



**GIL DEKEL, JAMES KLUZ,  
UMAN SHAHZAD, AND MICHAEL MATTHEW SY**

WEDNESDAY, MAY 17TH, 2017

# WORK DISTRIBUTION

GIL DEKEL



1. Team Coordinator
2. Gedder Algorithm Design
3. XML GUI Design and Implementation

JAMES KLUZ



1. Software Architecture Design & Implementation
2. Gedder Algorithm Design
3. Google Places API
4. Integrate XML GUI to Application

UMAN SHAHZAD



1. Software Architecture Design & Implementation
2. Gedder Algorithm Implementation
3. Version Control Management
4. Code Refactoring
5. Code Documentation
6. Website Development

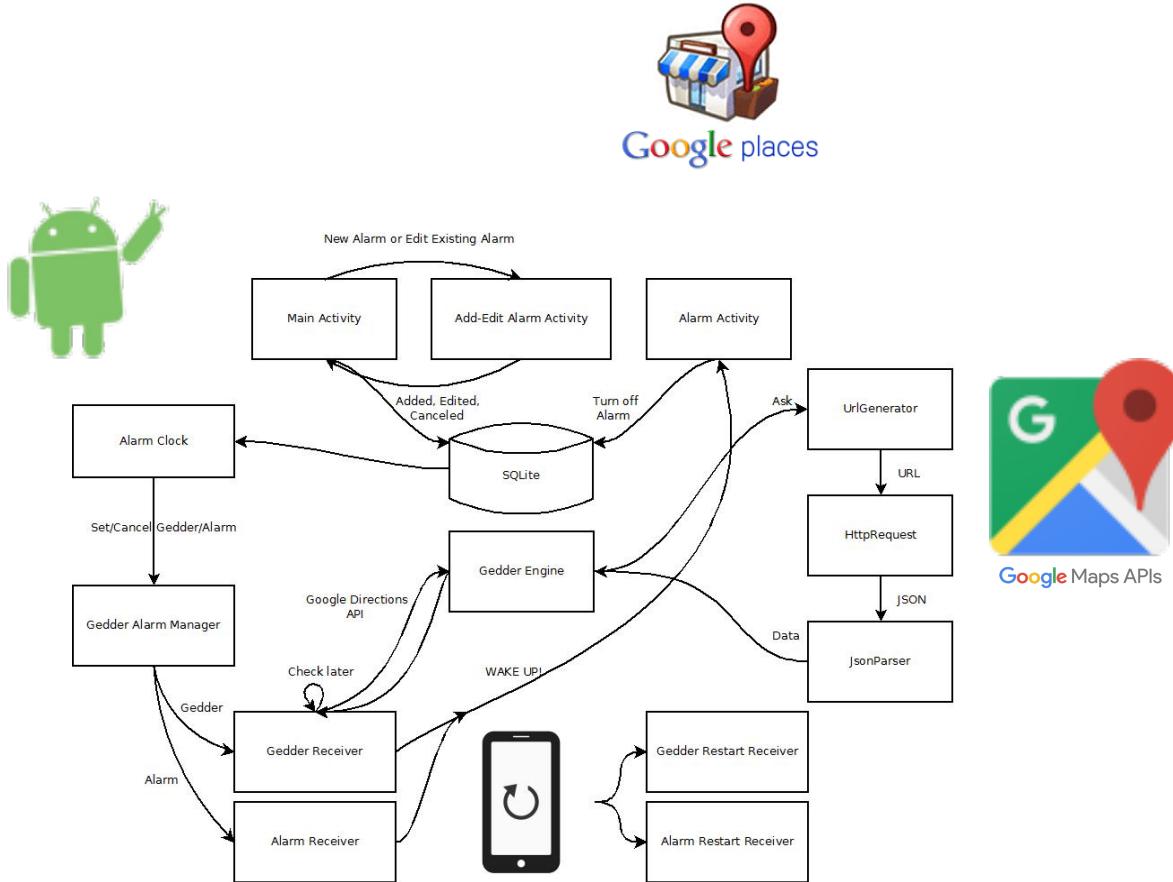
MICHAEL MATTHEW SY



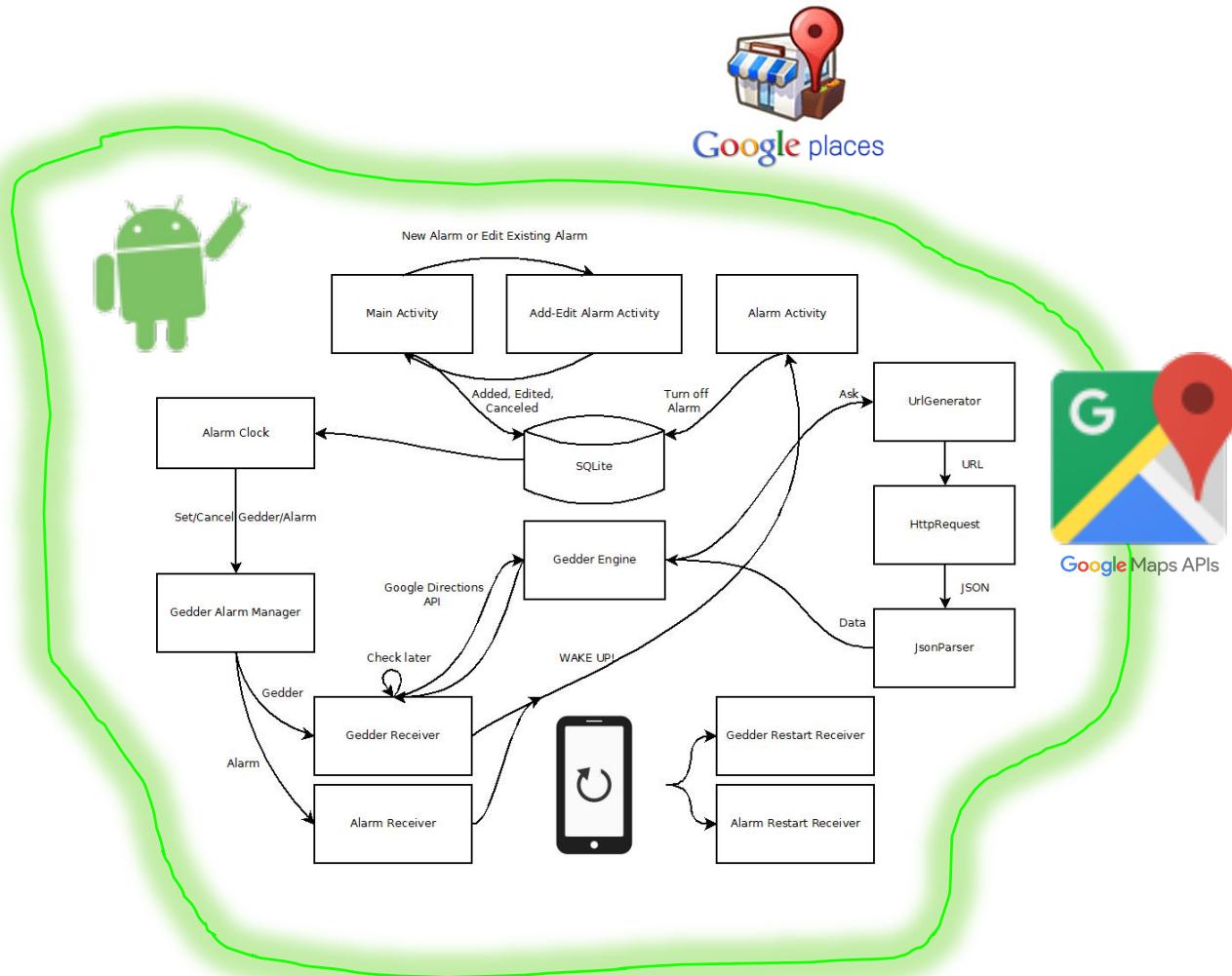
1. Design & Implementation of Google Map Interface Module
2. Data Collection
3. Testing and Bug Discovery in Prototypes and Gedder 1.0



