

Sub:	Mobile Application	Sub Code:	16MCA53	Branch:	MCA
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Sem:	V			OBE	

1a What is Android. List various versions of android and their codenames. [4]

Android is a mobile operating system that is based on a modified version of Linux. It was originally developed by a start-up of the same name, Android, Inc. In 2005, as part of its strategy to enter the mobile space, Google purchased Android and took over its development work (as well as its development team). Android is open and free; most of the Android code was released under the open-source Apache License, which means that anyone who wants to use Android can do so by downloading the full Android source code. The main advantage of adopting Android is that it offers a unified approach to application development. Android OS is a Linux-based open source platform for mobile, cellular handsets developed by Google and the Open Handset Alliance

Code name	Version number	Initial release date	API level
(No codename) ^[2]	1.0	September 23, 2008	1
(Internally known as "Petit Four") ^[2]	1.1	February 9, 2009	2
Cupcake	1.5	April 27, 2009	3
Donut ^[3]	1.6	September 15, 2009	4
Eclair ^[4]	2.0 – 2.1	October 26, 2009	5 – 7
Froyo ^[5]	2.2 – 2.2.3	May 20, 2010	8
Gingerbread ^[6]	2.3 – 2.3.7	December 6, 2010	9 – 10
Honeycomb ^[7]	3.0 – 3.2.6	February 22, 2011	11 – 13
Ice Cream Sandwich ^[8]	4.0 – 4.0.4	October 18, 2011	14 – 15
Jelly Bean ^[9]	4.1 – 4.3.1	July 9, 2012	16 – 18
KitKat ^[10]	4.4 – 4.4.4	October 31, 2013	19 – 20
Lollipop ^[12]	5.0 – 5.1.1	November 12, 2014	21 – 22
Marshmallow ^[13]	6.0 – 6.0.1	October 5, 2015	23
Nougat ^[14]	7.0 – 7.1.2	August 22, 2016	24 – 25
Oreo	8.0	August 21, 2017	26

1b Implement an application that creates an alert upon receiving a message. [6]

Code for Activity_main.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_margin="10dp"
    android:orientation="vertical">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Message"
        android:textSize="30sp" />

    <EditText
        android:id="@+id/editText"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:singleLine="true"
        android:textSize="30sp" />

    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_margin="30dp"
        android:layout_gravity="center"
        android:text="Notify"
```

```
android:textSize="30sp"/>
```

```
</LinearLayout>
```

Code for MainActivity.java:

```
package com.example.lab9;
import android.app.Activity;
import android.app.Notification;
import android.app.NotificationManager;
import android.app.PendingIntent;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;

public class MainActivity extends Activity {

    Button notify;
    EditText e;

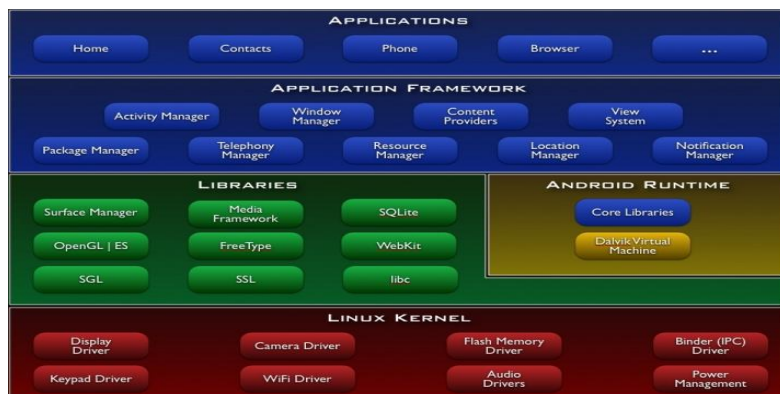
    @Override
    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        notify= (Button) findViewById(R.id.button);
        e= (EditText) findViewById(R.id.editText);

