Sarawak Campus

Assignment Cover Sheet

(for individual and group assignments)

This cover sheet is to be attached to all assignments, both hard copy and electronic format

ASSIGNMENT DETAILS

Unit Code	COS30017	Unit Title	Software Development for Mobile Devices
Tutorial/Lab Group	2	Lecturer/Tutor Name	Ms.Marlene Lu
Assignment Title	Formative Assignment - 04		
Due date	11/06/2019	Date Received	11/05/2019

DECLARATION

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To be completed if this is a group assignment

We declare that this is a group assignment and that no part of this submission has been copied from any other student's work or from any other source except where due acknowledgment is made explicitly in the text, nor has any part been written for us by another person.

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Total Mark		Marker's Signature		Date	

EXTENSION CERTIFICATE

This assignment has been given an extension by

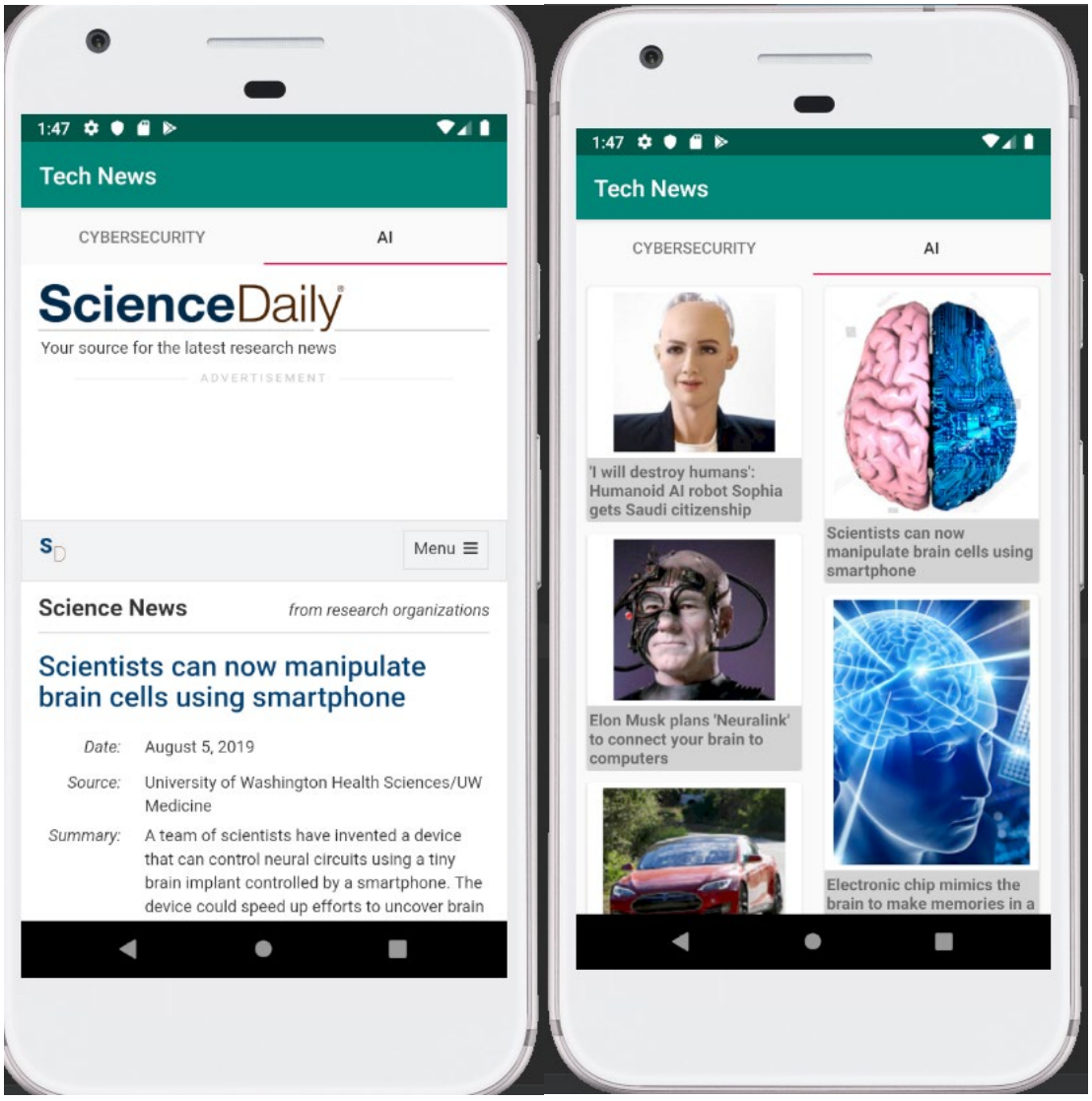
Unit Convenor			
Extended due date		Date Received	