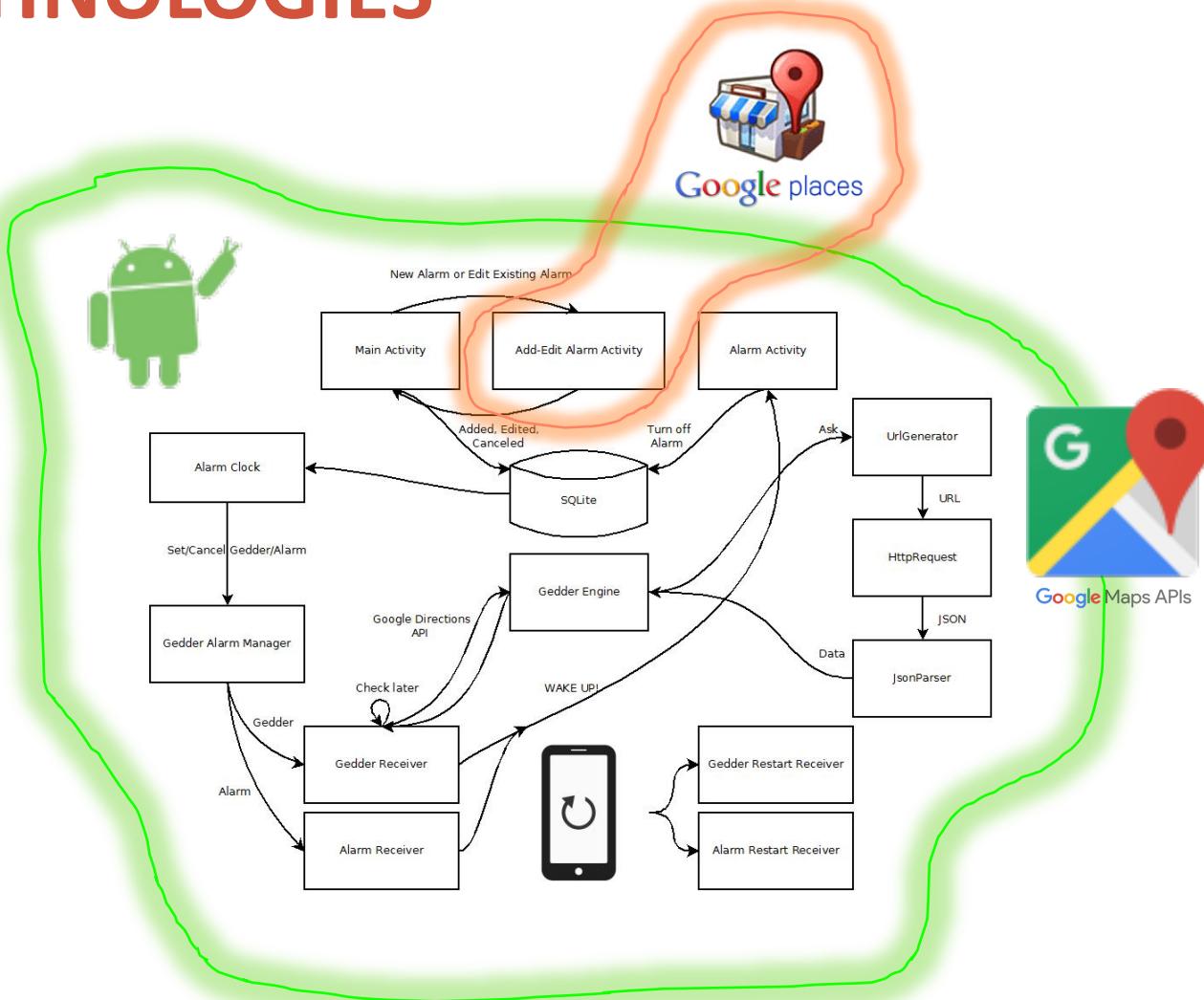
# GEDDER'S ARCHITECTURE AND TECHNOLOGIES



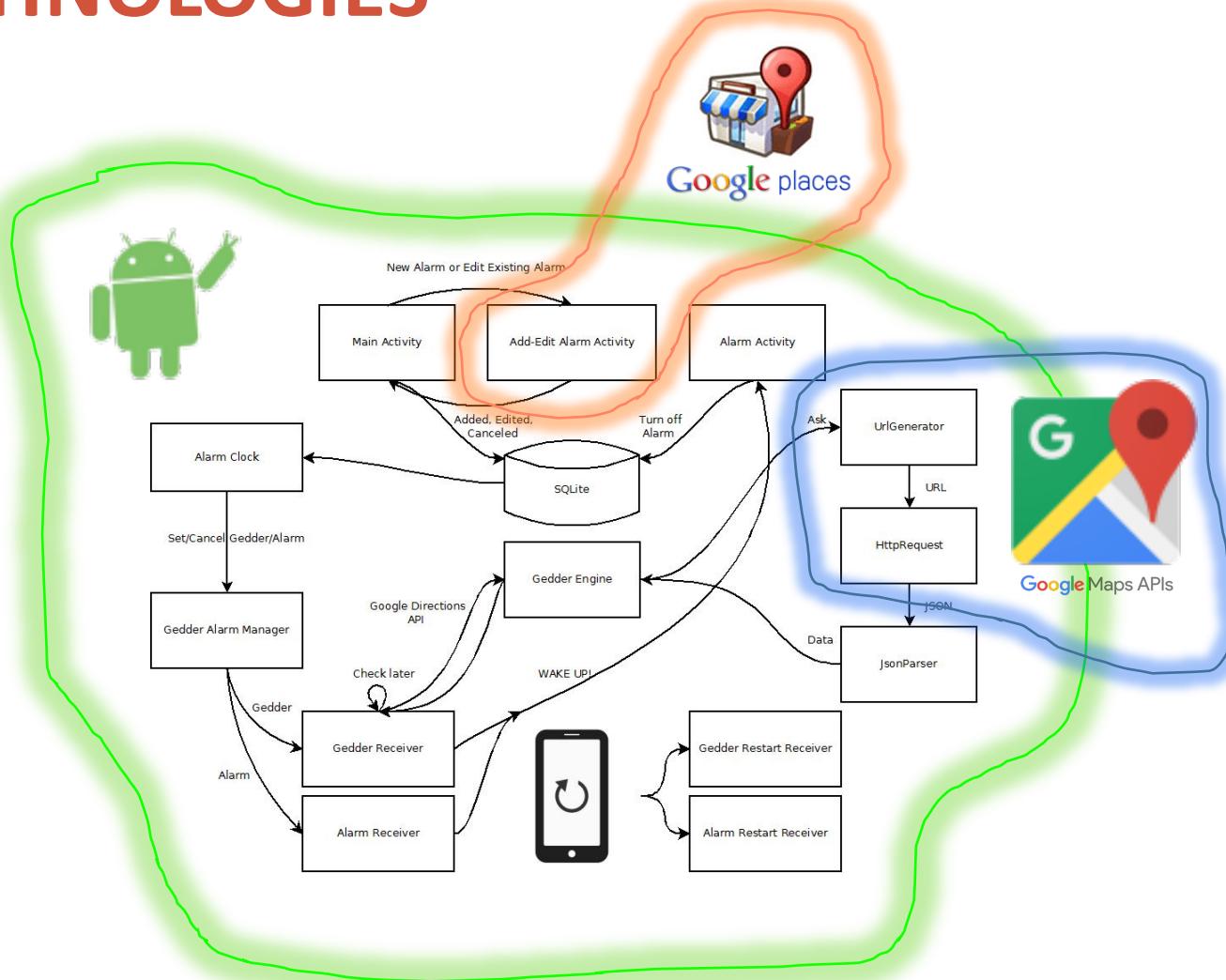
# GEDDER'S ARCHITECTURE AND TECHNOLOGIES



# GEDDER'S ARCHITECTURE AND TECHNOLOGIES

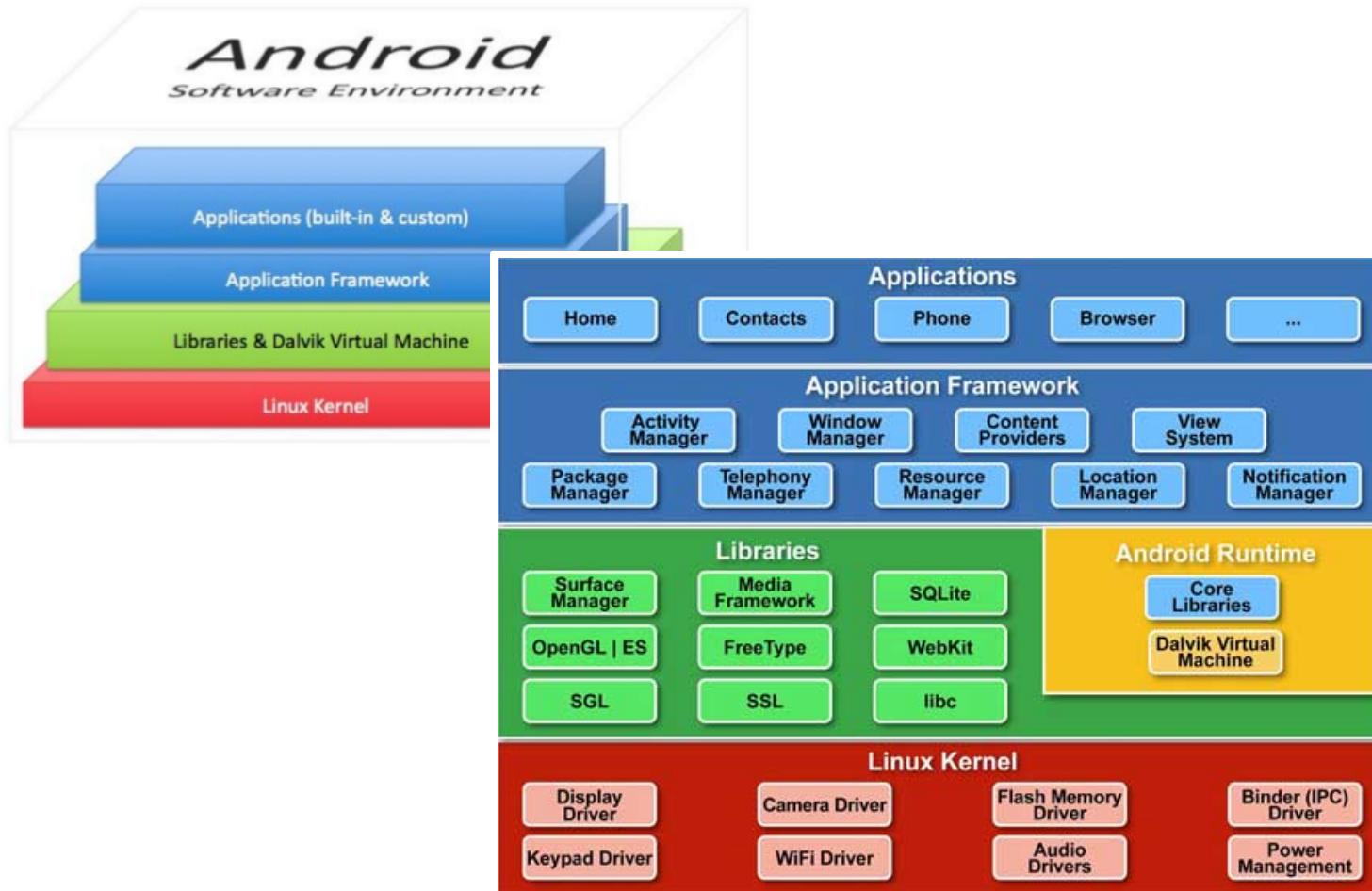


# GEDDER'S ARCHITECTURE AND TECHNOLOGIES





# FOUR LAYERS OF ANDROID



# FOUR PRINCIPLE CLASSES

## THE FOUR PRIMARY CLASSES OF ANDROID:

- Activities
- Broadcast Receivers
- Content Providers
- Services/Managers

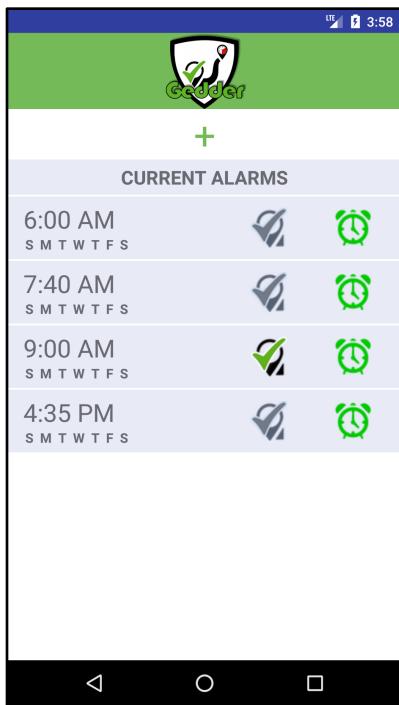


Intents → The glue between the classes

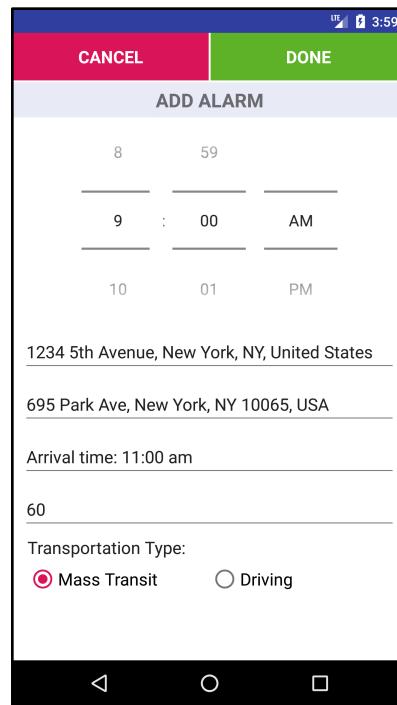
# ACTIVITIES

ACTIVITIES REPRESENT A SCREEN IN AN APP

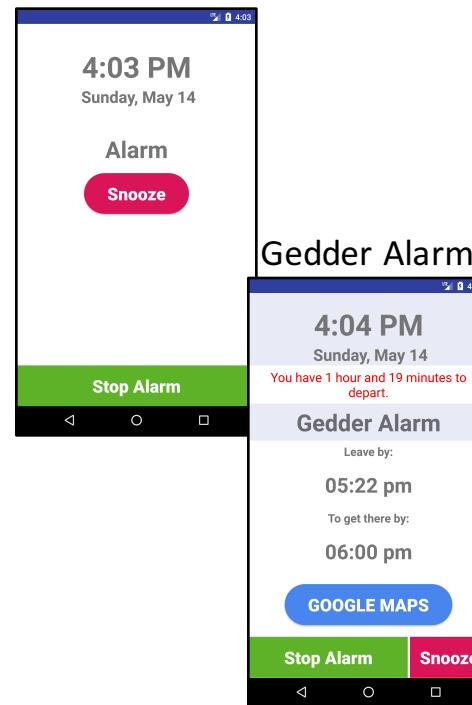
Main Screen



Add/Edit Alarm



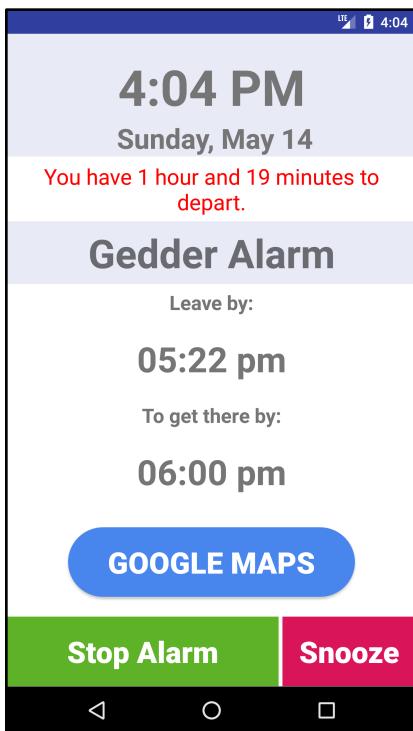
Regular Alarm



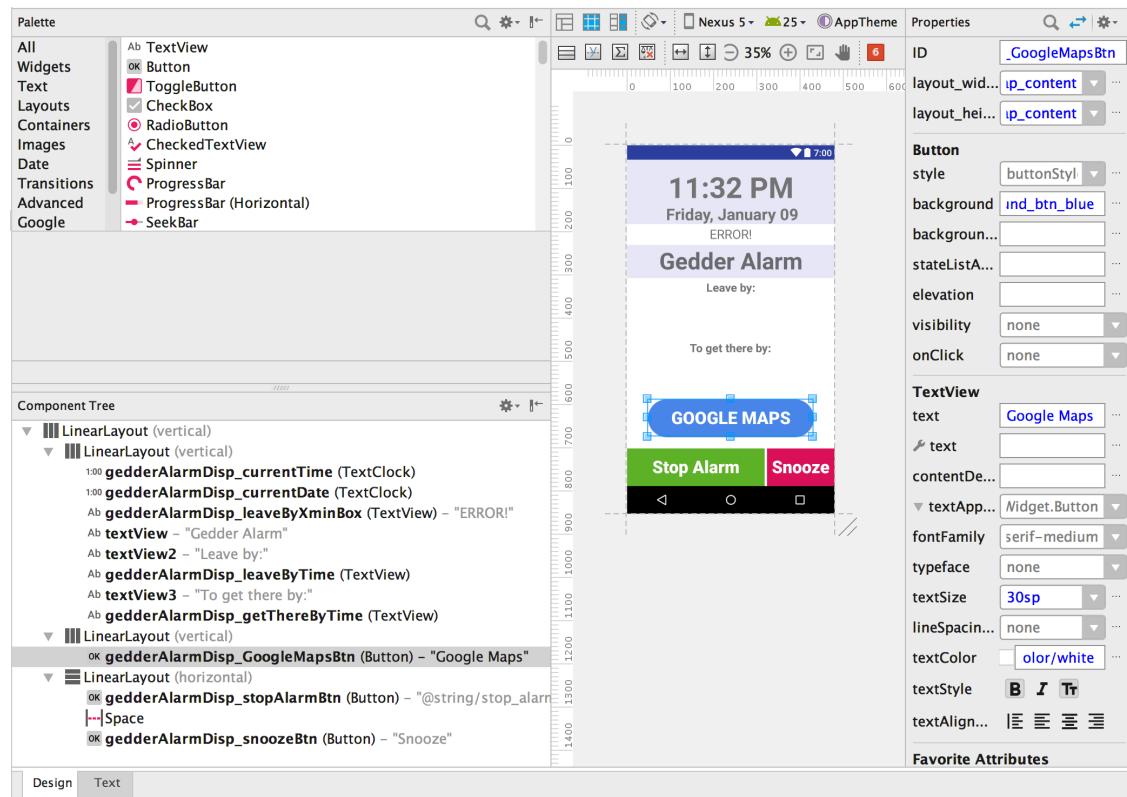
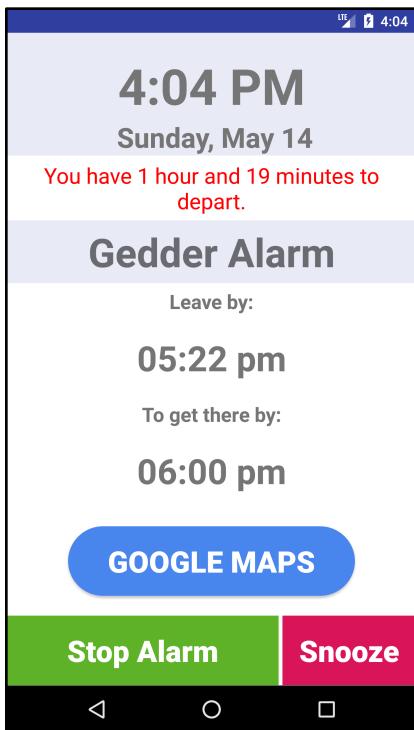
\* Four different screens == four Gedder activities



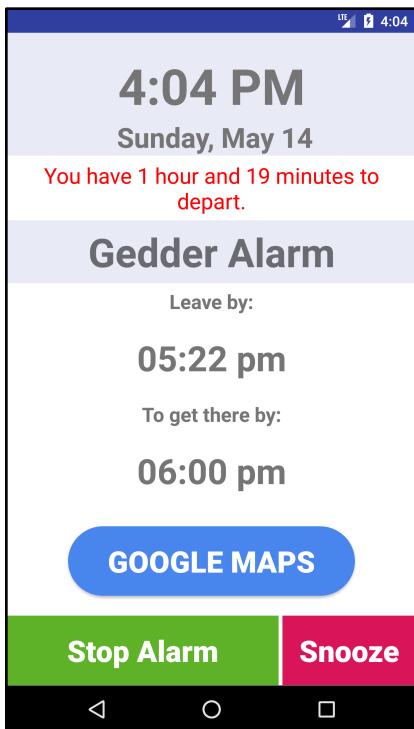
# ACTIVITIES



# ACTIVITIES



# ACTIVITIES



The screenshot displays the Android Studio interface with the following details:

- Design View:** Shows the layout of the activity. It features a top bar with the time (11:32 PM) and date (Friday, January 09). Below this is a section titled "Gedder Alarm". The main content area contains two buttons: "GOOGLE MAPS" (blue background) and "top Alarm" (green background) and "Snooze" (pink background).
- Properties Panel:** On the right side, the properties panel is open for the "GoogleMapsBtn" button. It shows the following settings:
  - ID:** \_GoogleMapsBtn
  - layout\_width:** ip\_content
  - layout\_height:** ip\_content
  - Button style:** buttonStyle
  - background:** ind\_btn\_blue
  - backgroundTint:** #000000