        notify.setOnClickListener(new View.OnClickListener()
        {
            @Override
            public void onClick(View v)
            {
                Intent intent = new Intent(MainActivity.this, MainActivity.class);
                PendingIntent pending = PendingIntent.getActivity(MainActivity.this, 0, intent, 0);
                Notification noti = new Notification.Builder(MainActivity.this).setContentTitle("New
                Message").setContentText(e.getText().toString()).setSmallIcon(R.drawable.i
                c_launcher).setContentIntent(pending).build();
                NotificationManager manager = (NotificationManager)
                getSystemService(NOTIFICATION_SERVICE);
                noti.flags |= Notification.FLAG_AUTO_CANCEL;
                manager.notify(0, noti);
            }
        });
    }
}
```

2a Draw architecture of Android. List all the features of Android. [4]



Features of Android

Storage — Uses SQLite, a lightweight relational database, for data storage.

Connectivity — Supports GSM/EDGE, IDEN, CDMA, EV-DO, UMTS, Bluetooth (includes A2DP and AVRCP), WiFi, LTE, and WiMAX.

Messaging — Supports both SMS and MMS.

Web browser — Based on the open-source WebKit, together with Chrome's V8 JavaScript engine

Media support — Includes support for the following media: H.263, H.264 (in 3GP or MP4 container), MPEG-4 SP, AMR, AMR-WB (in 3GP container), AAC, HE-AAC (in MP4 or 3GP container), MP3, MIDI, Ogg Vorbis, WAV, JPEG, PNG, GIF, and BMP

Hardware support — Accelerometer Sensor, Camera, Digital Compass, Proximity Sensor, and GPS

Multi-touch — Supports multi-touch screens

Multi-tasking — Supports multi-tasking applications

Flash support — Android 2.3 supports Flash 10.1.

Tethering — supports sharing of Internet connections as a wired/wireless hotspot

2b Develop a standard calculator application to perform basic calculations like addition, subtraction, multiplication and division.. [6]

Code for Activity_main.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_margin="20dp">

    <LinearLayout
        android:id="@+id/LinearLayout1"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_margin="20dp">

        <EditText
            android:id="@+id/editText1"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:inputType="numberDecimal"
            android:textSize="20sp" />

        <EditText
            android:id="@+id/editText2"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:inputType="numberDecimal"
            android:textSize="20sp" />

    </LinearLayout>
</LinearLayout>
<LinearLayout
    android:id="@+id/LinearLayout2"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_margin="20dp">

    <Button
        android:id="@+id/Add"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="+"
        android:textSize="30sp" />

    <Button
        android:id="@+id/Sub"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="-"
        android:textSize="30sp" />

    <Button
        android:id="@+id/Mul"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="*"
        android:textSize="30sp" />

    <Button
        android:id="@+id/Div"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="/"
        android:textSize="30sp" />

</LinearLayout>
</LinearLayout>
```

```

        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="*"
        android:textSize="30sp"/>

<Button
    android:id="@+id/Div"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_weight="1"
    android:text="/"
    android:textSize="30sp"/>

</LinearLayout>

<TextView
    android:id="@+id/textView"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="50dp"
    android:text="Answer is"
    android:textSize="30sp"
    android:gravity="center"/>

</LinearLayout>

```

Code for MainActivity.java:

```

package com.example.lab3;
import android.app.Activity;
import android.os.Bundle;
import android.text.TextUtils;
import android.view.Menu;
import android.view.MenuItem;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
import android.view.View.OnClickListener;

public class MainActivity extends Activity implements OnClickListener {

    EditText Num1;
    EditText Num2;
    Button Add;
    Button Sub;
    Button Mul;
    Button Div;
    TextView Result;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        Num1 = (EditText) findViewById(R.id.editText1);
        Num2 = (EditText) findViewById(R.id.editText2);
        Add = (Button) findViewById(R.id.Add);
        Sub = (Button) findViewById(R.id.Sub);
        Mul = (Button) findViewById(R.id.Mul);
        Div = (Button) findViewById(R.id.Div);
        Result = (TextView) findViewById(R.id.textView);
        Add.setOnClickListener(this);
        Sub.setOnClickListener(this);
        Mul.setOnClickListener(this);
        Div.setOnClickListener(this);
    }

    public void onClick(View v)
    {

```

```

float num1 = 0;
float num2 = 0;
float result = 0;
String oper = "";

if (TextUtils.isEmpty(Num1.getText().toString()) || TextUtils.isEmpty(Num2.getText().toString()))
    return;

num1 = Float.parseFloat(Num1.getText().toString());
num2 = Float.parseFloat(Num2.getText().toString());

switch (v.getId())
{
    case R.id.Add:
        oper = "+";
        result = num1 + num2;
        break;
    case R.id.Sub:
        oper = "-";
        result = num1 - num2;
        break;
    case R.id.Mul:
        oper = "*";
        result = num1 * num2;
        break;
    case R.id.Div:
        oper = "/";
        result = num1 / num2;
        break;
    default:
        break;
}
Result.setText(num1 + " " + oper + " " + num2 + " = " + result);
}
}

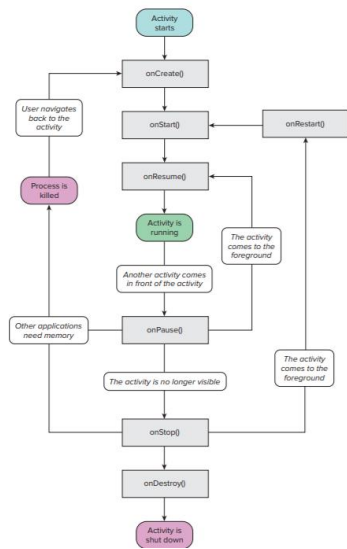
```

3 a What is an Activity. List all life cycles of activity with diagram. [4]

An activity represents a single screen with a user interface just like window or frame of Java. Android activity is the subclass of ContextThemeWrapper class.