COS30017 – Software Development for Mobile Devices

Formative Assignment 4

Task 1

Screenshot of application



Java Codes for MainActivity

```
package com.example.task1;

import androidx.appcompat.app.AppCompatActivity;
import androidx.fragment.app.FragmentManager;
import androidx.recyclerview.widget.LinearLayoutManager;
import androidx.recyclerview.widget.RecyclerView;
import androidx.recyclerview.widget.StaggeredGridLayoutManager;
import androidx.viewpager.widget.ViewPager;

import android.net.Uri;
import android.os.Bundle;
import android.util.Log;
import android.widget.LinearLayout;

import java.io.BufferedReader;
import java.io.IOException;
import java.io.InputStream;
import java.io.InputStreamReader;
import java.io.Reader;
import java.io.UnsupportedEncodingException;
import java.nio.Buffer;
import java.util.ArrayList;
import java.util.Scanner;

public class MainActivity extends AppCompatActivity implements
FragmentOne.OnFragmentInteractionListener,FragmentTwo.OnFragmentInteractionListener
,FragmentThree.OnFragmentInteractionListener{
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);


        ViewPager viewPager = findViewById(R.id.viewPager);
        ViewPagerAdapter viewPagerAdapter = new ViewPagerAdapter
                (this,getSupportFragmentManager());
        viewPager.setAdapter(viewPagerAdapter);

    }


    @Override
    public void onFragmentInteraction(String fragment) {

    }
}
```

Java Codes for Link class

```
package com.example.task1;

import android.content.Context;
import android.view.View;

import java.io.InputStream;
import java.net.URL;
import java.util.ArrayList;
import java.util.Scanner;

public class Link {
    private String category;
    private String title;
    private String photo;
    private String URL;

    public Link(String category, String title, String photo, String URL) {
        this.category = category;
        this.title = title;
        this.photo = photo;
        this.URL = URL;
    }

    public String getCategory() {
        return category;
    }

    public void setCategory(String category) {
        this.category = category;
    }

    public String getURL() {
        return URL;
    }

    public void setURL(String URL) {
        this.URL = URL;
    }


    public String getTitle() {
        return title;
    }

    public void setTitle(String title) {
        this.title = title;
    }

    public String getImageName() {
        return photo;
    }

    public void setImageName(String imageName) {
```

```
        this.photo = imageName;
    }

    public static ArrayList<Link> createLinkList(View view){
        ArrayList<Link> links = new ArrayList<>();
        ArrayList<String> title = new ArrayList<>();
        ArrayList<String> photo = new ArrayList<>();
        ArrayList<String> URL = new ArrayList<>();
        ArrayList<String> category = new ArrayList<>();

        InputStream input = view.getResources().openRawResource(R.raw.news_items);
        Scanner scanner = new Scanner(input);
        while(scanner.hasNext()){
            String line = scanner.nextLine();

            String[] pieces = line.split(":",2);

            switch(pieces[0]){
                case "title":
                    title.add(pieces[1]);
                    break;
                case "photo":
                    String[] temp = pieces[1].split("\\.");
                    photo.add(temp[0]);
                    break;
                case "website":
                    URL.add(pieces[1]);
                    break;
                case "category":
                    category.add(pieces[1]);
                    break;
            }
        }
        //by right the size is 9,since they are 9 items.
        for(int i=0;i<title.size();i++){
            links.add(new Link(category.get(i),title.get(i),photo.get(i),URL.get(i)));
        }

        return links;
    }
}
```