  - stateListAnimator:** (empty)
  - elevation:** 0dp
  - visibility:** none
  - onClick:** none
- Text View:** The XML code for the layout is shown in the center, defining three linear layouts and two buttons.

```

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:gravity="center|bottom"
    android:orientation="vertical">

    <Button
        android:id="@+id/gedderAlarmDisp_GoogleMapsBtn"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginBottom="20dp"
        android:layout_gravity="center"
        android:background="@drawable/round_btn_blue"
        android:paddingBottom="15dp"
        android:paddingLeft="40dp"
        android:paddingRight="40dp"
        android:paddingTop="15dp"
        android:text="Google Maps"
        android:textColor="@android:color/white"
        android:textSize="30sp"
        android:textStyle="bold" />

</LinearLayout>

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:gravity="center|bottom"
    android:orientation="horizontal">

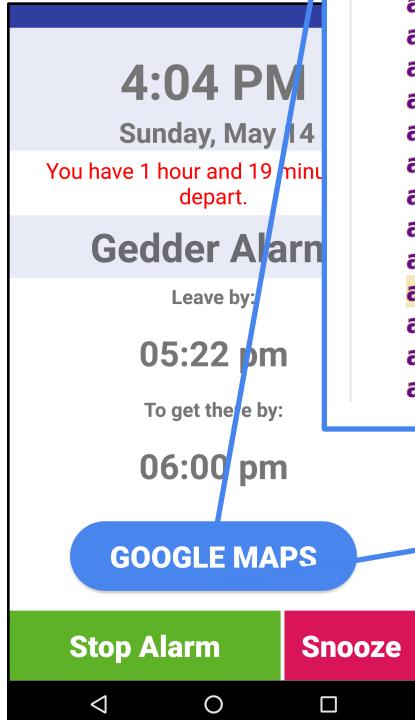
    <Button
        android:id="@+id/gedderAlarmDisp_stopAlarmBtn"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_gravity="center|bottom"
        android:layout_weight="0.333"
        android:background="#FF5EB227"
        android:paddingBottom="15dp"
        android:paddingTop="15dp"
        android:text="Stop Alarm"
        android:textAllCaps="false" />

```



# ACTIVITIES

## XML Layout file



The screenshot shows an Android application interface. At the top, it displays the time as 4:04 PM and the date as Sunday, May 14. A message indicates "You have 1 hour and 19 minutes to depart". Below this, the title "Gedder Alarm" is shown. Underneath, there are two time entries: "Leave by: 05:22 pm" and "To get there by: 06:00 pm". A blue callout bubble labeled "GOOGLE MAPS" points to a button labeled "Google Maps" on the right side of the screen.

