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Department of Computer Science & Engineering

A S S I G N M E N T P R O G R A M S

Lab-III (Android / MATLAB)
CSE-318

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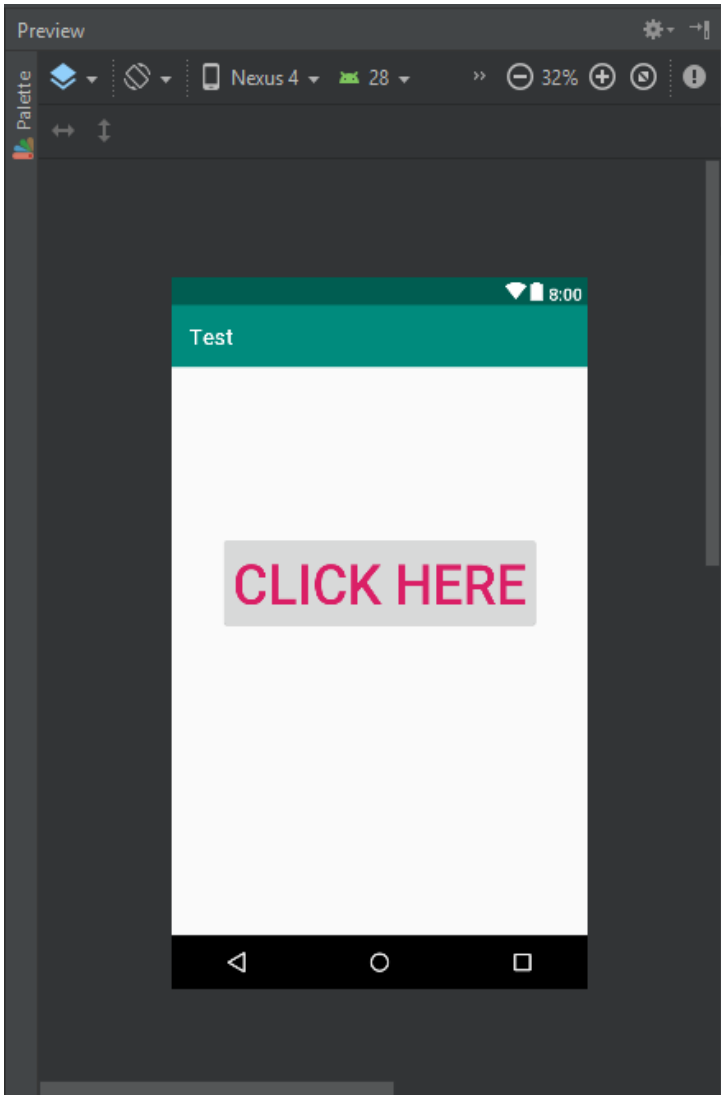
Android Programs