Java Codes for RecyclerViewAdapter

```
package com.example.task1;

import android.app.Activity;
import android.content.Context;
import android.net.Uri;
import android.util.Log;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.widget.ImageView;
```

```
import android.widget.TextView;
import android.widget.Toast;

import androidx.annotation.NonNull;
import androidx.fragment.app.FragmentActivity;
import androidx.recyclerview.widget.RecyclerView;

import java.util.ArrayList;

public class RecyclerViewAdapter extends
RecyclerView.Adapter<RecyclerViewAdapter.ViewHolder>{
    private ArrayList<Link> links;
    private Context context;

    public RecyclerViewAdapter(Context context, ArrayList<Link> links) {
        this.context=context;
        this.links = links;
    }

    @NonNull
    @Override
    public ViewHolder onCreateViewHolder(@NonNull ViewGroup parent, int viewType) {
        View view = LayoutInflater.from(parent.getContext()).inflate(R.layout.recycler_layout,
                parent,false);
        return new ViewHolder(view);
    }

    @Override
    public void onBindViewHolder(@NonNull ViewHolder holder, int position) {
        Link link=links.get(position);
        int resID = holder.image.getResources().getIdentifier(link.getImageName(),
                "drawable",holder.image.getContext().getPackageName());
        holder.image.setImageResource(resID);
        holder.title.setText(link.getTitle());

    }

    @Override
    public int getItemCount() {
        return links.size();
    }

    public class ViewHolder extends RecyclerView.ViewHolder implements
View.OnClickListener{
        public ImageView image;
        public TextView title;
        public ViewHolder(@NonNull View itemView) {
            super(itemView);
            image=itemView.findViewById(R.id.image);
            title=itemView.findViewById(R.id.title);
            itemView.setOnClickListener(this);
        }

        @Override
        public void onClick(View v) {
```

```
            int pos= getAdapterPosition(); //should pass the URL into webview in fragment three
            if(links.get(pos).getCategory().equals("cybersecurity")){
                FragmentThree fragmentThree =  new FragmentThree(links.get(pos).getURL());
                ((FragmentActivity)context).getSupportFragmentManager()
                        .beginTransaction()
                        .replace(R.id.fragment_one,fragmentThree)
                        .addToBackStack(null)
                        .commit();
            }else{
                FragmentThree fragmentThree =  new FragmentThree(links.get(pos).getURL());
                ((FragmentActivity)context).getSupportFragmentManager()
                        .beginTransaction()
                        .replace(R.id.fragment_two,fragmentThree)
                        .addToBackStack(null)
                        .commit();
            }

        }
    }
}
```