```
<Button
    android:id="@+id/gedderAlarmDisp_GoogleMapsBtn"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginBottom="20dp"
    android:layout_gravity="center"
    android:background="@drawable/round_btn_blue"
    android:paddingBottom="15dp"
    android:paddingLeft="40dp"
    android:paddingRight="40dp"
    android:paddingTop="15dp"
    android:text="Google Maps"
    android:textColor="@android:color/white"
    android:textSize="30sp"
    android:textStyle="bold" />
```

```
... (partial XML code showing nested layouts and other buttons)
```

```
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:gravity="center|bottom"
    android:orientation="horizontal">

    <Button
        android:id="@+id/gedderAlarmDisp_StopAlarmBtn"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_gravity="center|bottom"
        android:layout_weight="1.0"
        android:background="#FF5722"
        android:paddingBottom="25dp"
        android:paddingTop="15dp"
        android:text="Stop Alarm"
        android:textColor="white"
        android:textSize="18sp"
        android:textStyle="bold" />

    <Space
        android:layout_width="0dp"
        android:layout_weight="0.1" />

    <Button
        android:id="@+id/gedderAlarmDisp_SnoozeBtn"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_gravity="center|bottom"
        android:layout_weight="1.0"
        android:background="#E91E63"
        android:paddingBottom="25dp"
        android:paddingTop="15dp"
        android:text="Snooze"
        android:textColor="white"
        android:textSize="18sp"
        android:textStyle="bold" />
```

