ECSE 420 - Parallel Computing
Programming Assignment 3
Fall 2015
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Briefly explain the functionality of your application. That is, how different states are reached? How you notify the user when a different state is reached?

Starting the application creates a new process in the device, which initially executes the activity that was labeled as the main activity in the AndroidManifest.xml file. In the submitted application, MainActivity.java implements the main activity. As specified in diagram one below, the methods onCreate(), onStart(), and onResume() are called upon starting the application. The onCreate() method creates and binds a service to the main activity - a service is an application component which can perform operations in the background and does not provide an user interface. In the submitted application, a service is created to monitor changes in the device volume through a ContentObserver.

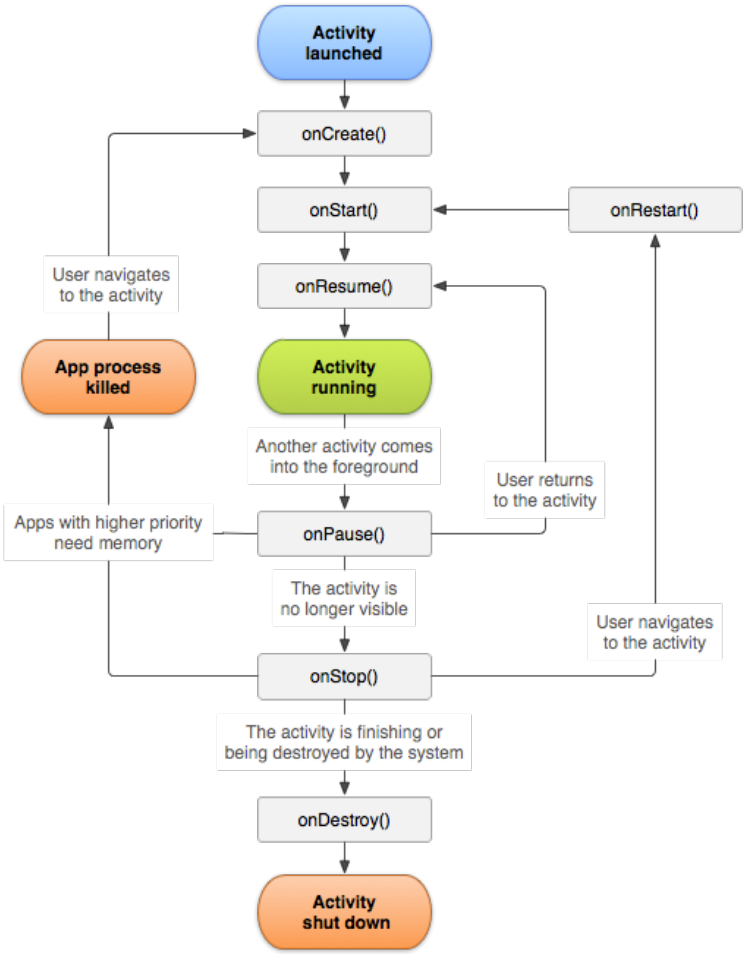

Diagram 1. Android Activity Lifecycle.

Switching applications results in calling the onPause() and onStop() methods of the main activity. The onPause() method is called when the activity is either resuming or stopping execution, and is typically used to commit unsaved changes to persistent data. The onStop() method is called when the activity is no longer visible to the user. It is important to note that stopping execution of the activity does not affect the execution of the service that is listening to volume changes - as mentioned above, services run in the background.

Closing the application while in execution results in calling the onPause(), onStop(), and onDestroy() methods. This last method terminates the execution of the process, and it also destroys the services bound to the application.

The user is notified of when different states of the application are reached through Toast messages. These are small popups that are displayed on the device at each of the states shown in the diagram above. The images below demonstrate all the Toasts that are created through the application lifecycle.

