1. ACTIVITY LIFE CYCLE

```
/*****************************************************************************/
/* Aim                  : Develop an Android application to demonstrate Android Activity */
/*                        Life cycle                                         */
/* Author               : Vyshak Puthusseri                                  */
/* Date Written         : 6.02.2019                                          */
/*****************************************************************************/
```

PROGRAM

XML Code:

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<android.support.constraint.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:app="http://schemas.android.com/apk/res-auto"
   xmlns:tools="http://schemas.android.com/tools"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   tools:context=".MainActivity">
</android.support.constraint.ConstraintLayout>
```

JAVA Code:

MainActivity.java

```
package com.example.andlabb.lifecycle;

import android.content.Intent;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.util.Log;
import android.view.View;
import android.widget.Button;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
```

```
        setContentView(R.layout.activity_main);
        Log.v("cycle","Oncreate");

    }
    @Override
    protected void onStart() {
        super.onStart();
        Log.v("cycle","onstart");
        Toast.makeText(this, "On Start", Toast.LENGTH_SHORT).show();
    }
    @Override
    protected void onStop() {
        super.onStop();
        Log.v("cycle","onstop");
        Toast.makeText(this, "On Stop", Toast.LENGTH_SHORT).show();
    }
    @Override
    protected void onDestroy() {
        super.onDestroy();
        Log.v("cycle","ondestroy");
        Toast.makeText(this, "On Destroy", Toast.LENGTH_SHORT).show();
    }
    @Override
    protected void onPause() {
        super.onPause();
        Log.v("cycle","onpause");
        Toast.makeText(this, "On Pause", Toast.LENGTH_SHORT).show();
    }
    @Override
    protected void onResume() {
        super.onResume();
        Log.v("cycle","onresume");
        Toast.makeText(this, "On Resume", Toast.LENGTH_SHORT).show();
    }
}
```

```
/*****************************************************************************/
/* RESULT                                                                    */
/* Android application is developed and output is verified.                  */
/*****************************************************************************/
```

2. NAVIGATION

```
/*****************************************************************************/
/* Aim                  : Develop an Android application that displays an activity   */
/*                        navigation from the first to second activity on a button click.  */
/* Author               : Vyshak Puthusseri                                        */
/* Date Written         : 11.02.2019                                               */
/*****************************************************************************/
```

PROGRAM

XML Code:

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<android.support.constraint.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:app="http://schemas.android.com/apk/res-auto"
   xmlns:tools="http://schemas.android.com/tools"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   tools:context=".MainActivity">
   <LinearLayout
      android:layout_width="395dp"
      android:layout_height="435dp"
      android:orientation="vertical"
      tools:layout_editor_absoluteX="8dp"
      tools:layout_editor_absoluteY="288dp">
      <Button
         android:id="@+id/button"
         android:layout_width="208dp"
         android:layout_height="84dp"
         android:text="Button"
         tools:layout_editor_absoluteX="79dp"
         tools:layout_editor_absoluteY="528dp" />
   </LinearLayout>
</android.support.constraint.ConstraintLayout>
```

JAVA Code:

MainActivity.java

```
package com.example.andlabb.callback;

import android.content.Intent;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;

public class MainActivity extends AppCompatActivity {
Button b;
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      b=(Button)findViewById(R.id.button );

   b.setOnClickListener(new View.OnClickListener() {
      @Override
      public void onClick(View v) {
         Intent i=new Intent(MainActivity.this,MainActivity2.class);
         startActivity(i);
      }
   });
   }
}
```

MainActivity2.java

```
package com.example.andlabb.callback;
import android.content.Intent;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.widget.Toast;

public class MainActivity2 extends AppCompatActivity {

   @Override
```

```
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main2);
        Toast.makeText(getApplicationContext(),",Navigation",Toast.LENGTH_LONG).show();
    }
}


/*****************************************************************************/
/* RESULT                                                                    */
/* Android application is developed and output is verified                   */
/*****************************************************************************
```

3. EXPLICIT INTENT

```
/*****************************************************************************/
/* Aim                  : Develop an Android application that passes the data using explicit*/
/*                        intent, while navigation.                            */
/* Author               : Vyshak Puthusseri                                    */
/* Date Written         : 11.02.2019                                           */
/*****************************************************************************/
```

PROGRAM

XML Code:

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<android.support.constraint.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:app="http://schemas.android.com/apk/res-auto"
   xmlns:tools="http://schemas.android.com/tools"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   tools:context=".MainActivity">
   <LinearLayout
      android:layout_width="395dp"
      android:layout_height="435dp"
      android:orientation="vertical"
      tools:layout_editor_absoluteX="8dp"
      tools:layout_editor_absoluteY="288dp">
      <EditText
         android:id="@+id/editText"
         android:layout_width="264dp"
         android:layout_height="76dp"
         android:ems="10"
         android:inputType="textPersonName"
         android:text="Name"
         tools:layout_editor_absoluteX="73dp"
         tools:layout_editor_absoluteY="374dp" />
      <Button
         android:id="@+id/button"
         android:layout_width="208dp"
         android:layout_height="84dp"
         android:text="Button"
         tools:layout_editor_absoluteX="79dp"
         tools:layout_editor_absoluteY="528dp" />
   </LinearLayout>
</android.support.constraint.ConstraintLayout>
```

JAVA Code:

MainActivity.java

```
package com.example.andlabb.callback;

import android.content.Intent;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;

public class MainActivity extends AppCompatActivity {
Button b;
EditText t;
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      b=(Button)findViewById(R.id.button );
      t=(EditText)findViewById(R.id.editText);

   b.setOnClickListener(new View.OnClickListener() {
      @Override
      public void onClick(View v) {
         Intent i=new Intent(MainActivity.this,MainActivity2.class);
         i.putExtra("text",t.getText().toString());
         startActivity(i);
      }
   });
   }
}
```

MainActivity2.java

```
package com.example.andlabb.callback;

import android.content.Intent;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.widget.Toast;
```

```
public class MainActivity2 extends AppCompatActivity {

   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main2);
      Intent i=getIntent();
      Toast.makeText(getApplicationContext(),i.getStringExtra("text")
,Toast.LENGTH_LONG).show();
   }
}


/*****************************************************************************/
/* RESULT                                                                    */
/* Android application is developed and output is verified                   */
/*****************************************************************************/
```

4. IMPLICIT INTENT

```
/*************************************************************************/
/* Aim                  : Develop an Android application that opens the browser on a  */
/*                        button click                                   */
/* Author               : Vyshak Puthusseri                            */
/* Date Writtten        : 13.02.2019                                   */
/*************************************************************************/
```

PROGRAM

XML Code:

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<android.support.constraint.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:app="http://schemas.android.com/apk/res-auto"
   xmlns:tools="http://schemas.android.com/tools"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   tools:context=".MainActivity">
</android.support.constraint.ConstraintLayout>
```

JAVA Code:

MainActivity.java

```
package com.example.andlabb.callback;
import android.content.Intent;
import android.net.Uri;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
public class MainActivity extends AppCompatActivity {
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      Intent i=new Intent(Intent.ACTION_VIEW, Uri.parse("http://www.google.com"));
      startActivity(i);
   }
```

/***/
/* **RESULT** */
/* Android application is developed and output is verified */
/***/

5. BASIC CALCULATOR

```
/*****************************************************************************/
/* Aim                  : Develop a calculator in Android to perform the basic calculations */
/* Author               : Vyshak Puthusseri                                  */
/* Date Written         : 27.02.2019                                         */
/*****************************************************************************/
```

PROGRAM

XML Code:

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:app="http://schemas.android.com/apk/res-auto"
   xmlns:tools="http://schemas.android.com/tools"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   android:orientation="vertical"
   tools:context=".MainActivity">
   <EditText
      android:id="@+id/editText"
      android:layout_width="match_parent"
      android:layout_height="102dp"
      android:ems="10"
      android:inputType="textPersonName"
      android:hint="" />
   <LinearLayout
      android:layout_width="match_parent"
      android:orientation="horizontal"
      android:layout_height="wrap_content">
      <Button
         android:id="@+id/b1"
         android:layout_width="wrap_content"
         android:layout_height="wrap_content"
         android:layout_weight="1"
         android:text="1" />
      <Button
         android:id="@+id/b2"
         android:layout_width="wrap_content"
         android:layout_height="wrap_content"
         android:layout_weight="1"
         android:text="2" />
      <Button
         android:id="@+id/b3"
```

```
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="3" />
    <Button
        android:id="@+id/bp"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="+" />
</LinearLayout>
<LinearLayout
    android:layout_width="match_parent"
    android:orientation="horizontal"
    android:layout_height="wrap_content">
    <Button
        android:id="@+id/b4"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="4" />
    <Button
        android:id="@+id/b5"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="5" />
    <Button
        android:id="@+id/b6"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="6" />
    <Button
        android:id="@+id/bm"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="-" />
</LinearLayout>
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="horizontal">
    <Button
        android:id="@+id/b7"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_weight="1"
```

```
        android:text="7" />
    <Button
        android:id="@+id/b8"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="8" />
    <Button
        android:id="@+id/b9"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="9" />
    <Button
        android:id="@+id/bmu"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="*" />
</LinearLayout>
<LinearLayout
    android:layout_width="match_parent"
    android:orientation="horizontal"
    android:layout_height="wrap_content">
    <Button
        android:id="@+id/bdot"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="." />
    <Button
        android:id="@+id/b0"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="0" />
    <Button
        android:id="@+id/be"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="=" />
    <Button
        android:id="@+id/bdiv"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="/" />
</LinearLayout>
```

```
    <Button
        android:id="@+id/bclear"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="CLR" />
</LinearLayout>
```

JAVA Code:

MainActivity.java

```
package com.example.andlabb.clac;
import android.net.wifi.p2p.WifiP2pManager;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
public class MainActivity extends AppCompatActivity implements View.OnClickListener {
    Button butn[], b1,b2,b3,b4,b5,b6,b7,b8,b9,b0,bp,bdot,bm,bmu,bdiv,be,clr;
    EditText editText;
    String num="",operator="";
    float fno=0,sno,result=0;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        b1=findViewById(R.id.b1);
        b2=findViewById(R.id.b2);
        b3=findViewById(R.id.b3);
        b4=findViewById(R.id.b4);
        b5=findViewById(R.id.b5);
        b6=findViewById(R.id.b6);
        b7=findViewById(R.id.b7);
        b8=findViewById(R.id.b8);
        b9=findViewById(R.id.b9);
        b0=findViewById(R.id.b0);
        bdot=findViewById(R.id.bdot);
        bm=findViewById(R.id.bm);
        bmu=findViewById(R.id.bmu);
        bdiv=findViewById(R.id.bdiv);
        be=findViewById(R.id.be);
        bp=findViewById(R.id.bp);
        clr=findViewById(R.id.bclear);
        editText=findViewById(R.id.editText);
        b1.setOnClickListener(this);
```