The XML code for the "Google Maps" button is as follows:

```
<Button
    android:id="@+id/gedderAlarmDisp_GoogleMapsBtn"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginBottom="20dp"
    android:layout_gravity="center"
    android:background="@drawable/round_btn_blue"
    android:paddingBottom="15dp"
    android:paddingLeft="40dp"
    android:paddingRight="40dp"
    android:paddingTop="15dp"
    android:text="Google Maps"
    android:textColor="@android:color/white"
    android:textSize="30sp"
    android:textStyle="bold" />
```

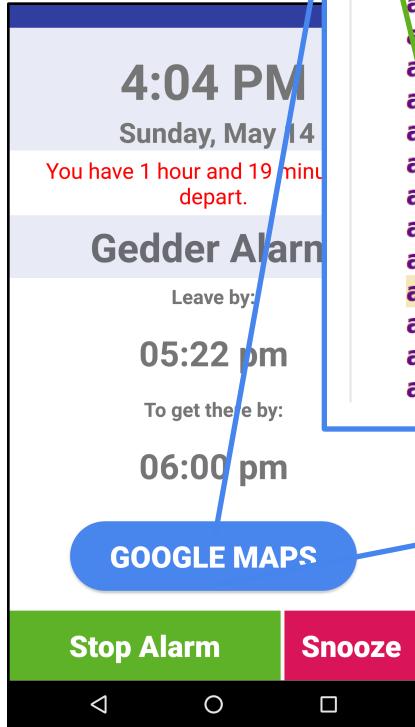
The Properties panel on the right shows the following settings for the "Google Maps" button:

- ID: \_GoogleMapsBtn
- layout\_width: wrap\_content
- layout\_height: wrap\_content
- layout\_marginBottom: 20dp
- layout\_gravity: center
- background: @drawable/round\_btn\_blue
- paddingBottom: 15dp
- paddingLeft: 40dp
- paddingRight: 40dp
- paddingTop: 15dp
- text: Google Maps
- textColor: @android:color/white
- textSize: 30sp
- textStyle: bold



# ACTIVITIES

## XML Layout file



The screenshot shows an Android application interface. At the top, it displays the time as 4:04 PM and the date as Sunday, May 14. A message indicates "You have 1 hour and 19 minutes to depart". Below this, the title "Gedder Alarm" is shown, followed by "Leave by: 05:22 pm" and "To get there by: 06:00 pm". A blue button labeled "GOOGLE MAPS" is located at the bottom left. The main content area contains a large button labeled "GedderAlarmDisp\_GoogleMapsBtn". A green box highlights this button in both the XML layout and the Java code.

```

<Button
    android:id="@+id/gedderAlarmDisp_GoogleMapsBtn"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginBottom="20dp"
    android:layout_gravity="center"
    android:background="@drawable/round_btn_blue"
    android:paddingBottom="15dp"
    android:paddingLeft="40dp"
    android:paddingRight="40dp"
    android:paddingTop="15dp"/>

```

```

Button mGoogleMapsBtn;
mGoogleMapsBtn = (Button) findViewById(R.id.gedderAlarmDisp_GoogleMapsBtn);
mGoogleMapsBtn.setOnClickListener(new View.OnClickListener() {
    public void onClick(View v) {
        try {
            String origin_address = mOrigin.replaceAll(" ", "+");
            String destination_address = mDestination.replaceAll(" ", "+");
            String uri = "http://maps.google.com/maps?f=d&hl=en&saddr=" +
                    "&origin_address+" + "&daddr=" + destination_address;
            Intent intent = new Intent(android.content.Intent.ACTION_VIEW, Uri.parse(uri));
            startActivity(Intent.createChooser(intent, "Select an application"));
        } catch (Exception e) {
            Toast.makeText(getApplicationContext(),
                    "Trouble opening Google Maps, please make sure it is installed!",
                    Toast.LENGTH_LONG).show();
        }
    }
});

```

## Java File

```

<Button
    android:id="@+id/gedderAlarmDisp_stopAlarmBtn"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_gravity="center|bottom"
    android:layout_weight=".333"
    android:background="#FF5722"
    android:paddingBottom="25dp"
    android:paddingTop="15dp"
    android:text="Stop Alarm"
    android:textAllCap="false"/>

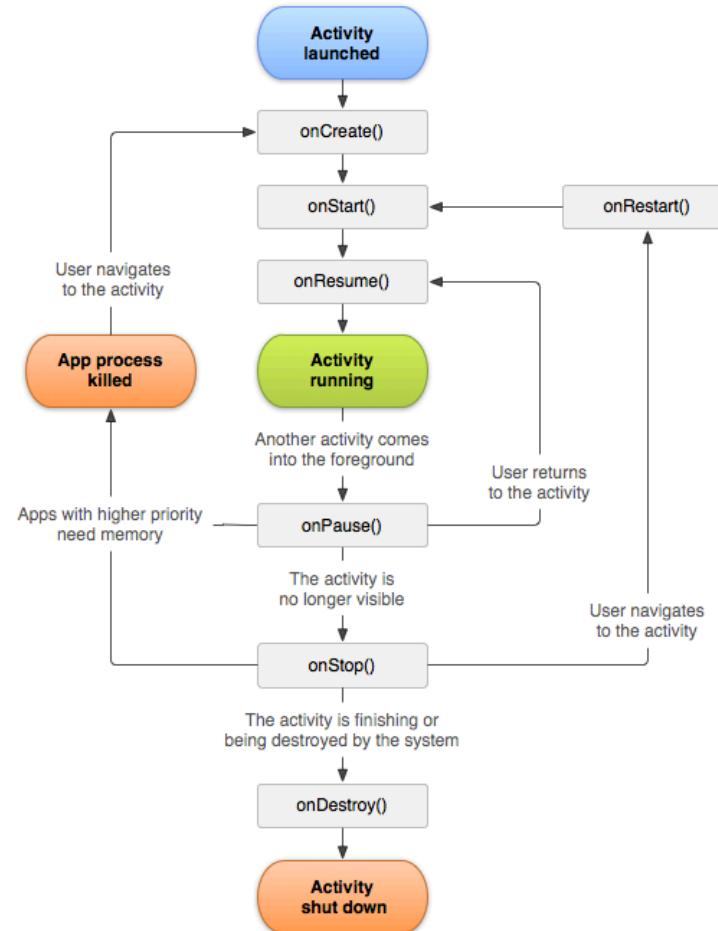
```



# ACTIVITIES

## ACTIVITY LIFECYCLE

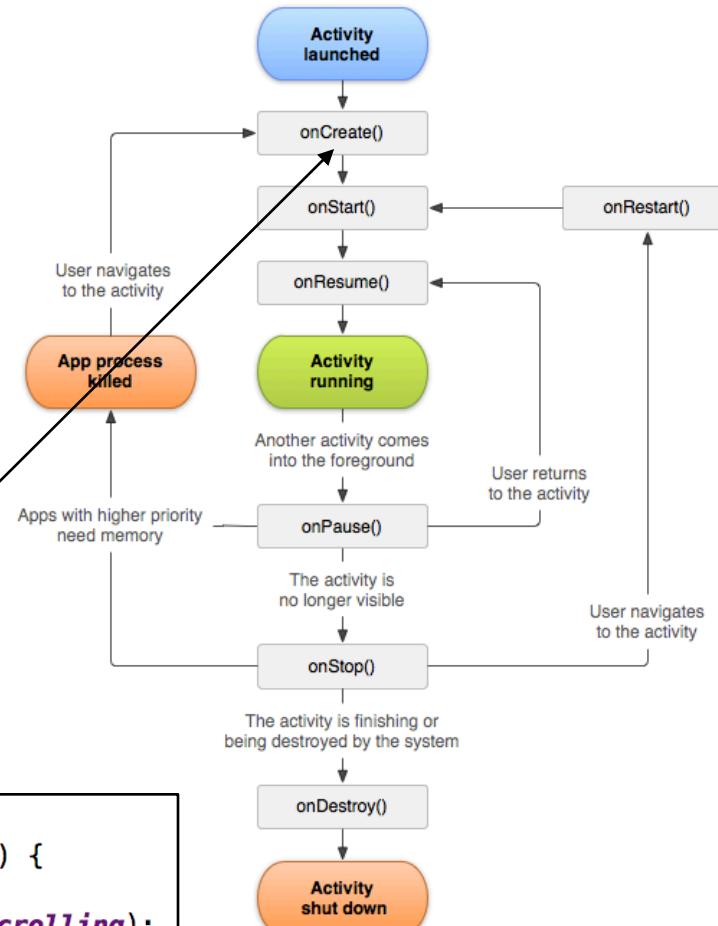
- Every activity has these methods
- We can override these methods to customize our activity's behavior



