```
//a1 DATE
public class MainActivity extends AppCompatActivity {

    String[] mobileArray = {
            "Biotechnology",
            "Civil Engineering",
            "Computer Science and Engineering",
            "Electronics & Communications Engineering",
            "Electrical & Electronics Engineering",
            "Information Science and Engineering",
            "Mechanical Engineering"
    };
    ArrayAdapter adapter;
    DatePicker date;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        adapter = new ArrayAdapter<String>(this, R.layout.course_item, mobileArray);

        date = findViewById(R.id.datePicker);

        ListView listView = findViewById(R.id.courseList);
        listView.setAdapter(adapter);

        listView.setOnItemClickListener(new AdapterView.OnItemClickListener() {
            @Override
            public void onItemClick(AdapterView<?> parent, View view, int position, long id) {
                String course = (String) adapter.getItem(position);
                String dateString = date.getDayOfMonth() + "/" + ( 1 + date.getMonth() ) + "/" +
                        date.getYear();
                String toastString = "Joined on : " + dateString + "\ncourse : " + course;
                Toast.makeText(getApplicationContext(), toastString, Toast.LENGTH_SHORT).show();
            }
        });

    }
}

// a4 flash
public class MainActivity extends AppCompatActivity {

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

        new Thread() {
            @Override
            public void run() {
                try {
                    Thread.sleep(100);

                } catch (InterruptedException e) {
                    Log.e(getPackageName(), "Exception in sleep");
                } finally {
                    startActivity(new Intent(getApplicationContext(), MainActivity.class));
                }
            }
        }.start();
    }
}

// a5 webview

<uses-permission android:name="android.permission.INTERNET" />

public class MainActivity extends AppCompatActivity {
    Button defaultPage;
    Button loadPage;
    EditText url;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
```

```
        defaultPage = findViewById(R.id.defaultPage);
        loadPage = findViewById(R.id.loadURL);
        url = findViewById(R.id.url);
        ActivityCompat.requestPermissions(MainActivity.this, new String[]
{Manifest.permission.INTERNET}, 1);

        defaultPage.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Intent i = new Intent(getApplicationContext(), WebViewActivity.class);
                i.putExtra("load", "defaultpage");
                startActivity(i);
            }
        });
        loadPage.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Intent i = new Intent(getApplicationContext(), WebViewActivity.class);
                i.putExtra("load", url.getText().toString());
                startActivity(i);
            }
        });

    }
}

public class WebViewActivity extends AppCompatActivity {

    WebView page;

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

        page = findViewById(R.id.webView);
        page.setWebViewClient(new WebViewClient());
        Intent i = getIntent();
        String url = i.getStringExtra("load");
        if (url.equals("defaultpage")) {
            page.loadUrl("https://www.google.com");
        } else {
            page.loadUrl(url);
        }
    }
}


// a6 shared pref
public class MainActivity extends AppCompatActivity {
    String prefName = "pName";
    String prefTag = "pTag";
    SharedPreferences pref;
    SharedPreferences.Editor editor;
    EditText text;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        text = findViewById(R.id.editText);
        pref = getSharedPreferences(prefName, Context.MODE_PRIVATE);
        text.setText(pref.getString(prefTag, ""));
    }

    protected void onPause() {
        super.onPause();
        editor = pref.edit();
        editor.putString(prefTag, text.getText().toString()).apply();
    }

}

// a7 options menu
public boolean onCreateOptionsMenu(Menu menu) {
```

```
    MenuInflater inflater = getMenuInflater();
    inflater.inflate(R.menu.activity_menu, menu);
    return true;
}

public boolean onOptionsItemSelected(MenuItem item) {
    // Handle item selection
    switch (item.getItemId()) {
        case R.id.f1:
            startActivity(new Intent(this, Main2Activity.class));
            return true;
        case R.id.f2:
            startActivity(new Intent(this, Main3Activity.class));
            return true;
        default:
            return super.onOptionsItemSelected(item);
    }
}

// a8 context menu
public class MainActivity extends AppCompatActivity {

    ConstraintLayout cl;
