CS 105

Week 14

Grades

Grades

- MP1-MP6 and resubmissions (MP1-MP3)
  - Grades on Compass 2g
  - Grader output on CS 105 website

Grades

- MP1-MP6 and resubmissions (MP1-MP3)
  - Grades on Compass 2g
  - Grader output on CS 105 website
- Midterm #1 and #2
  - Grades on Compass 2g
  - Scantron results on CS 105 website

Grades

#	Your Response	Correct Response	Grade?
1	A	A	✔
2	D	D	✔
3	B	B	✔
4	E	D	✖
5	A	A	✔
6	D	D	✔

CS 105 Final Project

CS 105 Final Project

- **Week #1**: Found Groups

CS 105 Final Project

- **Week #1**: Found Groups
- **Week #2**: Proposed a Project

CS 105 Final Project

- **Week #1**: Found Groups
- **Week #2**: Proposed a Project
- **Week #3**: Mid-project Update

CS 105 Final Project

- **Week #4**: Show Off Your Project

CS 105 Final Project

- **Week #4**: Show Off Your Project
  - Write up an overview of your project and what you learned *(1-2 pages)*
  - Demo your project live to your TA in lab section
  - Submit your project and code to the CS 105 website

CS 105 Final Project

- **Week #4**: Show Off Your Project
  - Write up an overview of your project and what you learned *(1-2 pages)*
  - **[In Lab]**: Demo your project live to your TA in lab section
  - **[Friday, 6:00pm]**: Submit your project and code to the CS 105 website

Clicker Review #1

Databases are similar to spreadsheets, except for **rows** are called?

A) Keys
B) Records
C) Schemas
D) SQL
E) Tables

Clicker Review #1

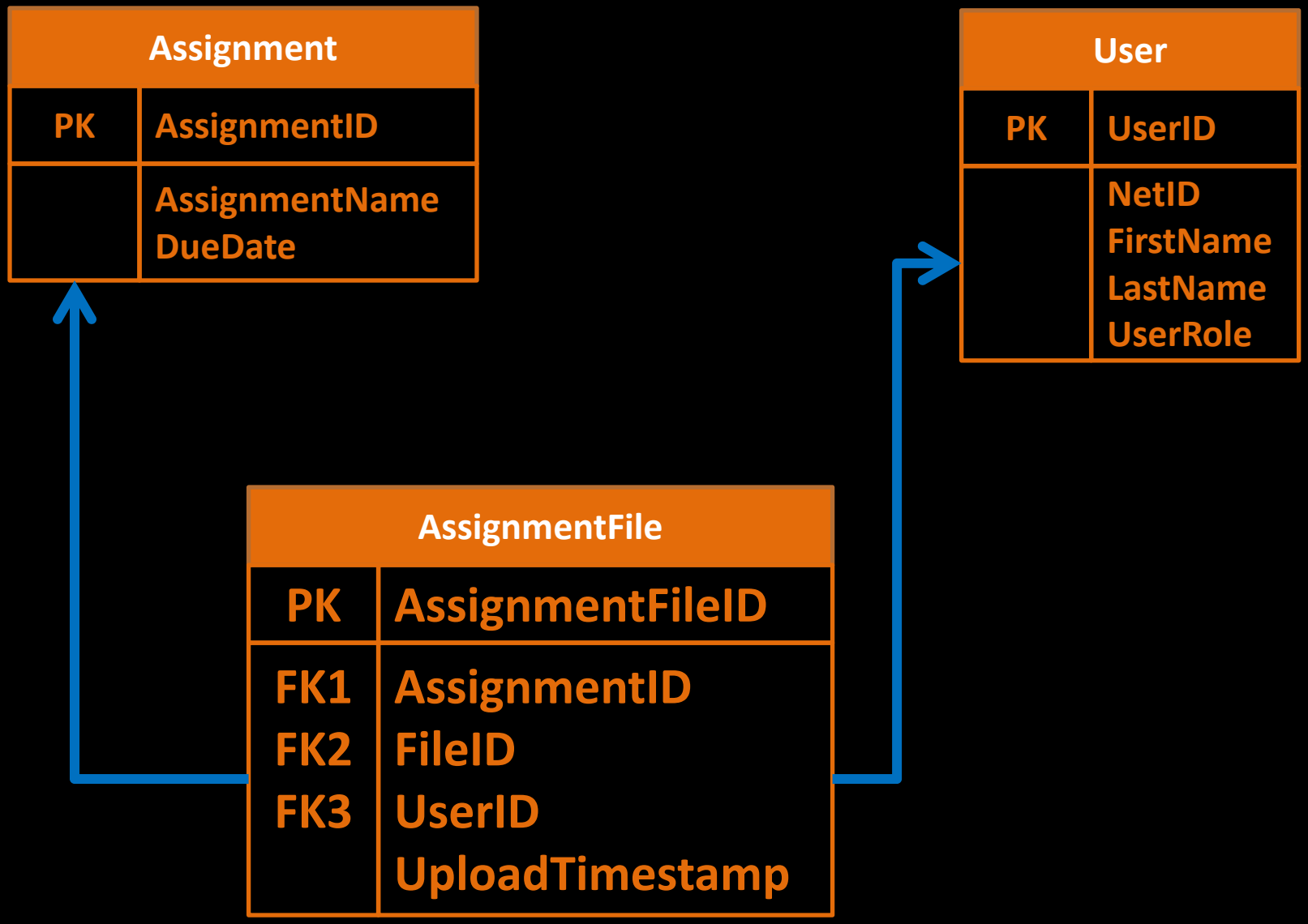
Databases are similar to spreadsheets, except for **rows** are called?