1. Write a program in Android to display “Hello world” on clicking a button from an activity to another activity.

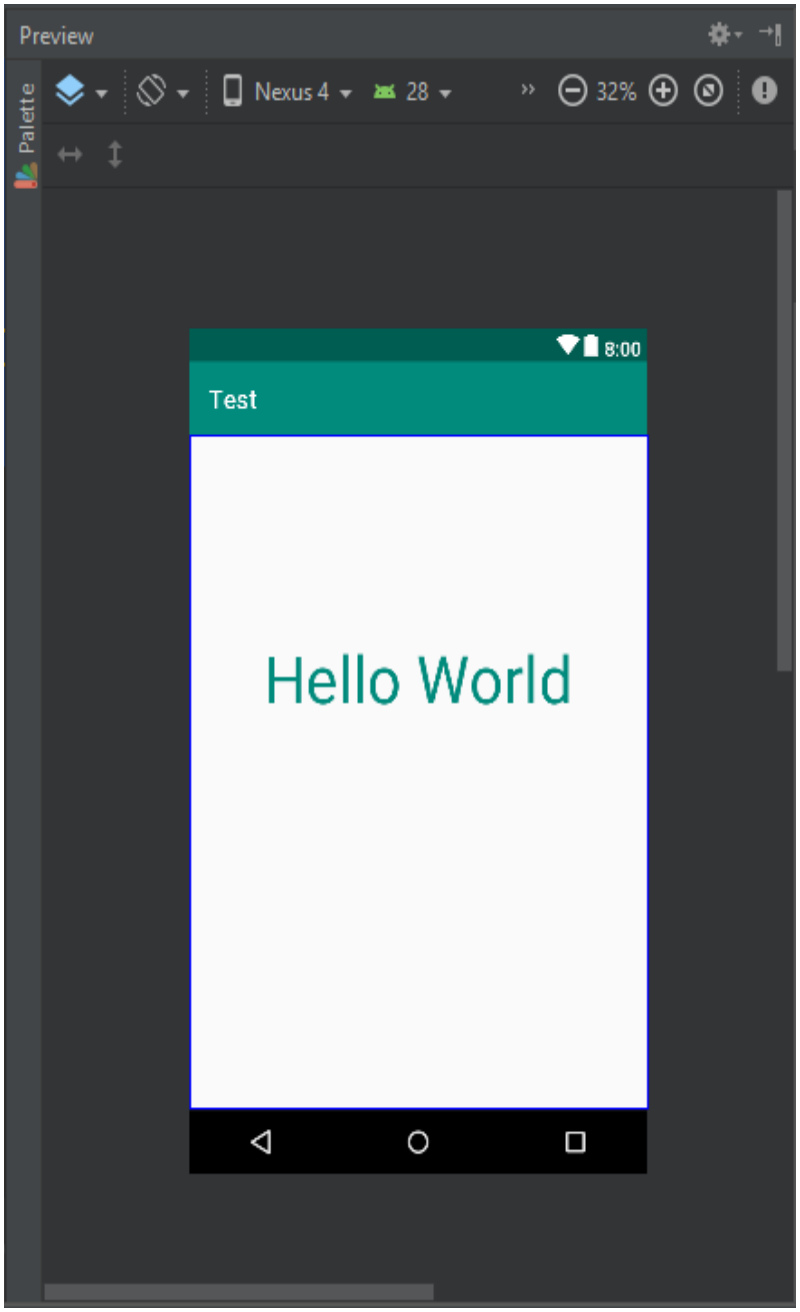
ACTIVITY_MAIN.XML

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent">
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Click Here"
        android:textColor="@color/colorAccent"
        android:textSize="50dp"
        android:layout_marginTop="150dp"
        android:layout_centerHorizontal="true"
        android:id="@+id/button"/>
</RelativeLayout>
```



ACTIVITY2.XML

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout android:layout_width="match_parent"
    android:layout_height="match_parent"
    xmlns:android="http://schemas.android.com/apk/res/android">
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Hello World"
        android:textSize="50dp"
        android:textColor="@color/colorPrimary"
        android:layout_marginTop="150dp"
        android:layout_centerHorizontal="true"/>
</RelativeLayout>
```



MainActivity.java

```
package com.example.jishan.test;

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 button;
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        Button button=(Button)findViewById(R.id.button);
        button.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Intent intent=new Intent(MainActivity.this,Second.class);
                startActivity(intent);
            }
        });
    }
}
```

ACTIVITY2.java

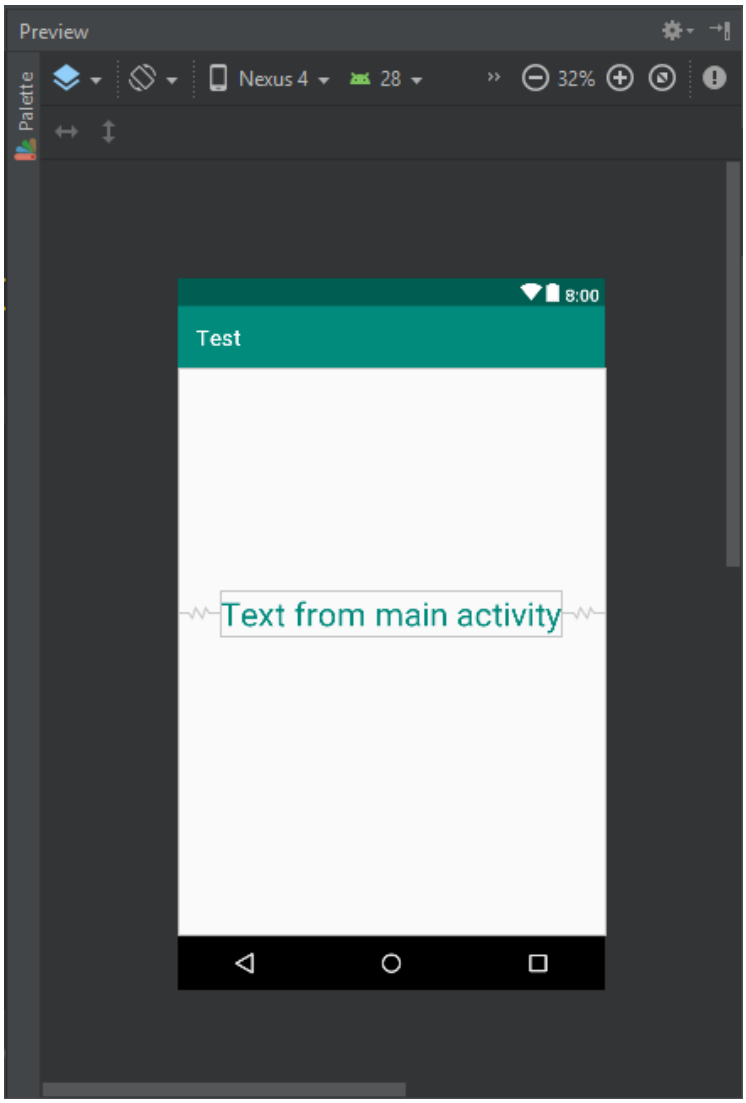
```
package com.example.jishan.test;

import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;

public class Second extends AppCompatActivity {

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

2. Write a program in Android to display the text written of first activity to second activity by a button click.

ACTIVITY_MAIN.XML

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent">
    <EditText
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:hint="Enter some text"
        android:textColor="@color/colorPrimaryDark"
        android:textSize="30dp"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="150dp"
        android:id="@+id/edittext"/>
```

```
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Click Here"
        android:textColor="@color/colorAccent"
        android:textSize="30dp"
        android:layout_marginTop="250dp"
        android:layout_centerHorizontal="true"
        android:id="@+id/button"/>
</RelativeLayout>
```