The Activity base class defines a series of events that governs the life cycle of an activity. The Activity class defines the following events:

- onCreate() — Called when the activity is first created
- onStart() — Called when the activity becomes visible to the user
- onResume() — Called when the activity starts interacting with the user
- onPause() — Called when the current activity is being paused and the previous activity is being resumed
- onStop() — Called when the activity is no longer visible to the user
- onDestroy() — Called before the activity is destroyed by the system (either manually or by the system to conserve memory)
- onRestart() — Called when the activity has been stopped and is restarting again



3b Devise an application that implements Multi threading [6]

Code for Activity_main.xml:

```

<?xml version="1.0" encoding="utf-8"?>
<ScrollView
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent">
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical" >

    <ImageView
        android:id="@+id/image"
        android:layout_width="250dp"
        android:layout_height="250dp"
        android:layout_gravity="center"
        android:layout_margin="50dp" />

    <Button
        android:id="@+id/firstbtn"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center"
        android:layout_margin="10dp"
        android:text="Load Image 1" />

    <Button
        android:id="@+id/secondbtn"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center"
        android:layout_margin="10dp"
        android:text="Load image 2" />

</LinearLayout>
</ScrollView>
  
```

Code for MainActivity.java:

```

package com.example.lab6;

import android.app.Activity;
import android.os.Bundle;
import android.view.Menu;
import android.view.MenuItem;
import android.view.View;
import android.widget.Button;
import android.widget.ImageView;

public class MainActivity extends Activity {

    ImageView img;
  
```

```

        Button bt1, bt2;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        bt1 = (Button) findViewById(R.id.firstbtn);
        bt2 = (Button) findViewById(R.id.secondbtn);
        img = (ImageView) findViewById(R.id.image);

        bt1.setOnClickListener(new View.OnClickListener()
        {
            @Override
            public void onClick(View v)
            {
                new Thread(new Runnable()
                {
                    @Override
                    public void run()
                    {
                        img.post(new Runnable()
                        {
                            @Override
                            public void run()
                            {
                                img.setImageResource(R.drawable.sad);
                            }
                        });
                    }
                }).start();
            }
        });

        bt2.setOnClickListener(new View.OnClickListener()
        {
            @Override
            public void onClick(View v)
            {
                new Thread(new Runnable()
                {
                    @Override
                    public void run()
                    {
                        img.post(new Runnable()
                        {
                            @Override
                            public void run()
                            {
                                img.setImageResource(R.drawable.smiling);
                            }
                        });
                    }
                }).start();
            }
        });
    }
}

```

4a List out common attributes of view groups. [4]

ATTRIBUTE	DESCRIPTION
layout_width	Specifies the width of the View or ViewGroup
layout_height	Specifies the height of the View or ViewGroup
layout_marginTop	Specifies extra space on the top side of the View or ViewGroup
layout_marginBottom	Specifies extra space on the bottom side of the View or ViewGroup
layout_marginLeft	Specifies extra space on the left side of the View or ViewGroup
layout_marginRight	Specifies extra space on the right side of the View or ViewGroup

ATTRIBUTE	DESCRIPTION
layout_gravity	Specifies how child Views are positioned
layout_weight	Specifies how much of the extra space in the layout should be allocated to the View
layout_x	Specifies the x-coordinate of the View or ViewGroup
layout_y	Specifies the y-coordinate of the View or ViewGroup

4b Create an application that writes data to the SD card. [6]

Code for Activity_main.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
xmlns:android="http://schemas.android.com/apk/res/android"
android:layout_width="match_parent"
android:layout_height="match_parent"
android:layout_margin="20dp"
android:orientation="vertical">
<EditText
android:id="@+id/editText"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:singleLine="true"
android:textSize="30dp" />
<Button
android:id="@+id/button"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:layout_margin="10dp"
android:text="Write Data"
android:textSize="30dp" />
<Button
android:id="@+id/button2"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:layout_margin="10dp"
android:text="Read data"
android:textSize="30dp" />
<Button
android:id="@+id/button3"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:layout_margin="10dp"
android:text="Clear"
android:textSize="30dp" />
</LinearLayout>
```

Manifest for the Android Application:

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

MainActivity.java

```
package com.example.lab8;
import java.io.BufferedReader;
import java.io.File;
import java.io.FileInputStream;
import java.io.FileOutputStream;
import java.io.InputStreamReader;
import android.app.Activity;
import android.os.Bundle;
import android.view.View;
```



```

import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
public class MainActivity extends Activity {
    EditText e1;
    Button write,read,clear;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        e1= (EditText) findViewById(R.id.editText);
        write= (Button) findViewById(R.id.button);
        read= (Button) findViewById(R.id.button2);
        clear= (Button) findViewById(R.id.button3);
        write.setOnClickListener(new View.OnClickListener()
        {
            @Override
            public void onClick(View v)
            {
                String message=e1.getText().toString();
                try
                {
                    File f=new File("/sdcard/myfile.txt");
                    f.createNewFile();