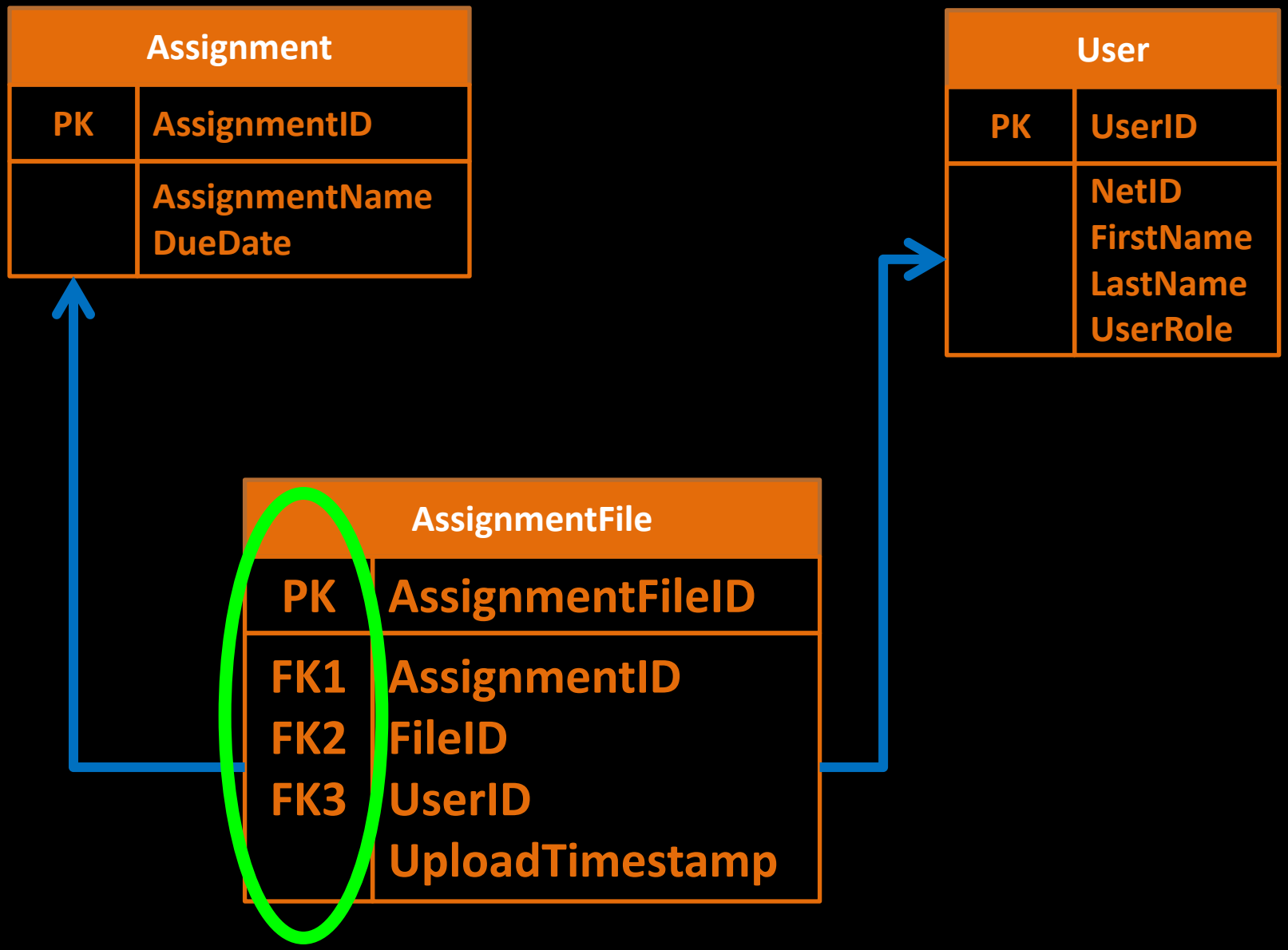
A) Keys
B) Records
C) Schemas
D) SQL
E) Tables

Clicker Review #2

What types of keys exist in a database?

A) Foreign and domestic keys
B) Local and regional keys
C) Foreign and local keys
D) Regional and global keys
E) Foreign and primary keys


Assignment
PK
AssignmentID
AssignmentName
DueDate
User
PK
UserID
NetID
FirstName
LastName
UserRole
AssignmentFile
PK
AssignmentFileID
FK1
FK2
FK3
AssignmentID
FileID
UserID
UploadTimestamp


Assignment
PK
AssignmentID
AssignmentName
DueDate
User
PK
UserID
NetID
FirstName
LastName
UserRole
AssignmentFile
PK
AssignmentFileID
FK1
FK2
FK3
AssignmentID
FileID
UserID
UploadTimestamp

Clicker Review #2

What types of keys exist in a database?