ACTIVITY2.XML

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout android:layout_width="match_parent"
    android:layout_height="match_parent"
    xmlns:android="http://schemas.android.com/apk/res/android">
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Text from main activity"
        android:textSize="30dp"
        android:textColor="@color/colorPrimary"
```

```
        android:layout_marginTop="200dp"
        android:layout_centerHorizontal="true"
        android:id="@+id/textview"/>
</RelativeLayout>
```

MainActivity.java

```
package com.example.jishan.test;

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 button;
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        Button button=(Button)findViewById(R.id.button);
        final EditText editext=(EditText)findViewById(R.id.edittext);
        button.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Intent intent=new Intent(MainActivity.this,Second.class);
                intent.putExtra("Text",editext.getText().toString());
                startActivity(intent);
            }
        });
    }
}
```

Activity2.java

```
package com.example.jishan.test;

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

public class Second extends AppCompatActivity {

    TextView textView;
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_second);
        textView=(TextView)findViewById(R.id.textview);
        textView.setText(getIntent().getStringExtra("Text"));
    }
}
```

3. Write a program in Android to show text in color depending on which button is clicked either of blue, red, or green.

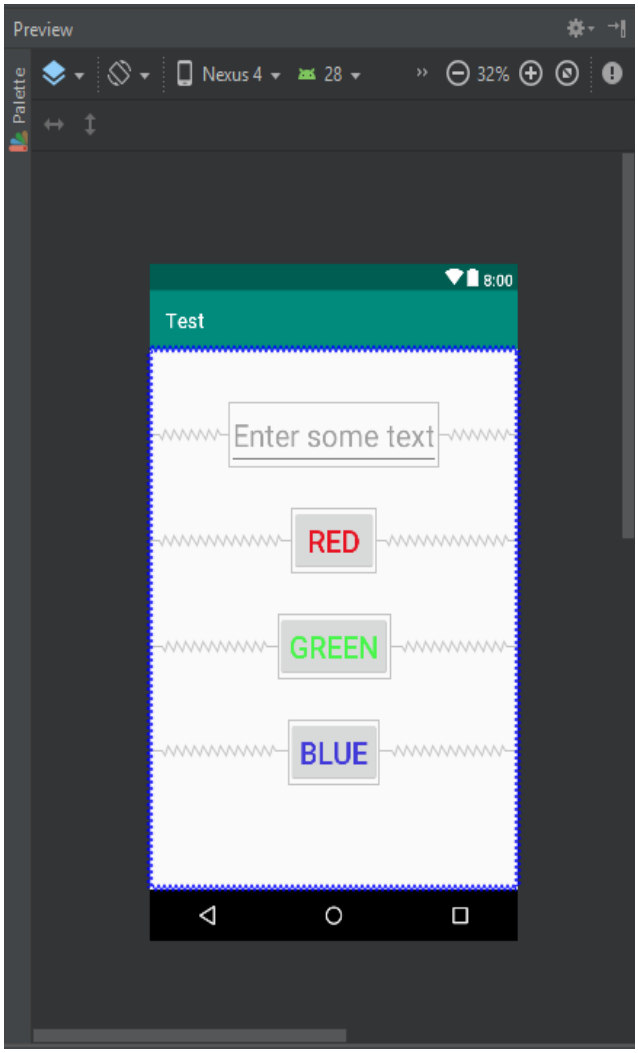
ACTIVITY_MAIN.XML

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