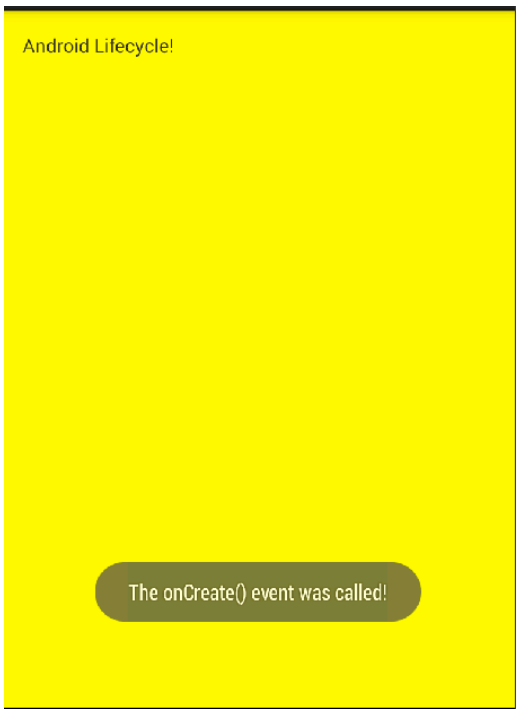

Diagram 2. Activity onCreate() event.

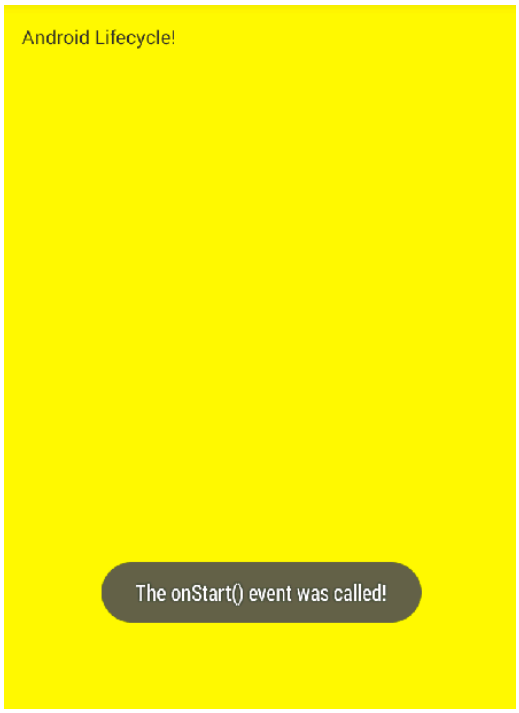

Diagram 3. Activity onStart() event.

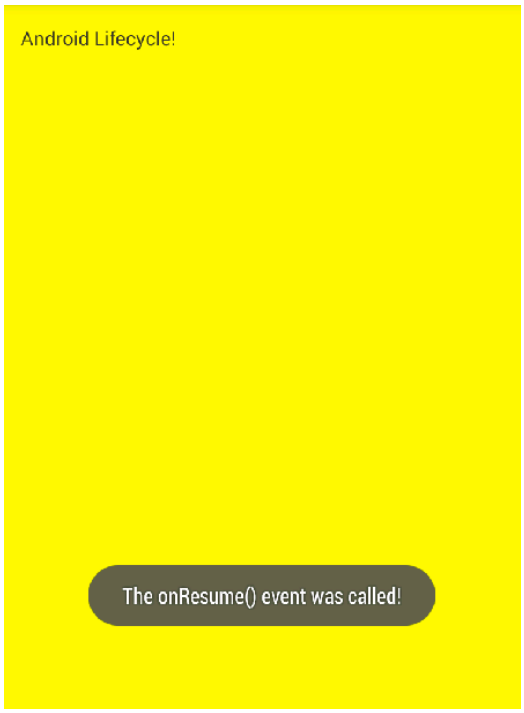

Diagram 4. Activity onResume() event.