A) Foreign and domestic keys
B) Local and regional keys
C) Foreign and local keys
D) ~~Regional and global keys~~
E) Foreign and primary keys

Apps

Object-Oriented Programming (OOP)

Object-Oriented Programming

Object

Object

A variable that contains related functions and associated data

Object

A variable that contains related functions and associated data

`Person``:`

Object

A variable that contains related functions and associated data

```
Person:
   FirstName: Wade
   LastName: Fagen
   NetID: waf
```

Object

A variable that contains related functions and associated data

```
Person:
   FirstName: Wade
   LastName: Fagen
   NetID: waf
```

Object

A variable that contains related functions and associated data

```
var cs105 =
```

```
Person:
    FirstName: Wade
    LastName: Fagen
    NetID: waf
```

Object

A variable that contains related functions and associated data

```
var cs105 = Person:
              FirstName: Wade
              LastName: Fagen
              NetID: waf
            ;
```

Object

A variable that contains related functions and associated data

```
var cs105 = Person:
              FirstName: Wade
              LastName: Fagen
              NetID: waf
            ;

print(cs105.FirstName);
```

Object

A variable that contains related functions and associated data

```
var cs105 = Person:
              FirstName: Wade
              LastName: Fagen
              NetID: waf
            ;

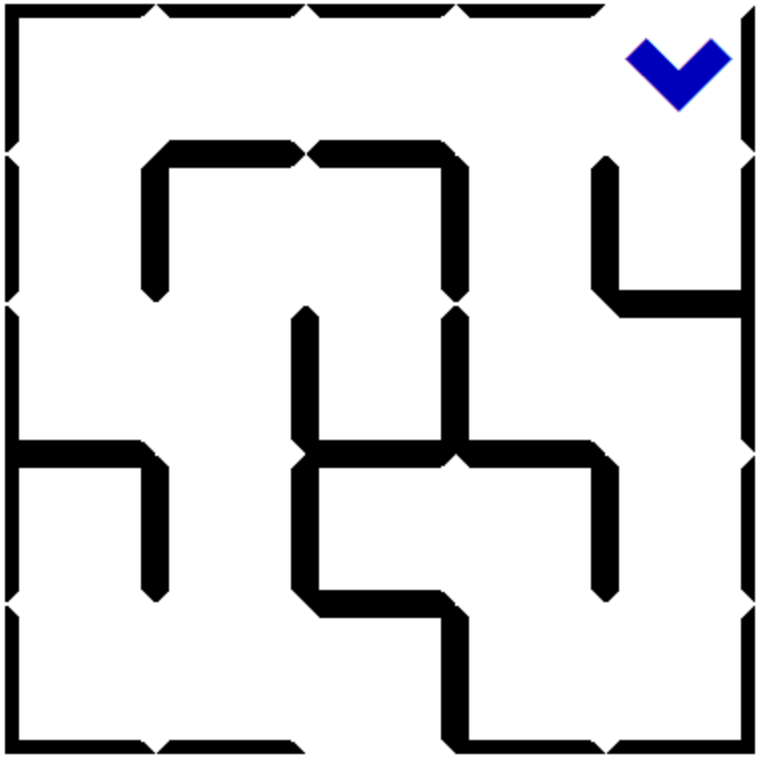
print(cs105.FirstName);
```