```
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent">
    <EditText
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:hint="Enter some text"
        android:layout_marginTop="50dp"
        android:layout_centerHorizontal="true"
        android:textSize="30dp"
        android:id="@+id/edittext"/>
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="RED"
        android:textColor="@color/Red"
        android:textSize="30dp"
        android:layout_marginTop="150dp"
        android:layout_centerHorizontal="true"
        android:id="@+id/button1"/>
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="GREEN"
        android:textColor="@color/Green"
        android:textSize="30dp"
        android:layout_marginTop="250dp"
        android:layout_centerHorizontal="true"
        android:id="@+id/button2"/>
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="BLUE"
        android:textColor="@color/Blue"
        android:textSize="30dp"
        android:layout_marginTop="350dp"
        android:layout_centerHorizontal="true"
        android:id="@+id/button3"/>
</RelativeLayout>
```

ACTIVITY2.XML

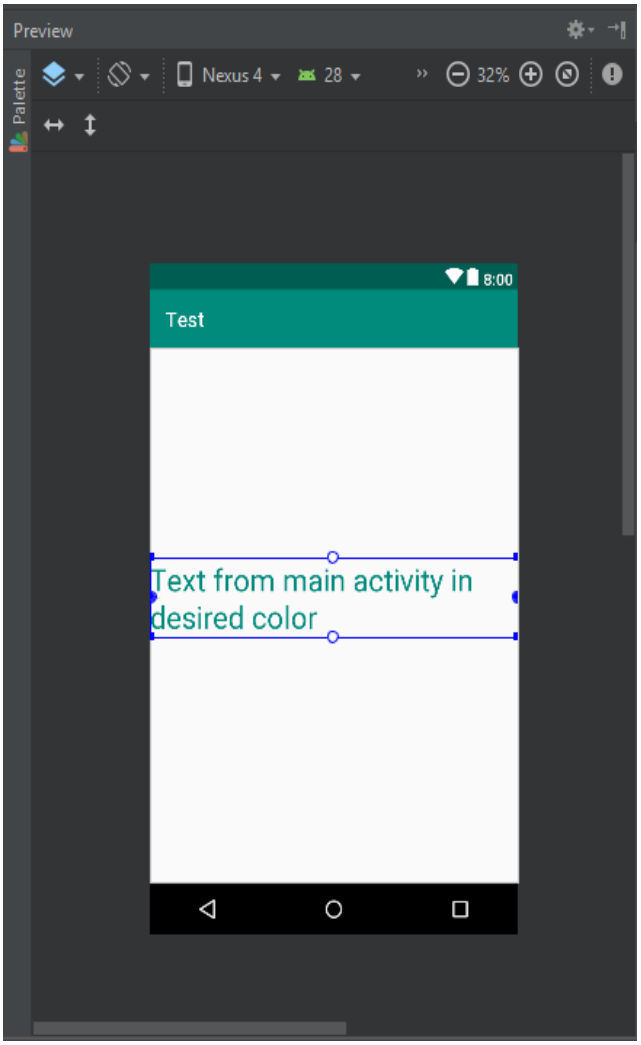
```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout android:layout_width="match_parent"
    android:layout_height="match_parent"
    xmlns:android="http://schemas.android.com/apk/res/android">
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Text from main activity in desired color"
        android:textSize="30dp"
        android:textColor="@color/colorPrimary"
        android:layout_marginTop="200dp"
        android:layout_centerHorizontal="true"
        android:id="@+id/textview"/>
</RelativeLayout>
```



MainActivity.java

```
package com.example.jishan.test;


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 button;
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        Button button1=(Button)findViewById(R.id.button1);
        Button button2=(Button)findViewById(R.id.button2);
        Button button3=(Button)findViewById(R.id.button3);
        final EditText editText=(EditText)findViewById(R.id.edittext);
        button1.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Intent intent=new Intent(MainActivity.this,Second.class);
```