```
    b2.setOnClickListener(this);
    b3.setOnClickListener(this);
    b4.setOnClickListener(this);
    b5.setOnClickListener(this);
    b6.setOnClickListener(this);
    b7.setOnClickListener(this);
    b8.setOnClickListener(this);
    b9.setOnClickListener(this);
    b0.setOnClickListener(this);
    bdot.setOnClickListener(this);
    bm.setOnClickListener(this);
    bmu.setOnClickListener(this);
    bdiv.setOnClickListener(this);
    be.setOnClickListener(this);
    bp.setOnClickListener(this);
    clr.setOnClickListener(this);
}

public void onScreen()
{
    if(operator!="")
    {
        editText.setText(editText.getText() + num);
    }
    else
    {
        editText.setText(num);
    }
}

@Override
public void onClick(View v) {
    if(v==bdot)
    {
        num=num+".";
        onScreen();
    }
    if(v==b1)
    {
        num=num+"1";
        onScreen();
    }
    if(v==b2)
    {
        num=num+"2";
        onScreen();
    }
    if(v==b3)
    {
```

```
    num=num+"3";
    onScreen();
}
if(v==b4)
{
    num=num+"4";
    onScreen();
}
if(v==b5)
{
    num=num+"5";
    onScreen();
}
if(v==b6)
{
    num=num+"6";
    onScreen();
}
if(v==b7)
{
    num=num+"7";
    onScreen();
}
if(v==b8)
{
    num=num+"8";
    onScreen();
}
if(v==b9)
{
    num=num+"9";
    onScreen();
}
if(v==b0)
{
    num=num+"0";
    onScreen();
}
if(v==bp)
{
    editText.setText(num + " + ");
    operator="+";
    abc();
}
if(v==bm)
{
    editText.setText(num + " - ");
    operator="-";
    abc();
```

```
    }
    if(v==bmu)
    {
        editText.setText(num + " * ");
        operator="*";
        abc();
    }
    if(v==bdiv)
    {
        editText.setText(num + " / ");
        operator="/";
        abc();
    }
    if(v==clr)
    {
        operator="";
        fno=0;
        sno=0;
        num="";
        result=0;
        editText.setText("");
    }
    if(v==be)
    {
        if(sno==0)
            sno = Float.parseFloat(num);
        switch (operator)
        {
            case "+":result=result+sno;
                    break;
            case "-":result=result-sno;
                break;
            case "*":result=result*sno;
                break;
            case "/":result=result/sno;
                break;
        }
        num=result+"";
        editText.setText(result+"");
        fno=0;
    }
}

public void abc()
{
    if(fno==0) {
        fno = Float.parseFloat(num);
        result=fno;
        num="";
```

```
            sno=0;
        }
        else {
            sno = Float.parseFloat(num);
            num="";
        }
    }
}
```

```
/*****************************************************************************/
/* RESULT                                                                    */
/* Android application is developed and output is verified                   */
/*****************************************************************************/
```

6. LATITUDE AND LONGITUDE

```
/*****************************************************************************/
/* Aim                    : Develop an Android application to find the Latitude and   */
/*                          Longitude of the current location                        */
/* Author                 : Vyshak Puthusseri                                        */
/* Date Written           : 06.03.2019                                               */
/*****************************************************************************/
```

PROGRAM

Manifest:

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.andlabb.gpslocation">
    <uses-permission android:name="android.permission.ACCESS_COARSE_LOCATION" />
    <uses-permission android:name="android.permission.ACCESS_FINE_LOCATION" />
    <uses-permission android:name="android.permission.INTERNET" />
    <uses-permission android:name="android.permission.ACCESS_NETWORK_STATE" />
    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/AppTheme">
        <uses-library
            android:name="org.apache.http.legacy"
            android:required="false" />
        <meta-data
            android:name="com.google.android.geo.API_KEY"
            android:value="AIzaSyBBgg0RNymnilm3nHKz7JN2VN0S3mBQzSA"/>
        <activity android:name=".MainActivity">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />
                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
    </application>
</manifest>
```

XML Code:

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<android.support.constraint.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:app="http://schemas.android.com/apk/res-auto"
   xmlns:tools="http://schemas.android.com/tools"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   tools:context=".MainActivity">
   <TextView
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Hello World!"
      android:id="@+id/a"
      app:layout_constraintBottom_toBottomOf="parent"
      app:layout_constraintLeft_toLeftOf="parent"
      app:layout_constraintRight_toRightOf="parent"
      app:layout_constraintTop_toTopOf="parent" />
   <fragment xmlns:android="http://schemas.android.com/apk/res/android"
      xmlns:tools="http://schemas.android.com/tools"
      android:id="@+id/mapa"
      android:name="com.google.android.gms.maps.SupportMapFragment"
      android:layout_width="match_parent"
      android:layout_height="match_parent"
      tools:context=".MainActivity" />
</android.support.constraint.ConstraintLayout>
```

JAVA Code:

MainActivity.java

```
package com.example.andlabb.gpslocation;
import android.Manifest;
import android.content.Context;
import android.content.pm.PackageManager;
import android.location.Location;
import android.location.LocationListener;
import android.location.LocationManager;
import android.support.annotation.NonNull;
import android.support.v4.app.ActivityCompat;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.util.Log;
import android.widget.Toast;
```

```
import com.google.android.gms.maps.CameraUpdateFactory;
import com.google.android.gms.maps.GoogleMap;
import com.google.android.gms.maps.OnMapReadyCallback;
import com.google.android.gms.maps.SupportMapFragment;
import com.google.android.gms.maps.model.LatLng;
import com.google.android.gms.maps.model.MarkerOptions;
public class MainActivity extends AppCompatActivity implements OnMapReadyCallback {
   LocationManager locationManager;
   Context mContext;
Double lat=0.0,lan=0.0;
   GoogleMap gmap;
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      ActivityCompat.requestPermissions(this,new
String[]{Manifest.permission.ACCESS_FINE_LOCATION}, 1);
      ActivityCompat.requestPermissions(this,new
String[]{Manifest.permission.ACCESS_COARSE_LOCATION}, 1);
      mContext=this;
      locationManager = (LocationManager)
mContext.getSystemService(Context.LOCATION_SERVICE);
      SupportMapFragment mapFragment = (SupportMapFragment)
getSupportFragmentManager()
            .findFragmentById(R.id.mapa);
      mapFragment.getMapAsync((OnMapReadyCallback) this);
   }
   LocationListener location=new LocationListener() {
      @Override
      public void onLocationChanged(Location location) {

Toast.makeText(getApplicationContext(),location.getLatitude()+","+location.getLongitude() ,Toast
.LENGTH_LONG).show();
         lat=location.getLatitude();
         lan=location.getLongitude();
         LatLng sydney = new LatLng(lat, lan);
            gmap.addMarker(new MarkerOptions().position(sydney)
               .title(""));
         gmap.moveCamera(CameraUpdateFactory.newLatLng(sydney));
      }
      @Override
      public void onStatusChanged(String provider, int status, Bundle extras) {
      }
      @Override
      public void onProviderEnabled(String provider) {
      }
      @Override
      public void onProviderDisabled(String provider) {
      }
```

```
    };
    public void onRequestPermissionsResult(int requestCode, String permissions[], @NonNull int[]
grantResults) {
        switch (requestCode) {
            case 1: {
                if (grantResults.length > 0
                        && grantResults[0] == PackageManager.PERMISSION_GRANTED) {
                    if (ActivityCompat.checkSelfPermission(this,
Manifest.permission.ACCESS_FINE_LOCATION) != PackageManager.PERMISSION_GRANTED
&& ActivityCompat.checkSelfPermission(this,
Manifest.permission.ACCESS_COARSE_LOCATION) !=
PackageManager.PERMISSION_GRANTED) {
                        Toast.makeText(getApplicationContext(),"no permission" ,Toast
.LENGTH_LONG).show();
                        return;
                    }
                    else
                    {
                        locationManager.requestLocationUpdates(LocationManager.GPS_PROVIDER,
                                10,
                                10, location);
                    }
                } else {
                }
                return;
            }
        }
    }
    @Override
    public void onMapReady(GoogleMap googleMap) {
        gmap=googleMap;
        LatLng sydney = new LatLng(lat, lan);
        googleMap.addMarker(new MarkerOptions().position(sydney)
                .title(""));
        googleMap.moveCamera(CameraUpdateFactory.newLatLng(sydney));
    }
}
```

/**/
/* **RESULT** */
/* Android application is developed and output is verified */
/**/

7. DIGITAL CLOCK

```
/*****************************************************************************/
/* Aim                  : Develop a digital clock in Android and set alarm.  */
/* Author               : Vyshak Puthusseri                                  */
/* Date Written         : 13.03.2019                                         */
/*****************************************************************************/
```

PROGRAM

XML Code:

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:app="http://schemas.android.com/apk/res-auto"
   xmlns:tools="http://schemas.android.com/tools"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   android:orientation="vertical"
   tools:context=".MainActivity">
   <TextClock
      android:id="@+id/textClock"
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
      android:format12Hour="H:mm:ss"
      android:textColor="#0000FF"
      android:textSize="35sp"
      tools:layout_editor_absoluteX="91dp"
      tools:layout_editor_absoluteY="0dp" />
   />
   <Button
      android:id="@+id/tts"
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
      android:text="Speak"/>
   <TimePicker
      android:id="@+id/timepicker"
      android:layout_width="match_parent"
      android:layout_height="wrap_content"></TimePicker>
   <ToggleButton
      android:id="@+id/toggle"
      android:layout_width="match_parent"
      android:layout_height="wrap_content" />
</LinearLayout>
```

JAVA Code:

MainActivity.java

```
package com.example.andlabb.digitalclock;
import android.app.AlarmManager;
import android.app.PendingIntent;
import android.content.Intent;
import android.speech.tts.TextToSpeech;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.CompoundButton;
import android.widget.TextClock;
import android.widget.TimePicker;
import android.widget.Toast;
import android.widget.ToggleButton;
import java.util.Calendar;
import java.util.Locale;
public class MainActivity extends AppCompatActivity {
   TextToSpeech textToSpeech;
   TextClock textClock;
   Button b;
   TimePicker timePicker;
   AlarmManager alarmManager;
   ToggleButton toggleButton;
   PendingIntent pendingIntent;
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      textClock=findViewById(R.id.textClock);
      timePicker=findViewById(R.id.timepicker);
      alarmManager = (AlarmManager) getSystemService(ALARM_SERVICE);
      toggleButton=findViewById(R.id.toggle);
      toggleButton.setOnCheckedChangeListener(new
CompoundButton.OnCheckedChangeListener() {
         @Override
         public void onCheckedChanged(CompoundButton buttonView, boolean isChecked) {
            long time;
            if (buttonView.isChecked())
            {
               Toast.makeText(MainActivity.this, "ALARM ON",
Toast.LENGTH_SHORT).show();
               Calendar calendar = Calendar.getInstance();
               calendar.set(Calendar.HOUR_OF_DAY, timePicker.getCurrentHour());
               calendar.set(Calendar.MINUTE, timePicker.getCurrentMinute());
```

```
                Intent intent = new Intent(getApplicationContext(), AlarmReceiver.class);
                pendingIntent = PendingIntent.getBroadcast(getApplicationContext(), 0, intent, 0);
                time=(calendar.getTimeInMillis()-(calendar.getTimeInMillis()%60000));
                if(System.currentTimeMillis()>time)
                {
                   if (calendar.AM_PM == 0)
                      time = time + (1000*60*60*12);
                   else
                      time = time + (1000*60*60*24);
                }
                alarmManager.setRepeating(AlarmManager.RTC_WAKEUP, time, 10000,
pendingIntent);
             }
             else
             {
                alarmManager.cancel(pendingIntent);
                Toast.makeText(MainActivity.this, "ALARM OFF",
Toast.LENGTH_SHORT).show();
             }
          }
       });
       b=findViewById(R.id.tts);
       textToSpeech = new TextToSpeech(getApplicationContext(), new
TextToSpeech.OnInitListener() {
          @Override
          public void onInit(int status) {
             if (status == TextToSpeech.SUCCESS) {
                int ttsLang = textToSpeech.setLanguage(Locale.US);
                if (ttsLang == TextToSpeech.LANG_MISSING_DATA
                      || ttsLang == TextToSpeech.LANG_NOT_SUPPORTED) {
                } else {
                }
             } else {
             }
          }
       });
       b.setOnClickListener(new View.OnClickListener() {
          @Override
          public void onClick(View v) {
             String data = textClock.getText().toString();
             int speechStatus = textToSpeech.speak(data, TextToSpeech.QUEUE_FLUSH, null);
             if (speechStatus == TextToSpeech.ERROR) {
             }
          }
       });
    }
}
```

AlarmReceiver,java

```
package com.example.andlabb.digitalclock;

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)
   {
      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();
   }
}
```

/**/
/* **RESULT** */
/* Android application is developed and output is verified */
/**/

8. SMS AND SPEED DIAL

```
/*****************************************************************************/
/* Aim                  : Develop an Android application to do the following */
/*                        (i) Sent an SMS alert on a particular key press    */
/*                        (ii) Speed Dial                                    */
/* Author               : Vyshak Puthusseri                                  */
/* Date Written         : 10.04.2019                                         */
/*****************************************************************************/
```

PROGRAM

Manifest:

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.andlabb.speed_dial">
    <uses-permission android:name="android.permission.CALL_PHONE" />
    <uses-permission android:name="android.permission.SEND_SMS" />
    <uses-permission android:name="android.permission.READ_SMS" />
    <uses-permission android:name="android.permission.RECEIVE_SMS" />
    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/AppTheme">
        <activity android:name=".MainActivity">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />
                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
        <activity android:name=".speedDial" />
        <activity android:name=".sms"></activity>
    </application>
</manifest>
```

XML Code:

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
```

```
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    tools:context=".MainActivity">
<Button
    android:id="@+id/speeddial"
    android:text="Speed Dial"
    android:layout_width="match_parent"
    android:layout_height="wrap_content" />
    <Button
        android:id="@+id/sms"
        android:text="SMS"
        android:layout_width="match_parent"
        android:layout_height="wrap_content" />
</LinearLayout>
```

activity_sms.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    tools:context=".sms">
    <TextView
        android:id="@+id/textView2"
        android:layout_width="match_parent"
        android:layout_height="50dp"
        android:text="Phone No."
        android:textSize="20dp" />
    <EditText
        android:id="@+id/number"
        android:layout_width="match_parent"
        android:layout_height="0dp"
        android:layout_weight="1" />
    <TextView
        android:id="@+id/textView"
        android:layout_width="match_parent"
        android:layout_height="50dp"
        android:text="Message"
        android:textSize="20dp" />
    <EditText
        android:id="@+id/text"
        android:layout_width="match_parent"
        android:layout_height="13dp"
```

```
        android:layout_marginTop="-20dp"
        android:layout_weight="10" />
    <Button
        android:id="@+id/send"
        android:layout_width="match_parent"
        android:layout_height="0dp"
        android:layout_weight="1"
        android:text="Send" />
</LinearLayout>
```

activity_speed_dial.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    tools:context=".speedDial">
    <EditText
        android:id="@+id/editText"
        android:layout_width="match_parent"
        android:layout_height="102dp"
        android:ems="10"
        android:inputType="textPersonName"
        android:hint="" />
    <LinearLayout
        android:layout_width="match_parent"
        android:orientation="horizontal"
        android:layout_height="wrap_content">
        <Button
            android:id="@+id/b1"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:text="1" />
        <Button
            android:id="@+id/b2"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:text="2" />
        <Button
            android:id="@+id/b3"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_weight="1"
```

```
        android:text="3" />
    </LinearLayout>
    <LinearLayout
       android:layout_width="match_parent"
       android:orientation="horizontal"
       android:layout_height="wrap_content">
       <Button
          android:id="@+id/b4"
          android:layout_width="wrap_content"
          android:layout_height="wrap_content"
          android:layout_weight="1"
          android:text="4" />
       <Button
          android:id="@+id/b5"
          android:layout_width="wrap_content"
          android:layout_height="wrap_content"
          android:layout_weight="1"
          android:text="5" />
       <Button
          android:id="@+id/b6"
          android:layout_width="wrap_content"
          android:layout_height="wrap_content"
          android:layout_weight="1"
          android:text="6" />
    </LinearLayout>
    <LinearLayout
       android:layout_width="match_parent"
       android:layout_height="wrap_content"
       android:orientation="horizontal">
       <Button
          android:id="@+id/b7"
          android:layout_width="wrap_content"
          android:layout_height="wrap_content"
          android:layout_weight="1"
          android:text="7" />
       <Button
          android:id="@+id/b8"
          android:layout_width="wrap_content"
          android:layout_height="wrap_content"
          android:layout_weight="1"
          android:text="8" />
       <Button
          android:id="@+id/b9"
          android:layout_width="wrap_content"
          android:layout_height="wrap_content"
          android:layout_weight="1"
          android:text="9" />
    </LinearLayout>
    <LinearLayout
```

```
        android:layout_width="match_parent"
        android:orientation="horizontal"
        android:layout_height="wrap_content">
        <Button
            android:id="@+id/bdot"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:text="." />
        <Button
            android:id="@+id/b0"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:text="0" />
    </LinearLayout>
    <Button
        android:id="@+id/bclear"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="CLR" />
</LinearLayout>
```

JAVA Code:

MainActivity.java

```
package com.example.andlabb.speed_dial;

import android.content.Intent;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
public class MainActivity extends AppCompatActivity {
Button speedDial,sms;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        speedDial=findViewById(R.id.speeddial);
        sms=findViewById(R.id.sms);
        speedDial.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Intent i=new Intent(getApplicationContext(),
com.example.andlabb.speed_dial.speedDial.class);
                startActivity(i);
```

```
        }
    });
    sms.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            Intent i=new Intent(getApplicationContext(),
com.example.andlabb.speed_dial.sms.class);
            startActivity(i);
        }
    });
  }
}
```

sms.java

```
package com.example.andlabb.speed_dial;
import android.Manifest;
import android.app.Activity;
import android.app.Notification;
import android.app.NotificationManager;
import android.app.PendingIntent;
import android.content.BroadcastReceiver;
import android.content.Context;
import android.content.Intent;
import android.content.IntentFilter;
import android.content.pm.PackageManager;
import android.content.res.Resources;
import android.graphics.BitmapFactory;
import android.net.Uri;
import android.os.Build;
import android.support.annotation.RequiresApi;
import android.support.v4.app.ActivityCompat;
import android.support.v4.content.ContextCompat;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.telephony.SmsManager;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
public class sms extends AppCompatActivity {
  Button send;
  EditText text, number;
  @Override
  protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_sms);
    send = findViewById(R.id.send);
```

```
        text = findViewById(R.id.text);
        number = findViewById(R.id.number);
       ActivityCompat.requestPermissions(sms.this, new
String[]{Manifest.permission.SEND_SMS}, 1);
        send.setOnClickListener(new View.OnClickListener() {
            @RequiresApi(api = Build.VERSION_CODES.JELLY_BEAN)
            @Override
            public void onClick(View v) {
                sendSMS(number.getText().toString(), text.getText().toString());
            }
        });
        Intent sms_intent=getIntent();
        Bundle b=sms_intent.getExtras();
        if(b!=null){

Toast.makeText(getApplicationContext(),b.getString("sms_str"),Toast.LENGTH_LONG).show();
            // Display SMS in the TextView
        }
    }
    @RequiresApi(api = Build.VERSION_CODES.JELLY_BEAN)
    private void sendSMS(String phoneNumber, String message) {
        String SENT = "SMS_SENT";
        String DELIVERED = "SMS_DELIVERED";
        SmsManager sms = SmsManager.getDefault();
        sms.sendTextMessage(phoneNumber, null, message, null, null);
        Intent notificationIntent = new Intent(getApplicationContext(), sms.class);
        PendingIntent contentIntent = PendingIntent.getActivity(getApplicationContext(),
                1, notificationIntent,
                PendingIntent.FLAG_CANCEL_CURRENT);
        NotificationManager nm = (NotificationManager) getApplicationContext()
                .getSystemService(Context.NOTIFICATION_SERVICE);
        Resources res = getApplicationContext().getResources();
        Notification.Builder builder = new Notification.Builder(getApplicationContext());
        builder.setContentIntent(contentIntent)
                .setSmallIcon(R.drawable.ic_launcher_background)
                .setLargeIcon(BitmapFactory.decodeResource(res,
R.drawable.ic_launcher_background))
                .setTicker("")
                .setWhen(System.currentTimeMillis())
                .setAutoCancel(true)
                .setContentTitle("SMS")
                .setContentText("send");
        Notification n = builder.build();
        nm.notify(1, n);
    }
}
```

speedDial.java

```
package com.example.andlabb.speed_dial;
import android.Manifest;
import android.content.Intent;
import android.content.pm.PackageManager;
import android.net.Uri;
import android.support.v4.app.ActivityCompat;
import android.support.v4.content.ContextCompat;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
public class speedDial extends AppCompatActivity implements View.OnLongClickListener {
   Button b1, b2, b3, bp, bdot, bm, bmu, bdiv, be, clr;
   EditText editText;
   String num = "", operator = "";
   float fno = 0, sno, result = 0;
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_speed_dial);
      b1 = findViewById(R.id.b1);
      b2 = findViewById(R.id.b2);
      b3 = findViewById(R.id.b3);
      b1.setOnLongClickListener(this);
      b2.setOnLongClickListener(this);
      b3.setOnLongClickListener(this);
      if (ContextCompat.checkSelfPermission(speedDial.this, Manifest.permission.CALL_PHONE)
!= PackageManager.PERMISSION_GRANTED) {
         ActivityCompat.requestPermissions(speedDial.this, new
String[]{Manifest.permission.CALL_PHONE},1);
      }
      else
      {
      }
   }
   @Override
   public boolean onLongClick(View v) {
      if (ActivityCompat.checkSelfPermission(this, Manifest.permission.CALL_PHONE) !=
PackageManager.PERMISSION_GRANTED) {
         // TODO: Consider calling
         // here to request the missing permissions, and then overriding
         //   public void onRequestPermissionsResult(int requestCode, String[] permissions,
```

```
            //                          int[] grantResults)
            // to handle the case where the user grants the permission. See the documentation
            // for ActivityCompat#requestPermissions for more details.
            Toast.makeText(getApplicationContext(),"no permission",Toast.LENGTH_LONG).show();
            return true;
        }
        if (v == b1) {
            Intent intent = new Intent(Intent.ACTION_CALL, Uri.parse("tel:" + "9605709596"));
            startActivity(intent);
        }
        if(v==b2)
        {
            Intent intent = new Intent(Intent.ACTION_CALL, Uri.parse("tel:" + "123456789"));
            startActivity(intent);
        }
        if(v==b3)
        {
            Intent intent = new Intent(Intent.ACTION_CALL, Uri.parse("tel:" + "987654321"));
            startActivity(intent);
        }
        return false;
    }
}


/*****************************************************************************/
/* RESULT                                                                    */
/* Android application is developed and output is verified                   */
/*****************************************************************************/
```

