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BSIT-2N
ITELEC1

Assignment #1: Research on Activity Lifecycle

The Activity Lifecycle

In Android application development an Activity is one single screen with a user interface. Most applications have one or more activities and the Activity Lifecycle is how we manage those activities.

The Activity Lifecycle is the stages that an activity goes through in its existence from the point of creation, when it goes through its multiple lifecycle stages until it reaches the end of life and destroys the application. Developers must understand the life cycles of an application in order to create responsive, effective, efficient and user-friendly applications.

The Activity Lifecycle Methods

1. onCreate()

Purpose: This method is called when the activity is created.

Use: The activity must initialize the activity, call setContentView() to set the layout, initialize any critical objects and prepare those that have not been initialized.

Example: load data, initialize variables, create ui elements.

2. onStart()

Purpose: This method is called when the activity is about to become visible to the user.

Use: Actions to take when starting the activity are NOT things to do when the activity is interactive.

Example: Refresh UI or refresh resources.

3. onResume()

Purpose: This method is called when the activity has come to the foreground and will interact with the user.

Use: Motion animations, start (or continue) listening for sensor data (accelerometer) or resume a paused task.

Example: code that would resume video playback, or resume a paused game.

4. onPause()

Purpose: called when another activity is requesting focus, but the user can still see the current activity.

Use: To save data in the activity, save or pause animations, or free up resources that don't need to run in the background.

Example: Video paused, or draft saved of text input.

5. **onStop()**

Purpose: Called when the activity is no longer visible to the user.

Use: Free up any resources that aren't needed anymore while the activity is invisible.

Example: Background music is stopped that was running in the background or unregistering broadcast receivers.

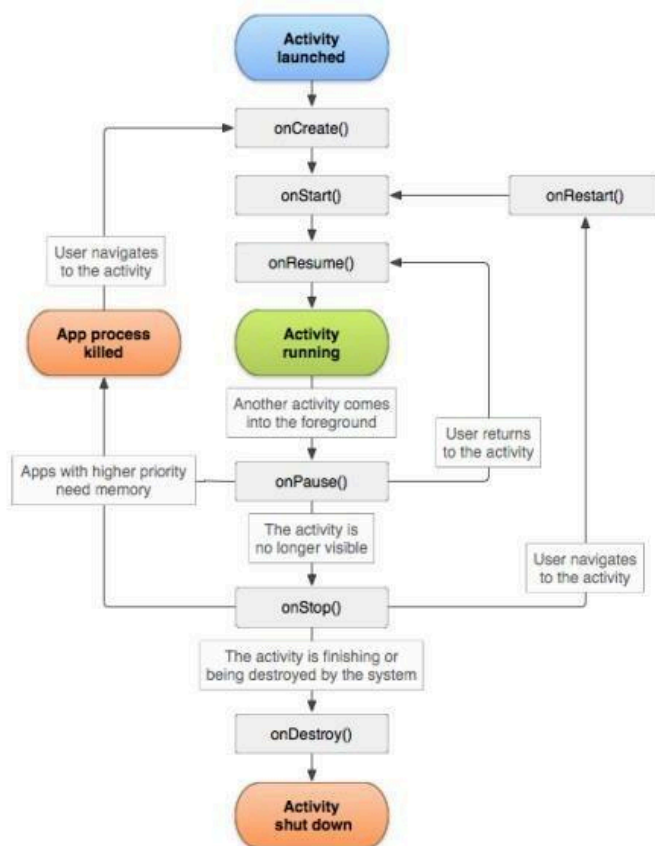
6. **onDestroy()**

Purpose: Called when your activity is being destroyed either by the user finishing it, or the system reclaiming memory.

Use: Do final cleanup of resources.

Example: Closing database connections or stopping a background thread.

Activity Lifecycle Diagram



Sample Code

```
package com.example.activitylifecycleassignment1

import android.os.Bundle
import android.util.Log
import androidx.appcompat.app.AppCompatActivity

class MainActivity : AppCompatActivity() {

    private val TAG = "ActivityLifecycle"

    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)
        Log.d(TAG, "onCreate called")
    }

    override fun onStart() {
        super.onStart()
        Log.d(TAG, "onStart called")
    }

    override fun onResume() {
        super.onResume()
        Log.d(TAG, "onResume called")
    }

    override fun onPause() {
        super.onPause()
        Log.d(TAG, "onPause called")
    }

    override fun onStop() {
        super.onStop()
        Log.d(TAG, "onStop called")
    }

    override fun onDestroy() {
        super.onDestroy()
        Log.d(TAG, "onDestroy called")
    }
}
```

Conclusion

The Activity Lifecycle can be considered one of the most simplistic ideas in Android development. Each of the lifecycle methods provide opportunities for developers to allocate and manage resources properly, maintain user data, and maintain functionality in changing system conditions. With the onCreate, onStart, onResume, onPause, onStop, and onDestroy methods available, developers can create reliable, efficient, and user-friendly applications.

GitHub Repositories

<https://github.com/dominiccalamba/ITELEC1/blob/main/Assignments/Assignment1/ActivityLifecycleAssignment1.zip>