# ACTIVITIES

## ACTIVITY LIFECYCLE

- Every activity has these methods
- We can override these methods to customize our activity's behavior



```

@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_alarm_edit_scrolling);
    InitializeVariables();
}

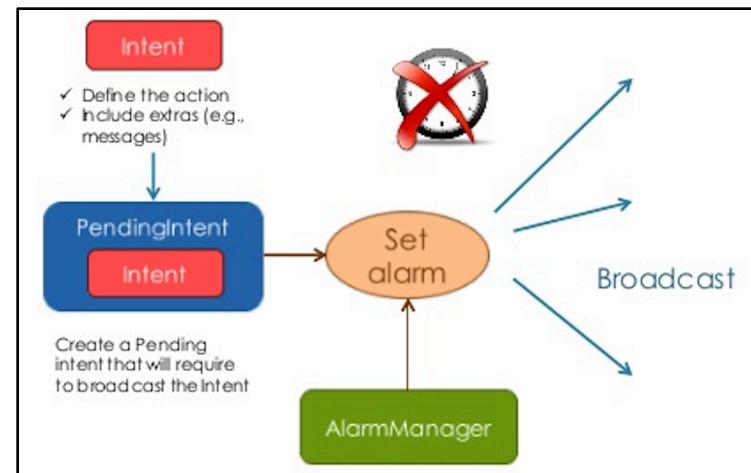
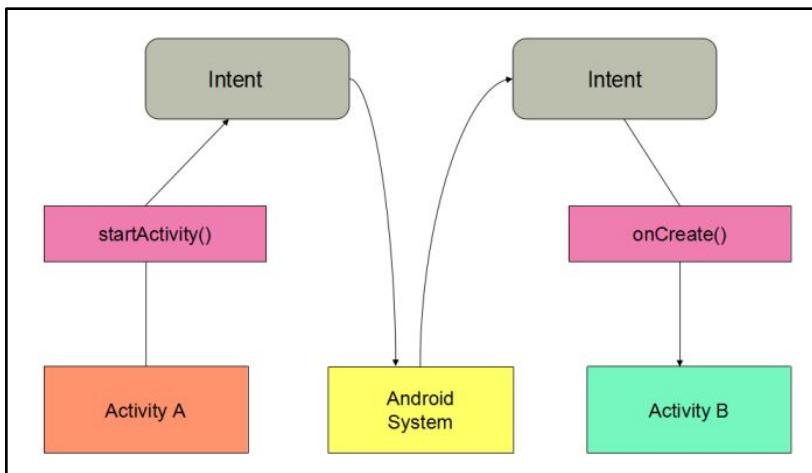
```



# MOVING BETWEEN ACTIVITIES

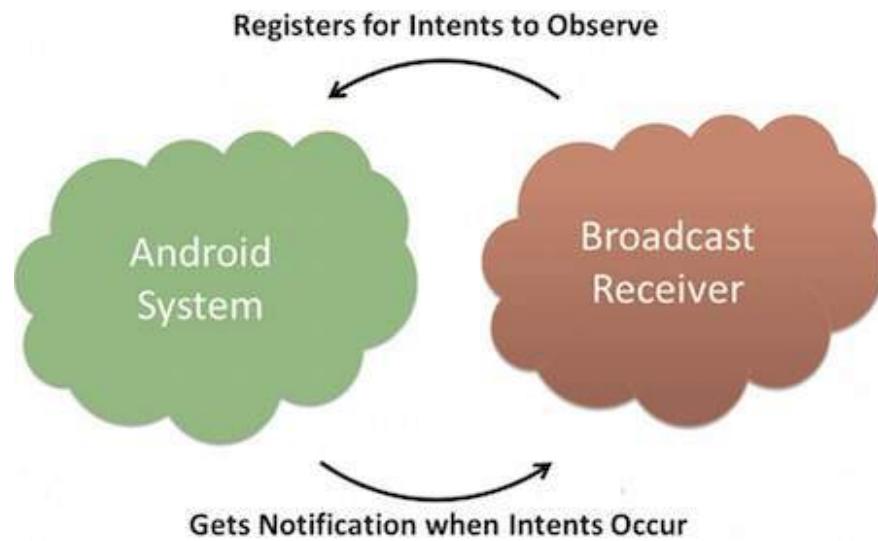
## INTENTS

- Perform late runtime binding between the code in different applications
- Used in the launching of activities
- A passive data structure holding an abstract description of an action to be performed

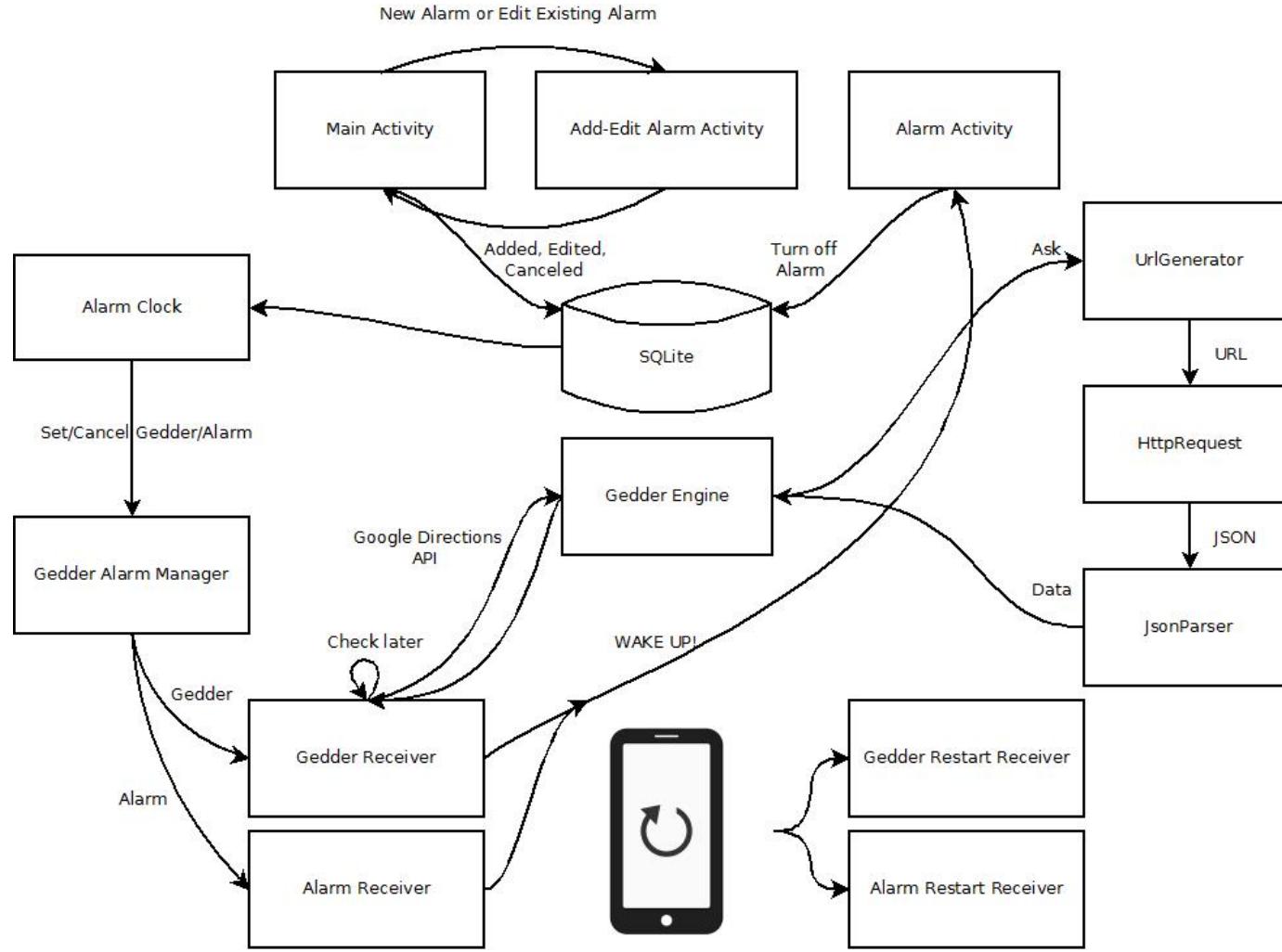


# BROADCAST RECEIVERS

- An Android component
  - Register for system events
  - Register for application events
- Registered receivers for an event are notified by the Android runtime once this even happens