9. DATABASE CONNECTION

```
/*****************************************************************************/
/* Aim                    : Develop an Android application to demonstrate database  */
/*                          operations                                        */
/* Author                 : Vyshak Puthusseri                                */
/* Date Written           : 24.04.2019                                       */
/*****************************************************************************/
```

PROGRAM

XML Code:

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<AbsoluteLayout 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">
   <TextView
      android:layout_width="200dp"
      android:layout_height="wrap_content"
      android:layout_x="50dp"
      android:layout_y="20dp"
      android:text="Employee Details"
      android:textAlignment="center"
      android:textSize="20sp" />

   <TextView
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:layout_x="20dp"
      android:layout_y="110dp"
      android:text="Emp Id:"
      android:textSize="20sp" />

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

   <TextView
```

```
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_x="20dp"
    android:layout_y="160dp"
    android:text="Emp Name:"
    android:textSize="20sp" />

<EditText
    android:id="@+id/Name"
    android:layout_width="150dp"
    android:layout_height="wrap_content"
    android:layout_x="175dp"
    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="Salary:"
    android:textSize="20sp" />

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

<Button
    android:id="@+id/Insert"
    android:layout_width="150dp"
    android:layout_height="wrap_content"
    android:layout_x="25dp"
    android:layout_y="300dp"
    android:background="@android:color/holo_green_light"
    android:text="Insert"
    android:textSize="20dp" />

<Button
    android:id="@+id/Delete"
    android:layout_width="150dp"
    android:layout_height="wrap_content"
    android:layout_x="200dp"
    android:layout_y="300dp"
```

```
        android:background="@android:color/holo_red_dark"
        android:text="Delete"
        android:textSize="20dp" />

    <Button
        android:id="@+id/Update"
        android:layout_width="150dp"
        android:layout_height="wrap_content"
        android:layout_x="23dp"
        android:layout_y="357dp"
        android:background="@android:color/holo_blue_light"
        android:text="Update"
        android:textSize="20dp" />

    <Button
        android:id="@+id/View"
        android:layout_width="150dp"
        android:layout_height="wrap_content"
        android:layout_x="201dp"
        android:layout_y="356dp"
        android:background="@android:color/holo_orange_light"
        android:text="View"
        android:textSize="20dp" />

    <Button
        android:id="@+id/ViewAll"
        android:layout_width="140dp"
        android:layout_height="wrap_content"
        android:layout_x="103dp"
        android:layout_y="421dp"
        android:text="View All"
        android:textSize="20dp" />

</AbsoluteLayout>
```

JAVA Code:

MainActivity.java

```
package com.example.andlabb.employee;==5

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.View;
import android.view.View.OnClickListener;
import android.widget.Button;
import android.widget.EditText;

public class MainActivity extends Activity implements OnClickListener
{
   EditText id,Name,salary;
   Button Insert,Delete,Update,View,ViewAll;
   SQLiteDatabase db;

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

      id=(EditText)findViewById(R.id.Id);
      Name=(EditText)findViewById(R.id.Name);
      salary=(EditText)findViewById(R.id.Salary);
      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);
      db=openOrCreateDatabase("Employee", Context.MODE_PRIVATE, null);
      db.execSQL("CREATE TABLE IF NOT EXISTS employee(id VARCHAR,name
VARCHAR,salary VARCHAR);");
   }
   public void onClick(View view)
```

```
{

    if(view==Insert)
    {

        if(id.getText().toString().trim().length()==0||
              Name.getText().toString().trim().length()==0||
              salary.getText().toString().trim().length()==0)
        {
           showMessage("Error", "Please enter all values");
           return;
        }
        db.execSQL("INSERT INTO employee VALUES('"+id.getText()+"','"+Name.getText()+
              "','"+salary.getText()+"');");
        showMessage("Success", "Record added");
        clearText();
    }

    if(view==Delete)
    {

        if(id.getText().toString().trim().length()==0)
        {
           showMessage("Error", "Please enter  Empid");
           return;
        }
        Cursor c=db.rawQuery("SELECT * FROM employee WHERE id='"+id.getText()+"'",
null);
        if(c.moveToFirst())
        {
           db.execSQL("DELETE FROM employee WHERE id='"+id.getText()+"'");
           showMessage("Success", "Record Deleted");
        }
        else
        {
           showMessage("Error", "Invalid Id");
        }
        clearText();
    }

    if(view==Update)
    {

        if(id.getText().toString().trim().length()==0)
        {
           showMessage("Error", "Please enter id");
           return;
        }
        Cursor c=db.rawQuery("SELECT * FROM employee WHERE id='"+id.getText()+"'",
```

```
null);
        if(c.moveToFirst()) {
           db.execSQL("UPDATE employee SET name='" + Name.getText() + "',salary='" +
salary.getText() +
                 "' WHERE id='"+id.getText()+"'");
           showMessage("Success", "Record Modified");
        }
        else {
           showMessage("Error", "Invalid id");
        }
        clearText();
     }

     if(view==View)
     {

        if(id.getText().toString().trim().length()==0)
        {
           showMessage("Error", "Please enter id");
           return;
        }
        Cursor c=db.rawQuery("SELECT * FROM employee WHERE id='"+id.getText()+"'",
null);
        if(c.moveToFirst())
        {
           Name.setText(c.getString(1));
           salary.setText(c.getString(2));
        }
        else
        {
           showMessage("Error", "Invalid id");
           clearText();
        }
     }

     if(view==ViewAll)
     {
        Cursor c=db.rawQuery("SELECT * FROM employee", null);
        if(c.getCount()==0)
        {
           showMessage("Error", "No records found");
           return;
        }
        StringBuffer buffer=new StringBuffer();
        while(c.moveToNext())
        {
           buffer.append("Id: "+c.getString(0)+"\n");
           buffer.append("Name: "+c.getString(1)+"\n");
           buffer.append("Salary: "+c.getString(2)+"\n\n");
```

```
            }
            showMessage("Employee 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()
    {
        id.setText("");
        Name.setText("");
        salary.setText("");
        id.requestFocus();
    }
}
```

```
/*****************************************************************************/
/* RESULT                                                                    */
/* Android application is developed and output is verified                   */
/*****************************************************************************/
```

PROGRAM – 1

```
/*************************************************************************/
/* Name of the Program     : strcng.sh                                   */
/* Aim                     : To input a string and change it with another string in uppercase
                              in a file                                  */
/* Author                  : Vyshak Puthusseri                           */
/* Date Written            : 06.02.2019                                  */
/* Revision                : 1                                           */
/*************************************************************************/

/*************************************************************************/

/* PROGRAM:                                                              */

read a
read b
replace=${b^^}
sed -i s/$b/$replace/g $a

/*************************************************************************/

/*************************************************************************/
/* RESULT:                                                               */
/*                                                                       */
/* The script is executed and the output is verified.                    */
/*                                                                       */
/*************************************************************************/
```

PROGRAM – 2

```
/*************************************************************************************/
/* Name of the Program      : menucalc.sh                                            */
/* Aim                      : To implement a menu driven calculator                  */
/* Author                   : Vyshak Puthusseri                                      */
/* Date Written             : 13.02.2019                                             */
/* Revision                 : 1                                                      */
/*************************************************************************************/

/*************************************************************************************/

/* PROGRAM:                                                                          */

RED='\033[0;32m'
NC='\033[0m' # No Color
printf "\033[1;32m CALCULATOR${NC}\n"
printf "\033[0;32m 1 : add${NC}\n"
printf "\033[0;33m 2 : sub${NC}\n"
printf "\033[0;34m 3 : div${NC}\n"
printf "\033[0;35m 4 : mul${NC}\n"
printf "\033[0;36m q : quit${NC}\n"
printf "\033[1;31mchoose your choice${NC}\n"
read c
while [ $c != "q" ]
do
echo "enter two number"
read a
read b
case $c in
"1")
sum=$((a+b))
printf "${RED}result="$sum"${NC} "
;;
"2")
sum=$((a-b))
printf "${RED}result="$sum"${NC} "
;;
"3")
sum=$((a*b))
printf "${RED}result="$sum"${NC} "
```

```
;;
"4")
sum=`bc <<< 'scale=2; '$a'/'$b`
printf "${RED}result="$sum"${NC} "
;;
"q")
break
;;
*)
echo "invalid input"
;;
esac
echo -e ""
printf "\033[0;32m 1 : add${NC}\n"
printf "\033[0;33m 2 : sub${NC}\n"
printf "\033[0;34m 3 : div${NC}\n"
printf "\033[0;35m 4 : mul${NC}\n"
printf "\033[0;36m q : quit${NC}\n"
printf "\033[1;31mchoose your choice${NC}\n"
read c
done
```

/***/

/***/
/* **RESULT:** */
/* */
/* The script is executed and the output is verified. */
/* */
/***/

PROGRAM – 3

```
/*************************************************************************/
/* Name of the Program      : line.sh                                    */
/* Aim                      : To input the two line numbers and print the lines between
                              them from a file                           */
/* Author                   : Vyshak Puthusseri                          */
/* Date Written             : 13.02.2019                                 */
/* Revision                 : 1                                          */
/*************************************************************************/