                    FileOutputStream fout=new
                    FileOutputStream(f);
                    fout.write(message.getBytes());

                    fout.close();
                    Toast.makeText(getApplicationContext(),"Data
                    Written in SDCARD",Toast.LENGTH_LONG).show();
                }
                catch (Exception e)
                {
                    Toast.makeText(getApplicationContext(),e.getMessage(),Toast.LENGTH_LO
                    NG).show();
                }
            }
        });
        read.setOnClickListener(new View.OnClickListener()
        {
            @Override
            public void onClick(View v)
            {
                String message;
                String buf = "";
                try
                {
                    File f = new File("/sdcard/myfile.txt");
                    FileInputStream fin = new
                    FileInputStream(f);
                    BufferedReader br = new BufferedReader(new
                    InputStreamReader(fin));
                    while ((message = br.readLine()) != null)
                    {
                        buf += message;
                    }
                    e1.setText(buf);
                    br.close();
                    fin.close();
                }
            }
        });
    }
}

```

```

Toast.makeText(getBaseContext(),"Data
Recived from SDCARD",Toast.LENGTH_LONG).show();
}
catch (Exception e)
{
Toast.makeText(getBaseContext(),
e.getMessage(), Toast.LENGTH_LONG).show();
}
}
});
clear.setOnClickListener(new View.OnClickListener()
{
@Override
public void onClick(View v)
{
e1.setText("");
}
});
}
}
}

```

5a What is view and view group. Explain any one view group. [4]

A view is a widget that has an appearance on screen. Examples of views are buttons, labels, and text boxes. A view derives from the base class android .view.View.

One or more views can be grouped together into a ViewGroup.

A ViewGroup (which is itself a special type of view) provides the layout in which you can order the appearance and sequence of views.

Android supports the following ViewGroups:

- > LinearLayout
- > AbsoluteLayout
- > TableLayout
- > RelativeLayout
- > FrameLayout
- > ScrollView

LinearLayout

The LinearLayout arranges views in a single column or a single row. Child views can be arranged either vertically or horizontally



5b Devise an application that draws basic graphical primitives (rectangle, circle) on the screen. [6]

Code for Activity_main.xml:

```

<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
  android:layout_width="match_parent"

```

```

        android:layout_height="match_parent">

        <ImageView
            android:id="@+id/image"
            android:layout_width="match_parent"
            android:layout_height="match_parent"
        />
    </RelativeLayout>

```

Code for MainActivity.java:

```

package com.example.lab4;

import android.app.Activity;
import android.graphics.Bitmap;
import android.graphics.Canvas;
import android.graphics.Color;
import android.graphics.Paint;
import android.graphics.drawable.BitmapDrawable;
import android.os.Bundle;
import android.widget.ImageView;

public class MainActivity extends Activity {

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

        //Creating a Bitmap
        Bitmap bg = Bitmap.createBitmap(720, 1280, Bitmap.Config.ARGB_8888);

        //Setting the Bitmap as background for the ImageView
        ImageView i = (ImageView) findViewById(R.id.image);
        i.setBackgroundDrawable(new BitmapDrawable(bg));

        //Creating the Canvas Object
        Canvas canvas = new Canvas(bg);

        //Creating the Paint Object and set its color & TextSize
        Paint paint = new Paint();
        paint.setColor(Color.BLUE);
        paint.setTextSize(50);

        //To draw a Rectangle
        canvas.drawText("Rectangle", 420, 150, paint);
        canvas.drawRect(400, 200, 650, 700, paint);

        //To draw a Circle
        canvas.drawText("Circle", 120, 150, paint);
        canvas.drawCircle(200, 350, 150, paint);

    }
}

```

6 Develop a mobile application that uses GPS location information [10]

MainActivity.java

```

package com.example.lab7;

import android.os.Bundle;
import android.app.Activity;
import android.content.Context;
import android.location.Location;
import android.location.LocationListener;
import android.location.LocationManager;
import android.widget.TextView;

import android.util.Log;

public class MainActivity extends Activity implements LocationListener{
    protected LocationManager locationManager;
    protected LocationListener locationListener;
    protected Context context;
    TextView txtLat;
    String lat;
    String provider;
}

```

```

protected String latitude,longitude;
protected boolean gps_enabled,network_enabled;

@Override
protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);
txtLat = (TextView) findViewById(R.id.textview1);

locationManager = (LocationManager) getSystemService(Context.LOCATION_SERVICE);
locationManager.requestLocationUpdates(LocationManager.GPS_PROVIDER, 0, 0, this);
}
@Override
public void onLocationChanged(Location location) {
txtLat = (TextView) findViewById(R.id.textview1);
txtLat.setText("Latitude:" + location.getLatitude() + ", Longitude:" + location.getLongitude());
}

@Override
public void onProviderDisabled(String provider) {
Log.d("Latitude","disable");
}

@Override
public void onProviderEnabled(String provider) {
Log.d("Latitude","enable");
}

@Override
public void onStatusChanged(String provider, int status, Bundle extras) {
Log.d("Latitude","status");
}
}

```

activity_mail.xml