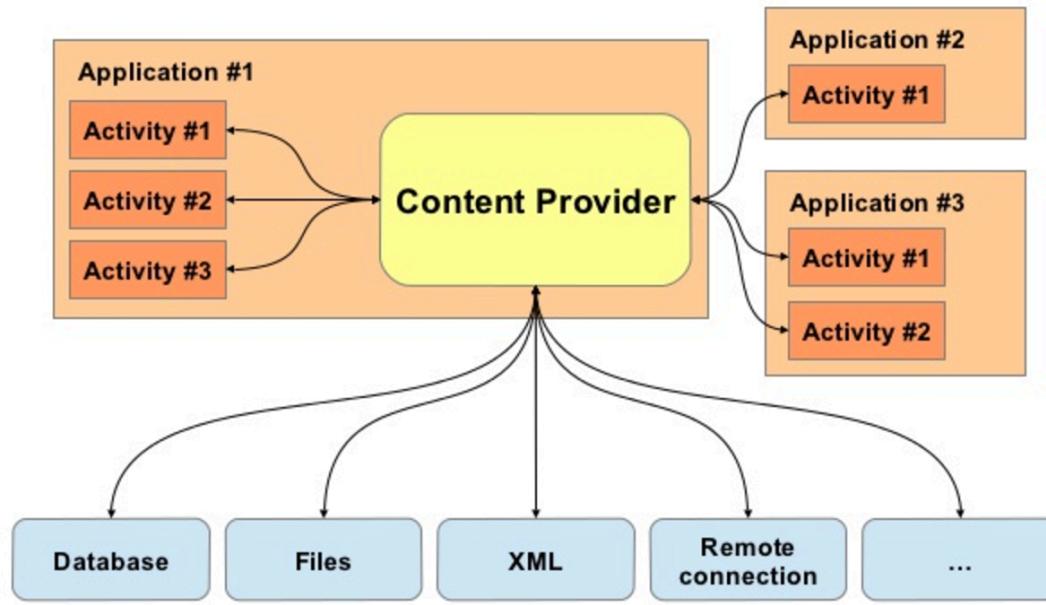


# BROADCAST RECEIVERS



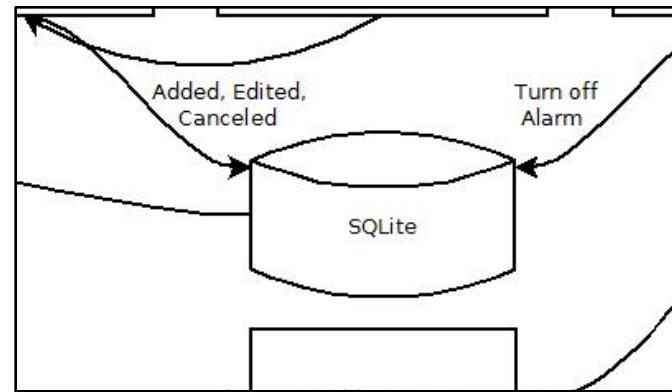
# CONTENT PROVIDERS

- Help an application manage access to data stored by itself
- Provides a way to share data with other apps
- Encapsulate the data, and provide mechanisms for defining data security.
- EXAMPLE: Phone Contacts



# CONTENT PROVIDERS

Alarm Clock	
* ID	INTEGER
◦ UUID	TEXT
◦ Request Code	INTEGER
◦ Origin ID	TEXT
◦ Origin Address	TEXT
◦ Destination ID	TEXT
◦ Destination Address	TEXT
◦ Travel Mode	TEXT
◦ Transit Mode	TEXT
◦ Repeat Days	SMALLINT
◦ Alarm Day	INTEGER
◦ Alarm Hour	SMALLINT
◦ Alarm Minute	SMALLINT
◦ Alarm Time	INT8
◦ Arrival Day	INTEGER
◦ Arrival Hour	SMALLINT
◦ Arrival Minute	SMALLINT
◦ Arrival Time	INT8
◦ Preparation Hour	SMALLINT
◦ Preparation Minute	SMALLINT
◦ Preparation Time	INT8
◦ Alarm Set	BOOLEAN
◦ Gedder Set	BOOLEAN



# SERVICES AND MANAGERS

## Services:

- Run in the background without a user interface
- Ask the OS to do something on your behalf, like download a photo
- Keeps the UI thread free to handle user interaction

## Managers:

- Provide access to various system services like Alarms



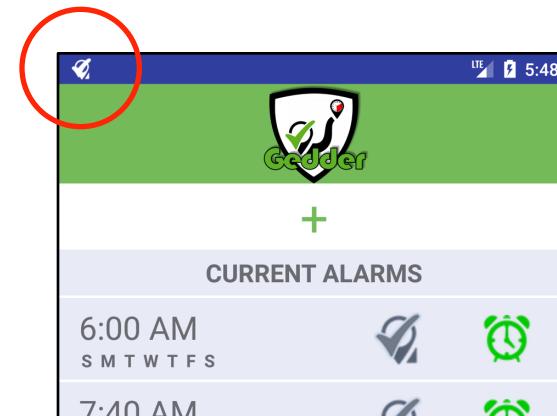
# SERVICES AND MANAGERS

## Alarm Manager:

- Provides access to the system alarm services

### How we use it:

- Set Alarms for Gedder Engine to check travel-time
- Set Alarm time for regular alarm clock
- This is done through Pending Intents