/*************************************************************************/

/* PROGRAM:                                                              */

read a
read b
c=$((b-a+1))
tail -n +$a t | head -$c

/*************************************************************************/

/*************************************************************************/
/* RESULT:                                                               */
/*                                                                       */
/* The script is executed and the output is verified.                    */
/*                                                                       */
/*************************************************************************/
```

PROGRAM – 4

```
/*************************************************************************/
/* Name of the Program      : power.sh                                   */
/* Aim                      : To input two filenames and compare them. if the contents of
                              the files are same, then reverse the second file's content; else
                              change first files' content to uppercase   */
/* Author                   : Vyshak Puthusseri                          */
/* Date Written             : 21.02.2019                                 */
/* Revision                  : 1                                         */
/*************************************************************************/

/*************************************************************************/

/* PROGRAM:                                                              */

read a
read b
file1=`cat $a`
file2=`cat $b`
if [ "$file1" == "$file2" ]
then
cat $b | rev &>> rev
else
tr a-z A-Z < $a &>> capital
fi

/*************************************************************************/

/*************************************************************************/
/* RESULT:                                                               */
/*                                                                       */
/* The script is executed and the output is verified.                    */
/*                                                                       */
/*************************************************************************/
```

PROGRAM – 5

```
/*************************************************************************/
/* Name of the Program     : count.sh                                    */
/* Aim                     : To count the number of lines, words, characters (alphabets,
                              digits, special characters) from a file without using 'wc'  */
/* Author                  : Yedhu Thambi                                */
/* Date Written            : 27.02.2019                                  */
/* Revision                : 1                                           */
/*************************************************************************/

/*************************************************************************/

/* PROGRAM:                                                              */

line_c=0
char_C_c=0
char_S_c=0
char_N_c=0
char_SP_c=0
alpha_c=0
word_cont=0
while read p; do
for (( i=0; i<${#p}; i++ )); do
if [[ "${p:$i:1}" = [a-z] ]]
then
if [[ "${p:$i:1}" != [A-Z] ]]
then
char_S_c=$((char_S_c+1))
fi
fi
if [[ "${p:$i:1}" = [A-Z] ]]
then
char_C_c=$((char_C_c+1))
fi
if [[ "${p:$i:1}" = [0-9] ]]
then
char_N_c=$((char_N_c+1))
fi
if [[ "${p:$i:1}" = *['!'@#\$%^\&*()_+.,';" ']* ]]
then
```

```
char_SP_c=$((char_SP_c+1))
fi

if [[ "${p:$i:1}" = " " ]]
then
if [[ "${p:$i+1:1}" != " " ]]
then
word_cont=$((word_cont+1))
fi
fi
char_c=$((char_c+1))
done
if [[ ${#p} != 0 ]]
then
word_cont=$((word_cont+1))
fi
line_c=$((line_c+1))
done <t
echo "line count $line_c"
echo "char Small count $char_S_c"
echo "char Capital count $char_C_c"
echo "char numarical count $char_N_c"
echo "char Special count $char_SP_c"
echo "char Word count $word_cont"
echo "alpha count $char_c"

/*****************************************************************************/

/*****************************************************************************/
/* RESULT:                                                                   */
/*                                                                           */
/* The script is executed and the output is verified.                        */
/*                                                                           */
/*****************************************************************************/
```

PROGRAM – 6

```
/*****************************************************************************/
/* Name of the Program      : histogram.sh                                   */
/* Aim                      : To find the mean and standard deviation based on the input
                              file and draw a histogram                       */
/* Author                   : Vyshak Puthusseri                              */
/* Date Written             : 28.02.2019                                     */
/* Revision                 : 1                                              */
/*****************************************************************************/

/*****************************************************************************/

/* PROGRAM:                                                                  */

awk -F ","  'total=$4+$5+$6+$7+$8+$9 , mean=total/7 { print $1 "," $2 "," $3 "," $4 "," $5 "," $6
"," $7 "," $8 "," $9 "," $10 "," total "," mean }' student_mark.csv > t.csv
mean=0
gtotal=0
a=0
b=0
c=0
d=0
e=0
f=0
#to find total
while IFS="," read -r roll admno roll sub1 sub2 sub3 sub4 sub5 sub6 sub7 total mean; do
gtotal=$((gtotal+$total))
done < t.csv
suma=0
meana=$((gtotal/28))
#to find Standard diviation
while IFS="," read -r roll admno roll sub1 sub2 sub3 sub4 sub5 sub6 sub7 total mean; do
suma=$((suma+($total-meana)*($total-meana)))
done < t.csv
var=$((suma/28))
sd=$(bc <<< "scale=2; sqrt($var)")
echo $meana
echo $sd
#to find grade
while IFS="," read -r roll admno roll sub1 sub2 sub3 sub4 sub5 sub6 sub7 total mean; do
```

```
ga=$(bc <<< "scale=2; $meana+2*$sd")
gb=$(bc <<< "scale=2; $meana+$sd")
gc=$(bc <<< "scale=2; $meana")
gd=$(bc <<< "scale=2; $meana-$sd")
ge=$(bc <<< "scale=2; $meana-2*$sd")


if [[ ${total%%.*} -gt ${ga%%.*} ]]
then
a=$((a+1))
elif [[ ${total%%.*} -gt ${gb%%.*} && ${total%%.*} -lt ${ga%%.*} ]]
then
b=$((b+1))
elif [[ ${total%%.*} -gt ${gc%%.*} && ${total%%.*} -lt ${gb%%.*} ]]then
c=$((c+1))
elif [[ ${total%%.*} -gt ${gd%%.*} && ${total%%.*} -lt ${gc%%.*} ]]then
d=$((d+1))
elif [[ ${total%%.*} -gt ${ge%%.*} && ${total%%.*} -lt ${gd%%.*} ]]then
e=$((e+1))
elif [[ ${total%%.*} -lt ${ge%%.*} ]]
then
f=$((f+1))
fi
done < t.csv
grade=($a $b $c $d $e $f)
gradea=(A B C D E F)
i=0,j=0
while [ $j -lt 6 ]
do
g=${grade[j]}
i=0
printf ${gradea[j]}
printf "  |"
while [ $i -lt  $g ]
do
printf " *"
i=$((i+1))
done
j=$((j+1))
echo ""
```

```
printf "   |"
echo ""
done
```

/***/

/***/
/* **RESULT:** */
/* */
/* The script is executed and the output is verified. */
/* */
/***/

PROGRAM – 7

```
/*************************************************************************/
/* Name of the Program      : del_file.sh                                */
/* Aim                      : To implement room allocation based on input files */
/* Author                   : Vyshak Puthusseri                          */
/* Date Written             : 12.03.2019                                 */
/* Revision                 : 1                                          */
/*************************************************************************/

/*************************************************************************/

/* PROGRAM:                                                              */

s1=0
s2=0
s3=0
i=0
rlno1=()
rlno2=()
rlno3=()
while IFS="," read rno name
do
rlno1[$i]=$rno
s1=`expr $s1 + 1`
((i++))
done < s1.csv
i=0
while IFS="," read rno name
do
rlno2[$i]=$rno
s2=`expr $s2 + 1`
((i++))
done < s3.csv
i=0
while IFS="," read rno name
do
rlno3[$i]=$rno
s3=`expr $s3 + 1`
((i++))
done < s5.csv
```

```
total=`expr $s1 + $s2 + $s3`
room1=`expr $total / 40`
room2=`expr $total % 40`
if [ `expr $room2 / 40` == 0 ]
then
tot_room=`expr $room1 + 1`
fi
i=1;p=0;q=0;r=0;
f=0
j=0
f1=0
while [ $i -le $tot_room ]
do
echo '=========================================='
echo 'Room ' $i
j=0
while [ $p -lt $s1 -a $j -lt 20 -a $q -lt $s2 -a $r -lt $s3 ]
do
if [ $f == 0 ]
then
echo ${rlno1[$p]} ${rlno2[$q]}
((p++))
((q++))
((j++))
f1=1
else
if [ $f == 1 ]
then
echo ${rlno2[$q]} ${rlno3[$r]}
((q++))
((r++))
((j++))
f1=2
fi
fi
if [ $f == 2 ]
then
echo ${rlno3[$r]} ${rlno1[$p]}
((r++))
((p++))
```

```
((j++))
f1=0
fi
done
i=`expr $i + 1`
if [ $f1 == 1 ]
then
f=1
fi
if [ $f1 == 2 ]
then
f=2
fi
if [ $f1 == 0 ] then
f=0
fi
done
while [ $p -lt $s1 -a $r -lt $s3 ]
do
echo ${rlno3[$r]} ${rlno1[$p]}
((r++))
((p++))
done
while [ $q -lt $s2 -a $r -lt $s3 ]
do
echo ${rlno3[$r]} ${rlno2[$q]}
((r++))
((q++))
done
while [ $q -lt $s1 -a $r -lt $s2 ]
do
echo ${rlno1[$p]} ${rlno2[$q]}
((p++));((q++))
done
while [ $p -lt $s1 ]
do
echo ${rlno1[$p]} 0
((p++))
done
while [ $q -lt $s2 ]
```

```
do
echo ${rlno2[$q]} 0
((q++))
done
while [ $r -lt $s3 ]
do
echo ${rlno3[$r]} 0
((r++))done
```

/**/

/**/
/* **RESULT:** */
/* */
/* The script is executed and the output is verified. */
/* */
/**/

PROGRAM – 8

```
/*************************************************************************/
/* Name of the Program      : Tcp.sh                                     */
/* Aim                      : Implementation of TCP client and server communication*/
/* Author                   : Vyshak Puthusseri                          */
/* Date Written             : 28.03.2019                                 */
/* Revision                 : 1                                          */
/*************************************************************************/

/*************************************************************************/
```

/* **PROGRAM:** */

Client.c

```
#include <netdb.h>
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <sys/socket.h>
#include <arpa/inet.h>
#include <fcntl.h> // for open
#include <unistd.h> // for close
#define MAX 80
#define PORT 8080
#define SA struct sockaddr
void func(int sockfd)
{
char buff[MAX];
int n;
for (;;) {
bzero(buff, sizeof(buff));
printf("Enter the string : ");
n = 0;
while ((buff[n++] = getchar()) != '\n') ;
write(sockfd, buff, sizeof(buff));
bzero(buff, sizeof(buff));
read(sockfd, buff, sizeof(buff));
printf("From Server : %s", buff);
if ((strncmp(buff, "exit", 4)) == 0) {
printf("Client Exit...\n");
break;
}
```

```
}
}
int main()
{
int sockfd, connfd;
struct sockaddr_in servaddr, cli;
// socket create and varification
sockfd = socket(AF_INET, SOCK_STREAM, 0);
if (sockfd == -1) {
printf("socket creation failed...\n");
exit(0);
}
else
printf("Socket successfully created..\n");
bzero(&servaddr, sizeof(servaddr));
// assign IP, PORT
servaddr.sin_family = AF_INET;
servaddr.sin_addr.s_addr = inet_addr("127.0.0.1");
servaddr.sin_port = htons(PORT);
// connect the client socket to server socket
if (connect(sockfd, (SA*)&servaddr, sizeof(servaddr)) != 0) {
printf("connection with the server failed...\n");
exit(0);
}
else
printf("connected to the server..\n");
// function for chat
func(sockfd);
// close the socket
close(sockfd);
}
```

Server.c

