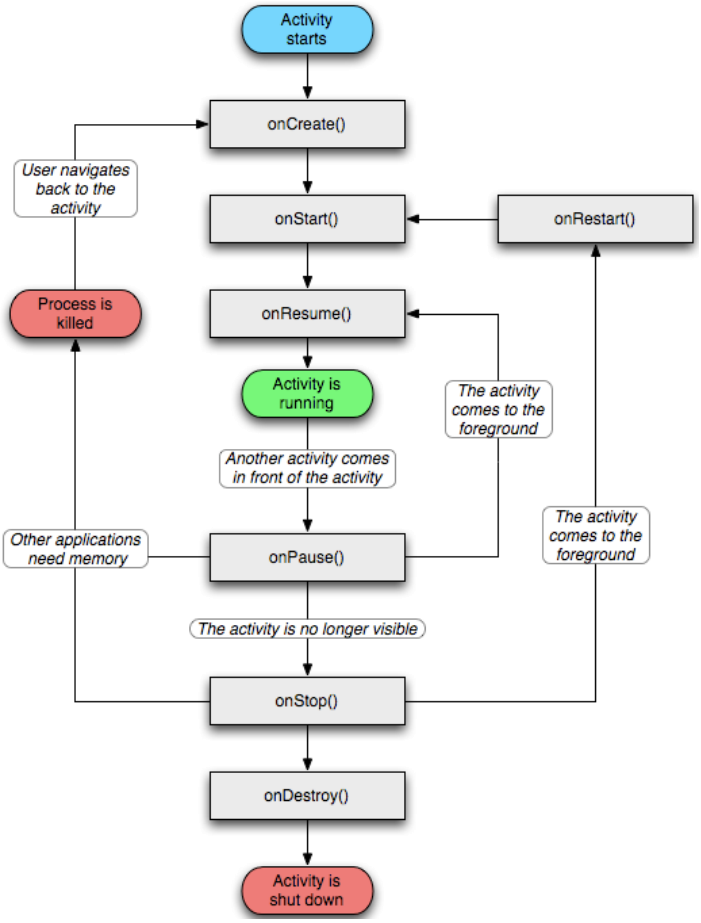
Sample questions

1. With reference to the figures of Android Activity's lifecycle below, consider logcat has been used to log each of the event like the following:



In `onCreate()`, added:

```
Log.d(LOG_TAG,"onCreate");
```

```
...
```

In `onResume()`, added:

```
Log.d(LOG_TAG,"onResume");
```

```
...
...
```

In `onDestroy()`, added:

```
Log.d(LOG_TAG," onDestroy");
```

Assume the user has first launched the app, run a while; soon the square (□) button is pressed to minimize the app and then retrieved the app. List one possible sequence of logs printed and state your assumption being made (8%).

2. App in Android can be either developed in SDK with Java or NDK with C/C++. Since the introduction of Android Runtime (ART) starting from Android 4.4 as a successor of Dalvik Virtual Machine (DVM), the comparative speed improving advantage done by NDK is significantly lowered. Explain why it is the case by comparing the difference between the ART and DVM. (10%)

3. Briefly describe the principle of event driven programming. You may illustrate the working by analyzing what is happening in the Java code in Android SDK below (8%)

```
public class MainActivity extends AppCompatActivity {

  Button button;
  @Override
  protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    button = (Button) findViewById(R.id.start);
    button.setOnClickListener(new View.OnClickListener() {
      @Override
      public void onClick(View v) {
        TextView textObj = (TextView) findViewById(R.id.label);
        textObj.setText((int) (Math.random() * 100));
      }
    });
  }
}
```

4. Why GPS performs unsatisfactorily in providing global location in indoor area? Name another common radio signal to localize user in indoor area and illustrate one of the approaches this RF can be used to find user's location (10%)