Q4.Develop an app to capture a photo and store it into SDCard, extend this app to display all the photos capture in the grid view.
a. How to use the Camera.
b. How to write data to the SD card.

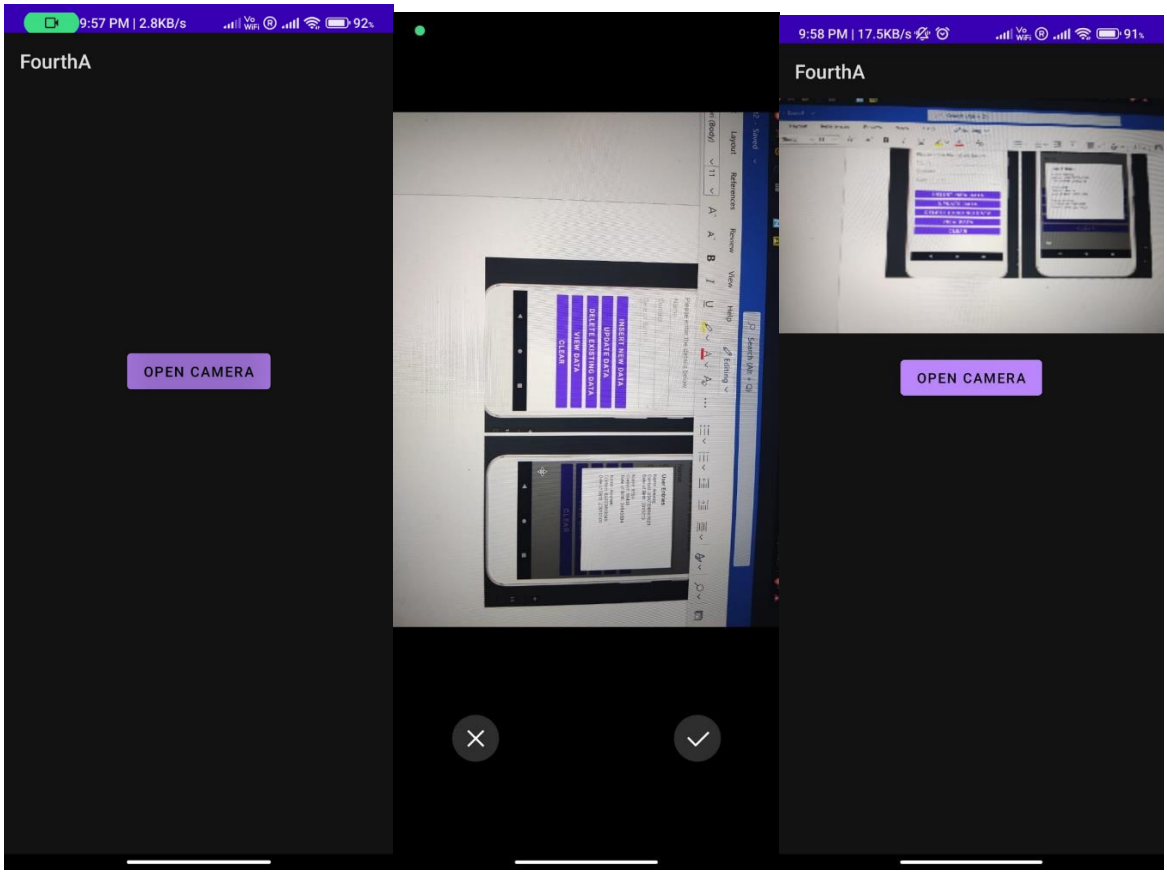
4a) activity_main.xml

```
<?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:gravity="center_horizontal"
    android:orientation="vertical"
    tools:context=".MainActivity">

    <ImageView
        android:id="@+id/imgCamera"
        android:layout_width="400dp"
        android:layout_height="240dp"
        android:scaleType="fitXY" />
    <Button
        android:id="@+id/btnCamera"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="21dp"
        android:text="Open Camera"/>
</LinearLayout>
```

MainActivity.java

```
package com.example.camerasd;

import androidx.annotation.Nullable;
import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.graphics.Bitmap;
import android.os.Bundle;
import android.provider.MediaStore;
import android.view.View;
import android.widget.Button;
import android.widget.ImageView;

public class MainActivity extends AppCompatActivity {
    private final int CAMERA_REQ_CODE = 100;
    ImageView imgCamera;
```