```

<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"
    tools:context=".MainActivity" >

    <TextView
        android:id="@+id/textview1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerHorizontal="true"
        android:layout_centerVertical="true"
        android:text="@string/hello_world" />

</RelativeLayout>

```

Manifest.xml

```

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

```

7 Create an application that uses Layout Managers and Event Listeners. [6]

Code for Activity_main.xml:

```

<?xml version="1.0" encoding="utf-8"?>
<ScrollView
    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"
    >
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:layout_gravity="center"
    tools:context=".MainActivity">

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="100dp">
        <TextView

```

```

        android:id="@+id/textView"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_margin="30dp"
        android:text="Details Form"
        android:textSize="25sp"
        android:gravity="center"/>
</LinearLayout>

<GridLayout
    android:id="@+id/gridLayout"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_marginTop="30dp"
    android:columnCount="2"
    android:rowCount="3">
    <TextView
        android:id="@+id/textView1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_margin="10dp"
        android:layout_row="0"
        android:layout_column="0"
        android:text="Name"
        android:textSize="20sp"
        android:gravity="center"/>

    <EditText
        android:id="@+id/nameedit"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_margin="10dp"
        android:layout_row="0"
        android:layout_column="1"
        android:ems="10"/>

    <TextView
        android:id="@+id/textView2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_margin="10dp"
        android:layout_row="1"
        android:layout_column="0"
        android:text="Reg.No"
        android:textSize="20sp"
        android:gravity="center"/>

    <EditText
        android:id="@+id/regnoedit"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_column="1"
        android:layout_margin="10dp"
        android:layout_row="1"
        android:ems="10"
        android:inputType="number" />

    <TextView
        android:id="@+id/textView3"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_margin="10dp"
        android:layout_row="2"
        android:layout_column="0"
        android:text="Dept"
        android:textSize="20sp"
        android:gravity="center"/>

    <Spinner
        android:id="@+id/deptspinner"
        android:layout_width="200sp"
        android:layout_height="wrap_content"
        android:layout_margin="10dp"
        android:layout_row="2"
        android:layout_column="1"
        android:spinnerMode="dropdown"/>

</GridLayout>

<Button
    android:id="@+id/submitbtn"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@+id/deptspinner"

```

```

        android:layout_marginTop="10sp"
        android:layout_gravity="center"
        android:text="Submit" />
</LinearLayout>
</ScrollView>

```

Code for activity_second.xml:

```

<?xml version="1.0" encoding="utf-8"?>
<LinearLayout 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:orientation="vertical"
    android:gravity="center">

    <TextView
        android:id="@+id/nametv"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_margin="20dp"
        android:text="New Text"
        android:textSize="30sp"/>

    <TextView
        android:id="@+id/regnotv"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_margin="20dp"
        android:text="New Text"
        android:textSize="30sp"/>

    <TextView
        android:id="@+id/depttv"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_margin="20dp"
        android:text="New Text"
        android:textSize="30sp"/>

</LinearLayout>

```

Adding Second Activity in Manifest for the Android Application:

```
<activity android:name=".SecondActivity"></activity>
```

Code for MainActivity.java:

```

package com.example.lab2;

import android.app.Activity;
import android.content.Intent;
import android.os.Bundle;
import android.view.Menu;
import android.view.MenuItem;
import android.view.View;
import android.widget.AdapterView;
import android.widget.AdapterView.OnItemClickListener;
import android.widget.ArrayAdapter;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Spinner;
import android.view.View.OnClickListener;

public class MainActivity extends Activity {

    //Defining the Views
    EditText nameEdit,regEdit;
    Button submitBtn;
    Spinner deptSpinner;

    //Data for populating in Spinner
    String [] dept_array={"MCA", "MBA", "CS", "Mech", "Civil"};

    String name,reg,dept;

    @Override

```

```

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

    //Referring the Views
    nameEdit= (EditText) findViewById(R.id.nameedit);
    regEdit= (EditText) findViewById(R.id.regnoedit);

    submitBtn= (Button) findViewById(R.id.submitbtn);

    deptSpinner= (Spinner) findViewById(R.id.deptspinner);

    //Creating Adapter for Spinner for adapting the data from array to Spinner
    ArrayAdapter adapter= new
ArrayAdapter(MainActivity.this,android.R.layout.simple_spinner_item,dept_array);
    deptSpinner.setAdapter(adapter);

    //Creating Listener for Button
    submitBtn.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {

            //Getting the Values from Views(Edittext & Spinner)
            name=nameEdit.getText().toString();
            reg=regEdit.getText().toString();
            dept=deptSpinner.getSelectedItem().toString();

            //Intent For Navigating to Second Activity
            Intent i = new Intent(MainActivity.this,SecondActivity.class);

            //For Passing the Values to Second Activity
            i.putExtra("name_key", name);
            i.putExtra("reg_key",reg);
            i.putExtra("dept_key", dept);

            startActivity(i);

        }
    });
}

```

Code for SecondActivity.java:

```

package com.example.lab2;

import android.app.Activity;
import android.content.Intent;
import android.os.Bundle;
import android.widget.TextView;

public class SecondActivity extends Activity {

    TextView nameTextView,regnoTextView,deptTextView;
    String name,reg,dept;

    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_second);

        nameTextView= (TextView) findViewById(R.id.nametv);
        regnoTextView= (TextView) findViewById(R.id.regnotv);
        deptTextView= (TextView) findViewById(R.id.depttv);

        //Getting the Intent
        Intent i = getIntent();

        //Getting the Values from First Activity using the Intent received
        name=i.getStringExtra("name_key");
        reg=i.getStringExtra("reg_key");
        dept=i.getStringExtra("dept_key");

        //Setting the Values to Intent
        nameTextView.setText(name);
        regnoTextView.setText(reg);
        deptTextView.setText(dept);

    }
}

```

8 Build an mobile application that create, save, update and delete data in a database. [10]

Code for Activity_main.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<ScrollView
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    xmlns:android="http://schemas.android.com/apk/res/android">
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical">
<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_x="50dp"
    android:layout_y="20dp"
    android:layout_gravity="center"
    android:text="Student Details"
    android:textSize="30sp" />

<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_gravity="center"
    android:layout_x="20dp"
    android:layout_y="110dp"
    android:text="Enter Rollno: "
    android:textSize="20sp" />

<EditText
    android:id="@+id/Rollno"
    android:layout_width="150dp"
    android:layout_height="wrap_content"
    android:layout_x="175dp"
    android:layout_gravity="center"
    android:layout_y="100dp"
    android:inputType="number"
    android:textSize="20sp" />

<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_gravity="center"
    android:layout_x="20dp"
    android:layout_y="160dp"
    android:text="Enter Name: "
    android:textSize="20sp" />

<EditText
    android:id="@+id/Name"
    android:layout_width="150dp"
    android:layout_height="wrap_content"
    android:layout_x="175dp"
    android:layout_gravity="center"
    android:layout_y="150dp"
    android:inputType="text"
    android:textSize="20sp" />

<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_x="20dp"
    android:layout_y="210dp"
    android:text="Enter Marks: "
    android:layout_gravity="center"
    android:textSize="20sp" />

<EditText
    android:id="@+id/Marks"
    android:layout_width="150dp"
    android:layout_height="wrap_content"
    android:layout_gravity="center"
    android:layout_x="175dp"
    android:layout_y="200dp"
    android:inputType="number"
    android:textSize="20sp" />
```



```

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:weightSum="2">
    <Button
        android:id="@+id/Insert"
        android:layout_width="150dp"
        android:layout_height="wrap_content"
        android:layout_x="25dp"
        android:layout_y="300dp"
        android:layout_weight="1"
        android:text="Insert"
        android:textSize="30dp" />

    <Button
        android:id="@+id/Delete"
        android:layout_width="150dp"
        android:layout_height="wrap_content"
        android:layout_x="200dp"
        android:layout_y="300dp"
        android:layout_weight="1"
        android:text="Delete"
        android:textSize="30dp" />
</LinearLayout>
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:weightSum="2">
    <Button
        android:id="@+id/Update"
        android:layout_width="150dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:layout_x="25dp"
        android:layout_y="400dp"
        android:text="Update"
        android:textSize="30dp" />

    <Button
        android:id="@+id/View"
        android:layout_width="150dp"
        android:layout_height="wrap_content"
        android:layout_x="200dp"
        android:layout_y="400dp"
        android:layout_weight="1"
        android:text="View"
        android:textSize="30dp" />
</LinearLayout>

    <Button
        android:id="@+id/ViewAll"
        android:layout_width="200dp"
        android:layout_height="wrap_content"
        android:layout_x="100dp"
        android:layout_y="500dp"
        android:layout_gravity="center"
        android:text="View All"
        android:textSize="30dp" />

</LinearLayout>
</ScrollView>

```

Code for MainActivity.java:

```

package com.example.lab5;

import android.app.Activity;
import android.app.AlertDialog.Builder;
import android.content.Context;
import android.database.Cursor;
import android.database.sqlite.SQLiteDatabase;
import android.os.Bundle;
import android.view.Menu;
import android.view.MenuItem;
import android.view.View;
import android.view.View.OnClickListener;
import android.widget.Button;
import android.widget.EditText;

public class MainActivity extends Activity implements OnClickListener {