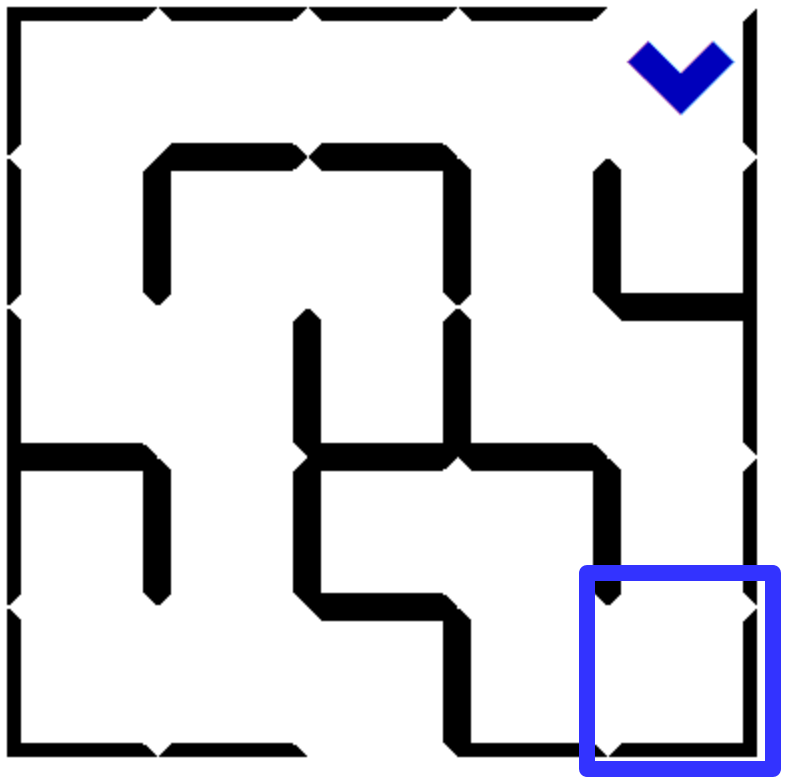
Object

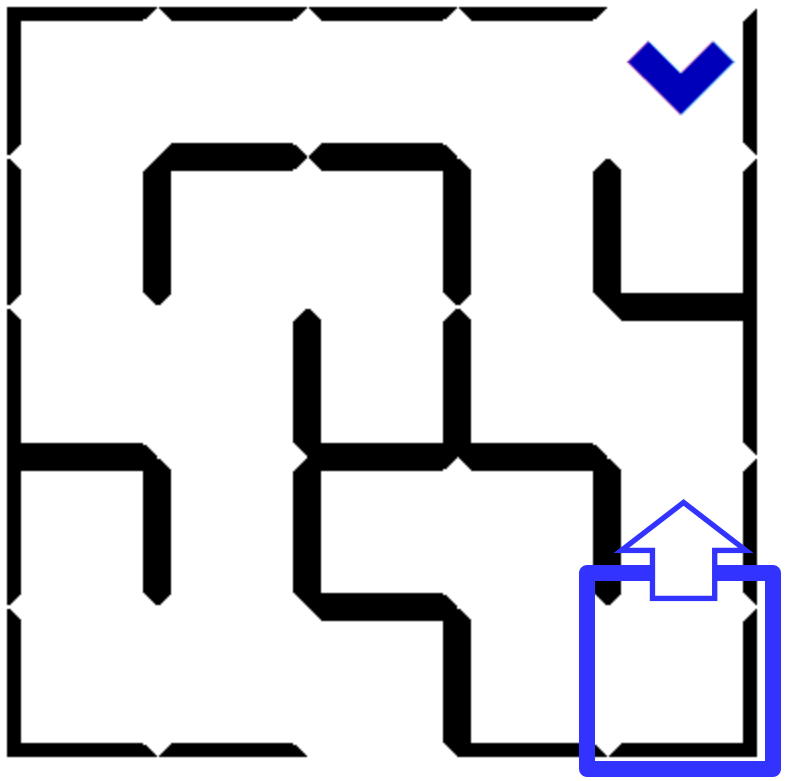
A variable that contains related functions and associated data

```
var cs105 = Person:
              FirstName: Wade
              LastName: Fagen
              NetID: waf
            ;

print(cs105.FirstName);
```







Cell:

```
Cell:
{
   wall:  [WALL_OPEN,
           WALL_EDGE,
           WALL_EDGE,
           WALL_OPEN],
```

```
Cell:
{
   wall: [WALL_OPEN,
          WALL_EDGE,
          WALL_EDGE,
          WALL_OPEN],
   visited: false,
```

```
Cell:
{
   wall: [WALL_OPEN,
          WALL_EDGE,
          WALL_EDGE,
          WALL_OPEN],
   visited: false,
   exit: false
};
```

```
[ [Cell, Cell, Cell, Cell, Cell],
  [Cell, Cell, Cell, Cell, Cell],
  [Cell, Cell, Cell, Cell, Cell],
  [Cell, Cell, Cell, Cell, Cell],
  [Cell, Cell, Cell, Cell, Cell] ]
```

```
[ [Cell, Cell, Cell, Cell, Cell],
  [Cell, Cell, Cell, Cell, Cell],
  [Cell, Cell, Cell, Cell, Cell],
  [Cell, Cell, Cell, Cell, Cell],
  [Cell, Cell, Cell, Cell, Cell] ]
```

```
for (var i = 0; i < width; i++)
{
  maze[i] = new Array(height);
  for (var j = 0; j < height; j++)
  {
    maze[i][j] = { wall: new Array(4),
                   visited: false,
                   exit: false };

    maze[i][j].wall[0] = WALL_CLOSED;
    maze[i][j].wall[1] = WALL_CLOSED;
    maze[i][j].wall[2] = WALL_CLOSED;
    maze[i][j].wall[3] = WALL_CLOSED;
  }
}
```