```
                intent.putExtra("Color","1");
                intent.putExtra("Text",editText.getText().toString());
                startActivity(intent);
            }
        });
        button2.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Intent intent=new Intent(MainActivity.this,Second.class);
                intent.putExtra("Color","2");
                intent.putExtra("Text",editText.getText().toString());
                startActivity(intent);
            }
        });
        button3.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Intent intent=new Intent(MainActivity.this,Second.class);
                intent.putExtra("Color","3");
                intent.putExtra("Text",editText.getText().toString());
                startActivity(intent);
            }
        });
    }
}
```



Activity2.java

```
package com.example.jishan.test;

import android.content.Intent;
import android.graphics.Color;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.widget.TextView;

public class Second extends AppCompatActivity {

    TextView textView;
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_second);
        textView=(TextView)findViewById(R.id.textview);
        textView.setText(getIntent().getStringExtra("Text"));
        String color=getIntent().getStringExtra("Color");
        int col=Integer.parseInt(color);
        if(col==1)
            textView.setTextColor(Color.RED);
        else if(col==2)
            textView.setTextColor(Color.GREEN);
        else if(col==3)
            textView.setTextColor(Color.BLUE);
    }
}
```

4. Write a program to implement services in Android.

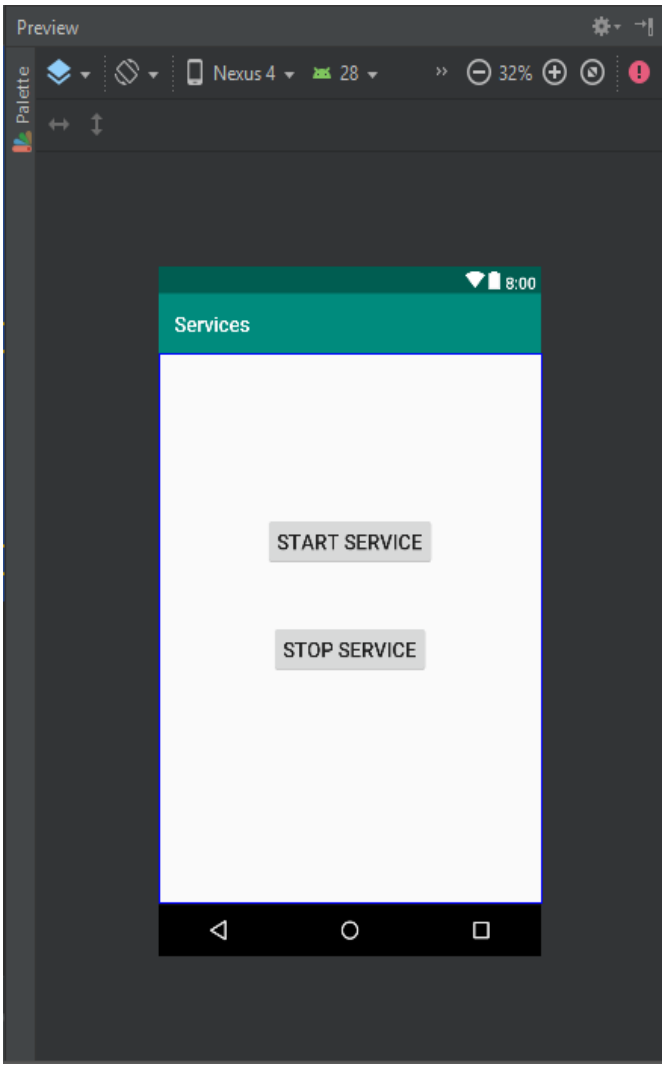
ACTIVITY_MAIN.XML

```
<RelativeLayout
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    xmlns:android="http://schemas.android.com/apk/res/android">
<Button
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_centerHorizontal="true"
    android:layout_marginTop="150dp"
    android:text="Start Service"
    android:textSize="20dp"
    android:id="@+id/button1"/>
<Button
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_centerHorizontal="true"
    android:layout_marginTop="250dp"
    android:text="Stop Service"
    android:textSize="20dp"
    android:id="@+id/button2"/>
</RelativeLayout>
```

MainActivity.java

```
package com.example.jishan.services;

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 button1,button2;
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        button1=(Button)findViewById(R.id.button1);
        button2=(Button)findViewById(R.id.button2);
        button1.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                startService(new Intent(MainActivity.this,MyService.class));
            }
        });
    }
}
```



Services.java