    TextView t1;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        cl = findViewById(R.id.cl);
        t1 = findViewById(R.id.textView);
        t1.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                registerForContextMenu(v);
            }
        });
    }

    @Override
    public void onCreateContextMenu(ContextMenu menu, View v, ContextMenu.ContextMenuInfo menuInfo) {
        super.onCreateContextMenu(menu, v, menuInfo);
        MenuInflater inflater = getMenuInflater();
        inflater.inflate(R.menu.activity_menu, menu);
    }

    public boolean onContextItemSelected(MenuItem item) {
        // Handle item selection
        switch (item.getItemId()) {
            case R.id.red:
                cl.setBackgroundColor(Color.RED);
                return true;
            case R.id.green:
                cl.setBackgroundColor(Color.GREEN);
                return true;
            case R.id.blue:
                cl.setBackgroundColor(Color.BLUE);
                return true;
            default:
                return super.onOptionsItemSelected(item);
        }
    }
}


// a9 & a10 intent, uses permission
Intent intent = new Intent(Intent.ACTION_VIEW, Uri.parse("sms:" + phoneNumber));
intent.putExtra("sms_body", message);
startActivity(intent);

ActivityCompat.requestPermissions(MainActivity.this,
        new String[]{Manifest.permission.CALL_PHONE}, 1);
Intent callIntent = new Intent(Intent.ACTION_CALL);
callIntent.setData(Uri.parse("tel:" + number));
    startActivity(callIntent);
```

```
// b1 async
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    pgsBar = findViewById(R.id.pBar);
    txtView = findViewById(R.id.tView);
    Button btn = findViewById(R.id.btnShow);
    btn.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            pgsBar.setProgress(0);

            new AsyncTask<String, Integer, String>() {
                @Override
                protected String doInBackground(String[] params) {
                    int i = 0;
                    int max = Integer.parseInt(params[0]);
                    while (i < max) {
                        try {
                            Thread.sleep(100);
                            i++;
                            publishProgress(i);
                        } catch (Exception ex) {
                            Log.e("error", ex.toString());
                        }
                    }
                    return null;
                }

                @Override
                protected void onProgressUpdate(Integer... values) {
                    super.onProgressUpdate(values);
                    pgsBar.setProgress(values[0]);
                    txtView.setText(values[0].toString());
                }
            }.execute("100");
        }
    });
}

// b2 music
//Main
play.set..public void onClick(View v) {
    startService(new Intent(getApplicationContext(), MusicService.class));
}
//MusicService.java
public class MusicService extends Service {
    MediaPlayer music;
    public void onCreate() {
        super.onCreate();
        music = MediaPlayer.create(this, R.raw.music);
    }
    public void onStart(Intent intent, int startId) {
        super.onStart(intent, startId);
        music.start();
    }
    public void onDestroy() {
        super.onDestroy();
        music.stop();
    }
    public IBinder onBind(Intent intent) {return null;}
}

//b3 battery broadcast
public class MainActivity extends AppCompatActivity {

    TextView mBatteryLevelText;
    ProgressBar mBatteryLevelProgress;
    BroadcastReceiver mReceiver;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        mBatteryLevelText = findViewById(R.id.textView);
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        mBatteryLevelProgress = findViewById(R.id.progressBar);
        mReceiver = new BroadcastReceiver() {
            public void onReceive(Context context, Intent intent) {
                int level = intent.getIntExtra(BatteryManager.EXTRA_LEVEL, 0);
                mBatteryLevelText.setText("Battery Level : " + level);
                mBatteryLevelProgress.setProgress(level);
                RelativeLayout rl = findViewById(R.id.rl);
                if (level > 60)
                    rl.setBackgroundColor(Color.GREEN);
                else if (level > 30)
                    rl.setBackgroundColor(Color.BLUE);
                else
                    rl.setBackgroundColor(Color.RED);
            }
        };
    }

    @Override
    protected void onStart() {
        super.onStart();
        registerReceiver(mReceiver, new IntentFilter(Intent.ACTION_BATTERY_CHANGED));
    }

    @Override
    protected void onStop() {
        unregisterReceiver(mReceiver);
        super.onStop();
    }
}

//b4
```