```
#include <netdb.h>
#include <netinet/in.h>
#include <stdlib.h>
#include <string.h>
#include <sys/socket.h>
#include <sys/types.h>
#include <stdio.h>
#include <fcntl.h>
#include <unistd.h>
#define MAX 80
```

```
#define PORT 8080
#define SA struct sockaddr
void func(int sockfd)
{
char buff[MAX];
int n;
// infinite loop for chat
for (;;) {
bzero(buff, MAX);
// read the message from client and copy it in buffer
read(sockfd, buff, sizeof(buff));
// print buffer which contains the client contents
printf("From client: %s\t To client : ", buff);
bzero(buff, MAX);
n = 0;
// copy server message in the buffer
while ((buff[n++] = getchar()) != '\n') ;
 // and send that buffer to client
write(sockfd, buff, sizeof(buff));

// if msg contains "Exit" then server exit and chat ended.
if (strncmp("exit", buff, 4) == 0) {
printf("Server Exit...\n");
break;
}
}
}

// Driver function
int main()
{
int sockfd, connfd, len;
struct sockaddr_in servaddr, cli;
// socket create and verification
sockfd = socket(AF_INET, SOCK_STREAM, 0);
if (sockfd == -1) {
printf("socket creation failed...\n");
exit(0);
}
else
printf("Socket successfully created..\n");
bzero(&servaddr, sizeof(servaddr));
// assign IP, PORT
servaddr.sin_family = AF_INET;
```

```
servaddr.sin_addr.s_addr = htonl(INADDR_ANY);
servaddr.sin_port = htons(PORT);
// Binding newly created socket to given IP and verification
if ((bind(sockfd, (SA*)&servaddr, sizeof(servaddr))) != 0) {
printf("socket bind failed...\n");
exit(0);
}
else
printf("Socket successfully binded..\n");
// Now server is ready to listen and verification
if ((listen(sockfd, 5)) != 0) {
printf("Listen failed...\n");
exit(0);
}
else
printf("Server listening..\n");
len = sizeof(cli);
// Accept the data packet from client and verification
connfd = accept(sockfd, (SA*)&cli, &len);
if (connfd < 0) {
printf("server acccept failed...\n");
exit(0);
}
else
printf("server acccept the client...\n");
// Function for chatting between client and server
func(connfd);
// After chatting close the socket
close(sockfd);
}

/*********************************************************************/

/*********************************************************************/
/* RESULT:                                                           */
/*                                                                   */
/* Implemented TCP communication and the output is verified.         */
/*                                                                   */
/*********************************************************************/
```

PROGRAM – 9

```
/*************************************************************************/
/* Name of the Program      : Udp.sh                                     */
/* Aim                      : Implementation of UDP client and server communication*/
/* Author                   : Vyshak Puthusseri                          */
/* Date Written             : 04.04.2019                                 */
/* Revision                 : 1                                          */
/*************************************************************************/

/*************************************************************************/
```

/* **PROGRAM:** */

Client.c

```
#include <stdio.h>
#include <stdlib.h>
#include <unistd.h>
#include <string.h>
#include <sys/types.h>
#include <sys/socket.h>
#include <arpa/inet.h>
#include <netinet/in.h>

#define PORT  8080
#define MAXLINE 1024
int main() {
int sockfd;
char buffer[MAXLINE];
char *hello = "Hello from client";
struct sockaddr_in       servaddr;
if ( (sockfd = socket(AF_INET, SOCK_DGRAM, 0)) < 0 ) {
perror("socket creation failed");
exit(EXIT_FAILURE);
}
memset(&servaddr, 0, sizeof(servaddr));
servaddr.sin_family = AF_INET;
servaddr.sin_port = htons(PORT);
servaddr.sin_addr.s_addr = INADDR_ANY;
int n, len;
sendto(sockfd, (const char *)hello, strlen(hello), MSG_CONFIRM, (const struct sockaddr
*) &servaddr, sizeof(servaddr));
printf("Hello message sent.\n");
```

```
n = recvfrom(sockfd, (char *)buffer, MAXLINE, MSG_WAITALL, (struct sockaddr *)
&servaddr, &len);
buffer[n] = '\0';
printf("Server : %s\n", buffer);
close(sockfd);
return 0;
}
```

Server.c

```
#include <stdio.h>
#include <stdlib.h>
#include <unistd.h>
#include <string.h>
#include <sys/types.h>
#include <sys/socket.h>
#include <arpa/inet.h>
#include <netinet/in.h>
#define PORT  8080
#define MAXLINE 1024
int main() {
int sockfd;char buffer[MAXLINE];
char *hello = "Hello from server";
struct sockaddr_in servaddr, cliaddr;
if ( (sockfd = socket(AF_INET, SOCK_DGRAM, 0)) < 0 ) {
perror("socket creation failed");
exit(EXIT_FAILURE); }
memset(&servaddr, 0, sizeof(servaddr));
memset(&cliaddr, 0, sizeof(cliaddr));
servaddr.sin_family = AF_INET;
servaddr.sin_addr.s_addr = INADDR_ANY;
servaddr.sin_port = htons(PORT);
// Bind the socket with the server address
if ( bind(sockfd, (const struct sockaddr *)&servaddr, sizeof(servaddr)) < 0 ) {
perror("bind failed");
exit(EXIT_FAILURE); }
int len, n;
n = recvfrom(sockfd, (char *)buffer, MAXLINE, MSG_WAITALL, ( struct sockaddr *)
&cliaddr, &len);
buffer[n] = '\0';
printf("Client : %s\n", buffer);
sendto(sockfd, (const char *)hello, strlen(hello), MSG_CONFIRM, (const struct sockaddr
*) &cliaddr, len);
```

```
printf("Hello message sent.\n");
return 0;
}

/*************************************************************************/

/*************************************************************************/
/* RESULT:                                                               */
/*                                                                       */
/* Implemented UDP communication and the output is verified.             */
/*                                                                       */
/*************************************************************************/
```

PROGRAM – 10

```
/*************************************************************************/
/* Name of the Program      : Slidingwindow.sh                           */
/* Aim                      : Implementation of sliding window protocol  */
/* Author                   : Vyshak Puthusseri                          */
/* Date Written             : 25.04.2019                                 */
/* Revision                 : 1                                          */
/*************************************************************************/

/*************************************************************************/
```

/* **PROGRAM:** */

Client.c

```
#include<stdio.h>
#include<string.h>
#include<stdlib.h>
#include <unistd.h>
#include<sys/socket.h>
#include<sys/types.h>
#include<netinet/in.h>
int main()
{
int sfd,lfd,len,choice;
char str[20],str1[20],err[20];
struct sockaddr_in saddr,caddr;
sfd=socket(AF_INET,SOCK_STREAM,0);
if(sfd<0)
perror("FdError");
bzero(&saddr,sizeof(saddr));
saddr.sin_family=AF_INET;
saddr.sin_addr.s_addr=INADDR_ANY;
saddr.sin_port=htons(5465);
connect(sfd,(struct sockaddr*)&saddr,sizeof(saddr));
for(;;)
{
read(sfd,str,20);
if(!strcmp(str,"exit"))
{
printf("Exiting\n");
break;
}
```

```
printf("\n\nReceived :  %s \n\n 1.Do u want to report an error(1-Yes 0-No)",str);
scanf("%d",&choice);
if(!choice)
write(sfd,"-1",sizeof("-1"));
else
{
printf("Enter the sequence no of the frame where error has occured\n");
scanf("%s",err);
write(sfd,err,sizeof(err));
}
}
}
```

Server.c

```
#include<stdio.h>
#include<sys/socket.h>
#include<sys/types.h>
#include<netinet/in.h>
#include <unistd.h>
#include<string.h>
#include<stdlib.h>
#include<arpa/inet.h>
int main()
{
int sfd,lfd,len,i,j,status,x;
char str[20],frame[20],temp[20],ack[20];
struct sockaddr_in saddr,caddr;
printf("enter frame size  : ");
scanf("%d",&x);
sfd=socket(AF_INET,SOCK_STREAM,0);
if(sfd<0)
perror("Error");
bzero(&saddr,sizeof(saddr));
saddr.sin_family=AF_INET;
saddr.sin_addr.s_addr=htonl(INADDR_ANY);
saddr.sin_port=htons(5465);
if(bind(sfd,(struct sockaddr*)&saddr,sizeof(saddr))<0)
perror("Bind Error");
listen(sfd,5);
len=sizeof(&caddr);
lfd=accept(sfd,(struct sockaddr*)&caddr,&len);
printf(" Enter the text : \n");
scanf("%s",str);
```

```
i=0;
while(i<strlen(str))
{
memset(frame,0,20);
strncpy(frame,str+i,x);
printf(" Transmitting Frames. ");
len=strlen(frame);
for(j=0;j<len;j++)
{
printf("%d",i+j);
sprintf(temp,"%d",i+j);
strcat(frame,temp);
}
printf("\n");
write(lfd,frame,sizeof(frame));
read(lfd,ack,20);
sscanf(ack,"%d",&status);
if(status==-1)
{
printf(" Transmission is successful. \n");
i+=x;
}
else
{
printf(" Received error in %d \n\n",status);
printf("\n\n Retransmitting Frame. ");
i=status;
}
}
write(lfd,"exit",sizeof("exit"));
printf("Exiting\n");
sleep(2);
close(lfd);
close(sfd);
}

/*****************************************************************************/

/*****************************************************************************/
/* RESULT:                                                                   */
/*                                                                           */
/* Implemented sliding window and the output is verified.                    */
/*                                                                           */
/*****************************************************************************/
```

PROGRAM – 11

```
/*************************************************************************/
/* Name of the Program      : Stopandwait.sh                             */
/* Aim                      : Implementation of stop and wait protocol   */
/* Author                   : Vyshak Puthusseri                          */
/* Date Written             : 25.04.2019                                 */
/* Revision                 : 1                                          */
/*************************************************************************/

/*************************************************************************/
```

/* **PROGRAM:** */

Client.c

```
#include <sys/types.h>
#include <netinet/in.h>
#include <arpa/inet.h>
#include <netdb.h>
#include <stdio.h>
#include <string.h>
#include <stdlib.h>
#include <unistd.h>
#include <errno.h>
int main()
{
int sock,val,i,count,port;
char recvdata[50],sentdata[50];
struct sockaddr_in server_addr;
printf("\n\n Client Running ..... ");
if ((sock = socket(AF_INET, SOCK_STREAM, 0)) == -1)
{
perror("Socket");
exit(1);
}
printf("\nEnter the port number");
scanf("%d",&port);
server_addr.sin_family = AF_INET;
server_addr.sin_port = htons(port);
server_addr.sin_addr.s_addr= htonl(INADDR_ANY);
bzero(&(server_addr.sin_zero),8);
if (connect(sock, (struct sockaddr *)&server_addr, sizeof(struct sockaddr)) == -1)
{
```

