Android Application Components

- Arun Nair

Android Application Components

1. Activities
2. Services
3. Broadcast Receivers
4. Content Providers

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1. Activity

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1. Activity

- A single **visual user interface**.
- Provides **an interactive screen.**

  (dialing phone, viewing a map, playing games etc.)
- Every screen in an application, is an activity by itself.
- Applications consist of **multiple activities.**

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1. Activity

```
<manifest ... >
  <application ... >
      <activity android:name=".ExampleActivity" />
      ...
  </application ... >
  ...
</manifest >
```

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1. Activity

```
public class ExampleActivity extends Activity {
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        // The activity is being created.
    }
    @Override
    protected void onStart() {
        super.onStart();
        // The activity is about to become visible.
    }
    @Override
    protected void onResume() {
        super.onResume();
```

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Lifecycle Methods

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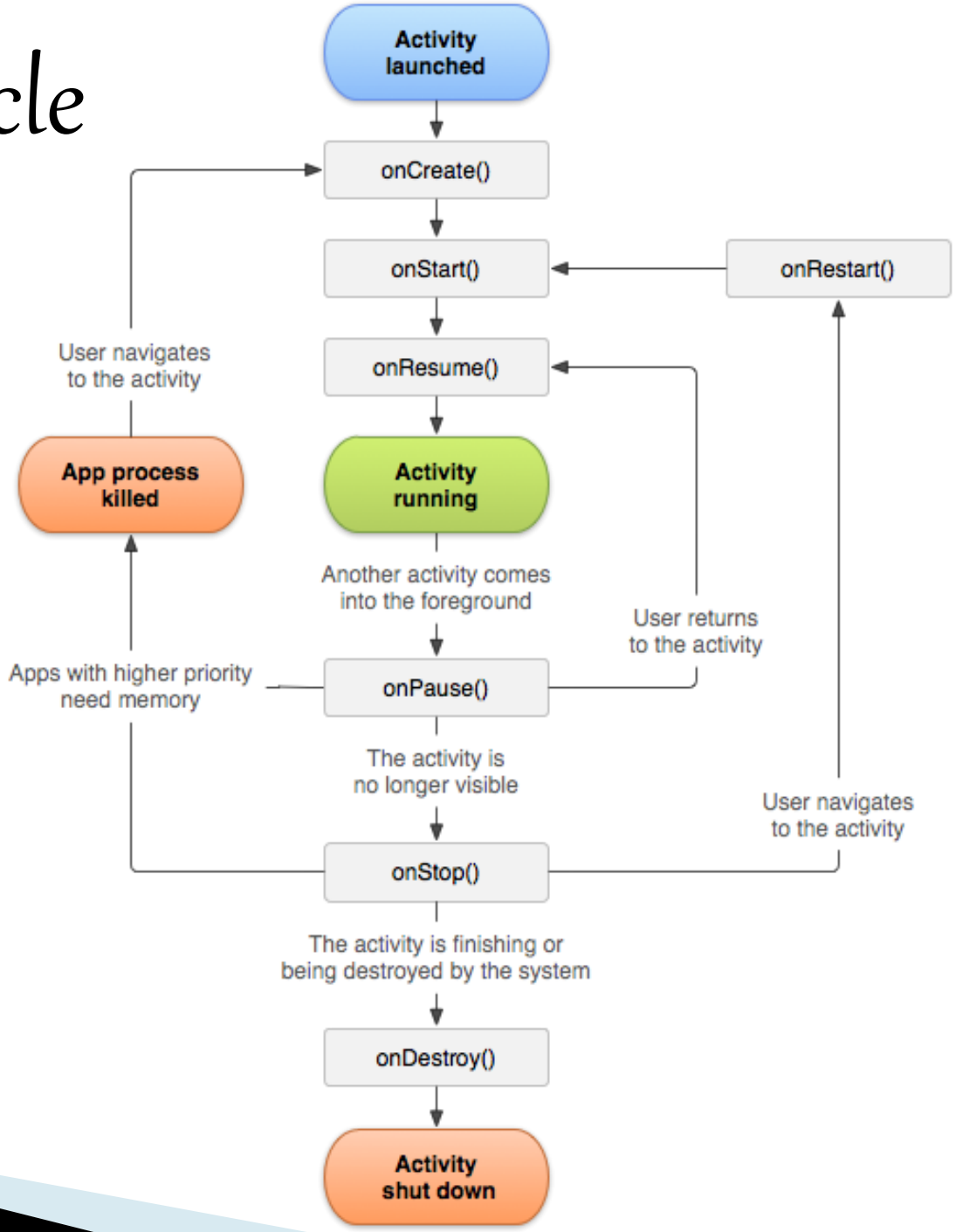
Activity Lifecycle



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Intents

- A **message-passing mechanism**.
- Works both within an application and between applications.

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Intents

- A **message-passing mechanism.**
- Works both within an application and between applications.
- Code:

```
Intent myIntent = new Intent(this, SecondActivity.class);
startActivity(myIntent);
```

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2. Services

2. Services

- **Runs in the background** without the user's direct interaction.
- Does not have a visual user interface.
- Runs in the main thread of the application that hosts it.
- E.g. : Network downloads, playing music, updates for an application, sync Gmail or Facebook.

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2. Services

```
<manifest ... >
  ...
  <application ... >
      <service android:name=".HelloService" />
      ...
  </application>
</manifest>
```

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2. Services

```
public class HelloService extends Service {
  private Looper mServiceLooper;
  private ServiceHandler mServiceHandler;

  // Handler that receives messages from the thread
  private final class ServiceHandler extends Handler {
      public ServiceHandler(Looper looper) {
          super(looper);
```

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3. Broadcast Receivers

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3. Broadcast Receivers

- Responds to system-wide **Broadcast announcements**.
- E.g. : Broadcasts announcing that the
  - screen has turned off,
  - the battery is low,
  - a picture was captured,
  - an SMS is received, etc.

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4. Content Providers

4. Content Providers

- **Store and retrieve data.**
- Makes applications **exchange data**.
- **Only way to share data** between applications in Android.

  [NO shared files, NO shared memory, etc.]
- E.g. : Phone contacts.

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An Example...

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Thank You...