Java Codes for FragmentOne

```
package com.example.task1;

import android.content.Context;
import android.net.Uri;
import android.os.Bundle;

import androidx.fragment.app.Fragment;
import androidx.recyclerview.widget.RecyclerView;
import androidx.recyclerview.widget.StaggeredGridLayoutManager;

import android.util.Log;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.widget.LinearLayout;
import android.widget.Toast;

import java.util.ArrayList;


public class FragmentOne extends Fragment{

    private ArrayList<Link> linkArrayList;
    private RecyclerView recyclerView;
    private RecyclerViewAdapter recyclerViewAdapter;
    private Context context;
    private OnFragmentInteractionListener mListener;

    public FragmentOne(Context context) {
        // Required empty public constructor
        this.context=context;
    }


    @Override
    public View onCreateView(LayoutInflater inflater, ViewGroup container,
                             Bundle savedInstanceState) {
        // Inflate the layout for this fragment
        View view = inflater.inflate(R.layout.fragment_one, container, false);
        initMain(view);
        return view;
    }

    private void initMain(View view) {
        initRecycler(view);
    }

    private void initRecycler(View view) {
        linkArrayList=Link.createLinkList(view);
        ArrayList<Link> cyber = new ArrayList<>();
        for(int i=0;i<linkArrayList.size();i++){
            if(linkArrayList.get(i).getCategory().contains("cybersecurity")){
                cyber.add(linkArrayList.get(i));
```

```
            }
        }
        recyclerView = view.findViewById(R.id.recyclerview);
        StaggeredGridLayoutManager staggeredGridLayoutManager =  new
StaggeredGridLayoutManager(2, LinearLayout.VERTICAL);
        recyclerView.setLayoutManager(staggeredGridLayoutManager);
        recyclerViewAdapter =  new RecyclerViewAdapter(context,cyber);
        recyclerView.setAdapter(recyclerViewAdapter);

    }

    // TODO: Rename method, update argument and hook method into UI event
    public void onButtonPressed(String fragment) {
        if (mListener != null) {
            mListener.onFragmentInteraction(fragment);
        }
    }

    @Override
    public void onAttach(Context context) {
        super.onAttach(context);
        if (context instanceof OnFragmentInteractionListener) {
            mListener = (OnFragmentInteractionListener) context;
        } else {
            throw new RuntimeException(context.toString()
                    + " must implement OnFragmentInteractionListener");
        }
    }

    @Override
    public void onDetach() {
        super.onDetach();
        mListener = null;
    }

    public interface OnFragmentInteractionListener {
        // TODO: Update argument type and name
        void onFragmentInteraction(String fragment);
    }
}
```

Java Codes for FragmentTwo

```
package com.example.task1;

import android.content.Context;
import android.net.Uri;
import android.os.Bundle;

import androidx.fragment.app.Fragment;
import androidx.recyclerview.widget.RecyclerView;
import androidx.recyclerview.widget.StaggeredGridLayoutManager;

import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.widget.AdapterView;
import android.widget.LinearLayout;

import java.util.ArrayList;


public class FragmentTwo extends Fragment {

    private ArrayList<Link> linkArrayList;
    private RecyclerView recyclerView;
    private RecyclerViewAdapter recyclerViewAdapter;
    private Context context;
    private OnFragmentInteractionListener mListener;

    public FragmentTwo(Context context) {
        // Required empty public constructor
        this.context=context;
    }



    @Override
    public View onCreateView(LayoutInflater inflater, ViewGroup container,
                             Bundle savedInstanceState) {
        // Inflate the layout for this fragment
        View view = inflater.inflate(R.layout.fragment_two, container, false);
        initMain(view);
        return view;
    }

    private void initMain(View view) {
        initRecycler(view);
    }

    private void initRecycler(View view) {
        linkArrayList=Link.createLinkList(view);
        ArrayList<Link> ai = new ArrayList<>();
        for(int i=0;i<linkArrayList.size();i++){
            if(linkArrayList.get(i).getCategory().contains("AI")){
```

```
            ai.add(linkArrayList.get(i));
        }
      }
      recyclerView = view.findViewById(R.id.recyclerview2);
      StaggeredGridLayoutManager staggeredGridLayoutManager =  new
StaggeredGridLayoutManager(2, LinearLayout.VERTICAL);
      recyclerView.setLayoutManager(staggeredGridLayoutManager);
      recyclerViewAdapter =  new RecyclerViewAdapter(context,ai);
      recyclerView.setAdapter(recyclerViewAdapter);
   }

   // TODO: Rename method, update argument and hook method into UI event
   public void onButtonPressed(String fragment) {
      if (mListener != null) {
         mListener.onFragmentInteraction(fragment);
      }
   }

   @Override
   public void onAttach(Context context) {
      super.onAttach(context);
      if (context instanceof OnFragmentInteractionListener) {
         mListener = (OnFragmentInteractionListener) context;
      } else {
         throw new RuntimeException(context.toString()
               + " must implement OnFragmentInteractionListener");
      }
   }

   @Override
   public void onDetach() {
      super.onDetach();
      mListener = null;
   }

   public interface OnFragmentInteractionListener {
      // TODO: Update argument type and name
      void onFragmentInteraction(String fragment);
   }
}
```