```
package com.example.jishan.services;

import android.app.Service;
import android.content.Intent;
```

```
import android.media.MediaPlayer;
import android.os.IBinder;
import android.provider.Settings;
import android.support.annotation.Nullable;
import java.net.URI;

public class MyService extends Service {
    public MediaPlayer player;
    //Uri uri=Uri.parse()
    public IBinder onBind(Intent intent) {
        return null;
    }
    public int onStartCommand(Intent intent,int flags,int stack)
    {
        player=MediaPlayer.create(this,R.raw.ringtone);
        player.setLooping(true);
        player.start();
        return START_STICKY;
    }
    public void onDestroy()
    {
        super.onDestroy();
        player.stop();
    }
}
```

5. Write a program to implement content providers in Android.

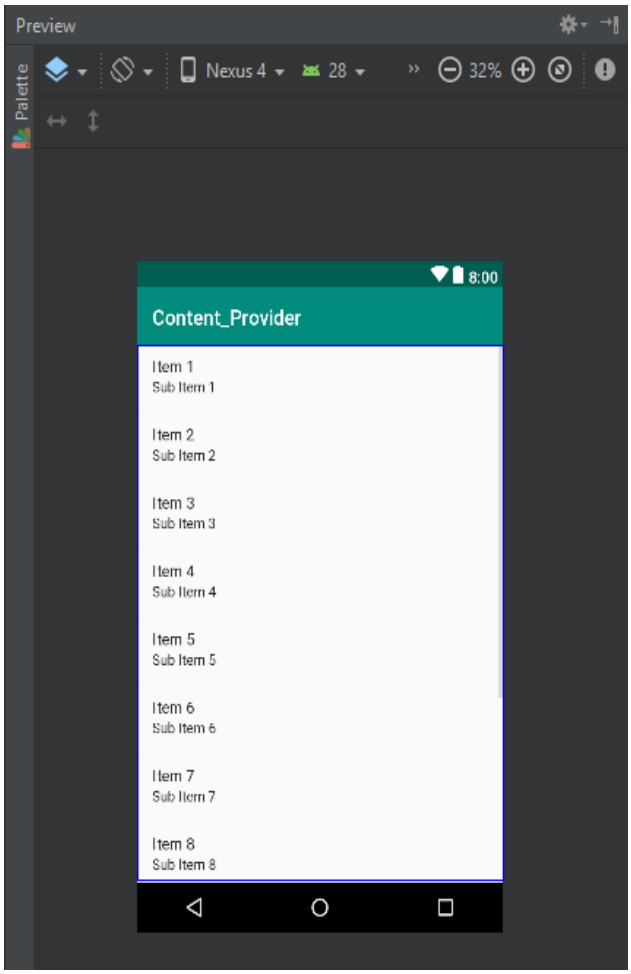
ACTIVITY_MAIN.XML

```
<RelativeLayout android:layout_width="match_parent"
    android:layout_height="match_parent"
    xmlns:android="http://schemas.android.com/apk/res/android">
    <ListView
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:id="@+id/listview">
    </ListView>
</RelativeLayout>
```

MainActivity.java

```
package com.example.jishan.content_provider;

import android.content.ContentResolver;
import android.database.Cursor;
import android.net.Uri;
import android.provider.ContactsContract;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.widget.ArrayAdapter;
import android.widget.ListView;
import java.util.ArrayList;
public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        setTitle("Content Resolver");
        init();
```

```
    }
    public void init()
    {
        ArrayList <String> contact=new ArrayList<>();
        Uri uri = ContactsContract.CommonDataKinds.Phone.CONTENT_URI;
                                                                    String[]
projection={ContactsContract.CommonDataKinds.Phone.DISPLAY_NAME,ContactsContract
.CommonDataKinds.Phone.NUMBER};
        String selection=null;
        String[] selectionArgs=null;
        String sortorder=null;
        ContentResolver cr=getContentResolver();
        Cursor c=cr.query(uri,projection,selection,selectionArgs,sortorder);
        while(c.moveToNext())
        {
                                                                    String
name=c.getString(c.getColumnIndex(ContactsContract.CommonDataKinds.Phone.DISPLAY
_NAME));
                                                                    String
num=c.getString(c.getColumnIndex(ContactsContract.CommonDataKinds.Phone.NUMBER))
;
            contact.add(name+"\n"+num);
        }
        ListView l=(ListView)findViewById(R.id.listview);
                                                        l.setAdapter(new
ArrayAdapter<String>(this,android.R.layout.simple_list_item_1,contact));
    }
}
```



■■■■■

MATLAB Programs

1. Given a 2-D matrix. Perform following set of operations on it.

Name	Math	Programming	Thermodynamics	Mechanics
Amit	24	44	36	36
Bhavna	52	57	68	76
Chetan	66	53	69	73
Deepak	85	40	86	72
Elizabeth	15	47	25	28
Farah	79	72	82	91

1.1 Create a 6*3 matrix (named as allMarks) to contain marks of first three courses.