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for (var i = 0; i < width; i++)
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  maze[i] = new Array(height);
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    maze[i][j].wall[2] = WALL_CLOSED;
    maze[i][j].wall[3] = WALL_CLOSED;
  }
}
```

Class

Class

A definition describing the contents of an object.

Class

A definition describing the contents of an object.

An object is an **instance** of a class.

Android API Classes

GUI

widget
AbsListView c !
AbsoluteLayout c !
AbsSeekBar c !
AbsSpinner c !
Adapter i !
AdapterViewAnimator c !!
AdapterViewFlipper c !!
AdapterView c !
AlphabetIndexer c 3
AnalogClock c !
ArrayAdapter c !
AutoCompleteTextView c !
BaseAdapter c !
BaseExpandableListAdapter c !
Button c !
CalendarView c !!!
Checkable i !
CheckBox c !
CheckedTextView c !
Chronometer c !
CompoundButton c !
CursorAdapter c !
CursorTreeAdapter c !
DatePicker c !
DialerFilter c !
DigitalClock c !
EditText c !
ExpandableListAdapter i !!
ExpandableListView c !
Filterable i !
Filter c !
FilterQueryProvider i !
FrameLayout c !
Gallery c !
GridView c !
HeaderViewListAdapter c !
HeterogeneousExpandableList i !!
HorizontalScrollView c 3
ImageButton c !
ImageSwitcher c !
ImageView c !
LinearLayout c !
ListAdapter i !
ListPopupWindow c !!!
ListView c !
MediaController c !
MultiAutoCompleteTextView c !
NumberPicker c !!!
OverScroller c 9
PopupMenu c !!
PopupWindow c !
ProgressBar c !
QuickContactBadge c 5
RadialTimeView c !
RadioGroup c !
RadioButton c !
RelativeLayout c !
RemoteViews c !
RemoteViewsService c !!!
ResourceCursorAdapter c !
ResourceCursorTreeAdapter c !
Scroller c !
ScrollView c !
SearchView c !!!
SeekBar c !
SimpleAdapter c !
SimpleCursorAdapter c !
SimpleCursorTreeAdapter c !
SimpleExpandableListAdapter c !
SlidingDrawer c 3
SpinnerAdapter i !
Spinner c !
StackView c !!!
TabHost c !
TableLayout c !
TableRow c !
TabWidget c !
TextSwitcher c !
TextView c !
TimePicker c !
Toast c !
ToggleButton c !
TwoLineListItem c !
VideoView c !
ViewAnimator c !
ViewFlipper c !
ViewSwitcher c !
WrapperListAdapter i !
ZoomButton c !
ZoomButtonsController c !
ZoomControls c !

view
AbsSavedState c !
ActionMode c !!!
ContextMenu i !
ContextThemeWrapper c !
DragEvent c !!!
FocusFinder c !
GestureDetector c !
Gravity c !
HapticFeedbackConstants c 3
InflateException c !
InputDevice c 9
InputEvent c 9
InputQueue c 9
KeyCharacterMap c !
KeyEvent c !
LayoutInflater c !
Menu c !
MenuInflater c !
MenuItem c !!
MotionEvent c !
OrientationEventListener c 3
OrientationListener c !
ScaleGestureDetector c 8
SoundEffectConstants c !
SubMenu c !!!
SurfaceHolder c !!
SurfaceView c !
TouchDelegate c !
VelocityTracker c !
ViewConfiguration c !
ViewDebug c !
ViewGroup c !
View c !
ViewManager i !
ViewParent i !
ViewPropertyAnimator c !!
ViewStub c !
ViewTreeObserver c !
Window c !
WindowManager i !

view.animation
AccelerateDecelerateInterpolator c !
AccelerateInterpolator c !
AlphaAnimation c !
Animation c !
AnimationSet c !
AnimationUtils c !
AnticipateInterpolator c 4
AnticipateOvershootInterpolator c 4
BounceInterpolator c 4
CycleInterpolator c !
DecelerateInterpolator c !
GridLayoutAnimationController c !
Interpolator i !
LayoutAnimationController c !
LinearInterpolator c !
OvershootInterpolator c 4
RotateAnimation c !
ScaleAnimation c !
Transformation c !
TranslateAnimation c !

webkit
CacheManager c !
CacheMessage c !!
CookieManager c !
CookieSyncManager c !
DataSetter c !
DownloadListener i !
GeolocationPermissions c 5
HttpAuthHandler c !
JsPromptResult c !
JsResult c !
MimeTypeMap c !
PluginStub c 5
SslErrorHandler c !
URLUtil c !
ValueCallback i 7
WebBackForwardList c !
WebChromeClient c !
WebHistoryItem c !
WebIconDatabase c !
WebResourceResponse c !!
WebSettings c !
WebStorage c 5
WebViewClient c !