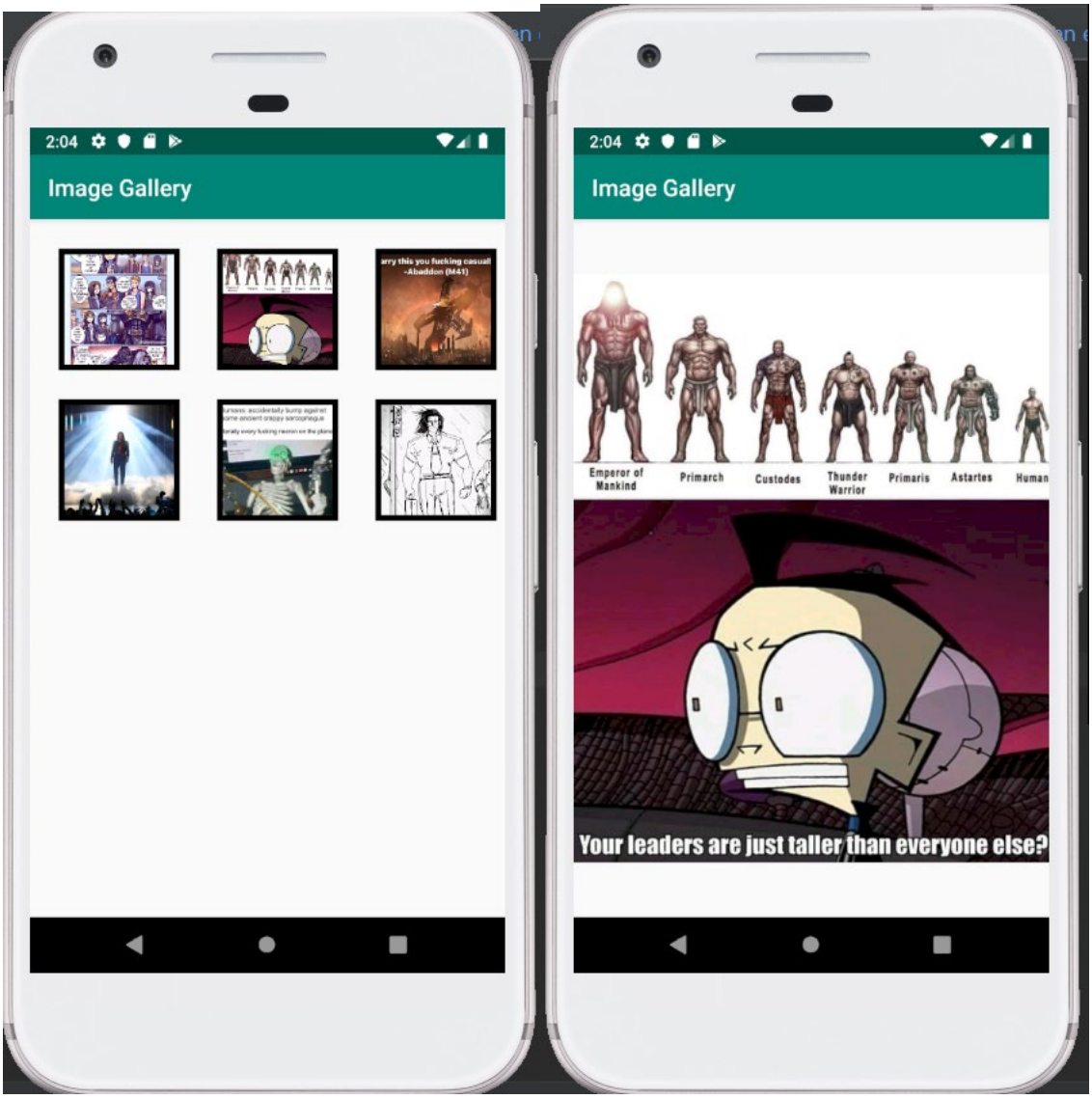
Java Codes for FragmentThree

```
package com.example.task1;

import android.content.Context;
import android.graphics.Bitmap;
import android.net.Uri;
import android.os.Bundle;

import androidx.fragment.app.Fragment;

import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.webkit.WebChromeClient;
import android.webkit.WebView;
import android.webkit.WebViewClient;
import android.widget.ProgressBar;


public class FragmentThree extends Fragment {
    private WebView webView;
    private String URL;
    private ProgressBar progressBar;

    private OnFragmentInteractionListener mListener;

    public FragmentThree(String url) {
        // Required empty public constructor
        this.URL = url;
    }


    @Override
    public View onCreateView(LayoutInflater inflater, ViewGroup container,
                             Bundle savedInstanceState) {
        // Inflate the layout for this fragment
        View view =  inflater.inflate(R.layout.fragment_three, container, false);
        initMain(view);
        return view;
    }

    private void initMain(View view) {
        webView = view.findViewById(R.id.webview);
        progressBar = view.findViewById(R.id.progressbar);

        webView.loadUrl(URL);
        webView.setWebViewClient(new WebViewClient(){
            @Override
            public void onPageStarted(WebView view, String url, Bitmap favicon) {
                super.onPageStarted(view, url, favicon);
                view.setVisibility(View.VISIBLE);
            }

            @Override
```

```
            public void onPageFinished(WebView view, String url) {
                super.onPageFinished(view, url);

                progressBar.setVisibility(View.GONE);
                view.setVisibility(View.VISIBLE);
            }
        });


    }

    // TODO: Rename method, update argument and hook method into UI event
    public void onButtonPressed(String fragment) {
        if (mListener != null) {
            mListener.onFragmentInteraction(fragment);
        }
    }

    @Override
    public void onAttach(Context context) {
        super.onAttach(context);
        if (context instanceof OnFragmentInteractionListener) {
            mListener = (OnFragmentInteractionListener) context;
        } else {
            throw new RuntimeException(context.toString()
                    + " must implement OnFragmentInteractionListener");
        }
    }

    @Override
    public void onDetach() {
        super.onDetach();
        mListener = null;
    }

    public interface OnFragmentInteractionListener {
        // TODO: Update argument type and name
        void onFragmentInteraction(String fragment);
    }
}
```