```

```

        EditText Rollno,Name,Marks;
        Button Insert,Delete,Update,View,ViewAll;
        SQLiteDatabase db;

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

    Rollno=(EditText)findViewById(R.id.Rollno);
    Name=(EditText)findViewById(R.id.Name);
    Marks=(EditText)findViewById(R.id.Marks);
    Insert=(Button)findViewById(R.id.Insert);
    Delete=(Button)findViewById(R.id.Delete);
    Update=(Button)findViewById(R.id.Update);
    View=(Button)findViewById(R.id.View);
    ViewAll=(Button)findViewById(R.id.ViewAll);

    Insert.setOnClickListener(this);
    Delete.setOnClickListener(this);
    Update.setOnClickListener(this);
    View.setOnClickListener(this);
    ViewAll.setOnClickListener(this);

    // Creating database and table
    db=openOrCreateDatabase("StudentDB", Context.MODE_PRIVATE, null);
    db.execSQL("CREATE TABLE IF NOT EXISTS student(rollno VARCHAR,name VARCHAR,marks VARCHAR);");
}

@Override
public void onClick(View view) {
    // TODO Auto-generated method stub
    // Inserting a record to the Student table
    if(view==Insert)
    {
        // Checking for empty fields
        if(Rollno.getText().toString().trim().length()==0||
            Name.getText().toString().trim().length()==0||
            Marks.getText().toString().trim().length()==0)
        {
            showMessage("Error", "Please enter all values");
            return;
        }
        db.execSQL("INSERT INTO student VALUES('"+Rollno.getText()+"','"+Name.getText()+
            "','"+Marks.getText()+"');");
        showMessage("Success", "Record added");
        clearText();
    }
    // Deleting a record from the Student table
    if(view==Delete)
    {
        // Checking for empty roll number
        if(Rollno.getText().toString().trim().length()==0)
        {
            showMessage("Error", "Please enter Rollno");
            return;
        }
        Cursor c=db.rawQuery("SELECT * FROM student WHERE rollno='"+Rollno.getText()+"'", null);
        if(c.moveToFirst())
        {
            db.execSQL("DELETE FROM student WHERE rollno='"+Rollno.getText()+"'");
            showMessage("Success", "Record Deleted");
        }
        else
        {
            showMessage("Error", "Invalid Rollno");
        }
        clearText();
    }
    // Updating a record in the Student table
    if(view==Update)
    {
        // Checking for empty roll number
        if(Rollno.getText().toString().trim().length()==0)
        {
            showMessage("Error", "Please enter Rollno");
            return;
        }
        Cursor c=db.rawQuery("SELECT * FROM student WHERE rollno='"+Rollno.getText()+"'", null);
        if(c.moveToFirst()) {
            db.execSQL("UPDATE student SET name='"+ Name.getText() + "','marks='"+ Marks.getText() +
                "' WHERE rollno='"+Rollno.getText()+"'");
            showMessage("Success", "Record Modified");
        }
    }
}

```

```

        else {
            showMessage("Error", "Invalid Rollno");
        }
        clearText();
    }
    // Display a record from the Student table
    if(view==View)
    {
        // Checking for empty roll number
        if(Rollno.getText().toString().trim().length()==0)
        {
            showMessage("Error", "Please enter Rollno");
            return;
        }
        Cursor c=db.rawQuery("SELECT * FROM student WHERE rollno='"+Rollno.getText()+"'", null);
        if(c.moveToFirst())
        {
            Name.setText(c.getString(1));
            Marks.setText(c.getString(2));
        }
        else
        {
            showMessage("Error", "Invalid Rollno");
            clearText();
        }
    }
    // Displaying all the records
    if(view==ViewAll)
    {
        Cursor c=db.rawQuery("SELECT * FROM student", null);
        if(c.getCount()==0)
        {
            showMessage("Error", "No records found");
            return;
        }
        StringBuffer buffer=new StringBuffer();
        while(c.moveToNext())
        {
            buffer.append("Rollno: "+c.getString(0)+"\n");
            buffer.append("Name: "+c.getString(1)+"\n");
            buffer.append("Marks: "+c.getString(2)+"\n\n");
        }
        showMessage("Student Details", buffer.toString());
    }
}
public void showMessage(String title,String message)
{
    Builder builder=new Builder(this);
    builder.setCancelable(true);
    builder.setTitle(title);
    builder.setMessage(message);
    builder.show();
}
public void clearText()
{
    Rollno.setText("");
    Name.setText("");
    Marks.setText("");
    Rollno.requestFocus();
}
}

```

9 Design an application that contains Phone Contacts in vertical linear manner. Selected contact appears at the top of the list with a large italicized font and a blue background. [10]

Code for Activity_main.xml:

```

<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    >
<TextView
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:gravity="center"
    android:id="@+id/selectedContact"
    android:padding="10dp"
    android:textSize="20sp"

```

```

        android:textStyle="italic"
        android:typeface="serif"
        android:background="@color/Blue"
        android:textColor="@color/White"
        android:text="@string/selectedEntry"/>
<ListView
    android:id="@+id/contactsListView"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    android:layout_weight="1">
</ListView>
</LinearLayout>

```

Code for contact_item.xml:

```

<?xml version="1.0" encoding="utf-8"?>
<TextView
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:padding="5dp"
    android:textStyle="bold"
    android:id="@+id/contactItem">
</TextView>