```
allMarks = [      24, 44, 36;
                  52, 57, 68;
                  66, 53, 69;
                  85, 40, 86;
                  15, 47, 25;
                  79, 72, 82  ];
```

1.2 Append for the Mechanics course to allMarks when recieved.

```
mechanics= [36;76;73;72;28;91];
allMarks= [allMarks, mechanics]
```

1.3 (a) Mechanics course was out of 50. Scale the marks to half.

```
AllMarks(:, 4) = 0.5 * allMarks(:, 4);
```

1.3 (b) Extract row 3 and give the marks to chetan. Also calculate his total marks.

```
chetan_marks = allMarks(3,:)
for i = 1:4
      fprintf(chetan_marks(i));
totalmarks = sum(chetan_marks);
fprintf(“%d\n”, totalmarks);
```

OUTPUT:

[66, 53,69,73], Chetan’s total Marks = 261

1.3 (c) Extract Marks of Deepak and Farah for first three courses.

```
deepak_marks = allMarks(4,1:3);
farah_marks = allMarks(6,1:3);
fprintf(“%d\n”, deepak_marks);
fprintf(“%d\n”, farah_marks);
```

OUTPUT:

[85,40,86]
[15,47,25]

1.3 (d) Calculate average marks obtained in each of the four courses.

```
Average_marks = [];
for i = 1:6
  Average_marks(i)= sum(allMarks(i,:))/4;
end
Average_marks= Average_marks';
fprintf(“%d\n”,Average_marks);
```

OUTPUT:

```
[30.50, 53.75, 56.05, 61.75, 25.25, 81.00]
```

1.3 (e) Scale all the marks out of 10.

```
Out_of_10 = [];
for I = 1:6
  for j = 1:4
    if j == 4
      Out_of_10(i,j) = 0.2 * allMarks(i,j);
    else
      Out_of_10(i,j) = 0.1 * allMarks(i,j);
    end
  end
end
fprintf(Out_of_10);
```

2. Write a script to calculate factorial of a number. Take Input from user.

```
N = input(‘Enter the number’);
fprintf("%d\n", factorial(N));
```

OUTPUT: Enter the number: 6
Factorial = 720

3. Find Fibonaaci series using using for loop and while loop.

Using for loop :

```
N = input('Enter the position of Fibonaaci series');
fib = [];
fib(1) = 0;
fib(2) = 1;
for I = 3:N
      fib(i) = fib(i-1) + fib(i-2);
end
fprintf("%d\n",fib(N))
```

OUTPUT:

Enter the position of Fibonacci series 6
Answer: 5

Using while loop :

```
N = input('Enter the position of fibonaaci series');
fib = [];
fib(1) = 0;
fib(2) = 1;
```

```
i=3;
while i<=N
  fib(i) = fib(i-1)+fib(i-2);
     i = i+1;
end
fprintf("%d\n",fib(N));
```

OUTPUT:

Enter the position of Fibonacci series 6
Answer: 5

4. Write a MATLAB program to calculate sum of series-

$$S = C_0 + C_1X + C_2X^2 + ... + C_nX^n.$$

```
N = input('input n:');
X = input('input x:');
sum_series = Series(N,X);
fprintf("Sum of series is: %d\n", sum_series);

function [Sum]= Series(N,X)
      Sum= 1
      for i= 1:N
          Sum += (1/i)*(X^i);
      end
end
```

OUTPUT:

input n: 4
input x: 2
Sum of series is: 19.666666

5. Write a program to check whether number is even or not in an array using if else.

```
a = [1,2,3,4,5,6,7,8,9,10,11,12,13,14,15];
b = [];
for i = 1:15
    if mod(a(i),2)==0
        b(i) = 1;
    else
        b(i) = 0;
    end
end
fprintf("%d ",b);
fprintf("\n");
```

Output- [0,1,0,1,0,1,0,1,0,1,0,1,0,1,0]

6. Write a function that prints the name of a digit and check that number is in range 0-9.

```
N = input("Enter the number: ");
a =['zero';'one';'two';'three';'four';'five';'six';'seven';'eight';'nine'];
if(N>=0 && N<=9)
   fprintf("Number is: ");
   fprintf(a(N+1, 1:end));
   fprintf("\n");
else
  fprintf("Enter value between 0 and 9");
end
```

OUTPUT: Enter the number: 6
Number is: six

7. Write a program to find sum of all elements of an array that are divisible by 3.