```
perror("Connect");
exit(1);
}
while(1)
{
 //get the pack number from client
printf("\n Enter packet number ");
scanf("%d",&val);
// sent the value to server
send(sock,&val,sizeof(val),0);
// get the data from the user
printf("\n\n Enter data ");
scanf("%s",sentdata);
// sent the to server
send(sock,sentdata,strlen(sentdata),0);
if(strcmp(sentdata,"end")==0)
break;
// recev the result from server
recv(sock,&count,sizeof(count),0);
i=recv(sock,recvdata,50,0);
recvdata[i]='\0';
printf("\n %s %d",recvdata,count);
}
close(sock);
return 0;
}
```

Server.c

```
#include <sys/types.h>
#include <netinet/in.h>
#include <netdb.h>
#include <stdio.h>
#include <string.h>
#include <stdlib.h>
#include <unistd.h>
#include <errno.h>
int main()
{
int sock,size,connect;
char senddata[50],data[50];
int val,count,i,port;
struct sockaddr_in ser,cli;
printf("\n\n Server Running ..... ");
```

```
if ((sock = socket(AF_INET, SOCK_STREAM, 0)) == -1)
{
perror("\n Socket Creation Error");
exit(-1);
}
printf("\nEnter the port number  : ");
scanf("%d",&port);
ser.sin_family = AF_INET;
ser.sin_port = htons(port);
ser.sin_addr.s_addr=INADDR_ANY;
bzero(&(ser.sin_zero),8);
if(bind(sock,(struct sockaddr *)&ser,sizeof(struct sockaddr)) == -1)
{
perror("\n\t Error in Bind");
exit(-1);
}
if (listen(sock,2)==-1)
{
perror("\n\t Error in Listen");
exit(-1);
}
printf("\n\t Waiting for connection ");
size=sizeof(struct sockaddr);
connect=accept(sock,(struct sockaddr *)&cli,&size);
if(connect==-1)
{
perror("\n\t Connection Failed :");
exit(-1);
}
printf("\n\t Connected Successfully");
printf("\n");
// get the pocket number from client
recv(connect,&val,sizeof(val),0);
count=val;
while(1)
{
i=recv(connect,&data,sizeof(data),0);
data[i]='\0';
if (strcmp(data,"end")==0)
{
printf("\n\t Finished");
break;
}
if(count!=val)
```

```
{
strcpy(senddata,"packet missing");
send(connect,&count,sizeof(count),0);
send(connect,senddata,strlen(senddata),0);
}
else
{
printf("\n The packet Number is : %d",val);
printf("\n The data is :%s",data);
count++;
strcpy(senddata,"send nextdata");
send(connect,&count,sizeof(count),0);
send(connect,senddata,strlen(senddata),0);
}
printf("\n The Expected Packet now is: %d \n",count);
recv(connect,&val,sizeof(val),0);
}
close(connect);
close(sock);
return 0;
}