```

Code for MainActivity.java:

```

package com.example.lab1;

import android.app.Activity;

import android.database.Cursor;

import android.net.Uri;

import android.os.Bundle;

import android.provider.ContactsContract;

import android.support.v4.widget.SimpleCursorAdapter;

import android.widget.AdapterView;

import android.widget.AdapterView.OnItemClickListener;

import android.widget.ListView;

import android.widget.TextView;

import android.view.*;

public class MainActivity extends Activity {

    private ListView mContactList;

    private TextView selectedText;

    /** Called when the activity is first created. */

    @Override

    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);

        setContentView(R.layout.activity_main);

        mContactList = (ListView) findViewById(R.id.contactsListView);

        selectedText = (TextView) findViewById(R.id.selectedContact);

        mContactList.setOnItemClickListener(new ClickListener());

```

```

        populateContactList();
    }

    public void populateContactList() {

        Uri uri = ContactsContract.Contacts.CONTENT_URI;

        String[] projection = new String[] {

            ContactsContract.Contacts._ID,

            ContactsContract.Contacts.DISPLAY_NAME,

        };

        String sortOrder = ContactsContract.Contacts.DISPLAY_NAME +

        " COLLATE LOCALIZED ASC";

        Cursor c = getContentResolver().query(uri, projection, null, null,sortOrder);

        String[] fields = new String[] {

            ContactsContract.Data.DISPLAY_NAME

        };

        SimpleCursorAdapter adapter = new SimpleCursorAdapter(this, R.layout.contact_item,c, fields, new int[] {R.id.contactItem});

        mContactList.setAdapter(adapter);

    }

    private class ClickListener implements OnItemClickListener {

        public void onItemClick(AdapterView<?> arg0, View textView, int pos, long arg3) {

            if(textView instanceof TextView)

                selectedText.setText(((TextView) textView).getText());

        }

    }

}

```

10 Devise a mobile application that creates alarm clock [10]

Code for Activity_main.xml:

```

<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical">
    <TimePicker
        android:id="@+id/timePicker"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center" />
    <ToggleButton
        android:id="@+id/toggleButton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center"
        android:layout_margin="20dp"

```

```
android:checked="false"
android:onClick="OnToggleClicked" />
</LinearLayout>
```

Manifest for the Android Application:

```
<receiver android:name=".AlarmReceiver" > </receiver>
```

Code for MainActivity.java:

```
package com.example.lab1;

import android.app.Activity;
import android.database.Cursor;
import android.net.Uri;
import android.os.Bundle;
import android.provider.ContactsContract;
import android.support.v4.widget.SimpleCursorAdapter;
import android.widget.AdapterView;
import android.widget.AdapterView.OnItemClickListener;
import android.widget.ListView;
import android.widget.TextView;
import android.view.*

public class MainActivity extends Activity {

    private ListView mContactList;

    private TextView selectedText;

    @Override

    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);

        setContentView(R.layout.activity_main);

        mContactList = (ListView) findViewById(R.id.contactsListView);

        selectedText = (TextView) findViewById(R.id.selectedContact);

        mContactList.setOnItemClickListener(new ClickListener());

        populateContactList();

    }

    public void populateContactList() {

        Uri uri = ContactsContract.Contacts.CONTENT_URI;

        String[] projection = new String[] {

            ContactsContract.Contacts._ID,

            ContactsContract.Contacts.DISPLAY_NAME,
```

```

};

String sortOrder = ContactsContract.Contacts.DISPLAY_NAME +

" COLLATE LOCALIZED ASC";

Cursor c = getContentResolver().query(uri, projection, null, null,sortOrder);

String[] fields = new String[] {

    ContactsContract.Data.DISPLAY_NAME

};

SimpleCursorAdapter adapter = new SimpleCursorAdapter(this, R.layout.contact_item,c, fields, new int[] {R.id.contactItem});

mContactList.setAdapter(adapter);

}

private class ClickListener implements OnItemClickListener {

    public void onItemClick(AdapterView<?> arg0, View textView, int pos, long arg3) {

        if(textView instanceof TextView)

            selectedText.setText(((TextView) textView).getText());

    }

}

}

```

Code for AlarmReceiver. java:

```

package com.example.lab10;
import android.content.BroadcastReceiver;
import android.content.Context;
import android.content.Intent;
import android.media.Ringtone;
import android.media.RingtoneManager;
import android.net.Uri;
import android.widget.Toast;
public class AlarmReceiver extends BroadcastReceiver {

    @Override
    public void onReceive(Context context, Intent intent) {
        // TODO Auto-generated method stub
        Toast.makeText(context, "Alarm! Wake up! Wake up!",

        Toast.LENGTH_LONG).show();
        Uri alarmUri =
        RingtoneManager.getDefaultUri(RingtoneManager.TYPE_ALARM);
        if (alarmUri == null)
        {
            alarmUri =
            RingtoneManager.getDefaultUri(RingtoneManager.TYPE_NOTIFICATION);
        }
        Ringtone ringtone = RingtoneManager.getRingtone(context,
        alarmUri);
        ringtone.play();
    }
}

```