```
a= [1,2,3,4,5,6,7,8,9,10,11,12,13,14,15];
sum=0;
for i = 1:15
     if mod(a(i),3)==0
         sum+=a(i);
     end
end
fprintf("Sum is : %d\n", sum)
```

Output- Sum of numbers divisble by 3 in first 15 natural numbers is: 45

8. Write a program to find an element in an array using for loop and while loop :
a. Using for loop:

```
a = [];
n = input(“Enter size: ”);
for i =1:n
      a(i)= input(“Enter %d th number:”,i);
end
b = input("Enter no to search: ");
flag=0;
for i = 1:n
    if a(i)==b
       fprintf("found at index %d\n",i)
       flag=1;
       break;
    end
end
if flag==0
   fprintf("Not Found\n")
end
```

Output- Enter size: 7 Enter the array: [1,4,7,3,2,8,9]
Enter no to search: 2 found at index 5

b. Using while loop:

```
a = [];
n = input(“Enter size: ”);
for i =1:n
      a(i)= input(“Enter %d th number:”,i);
end
b = input("Enter no to search: ");
flag=0;
i = 1;
while i <= n
    if a(i)==b
       fprintf("found at index %d\n",i)
       flag=1
       break;
   end
   i += 1;
end
if flag==0
    fprintf("Not Found\n")
end
```

Output- Enter size: 7 Enter the array: [1,4,7,3,2,8,9]

Enter no to search: 2 found at index 5

9. Write a MATLAB program to change the blue color of feathers in the bluebird image to red color.

```
img = imread('blue.png');
sizee = size(img);
newimg = img;
for i = 1 : sizee(1)
      for j = 1: sizee(2)
            if(img(i, j, 3) > mean(img(i, j, :)))
                 newimg(i, j, 1) = img(i, j, 3);
                 newimg(i, j, 2:3) = 0;
            end
      end
end
imwrite(newimg, 'jishan.png', 'png')
```

10. Write a MATLAB program to widen a image.

```
FirstImage = imread('blue.jpeg');
[rows columns] = size(FirstImage);
subplot(2, 1, 1);
imshow(FirstImage);
newWidth = [1,1.5 * columns]
subplot(2, 1, 2);
imshow(FirstImage, 'XData', newWidth);
```

11. Write a MATLAB program to crop an image.

```
image = imread('blue.jpeg');
subplot(2,1,1);
imshow(image);
[rows,columns]= size(image);
croped_image= imcrop(image,[x1 x2 y1 y2]);
subplot(2,1,2);
imshow(croped_image);
```

12. Write a MATLAB program for elliptical masking in an image. After forming elliptical shape crop the image.

```
I = imread('blue.jpeg');
subplot(2,1,1);
imshow(I)
J = elliptical_masker(I,40,90,100,350);
subplot(2,1,2);
imshow(J)
function im = elliptical_masker(im,c1,c2,r1,r2);
      [M,N,K] = size(im);
      for i1 = 1:M
         for i2 = 1:N
              if((i1-c1)/r1)^2 + ((i2-c2)/r2)^2 >= 1
                  im(i1,i2,:)=0;
              end
         end
      end
end
```

13. Given a matrix M=[1,3,5,2,4,6,7,8,3,9]. Find the elements in the matrix M that are greater than 4 and replace each one with its square root. Use both explict loop and logical indexing.

```
Matrix = [1, 3, 5, 2, 4, 6, 7, 8, 3, 9];
len_M = length(Matrix);
for i = 1:len_M
  if Matrix(i) > 4
    Matrix(i)= sqrt(Matrix(i));
  end
  fprintf("%d, ", Matrix(i));
end
```

Output- [1, 3, 2.23, 2, 4, 2.44, 2.64, 2.82, 3, 3]

14. Solve the following equations using Matlab.

$$X_1 + 3X_2 = 19$$
$$4X_1 + 2X_2 + 5X_3 = 26$$
$$7X_2 - 10X_3 = 35$$

```
syms x1 x2 x3;
eqn1 = x1 + 3*x2 == 19;
eqn2 = 4*x1 + 2*x2 + 5*x3 == 26;
eqn3 = 7*x2 - 10*x3 == 35;
sol = solve([eqn1,eqn2,eqn3],[x1,x2,x3]);
x1sol = sol.x1;
x2sol = sol.x2;
x3sol = sol.x3;
fprintf("x1= %d, x2= %d, x3= %d\n", x1sol,x2sol,x3sol);
```

Output- x1= 4, x2= 5, x3= 0

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