ANDROID INTERVIEW QUESTIONS (30 minutes)

I.   SINGLE CHOICE (10 marks)

1. Which statement below is correct?
   a. Overriding a method means different implementation, same signature
   b. Overloading a method means different implementation, same signature
   c. Overloading a method means different implementation, different signature
   d. Overriding a method means same implementation, same signature
   e. None of above

2. What is the name of the pattern which Android Listener [i.e. OnClickListener, OnTouchListener, etc.] used?
   a. Singleton Pattern
   b. Observer Pattern
   c. Factory Pattern
   d. Builder Pattern
   e. None of above

3. What is the name of the pattern which is to avoid the dead-locking and mistakes when invoking database connection?
   a. Singleton Pattern
   b. Observer Pattern
   c. Factory Pattern
   d. Builder Pattern
   e. None of above

4. What pattern does Android ListView use to improve performance?
   a. Flyweight Pattern
   b. Adapter Pattern
   c. Composite Pattern
   d. ViewHolder Pattern
   e. Iterator Pattern

5. What is the right order of an Android Activity Life Cycle?
   a. onCreate – onStart – onRestart – onResume – onPause – onStop – onDestroy
   b. onCreate – onStart – onResume – onPause – onStop – onDestroy
   c. onStart – onCreate – onResume – onPause – onStop – onDestroy
   d. onCreate – onRestart – onStart – onResume – onPause – onDestroy – onStop
   e. None of above

6. What is the correct way to transfer an object from an Activity to another Activity?
   a. By Shared Preferences
   b. By passing object to Activity [ie. new Activity(object)]
   c. By using static variable
   d. By implementing Serializable
   e. By implementing Parcelable

7. How does Android system handle multiple-size screen-layout?
   a. By drawable folders
   b. By layout folders
   c. By value folders
   d. By size calculation
   e. None of above

8. How to start an Android Service which can run indefinitely?
   a. Start and return START_NOT_STICKY in onStartCommand method
   b. Start and return START_REDELIVER_INTENT in onStartCommand method
   c. Start and return START_STICKY_COMPATIBILITY in onStartCommand method
   d. Start and return START_STICKY in onStartCommand method
   e. None of above

9. What is the maximum memory limit of a process in Android?
   a. 8MB
   b. 16MB
   c. 32MB
   d. 64MB
   e. Depends on the device s RAM

10. An Android Handler can not be created in?
    a. AsyncTask
    b. MainThread
    c. Java Thread
    d. Service
    e. All of above

II.   CODING SCENARIOS (18 marks)

SCENARIO I

```java
public class MainActivity extends Activity {

    private Button addFragment;
    private FragmentManager manager;
    private FragmentTransaction transaction;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        manager = getFragmentManager();
        addFragment = (Button) findViewById(R.id.addFragment);
        transaction = manager.beginTransaction();
        addFragment.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                for (int i = 1; i < 10; ++i)
                    transaction.add(new MyFragment("Fragment " + i), "Fragment " + i);
            }
        });

    }


    private class MyFragment extends Fragment {
        private String id;

        public MyFragment(String id) {
            this.id = id;
        }

        @Override
        public View onCreateView(LayoutInflater inflater, ViewGroup container, Bundle savedInstanceState) {
            TextView view = new TextView(getActivity());
            view.setText(id);
            return view;
        }
    }
}
```

1. Are there any issues with the MyFragment class? And what are the issues?
2. How many fragments are displayed and what are the name of these fragments on the screen (textview display) if the button "addFragment" is clicked?

Given these conditions:

➢ **AndroidManifest.xml:**

```xml
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.tyrael.myapplication">
    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="My Application"
        android:supportsRtl="true"
        android:theme="@style/AppTheme">
        <activity
            android:name=".MainActivity"
            android:configChanges="layoutDirection|orientation|screenLayout">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />
                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
    </application>
</manifest>
```

➢ **res/layout-port/activity_main.xml:**

```xml
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingBottom="16dp"
    android:paddingLeft="16dp"
    android:paddingRight="16dp"
    android:paddingTop="16dp"
    tools:context="com.example.tyrael.myapplication.MainActivity">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="This is portrait layout" />
</RelativeLayout>
```

➢ **res/layout-land/activity_main.xml:**

```xml
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingBottom="16dp"
    android:paddingLeft="16dp"
    android:paddingRight="16dp"
    android:paddingTop="16dp"
    tools:context="com.example.tyrael.myapplication.MainActivity">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="This is landscape layout" />
</RelativeLayout>
```

➢ **MainActivity.java:**

```java
public class MainActivity extends AppCompatActivity {

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

1. What happens when user start application and rotate the device?
2. Any improvement needed?

SCENARIO III

```java
public class ThreadActivity extends Activity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        for (int i = 0; i < 10; ++i) {
            new Thread(new MyRunnable("Thread " + i)).start();
            new MyAsyncTask("AsyncTask " + i).execute();
        }
    }

    private class MyAsyncTask extends AsyncTask<Void, Void, Void> {

        private String name;

        public MyAsyncTask(String name) {
            this.name = name;
        }

        @Override
        protected Void doInBackground(Void... params) {
            try {
                Thread.sleep(5000);
                System.out.println(name + " end");
            } catch (InterruptedException e) {
                e.printStackTrace();
            }
            return null;
        }
    }

    private class MyRunnable implements Runnable {

        private String name;

        public MyRunnable(String name) {
            this.name = name;
        }

        @Override
        public void run() {
            try {
                Thread.sleep(5000);
                System.out.println(name + " end");
            } catch (Exception e) {
                e.printStackTrace();
            }
        }
    }
}
```

1. How many threads are activated when user enters "ThreadActivity" screen?
2. What happens after 5 seconds? What is order of the printed texts (System.out.println)

III. SHORT ANSWER (12 marks)

1. The application package name can be declared at?

2. What is the different between "@id/" and "@+id/"?

3. What are the differences between ".png" and ".9.png"?

4. What do HTTP CODE 2xx, 3xx, 4xx, 5xx mean? Give example of each

5. What is a critical update of Android 6 (from previous version)? Give an example of handling the change

6. Describe briefly what do Android Volley, ButterKnife, ActiveAndroid, GSon libraries do?