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

        imgCamera = findViewById(R.id.imgCamera);
        Button btnCamera = findViewById(R.id.btnCamera);

        btnCamera.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                Intent iCamera = new Intent(MediaStore.ACTION_IMAGE_CAPTURE);
                startActivityForResult(iCamera, CAMERA_REQ_CODE);
            }
        });
    }

    @Override
    protected void onActivityResult(int requestCode, int resultCode, @Nullable Intent data) {
        super.onActivityResult(requestCode, resultCode, data);

        if (resultCode == RESULT_OK) {
            if (requestCode == CAMERA_REQ_CODE) {
                //for camera
                Bitmap img = (Bitmap) (data.getExtras().get("data"));
                imgCamera.setImageBitmap(img);

            }
        }
    }

}
```



4b) Android select an image from the gallery or storage

AndriodMainfest.xml

```
<!--//Adding Read External storage Permission-->
<uses-permission android:name="android.permission.READ_EXTERNAL_STORAGE"/>
```

activitymain.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"
    tools:ignore="ExtraText">

    <Button
        android:id="@+id/buttonSelectedImage"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="@string/select_image"/>
```

```
    <ImageView
        android:id="@+id/selectedImage"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:adjustViewBounds="true"
        android:contentDescription="@string/app_name" />
    android:adjustViewBounds="true"
    android:contentDescription="@string/app_name" />

</LinearLayout>
```

MainActivity.java

```
package com.example.gallaryapp;

import androidx.annotation.Nullable;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.ActivityCompat;
import androidx.core.content.ContextCompat;
import android.Manifest;
import android.content.Intent;
import android.content.pm.PackageManager;
import android.graphics.Bitmap;
import android.graphics.BitmapFactory;
import android.net.Uri;
import android.os.Bundle;
import android.provider.MediaStore;
import android.view.View;
import android.widget.ImageView;
import android.widget.Toast;
import java.io.InputStream;

public class MainActivity extends AppCompatActivity
{
    private static final int REQUEST_CODE_STORAGE_PERMISSION = 1;
    private static final int REQUEST_CODE_SELECT_IMAGE = 2;

    private ImageView imageSelected;

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

        findViewById(R.id.buttonSelectedImage).setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
```

```
            if (ContextCompat.checkSelfPermission(
                    getApplicationContext(), Manifest.permission.READ_EXTERNAL_STORAGE
            ) != PackageManager.PERMISSION_GRANTED) {
                ActivityCompat.requestPermissions(
                        MainActivity.this,
                        new String[]{Manifest.permission.READ_EXTERNAL_STORAGE},
                        REQUEST_CODE_STORAGE_PERMISSION);
            } else {
                selectImage();

            }
        }
    });

}


    private void selectImage()
    {
        Intent intent = new
Intent(Intent.ACTION_PICK,MediaStore.Images.Media.EXTERNAL_CONTENT_URI);
        if(intent.resolveActivity(getPackageManager()) != null){
            startActivityForResult(intent,REQUEST_CODE_SELECT_IMAGE);
        }
    }
    @Override
    public void onRequestPermissionsResult(int requestCode,@Nullable String[]
permissions,@Nullable int[] grantResults)
    {
        super.onRequestPermissionsResult(requestCode,permissions,grantResults);

        if(requestCode == REQUEST_CODE_STORAGE_PERMISSION && grantResults.length > 0)
        {
            if(grantResults[0] == PackageManager.PERMISSION_GRANTED)
            {
                selectImage();
            }
            else
            {
                Toast.makeText(this, "Permission Denied", Toast.LENGTH_SHORT).show();
            }
        }
    }

    @Override
    protected void onActivityResult(int requestCode, int resultCode, @Nullable Intent data) {
        super.onActivityResult(requestCode, resultCode, data);
        if(requestCode == REQUEST_CODE_SELECT_IMAGE && resultCode == RESULT_OK){
            if(data != null){
                Uri selectedImageUri = data.getData();
                if(selectedImageUri != null){
```

```
                try{

                    InputStream inputStream = getContentResolver().openInputStream(selectedImageUri);
                    Bitmap bitmap = BitmapFactory.decodeStream(inputStream);
                    imageSelected.setImageBitmap(bitmap);
                }catch (Exception exception){
                    Toast.makeText(this,exception.getMessage(), Toast.LENGTH_SHORT).show();
                }
            }
        }
    }
}
```

Output: