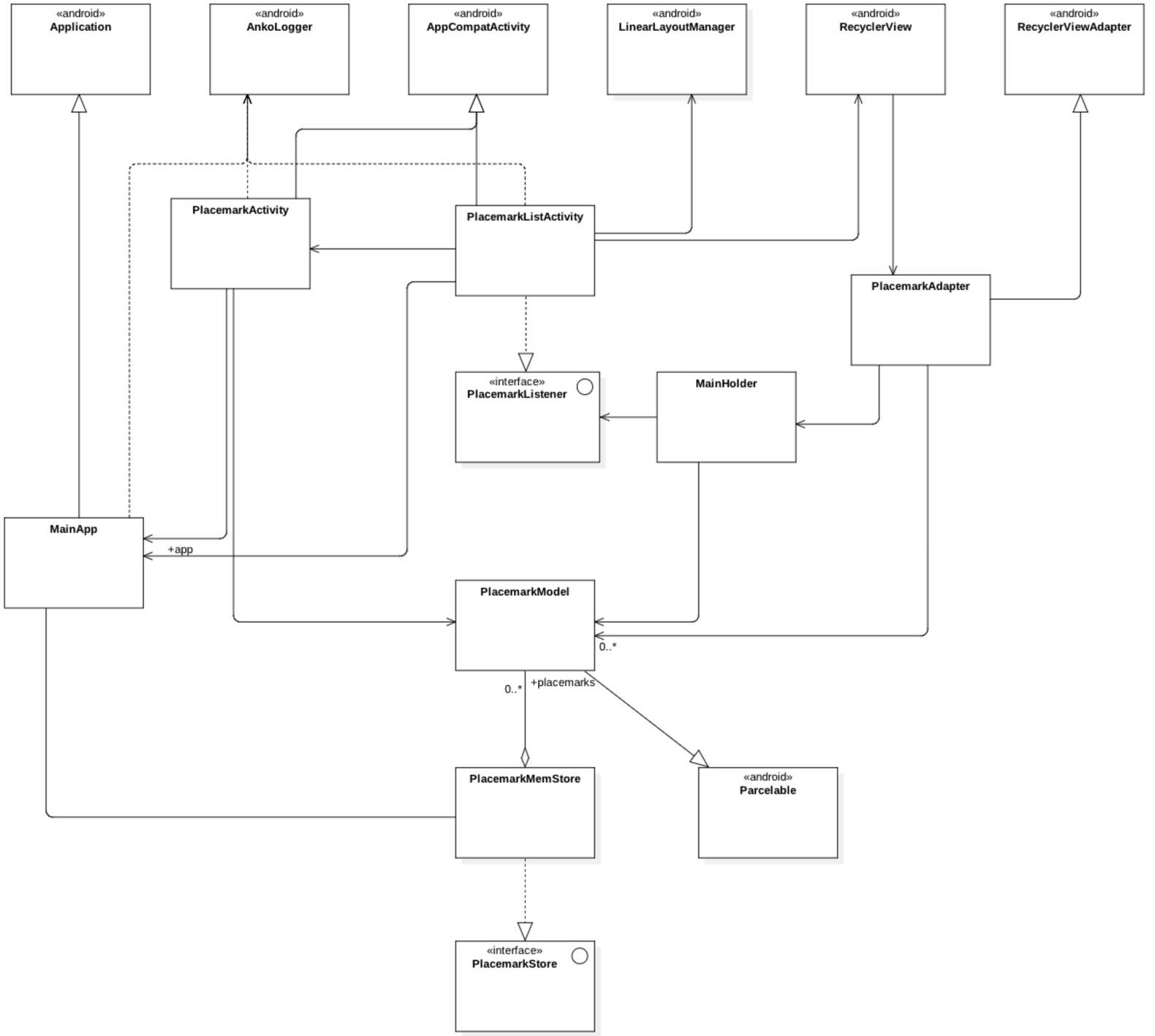
PlacemarkActivity

If pacemark passed to activity, set edit mode to true

```
var edit = false
...
override fun onCreate(savedInstanceState: Bundle?) {

  if (intent.hasExtra("placemark_edit")) {
    edit = true
    btnAdd.setText(R.string.save_placemark)
    placemark = intent.extras.getParcelable<PlacemarkModel>("placemark_edit")
    placemarkTitle.setText(placemark.title)
    description.setText(placemark.description)
  }
```

If edit mode when button pressed, update existing placemark Otherwise, create new placemark

```
  btnAdd.setOnClickListener() {
    placemark.title = placemarkTitle.text.toString()
    placemark.description = description.text.toString()
    if (placemark.title.isEmpty()) {
      toast(R.string.enter_placemark_title)
    } else {
      if (edit) {
        app.placemarks.update(placemark.copy())
      } else {
        app.placemarks.create(placemark.copy())
      }
    }
    info("add Button Pressed: $placemarkTitle")
    finish()
  }
```


«android»
Application
«android»
AnkoLogger
«android»
AppCompatActivity
«android»
LinearLayoutManager
«android»
RecyclerView
«android»
RecyclerViewAdapter
PlacemarkActivity
PlacemarkListActivity
PlacemarkAdapter
«interface»
PlacemarkListener
MainHolder
MainApp
+app
PlacemarkModel
0..*
0..*
+placemarks
PlacemarkMemStore
«android»
Parcelable
«interface»
PlacemarkStore