/*************************************************************************/

/*************************************************************************/
/* RESULT:                                                               */
/*                                                                       */
/* Implemented stop and wait protocol and the output is verified.        */
/*                                                                       */
/*************************************************************************/
```

Version Control System using GIT

/**/
/* Name of the Program : Familiarization of version control system using GIT */
/* Author : Vyshak Puthusseri */
/* Date Written : 26.04.2019 */
/* Revision : 1 */
/**/

Version Control

Version control enables multiple people to simultaneously work on a single project. Each person edits his or her own copy of the files and chooses when to share those changes with the rest of the team. Thus, temporary or partial edits by one person do not interfere with another person's work. Version control also enables one person we to use multiple computers to work on a project, so it is valuable even if we are working ourselves. Version control integrates work done simultaneously by different team members. In most cases, edits to different files or even the same file can be combined without losing any work. In rare cases, when two people make conflicting edits to the same line of a file, then the version control system requests human assistance in deciding what to do.

Version control gives access to historical versions of the project. This is insurance against computer crashes or data loss. If we make a mistake, we can roll back to a previous version. We can reproduce and understand a bug report on a past version of the software. We can also undo specific edits without losing all the work that was done in the meanwhile. For any part of a file, we can determine when, why, and by whom it was ever edited.

Basic version control Version control uses a repository (a database of changes) and a working copy where we do the work. The working copy (sometimes called a checkout) is the personal copy of all the files in the project. We make arbitrary edits to this copy, without affecting the teammates. When we are happy with the edits, we commit the changes to a repository.

A repository is a database of all the edits to, and/or historical versions (snapshots) of, the project. It is possible for the repository to contain edits that have not yet been applied to the working copy. We can update the working copy to incorporate any new edits or versions that have been added to the repository since the last time we updated. See the diagram at the right.

In the simplest case, the database contains a linear history: each change is made after the previous one. Another possibility is that different users made edits simultaneously (this is sometimes called “branching”). In that case, the version history splits and then merges again.

What is GIT

Git is a distributed revision control and source code management system with an emphasis on speed. Git was initially designed and developed by Linus Torvalds for Linux kernel development. Git is a free software distributed under the terms of the GNU General Public License version.

Experiment Setup

The directory and the files which are to be monitored through GIT are identified first. In the experiment we will be tracking the Directories and Files mentioned below:

13) MyMaster

-> **ProjA**
-> **ProjB**
-> MyProfile
-> MyFav
-> MyHometown

$ mkdir MyMaster
$ cd MyMaster
$ touch MyProfile MyFav MyHometown
$ cd ..
$ mkdir ProjA projB

Installing GIT

The official website of Git has detailed information about installing on Linux, Mac, or Windows. We follow the steps to install and configure GIT in a linux environment. GIT can be installed from the software repository using the command,

sudo apt-get install git

After installation is complete, check if git is installed properly by executing the following command,

$ git

usage: git [--version] [--help] [-C <path>] [-c name=value]
[--exec-path[=<path>]] [--html-path] [--man-path] [--info-path]
[-p|--paginate|--no-pager] [--no-replace-objects] [--bare]
[--git-dir=<path>] [--work-tree=<path>] [--namespace=<name>]
<command> [<args>]

The most commonly used git commands s are:

add	Add file contents to the index
bisect	Find by binary search the change that introduced a bug
branch	List, create, or delete branches
checkout	Checkout a branch or paths to the working tree
clone	Clone a repository into a new directory
commit	Record changes to the repository
diff	Show changes between commits, commit and working tree, etc
fetch	Download objects and refs from another repository
grep	Print lines matching a pattern
init	Create an empty Git repository or reinitialize an existing one
log	Show commit logs
merge	Join two or more development histories together
mv	Move or rename a file, a directory, or a symlink
pull	Fetch from and integrate with another repository or a local branch
push	Update remote refs along with associated objects
rebase	Forward-port local commits to the updated upstream head
reset	Reset current HEAD to the specified state
rm	Remove files from the working tree and from the index
show	Show various types of objects
status	Show the working tree status
tag	Create, list, delete or verify a tag object signed with GPG

'git help -a' and 'git help -g' lists available subcommands and some
concept guides. See 'git help <command>' or 'git help <concept>'
to read about a specific subcommand or concept.

Initial Configuration

The first step is to initialize Git in a directory. This is done using the command init, which creates a .git directory that contains all the Git-related information for the project.

14) git init

Next, we need to configure our name and email. We can do it as follows, replacing the values with the own name and email.

$ git config –global user.name"admin"
$ git config --global user.mail "admin1995@gmail.com"

myMaster$ git init
Initialized empty Git repository in /var/nfs/.home/mca2016/myMaster/.git/

It is important to note that if we do not set the name and email, certain default values will be used. In our case, the username **'admin'** and email '**admin1995@gmail.com**' would be the default values.

Staging Files for Commit

The next step is to create some files in the directory. We could use a text editor like Vim. Note that if we are going to add Git to an already existing directory, we do not need to perform this step.

Check the Status of the Repository

Now that we have some files in our repository, let us see how Git treats them. To check the current status of the repository, we use the git status command.

15) git status

myMaster$ git status
On branch master

Initial commit

Untracked files:
(use "git add <file>..." to include in what will be committed)

myfav
myhometown
myprofile
projA/
projB/

nothing added to commit but untracked files present (use "git add" to track)

Adding Files for Git to Track

At this point, we do not have any files for Git to track. We need to add files specifically to Git order to tell Git to track them. We add files using *add*.

git add my_file or **git add ***

Checking the status of the repository again shows us that one file has been added.

To add multiple files, we use the following (note that we have added another file for demonstration purposes.)

16) $ git add myfile2 myfile3

$ git status
On branch master

Initial commit

Changes to be committed: (use "git rm --cached <file>..." to unstage)

new file:myfav
new file:myhometown
new file:myhometown~
new file:myprofile
new file:projA/projDetails
new file:projA/projStatus
new file:projA/projStatus~
new file:projB/projDetails
new file:projB/projDetails~
new file:projB/projStatus
new file:projB/projStatus~

We could use git add recursively, but be careful with that command. There are certain files (like compiled files) that are usually kept out of the Git repository. If we use add recursively, it would add all such files, if they are present in the repository.

Removing Files

Let's say we have added files to Git that we do not want it to track. In such a situation, we tell Git to stop tracking them. Yet, running a simple git rm will not only remove it from Git, but will also remove it from the local file system as well! To tell Git to stop tracking a file, but still keep it on the local system, run the following command:

git rm --cached [file_name]

Committing Changes

Once we have staged the files, we can commit them into Git. Imagine a commit as a snapshot in time where we can return back to access the repository at that stage. We associate a commit message with every commit, which we can provide with the -m prefix.

17) $ git commit -m "newly added files"

[master (root-commit) 2340d2e] newly added files
11 files changed, 19 insertions(+)
create mode 100644 myfav
create mode 100644 myhometown
create mode 100644 myhometown~
create mode 100644 myprofile
create mode 100644 projA/projDetails
create mode 100644 projA/projStatus
create mode 100644 projA/projStatus~
create mode 100644 projB/projDetails
create mode 100644 projB/projDetails~
create mode 100644 projB/projStatus
create mode 100644 projB/projStatus~

Provide a useful commit message because it helps we in identifying what we changed in that commit. Avoid overly general messages like “Fixed bugs”. If we have an issue tracker, we could provide messages like “Fixed bug #234”. It’s good practice to prefix the branch name or feature name to the commit message. For instance, “Asset management – Added feature to generate PDFs of assets” is a meaningful message.

Git identifies commits by attaching a long hexadecimal number to every commit. Usually, we do not need to copy the whole string, and the first 5-6 characters are enough to identify the commit. In the screenshot, notice that 8dd76fc identifies our first commit.

Further Commitsthrough git status that Git notices the change in the files that it is tracking. We can check the changes to the tracked files from the last commit by running *git diff*. If we want to have a look at the changes to a particular file, we can run git diff <file>.

We need to add these files again to stage the changes in tracked files for the next commit. We can add all the tracked files by running: ***git add -u***

We could avoid this command by prefixing -a to git commit, which adds all changes to tracked files for a commit. This process, however, is very dangerous as it can be

damaging. For instance, let's say we opened a file and changed it by mistake. If we selectively stage them, we would notice changes in each file. But if we add -a to the commit, all files would be committed and we would fail to notice possible errors.

Once we have staged the files, we can proceed to a commit. A message can be associated with every commit, which is entered by using -m.

Managing of the Project

To check the history of the project, we can run the following command.

git log

This shows us the entire history of the project — which is a list of all the commits and their information. The information about a commit contains the commit hash, author, time and commit message. There are many variations of git log, which we could explore once we understand the concept of a branch in Git. To view the details of a particular commit and the files that were changed, run the following command:

$ git commit -m "newly added files"
[master (root-commit) 2340d2e] newly added files
11 files changed, 19 insertions(+)
create mode 100644 myfav
create mode 100644 myhometown
create mode 100644 myhometown~
create mode 100644 myprofile
create mode 100644 projA/projDetails
create mode 100644 projA/projStatus
create mode 100644 projA/projStatus~
create mode 100644 projB/projDetails
create mode 100644 projB/projDetails~
create mode 100644 projB/projStatus
create mode 100644 projB/projStatus~

git show <hash>

Where <hash> is the hex number associated with the commit. As this tutorial is for beginners, we will not cover how to get back to the state of a particular commit in time or how to manage branches.

$ git show
commit 2340d2ef3bdb67b9741aac819341dd6e086a1568

Author: admin <admin1995@gmail.com>
Date:Thu Feb 8 10:09:26 2018 +0530

newly added files

diff --git a/myfav b/myfav
new file mode 100644
index 0000000..2b6a991
--- /dev/null
+++ b/myfav
@@ -0,0 +1,4 @@
+my favorite place is my home.
+my favorite songs are melody.
+my love spending time with my brother.
+
diff --git a/myhometown b/myhometown
new file mode 100644
index 0000000..2106a8c
--- /dev/null
+++ b/myhometown
@@ -0,0 +1,5 @@
+Pandalam is a municipal town in Kerala, India.
+Among the fastest growing towns, Pandalam is considered a holy town due to its
+It is also a renowned educational and health care centre in central Travancore.

[1]+ Stopped git show

Git Checkout

In Git terms, a "checkout" is the act of switching between different versions of a target entity. The git checkout command operates upon three distinct entities: files, commits, and branches. In addition to the definition of "checkout" the phrase "checking out" is commonly used to imply the act of executing the git checkout command. In the Undoing Changes topic, we saw how git checkout can be used to view old commits.

Checking out branches is similar to checking out old commits and files in that the working directory is updated to match the selected branch/revision; however, new changes are saved in the project history—that is, it's not a read-only operation.

Checking out files and commits

It is sometimes required to go back to a previous committed state to access the particular version of the files. The history or log can be viewed quickly using the command

git log --oneline

$ git log --oneline
ffa789a new change
2340d2e newly added files

When we have found a commit reference to the point in history we want to visit, we can utilize the git checkout command to visit that commit. Git checkout is an easy way to "load" any of these saved snapshots onto our computer. We can use git checkout to view a particular version of a file using.

18) $ git checkout myfav
$ git checkout 2340d2ef3bdb67b9741aac819341dd6e086a1568 myfav

Checking out branches

The git checkout command lets we navigate between the branches created by git branch. Checking out a branch updates the files in the working directory to match the version stored in that branch, and it tells Git to record all new commits on that branch. Think of it as a way to select which line of development we're working on.

Git checkout works hand-in-hand with git branch. The git branch command can be used to create a new branch. A branch represents an independent line of development. Branches serve as an abstraction for the edit/stage/commit process. We can think of them as a way to request a brand new working directory, staging area, and project history. New commits are recorded in the history for the current branch, which results in a fork in the history of the project.

The git branch command lets us create, list, rename, and delete branches. It doesn't let us switch between branches or put a forked history back together again.

When we want to start a new feature, we create a new branch off master using
git branch new_branch

Once created we can then ***use git checkout new_branch*** to switch to that branch. Additionally, the git checkout command accepts a -b argument that acts as a convenience method which will create the new branch and immediately switch to it. We can work on multiple features in a single repository by switching between them with git checkout.

19) Branch and checkout details

$ git branch b1
$ git branch

b1
* master

$ git checkout b1
Switched to branch 'b1'
$ git branch
* b1
master

$ git status
On branch b1
Changes not staged for commit:
(use "git add <file>..." to update what will be committed)
(use "git checkout -- <file>..." to discard changes in working directory)

modified:myfav

Untracked files:
(use "git add <file>..." to include in what will be committed)

myfav~

no changes added to commit (use "git add" and/or "git commit -a")
$ git commit
On branch b1
Changes not staged for commit:
modified:myfav

Untracked files:
myfav~

no changes added to commit
$ git add myfav
$ git commit
Aborting commit due to empty commit message.
$ git commit -m "new change"
[b1 ffa789a] new change
1 file changed, 2 insertions(+)

$ git checkout master
Switched to branch 'master'

$ git merge b1
Updating 2340d2e..ffa789a

Fast-forward
myfav | 2 ++
1 file changed, 2 insertions(+)

$ git branch --d b1
Deleted branch b1 (was ffa789a).

Merging branches

Merging is Git's way of putting a forked history back together again. The git merge command lets we take the independent lines of development created by git branch and integrate them into a single branch.

Git merge will combine multiple sequences of commits into one unified history. In the most frequent use cases, git merge is used to combine two branches. Merge commits are unique against other commits in the fact that they have two parent commits. When creating a merge commit Git will attempt to auto magically merge the separate histories for we. If Git encounters a piece of data that is changed in both histories it will be unable to automatically combine them. This scenario is a version control conflict and Git will need user intervention to continue.

A merge can be initiated by executing ***git merge <branch name>*** where ***<branch name>*** is the name of the branch that will be merged into the receiving branch.

20) $ git merge b1
Updating 2340d2e..ffa789a
Fast-forward
myfav | 2 ++
1 file changed, 2 insertions(+)

Reverting to other versions

The git revert command is used for undoing changes to a repository's commit history. Other 'undo' commands like, git checkout and git reset, move the HEAD and branch ref pointers to a specified commit. Git revert also takes a specified commit, however, git revert does not move ref pointers to this commit. A revert operation will take the specified commit, inverse the changes from that commit, and create a new "revert commit". The ref pointers are then updated to point at the new revert commit making it the tip of the branch.

It's important to understand that git revert undoes a single commit—it does not "revert" back to the previous state of a project by removing all subsequent commits. In Git, this is actually called a reset, not a revert. Reverting has two important advantages over

resetting. First, it doesn't change the project history, which makes it a "safe" operation for commits that have already been published to a shared repository.

21) $ git revert ffa789a

On branch master
Untracked files:
myfav~

nothing added to commit but untracked files present

Putting the code in the Cloud

Once we have learned how to manage the code on the system, the next step is to put it in the cloud. Since Git doesn't have a central server like Subversion, we need to add each source to collaborate with others. That is where the concept of remotes comes in. A remote refers to a remote version of the repository.

If we wish to put the code in the cloud, we could create a project on GitHub, GitLab, or BitBucket and push the existing code to the repository. In this case, we use GitHub only and the remote repository in the cloud would act as a remote to the repository. Conveniently, a remote to which we have write access is called the origin.

After we create a remote repository, we have the ability to add a remote origin and then push the code to the origin.

22) $ git push orgin master

Username for 'https://github.com':admin1995@gmail.com
Password for 'https://admin1995@gmail.com@github.com':
Counting objects: 14, done.
Delta compression using up to 4 threads.
Compressing objects: 100% (12/12), done.
Writing objects: 100% (13/13), 1.45 KiB | 0 bytes/s, done.
Total 13 (delta 4), reused 0 (delta 0)
remote: Resolving deltas: 100% (4/4), done.
Tohttps://github.com/admin95/myMaster
4777f47..4ddd286 master -> master

$ git pull orgin master

Fromhttps://github.com/admin95/myMaster
* branch master -> FETCH_HEAD
Already up-to-date.

Stashing the work

git stash temporarily shelves (or stashes) changes we've made to the working copy so we can work on something else, and then come back and re-apply them later on. Stashing is handy if we need to quickly switch context and work on something else, but we're mid-way through a code change and aren't quite ready to commit. The git stash command takes the uncommitted changes (both staged and unstaged), saves them away for later use, and then reverts them from the working copy. We can reapply previously stashed changes with ***git stash pop***.

By default, running git stash will stash:

- changes that have been added to the index (staged changes)
- changes made to files that are currently tracked by Git (unstaged changes)

But it will not stash:

- new files in the working copy that have not yet been staged
- files that have been ignored

23 a) **$ git stash list**

stash@{0}: WIP on master: 4ddd286 Merge branch 'master' of https://github.com/sh
stash@{1}: WIP on master: 4ddd286 Merge branch 'master' of https://github.com/sh

Rebase – cleaning the history

Rebasing is the process of moving or combining a sequence of commits to a new base commit. Rebasing is most useful and easily visualized in the context of a feature branching workflow. Rebasing is a common way to integrate upstream changes into the local repository. Pulling in upstream changes with Git merge results in a superfluous merge commit every time we want to see how the project has progressed.

23 b) **$ git rebase master**
Current branch master is up to date.
$ git rebase abc
First, rewinding head to replay your work on top of it...
Fast-forwarded master to abc.
$ git status
On branch master
nothing to commit, working directory clean

/**********/

/***/
/* RESULT: */
/* */
/* Version control using GIT has been implemented in the working directory and the usage of the various commands and methods have been familiarized. */
/***/

LABORATORY RECORD

RLMCA234 MOBILE APPLICATION DEVELOPMENT LAB

Submitted By

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MAY 2019

LABORATORY RECORD

RLMCA232 SYSTEM DESIGN LAB

SUBMITTED BY

VYSHAK PUTHUSSERI

REG NO : TVE17MCA054

S4 MCA

DEPARTMENT OF COMPUTER APPLICATIONS

COLLEGE OF ENGINEERING, THIRUVANANTHAPURAM

MAY 2019

LABORATORY RECORD

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CERTIFICATE

SYSTEM DESIGN LAB RECORD

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Examiner Staff in Charge

Thiruvananthapuram

Date: ……..

LABORATORY RECORD

RLMCA234 MOBILE APPLICATION DEVELOPMENT LAB

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DEPARTMENT OF COMPUTER APPLICATIONS
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Examiner **Staff in Charge**

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