WebViewDatabase c !
WebViewFragment c !!!
WebView c !

GUI

view.inputmethod
BaseInputConnection c 3
CompletionInfo c 3
CorrectionInfo c !!
EditorInfo c 3
ExtractedText c 3
ExtractedTextRequest c 3
InputBinding c 3
InputConnection i 3
InputConnectionWrapper c 3
InputMethod i 3
InputMethodInfo c 3
InputMethodManager c 3
InputMethodSession i 3
InputMethodSubtype c !!

view.accessibility
AccessibilityEvent c 4
AccessibilityEventSource i 4
AccessibilityManager c 4

animation
Animator c !!!
AnimatorInflater c !!
AnimatorListenerAdapter c !!!
AnimatorSet c !!!
ArgbEvaluator c !!!
FloatEvaluator c !!!
IntEvaluator c !!!
KeyFrame c !!!
LayoutTransition c !!!
ObjectAnimator c !!!
PropertyValuesHolder c !!!
TimeInterpolator c !!!
TypeEvaluator c !!!
ValueAnimator c !!!

renderscript
AllocationAdapter c !!!
Allocation c !!
Byte2 c !!!
Byte3 c !!!
Byte4 c !!!
Element c !!!
FieldPacker c !!!
FileA3D c !!!
Float2 c !!!
Float3 c !!!
Float4 c !!!
Font c !!!
Int2 c !!!
Int3 c !!!
Int4 c !!!
Long2 c !!!
Long3 c !!!
Long4 c !!!
Matrix2f c !!!
Matrix3f c !!!
Matrix4f c !!!
Mesh c !!!
ProgramFragmentFixedFunction c !!!
ProgramFragment c !!!
Program c !!!
ProgramRaster c !!!
ProgramStore c !!!
ProgramVertexFixedFunction c !!!
ProgramVertex c !!!
RenderScript.Context c !!!
RenderScript c !!!
RSDriverException c !!!
RSIllegalArgumentException c !!!
RSInvalidStateException c !!!
RSRuntimeException c !!!
RSSurfaceView c !!!
Sampler c !!!
ScriptC c !!!
Script c !!!
Short2 c !!!
Short3 c !!!
Short4 c !!!
Type c !!!

graphics
AvoidXfermode c !
BitmapFactory c !
Bitmap c !
BitmapRegionDecoder c !!
BitmapShader c !
BlurMaskFilter c !
Camera c !
Canvas c !
ColorFilter c !
Color c !
ColorMatrixColorFilter c !
ColorMatrix c !
ComposePathEffect c !
ComposeShader c !
CornerPathEffect c !
DashPathEffect c !
DiscreteePathEffect c !
DrawFilter c !
EmbossMaskFilter c !
ImageFormat c !!
Interpolator c !
LayerRasterizer c !
LightingColorFilter c !
LinearGradient c !
MaskFilter c !
Matrix c !
Movie c !
NinePatch c !!
PaintFlagsDrawFilter c !
Paint c !
PathDashPathEffect c !
PathEffect c !
Path c !
PathMeasure c !
Picture c !
PixelFormat c !
PixelXorXfermode c !
PointF c !
Point c !
PorterDuffColorFilter c !
PorterDuff c !
PorterDuffXfermode c !
RadialGradient c !
RasterizerC c !
RectC c !
Rect c !
Region c !
RegionIterator c !
Shader c !
SumPathEffect c !
SurfaceTexture c !!
SweepGradient c !
TypeFace c !
Xfermode c !
YuvImage c !!

graphics.drawable
AnimationDrawable c !
AnimatedStateDrawable c !
BitmapDrawable c !
ClipDrawable c !
ColorDrawable c !
DrawableContainer c !
Drawable c !
GradientDrawable c !
InsetDrawable c !
LayerDrawable c !
LevelListDrawable c !
NinePatchDrawable c !
PaintDrawable c !
PictureDrawable c !
RotateDrawable c !
ScaleDrawable c !
ShapeDrawable c !
StateListDrawable c !
TransitionDrawable c !

service.wallpaper
WallpaperService c 7

opengl
ETC1 c 8
ETC1Util c 8
GLDebugHelper c !
GLES10Ext c 4
GLES10 c 4
GLES11Ext c 4
GLES11 c 4
GLES20 c 8
GLException c !
GLSurfaceView c 3
GLU c !
GLUtils c !
Matrix c !
Visibility c 3

graphics.drawable.shapes
ArcShape c !
OvalShape c !
PathShape c !
RectShape c !
RoundRectShape c !
Shape c !

User Interface

media
AsyncPlayer c !
AudioFormat c 3
AudioManager c !
AudioRecord c 3
AudioTrack c 3
CamcorderProfile c 8
CameraProfile c 8
EvilRecorder c 5
FaceDetector c !
JetPlayer c 3
MediaMetadataRetriever c !!
MediaPlayer c !
MediaRecorder c !
MediaScannerConnection c !
RingtoneC c !
RingtoneManager c !
SoundPool c !
ThumbnailUtils c 8
ToneGenerator c !

media.audiofx
AudioEffect c 9
BassBoost c 9
EnvironmentalReverb c 9
Equalizer c 9
PresetReverb c 9
Virtualizer c 9
Visualizer c 9

accessibilityservice
AccessibilityService c 4
AccessibilityServiceInfo c 4

drm
DrmConvertedStatus c !!
DrmErrorEvent c !!
DrmEvent c !!!
DrmInfoEvent c !!!