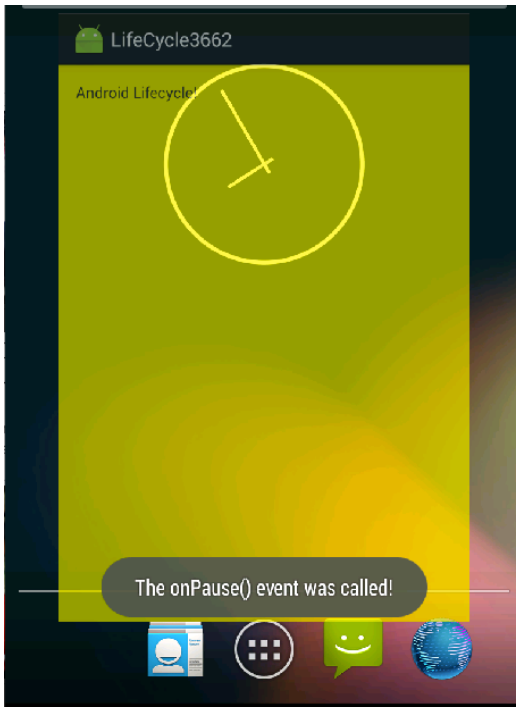

Diagram 5. Activity onPause() event.

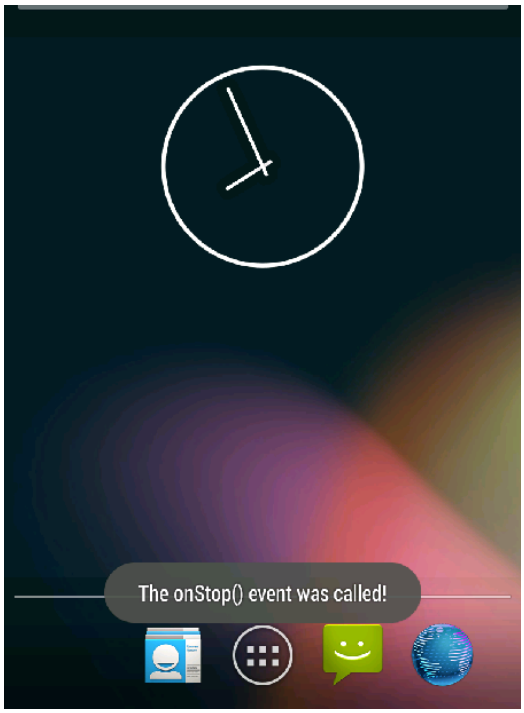

Diagram 6. Activity onStop() event.

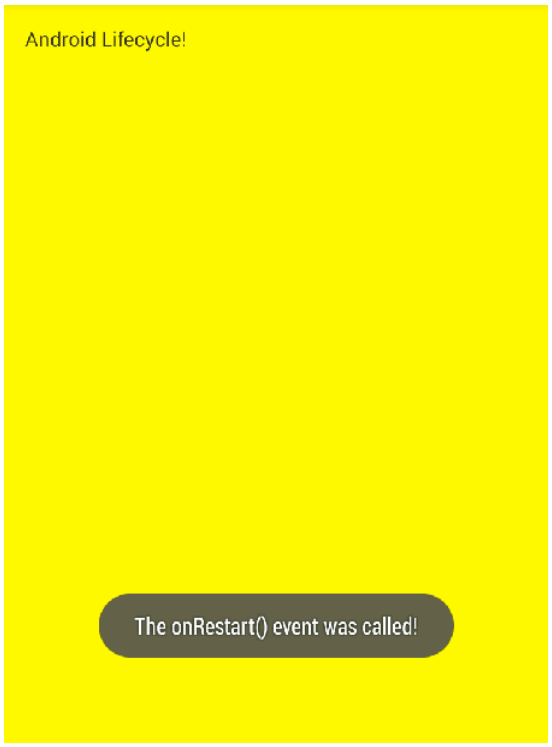

Diagram 7. Activity onRestart() event.