## Notification Manager:

- Notifies the user of events that happen

### How we use it:

- A persistent icon that goes in the status bar if a Gedder Alarm is set



# Google Places & Google Maps APIs



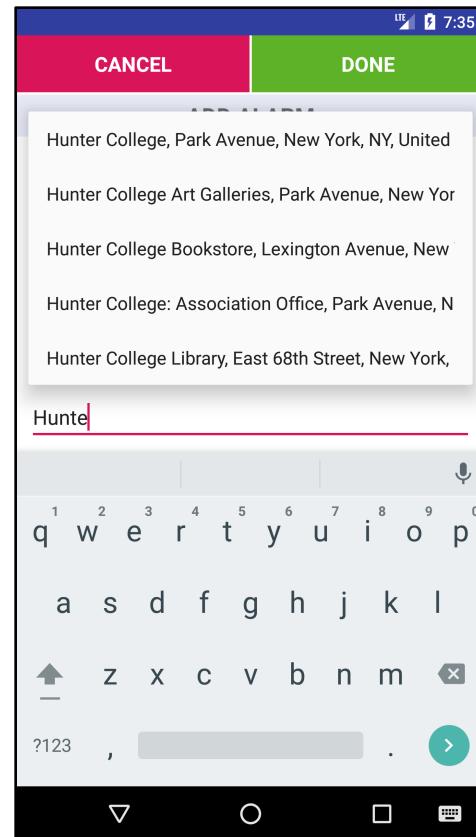
# GOOGLE PLACES API



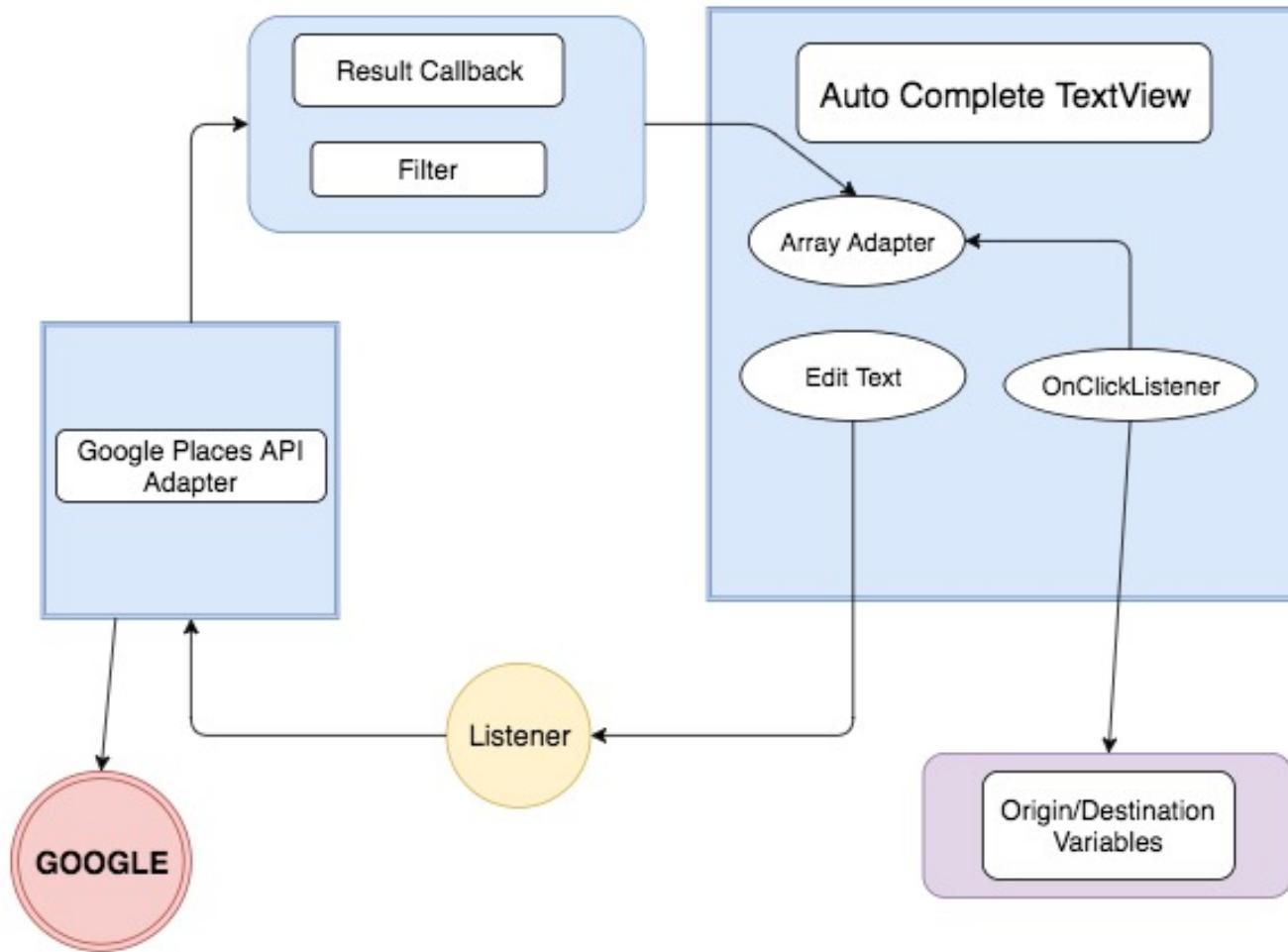
- Autocomplete for Addresses
- Search Businesses and nearby locations
- Need Google API Key

## How we used it:

- Autocomplete origin and destination address



# GOOGLE PLACES AND AUTO COMPLETE TEXT VIEW



# GOOGLE MAPS (DIRECTIONS) API

- Request format: **JSON** or **XML**
- URL with:
  - Origin
  - Destination
  - API Key → <https://console.developers.google.com/>

Example:

```
https://maps.googleapis.com/maps/api/directions/  
Json  
?origin=695+Park+Ave,+New+York,+NY  
&destination=New+York+University,+New+York,+NY+10003  
&key=APIKEY
```



# GOOGLE MAPS (DIRECTIONS) API

## Origin/Destination:

- Text String
  - “Hunter College”
- Latitude/Longitude Coordinates
- Place ID
  - Geocoded by Google

```
{
  "geocoder_status": "OK",
  "place_id": "ChIJwZVT9ZpZwokRBfO1cTF0MNo",
  "types": [ "establishment", "point_of_interest", "university" ]
}

"start_address": "695 Park Ave, New York, NY 10065, USA",
"start_location": {
  "lat": 40.7687399,
  "lng": -73.96542479999999
},
```

<https://maps.googleapis.com/maps/api/directions/>  
Json

?origin=695+Park+Ave,+New+York,+NY

?origin=40.7687399,-73.96542479999999

?origin=place\_id:ChIJwZVT9ZpZwokRBfO1cTF0MNo

Choose  
Between:

&destination=New+York+University,+New+York,+NY+10003

&key=APIKEY



# GOOGLE MAPS (DIRECTIONS) API

## RECOMMENDED ADDITIONAL PARAMETERS:

- Travel Modes
  - Driving
  - Walking
  - Bicycling
  - Transit
    - Mode: Subway, Bus, Train, Tram, Rail
    - Routing Preference: Less walking or Fewer Transfers
- Avoid
  - Tolls
  - Highways
  - Ferries
- Alternative routes

Same example from before:

```
https://maps.googleapis.com/maps/api/directions/json?origin=695+Park+Ave,+New+York,+NY&destination=New+York+University,+New+York,+NY+10003&key=APIKEY...  
+  
...&mode=driving&avoid=tolls | highways&departure_time=1541202457&alternatives=true  
OR  
...&mode=transit&transit_mode=train&transit_routing_preference=less_walking&arrival_time=1541202457
```

*Note: Arrival/Departure Time is in Unix Time == Seconds since Jan 1<sup>st</sup> 1970*



# GOOGLE MAPS (DIRECTIONS) API

## UNDERSTANDING RESPONSE (JSON)

### Important Information

- Status
- Location information
  - Place ID, Text String or Lat/Long Coordinates

```
"status" : "OK"
"status" : "ZERO_RESULTS"
"status" : "UNKNOWN_ERROR"
"status" : "NOT_FOUND"
"status" : "MAX_WAYPOINTS_EXCEEDED"
"status" : "OVER_QUERY_LIMIT"
"status" : "INVALID_REQUEST"
```

```
"geocoded_waypoints" : [
  {
    "geocoder_status" : "OK",
    "place_id" : "ChIJoa9DCQjAwokRotrYpIRzlr4",
    "types" : [ "locality", "political" ]
  },
  {
    "geocoder_status" : "OK",
    "place_id" : "ChIIJsXxpOlWLwokRd1zxj6dBblU",
    "types" : [ "political", "sublocality", "sublocality_level_1" ]
  }
],
```



# GOOGLE MAPS (DIRECTIONS) API

## UNDERSTANDING RESPONSE (JSON)

### Important Information

- Route information
  - Legs
  - Steps
- Coordinates of each step
- Instructions
- Travel Mode

Note: Values are returned in meters and seconds

```
"legs" : [
  {
    "distance" : {
      "text" : "10.4 mi",
      "value" : 16711
    },
    "duration" : {
      "text" : "23 mins",
      "value" : 1354
    },
    "end_address" : "Bronx, NY, USA",
    "end_location" : {
      "lat" : 40.8447535,
      "lng" : -73.86496289999999
    },
    "start_address" : "Yonkers, NY, USA",
    "start_location" : {
      "lat" : 40.9312599,
      "lng" : -73.89862959999999
    },
    ...
  }
]
```

```
"steps" : [
  {
    "distance" : {
      "text" : "203 ft",
      "value" : 62
    },
    "duration" : {
      "text" : "1 min",
      "value" : 17
    },
    "end_location" : {
      "lat" : 40.9317547,
      "lng" : -73.89896139999999
    },
    "html_instructions" : "Head \u003cb\u003e\u2196\u003c/b\u003e",
    "polyline" : {
      "points" : "kkyxFli`bMID_Aj@WN"
    },
    "start_location" : {
      "lat" : 40.9312599,
      "lng" : -73.89862959999999
    },
    "travel_mode" : "DRIVING"
  }
]
```



# Download Gedder

You can get our app (APK) from GitHub:

- <https://github.com/GedderAlarm/GedderAlarm/tree/csci499/app/build/outputs/apk/app-debug.apk>

Or download it directly to your phone:

- Here
  - <https://github.com/GedderAlarm/GedderAlarm/raw/csci499/app/build/outputs/apk/app-debug.apk>
- Or through our website:
  - <https://gedderalarm.github.io/>



Please help us discover bugs



# QUESTIONS



**THANK YOU**