Task 2

Screenshots



Java Codes for MainActivity

```
package com.example.task2;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.util.Log;
import android.widget.GridView;

public class MainActivity extends AppCompatActivity {
    GridView gridView;
    public static String KEY="IMAGE";
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
```

```
        String[] links = getResources().getStringArray(R.array.links);
        gridView=findViewById(R.id.gridView);
        GridAdapter gridAdapter = new GridAdapter(this,links); //replace imgID with URLs
        gridView.setAdapter(gridAdapter);
    }
}
```

Java Codes for GridAdapter

```
package com.example.task2;

import android.content.Context;
import android.content.Intent;
import android.graphics.Bitmap;
import android.media.Image;
import android.media.ThumbnailUtils;
import android.text.Layout;
import android.util.Log;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.widget.BaseAdapter;
import android.widget.ImageView;
import android.widget.Toast;

import com.android.volley.VolleyError;
import com.android.volley.toolbox.ImageLoader;

public class GridAdapter extends BaseAdapter {
    Context context;
    private String links[];
    LayoutInflater layoutInflater;
    private final int THUMBNAIL_SIZE=250;
    View view;

    public GridAdapter(Context context,String[] links) {
        this.context = context;
        this.links=links;
    }

    @Override
    public int getCount() {
        return links.length;
    }

    @Override
    public Object getItem(int position) {
        return null;
    }

    @Override
    public long getItemId(int position) {
        return 0;
    }
```

```
    @Override
    public View getView(final int position, View convertView, ViewGroup parent) {
        layoutInflater = (LayoutInflater)
context.getSystemService(Context.LAYOUT_INFLATER_SERVICE);
        if(convertView==null){
            view = new View(context);
            view = layoutInflater.inflate(R.layout.img_layout,null);
            final ImageView imageView = view.findViewById(R.id.imageView);
            ImageLoader imageLoader =
MySingleton.getInstance(context.getApplicationContext()).getImageLoader();
            imageLoader.get(links[position], new ImageLoader.ImageListener() {
                @Override
                public void onResponse(ImageLoader.ImageContainer response, boolean
isImmediate) {
                    Bitmap image = response.getBitmap();
                    Bitmap thumbnail =
ThumbnailUtils.extractThumbnail(image,THUMBNAIL_SIZE,THUMBNAIL_SIZE);
                    imageView.setImageBitmap(thumbnail);
                }

                @Override
                public void onErrorResponse(VolleyError error) {
                    System.out.println(error.getMessage());
                }
            });
            imageView.setOnClickListener(new View.OnClickListener() {
                @Override
                public void onClick(View v) {
                    Intent intent = new Intent(context.getApplicationContext(),SecondActivity.class);
                    intent.putExtra(MainActivity.KEY,links[position]);
                    context.startActivity(intent);
                }
            });
        }
        return view;
    }

}
```

Java Codes for MySingleton

```
package com.example.task2;

import android.content.Context;
import android.graphics.Bitmap;
import android.util.LruCache;

import com.android.volley.RequestQueue;
import com.android.volley.toolbox.ImageLoader;
import com.android.volley.toolbox.Volley;

public class MySingleton {
    private static MySingleton mySingleton;
    private static Context context;
    private RequestQueue requestQueue;
    private ImageLoader imageLoader;

    public MySingleton(Context context) {
        this.context = context;
        requestQueue = Volley.newRequestQueue(context);
        imageLoader = new ImageLoader(requestQueue, new ImageLoader.ImageCache() {
            private final LruCache<String,Bitmap> cache = new LruCache<>(3);

            @Override
            public Bitmap getBitmap(String url) {
                Bitmap bmp = cache.get(url);
                if(bmp==null){
                    System.out.println("Image not in cache");
                }else{
                    System.out.println("Image is in cache");
                }
                return bmp;
            }

            @Override
            public void putBitmap(String url, Bitmap bitmap) {
                System.out.println("Put image in cache");
                cache.put(url,bitmap);
            }
        });
    }
    public static synchronized MySingleton getInstance(Context context){
        if(mySingleton==null){
            mySingleton = new MySingleton(context);
        }
        return mySingleton;
    }

    public ImageLoader getImageLoader(){
        return imageLoader;
    }
}
```

Java Codes for SecondActivity

```
package com.example.task2;

import androidx.appcompat.app.AppCompatActivity;

import android.graphics.Bitmap;
import android.os.Bundle;
import android.widget.ImageView;

import com.android.volley.VolleyError;
import com.android.volley.toolbox.ImageLoader;

public class SecondActivity extends AppCompatActivity {
    ImageView imageView;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_second);

        imageView=findViewById(R.id.imageView2);
        Bundle bundle = getIntent().getExtras();
        String link = bundle.getString(MainActivity.KEY);
        ImageLoader imageLoader =
MySingleton.getInstance(getApplicationContext()).getImageLoader();
        imageLoader.get(link, new ImageLoader.ImageListener() {
            @Override
            public void onResponse(ImageLoader.ImageContainer response, boolean
isImmediate) {
                Bitmap bitmap = response.getBitmap();
                imageView.setImageBitmap(bitmap);
            }

            @Override
            public void onErrorResponse(VolleyError error) {

            }
        });
    }
}
```