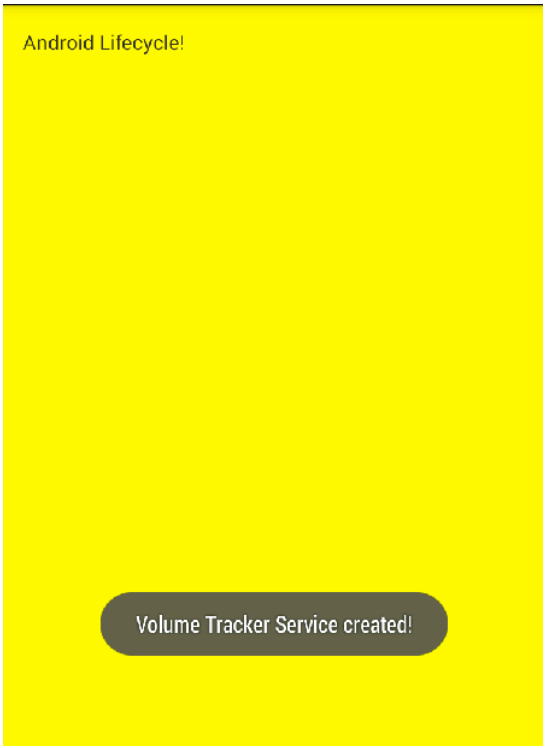

Diagram 8. Volume tracker Service Created.

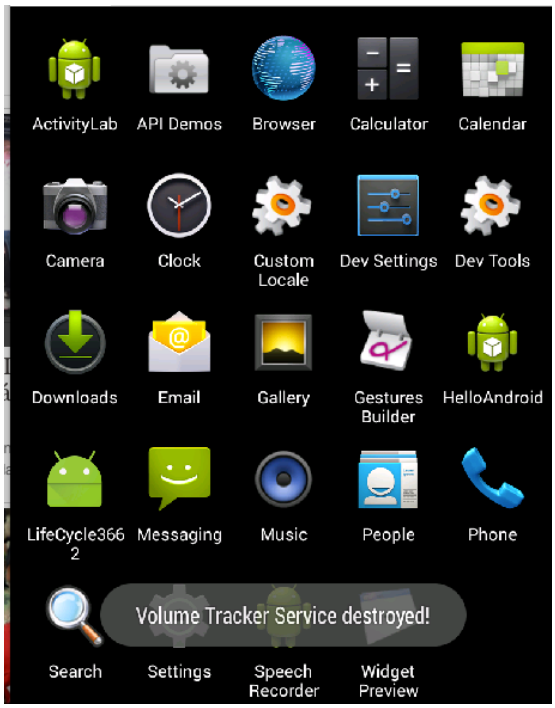

Diagram 9. Volume tracker Service Destroyed.

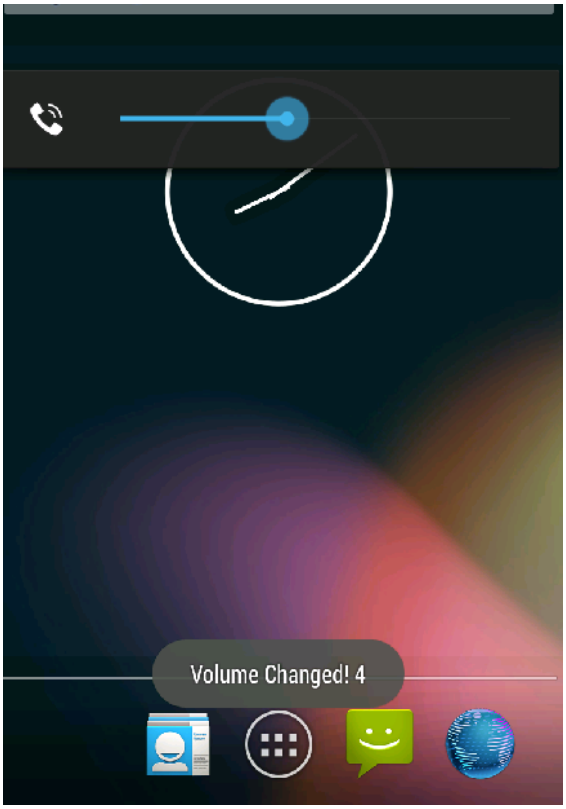

Diagram 10. Volume Change Reporting.