DrmInfo c !!!
DrmInfoRequest c !!!
DrmInfoStatus c !!!
DrmManagerClient c !!!
DrmRights c !!!
DrmStore c !!!
DrmSupportInfo c !!!
DrmUtils c !!!
ProcessedData c !!!

inputmethodservice
AbstractInputMethodSessionC 3
ExtractEditText c 3
InputMethodService c 3
Keyboard c 3
KeyboardView c 3

speech
RecognitionListener i !
RecognizerService c !!
RecognizerIntent c 3
RecognizerResultsIntent c !!
SpeechRecognizer c !!

speech.tts
TextToSpeech c 4

text
AlteredCharSequence c !
AndroidCharacter c !
Annotation c !
AutoText c !
BoringLayout c !
ClipboardManager c !
DynamicLayout c !
Editable i !
GetChars i !
Hyphi c !
InputFilter i !
InputType i 5
Layout c !
LoginFilter c !
NoCopySpan i 3
ParcelableSpan c 3
Selection c !
Spannable i !
SpannableFactory c !
SpannableStringBuilder c !
SpannableString c !
Spanned i !
SpannedString c !
SpanWatcher i !
StaticLayout c !
TextPaint c !
TextUtils c !
TextWatcher i !

text.format
DateFormat c 5
DateUtils c 3
Formatter c 3
Time c 3

text.style
AbsoluteSizeSpan c !
AlignmentSpan i !
BackgroundColorSpan c !
BulletSpan c !
CharacterStyle c !
ClickableSpan c !
DrawableMarginSpan c !
DynamicDrawableSpan c !
ForegroundColorSpan c !
IconMarginSpan c !
ImageSpan c !
LeadingMarginSpan i !
LineBackgroundSpan i !
LineHeightSpan i !
MaskFilterSpan c !
MetricAffectingSpan c !
ParagraphStyle i !
QuoteSpan c !
RasterizerSpan c !
RelativeSizeSpan c !
ReplacementSpan c !
ScaleXSpan c !
StrikethroughSpan c !
StyleSpan c !
SubscriptSpan c !
SuperscriptSpan c !
TabStopSpan i !
TextAppearanceSpan c !
TypefaceSpan c !
UnderlineSpan c !
UpdateAppearance i 3
UpdateLayout i !
URLSpan c !
WrapTogetherSpan i !

text.method
ArrowKeyMovementMethod c !
BaseKeyListener c !
BaseMovementMethod c !!!
CharacterPickerDialog c !
DateKeyListener c !
DateTimeKeyListener c !
DialerKeyListener c !
DigitsKeyListener c !
HideReturnsTransformationMethod c !
KeyListener i !
LinkMovementMethod c !
PasswordKeyListener c !
MultiTapKeyListener c !
NumberKeyListener c !
PasswordTransformationMethod c !
QwertyKeyListener c !
ReplacementTransformationMethod c !
ScrollingMovementMethod c !
SingleLineTransformationMethod c !
TextKeyListener c !
TimeKeyListener c !
Touch c !
TransformationMethod i !

text.util
Linkify c !
Rfc822Token c !
Rfc822Tokenizer c !

accounts
AbstractAccountAuthenticator c !
AccountAuthenticatorActivity c !
AccountAuthenticatorResponse c !
Account c 5
AccountManagerCallback i !
AccountManagerFuture i !
AccountManager c !
AccountsException c 5
AuthenticatorDescription c 5
AuthenticatorException c 5
NetworkErrorException c 5
OnAccountsUpdateListener i 5
OperationCanceledException c 5

gesture
Gesture c 4
GestureLibraries c 4
GestureLibrary c 4
GestureOverlayView c 4
GesturePoint c 4
GestureStore c 4
GestureStroke c 4
GestureUtils c 8
OrientedBoundingBox c 4
Prediction c 4

Connectivity

net
ConnectivityManager c !
Credentials c !
DhcpInfo c !
LocalServerSocket c !
LocalSocketAddress c !
LocalSocket c !
MailTo c !
NetworkInfo c !
ParseException c !
Proxy c !
SSLCertificateSocketFactory c !
SSLSessionCache c 8
TrafficStats c 8
Uri c !
UrlQuerySanitizer c !

net.http
AndroidHttpClient c 8
SslCertificate c !
SslError c 8

net.rtp
AudioCodec c !!
AudioGroup c !!
AudioStream c !2
RtpStream c !2

net.sip
SipAudioCall c 8
SipErrorCode c 9
SipException c 9
SipManager c 9
SipProfile c 9
SipRegistrationListener i 9
SipSession c 9

telephony.cdma
CdmaCellLocation c 5

telephony.gsm
GsmCellLocation c !
SmsManager c !
SmsMessage c !

telephony
CellLocation c !
NeighboringCellInfo c 3
PhoneNumberFormattingTextWatcher c !
PhoneNumberUtils c !
PhoneStateListener c !
ServiceState c !
SignalStrength c 7
SmsManager c 4
SmsMessage c 4
TelephonyManager c !

bluetooth
BluetoothA2dp c !!
BluetoothAdapter c 5
BluetoothAssignedNumbers c !!
BluetoothClass c 5
BluetoothDevice c 5
BluetoothHeadset c !!
BluetoothHealth c !!!
BluetoothProfile i !!
BluetoothServerSocket c 5
BluetoothSocket c 5

net.wifi
ScanResult c !
SupplicantState c !
WifiConfiguration c !
WifiInfo c !
WifiManager c !

nfc.tech
IsoDep c !!
MifareClassic c !!
MifareUltralight c !!
NdefFormatable c !!
Ndef c !!
NfcA c !!
NfcB c !!
NfcF c !!
NfcV c !!
TagTechnology i !!

nfc
FormatException c 9
NdefMessage c 9
NdefRecord c 9
NfcAdapter c 9
NfcManager c !!
Tag c !!
TagLostException c !!

mtp
MtpConstants c !2
MtpDevice c !2
MtpDeviceInfo c !2
MtpObjectInfo c !2
MtpStorageInfo c !2

System

os
AsyncTask c 3
BadParcelableException c !
BatteryManager c !
Binder c !
Build c !
Bundle c !
CancellationSignal c !
CountDownTimer c !
DeadObjectException c !
Debug c !
DropBoxManager c !!
Environment c !
FileObserver c !
Handler c !
HandlerThread c !
IBinder i !
IInterface i !
Looper c !
MemoryFile c !
Message c !
MessageQueue c !
Messenger c !
NetworkOnMainThreadException c !
Parcelable i !
ParcelFileDescriptor c !
ParcelFormatException c !
Parcel c !
ParcelUuid c !
PatternMatcher c !
Power Manager c !
Process c !
RecoverySystem c !
RemoteCallbackList c !
RemoteException c !
ResultReceiver c 3
StatFs c !
StrictMode c 9
SystemClock c !
Vibrator c !
WorkSource c 9

os.storage
OnObbStateChangeListener c 9
StorageManager c 9

util
AndroidException c !
AndroidRuntimeException c !
ArrayMapSet c !!
BaseIntArray c !!
BaseLongArray c !!
CharArrayBuffer c !
Config c !
DebugUtils c !
DisplayMetrics c !
EventLog c 8
EventLogTags c !
FloatMath c !
JsonReader c !!
JsonToken e !!!
JsonWriter c !!
Log c !
LogPrinter c !
LruCache c !2
MalformedJsonException c !!
MonthDisplayHelper c !
Pair c 5
Patterns c 8
Printer i !
PrintStreamPrinter c 5
PrintWriterPrinter c !
SparseArray c !
SparseBooleanArray c !
SparseIntArray c !
StateSet c !
StringBuilderPrinter c !
TimeFormatException c !
TimeUtils c !
TimingLogger c !
TypedValue c !
Xml c !

sax
Element c !
ElementListener i !
EndElementListener i !
EndTextElementListener i !
RootElement c !
StartElementListener i !
TextElementListener i !

database
AbstractCursor c !
AbstractWindowedCursor c !
ChainedJoinBuffer c !
ContentObservable c !
ContentObserver c !
CrossProcessCursor i !
Cursor i !
CursorIndexOutOfBoundsException c !
CursorJoiner c !
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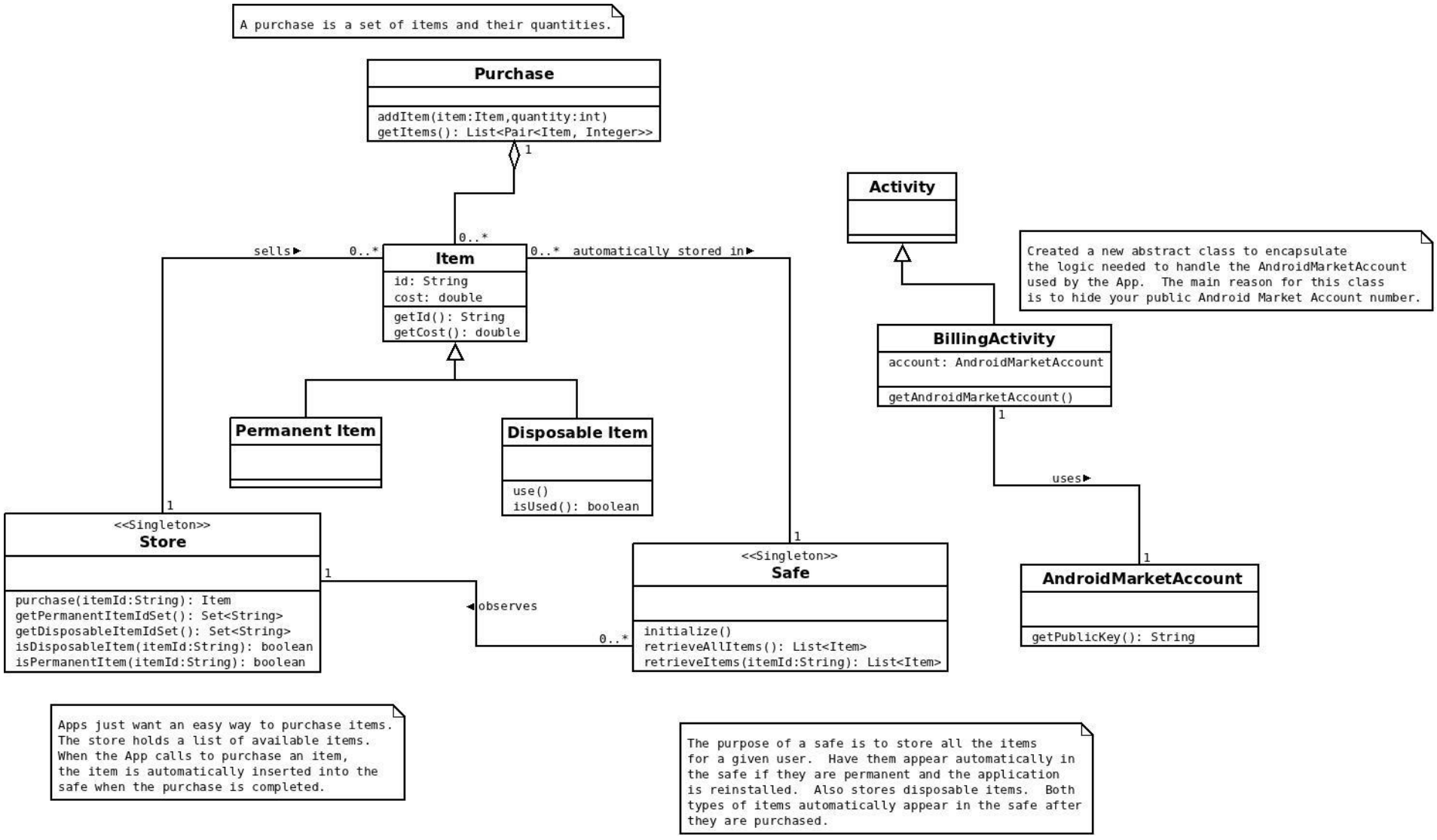
A purchase is a set of items and their quantities.
Purchase
addItem(item:Item,quantity:int)
getItems(): List<Pair<Item, Integer>>
1
0..*
sells►
0..*
Item
id: String
cost: double
getId(): String
getCost(): double
0..* automatically stored in►
Activity
Created a new abstract class to encapsulate the logic needed to handle the AndroidMarketAccount used by the App. The main reason for this class is to hide your public Android Market Account number.
BillingActivity
account: AndroidMarketAccount
getAndroidMarketAccount()
1
uses►
1
Permanent Item
Disposable Item
use()
isUsed(): boolean
1
<<Singleton>>
Store
purchase(itemId:String): Item
getPermanentItemIdSet(): Set<String>
getDisposableItemIdSet(): Set<String>
isDisposableItem(itemId:String): boolean
isPermanentItem(itemId:String): boolean
1
observes
0..*
1
<<Singleton>>
Safe
initialize()
retrieveAllItems(): List<Item>
retrieveItems(itemId:String): List<Item>
1
AndroidMarketAccount
getPublicKey(): String
Apps just want an easy way to purchase items. The store holds a list of available items. When the App calls to purchase an item, the item is automatically inserted into the safe when the purchase is completed.
The purpose of a safe is to store all the items for a given user. Have them appear automatically in the safe if they are permanent and the application is reinstalled. Also stores disposable items. Both types of items automatically appear in the safe after they are purchased.