

Mobile Application Development Lab
Experiment No. 4

Title

Develop an Android application that fetches and displays news using an **RSS Feed**.

1. Aim

To develop an Android application using **Android Studio** that retrieves and displays news from an **RSS feed URL**.

2. Objective

- To understand the concept of **RSS Feed integration in Android**.
- To fetch online XML data from an RSS feed.
- To parse XML and display news headlines in a list format.

3. Software Requirements

- **Android Studio**
- **Java / Kotlin**
- **Android SDK**
- **Internet Connection**
- **Android Emulator / Android Device**

4. Theory

RSS (Really Simple Syndication) is a web feed that allows users to access updates of websites in a standardized format.

RSS feeds are written in **XML format** and contain:

- Title
- Description
- Link
- Publication date

Example RSS feed sources:

- <https://news.google.com/rss>
- <https://feeds.bbc.co.uk/news/rss.xml>

In Android, RSS feeds are:

1. Downloaded using an **HTTP connection**
2. Parsed using **XML parser**
3. Displayed in **RecyclerView/ListView**

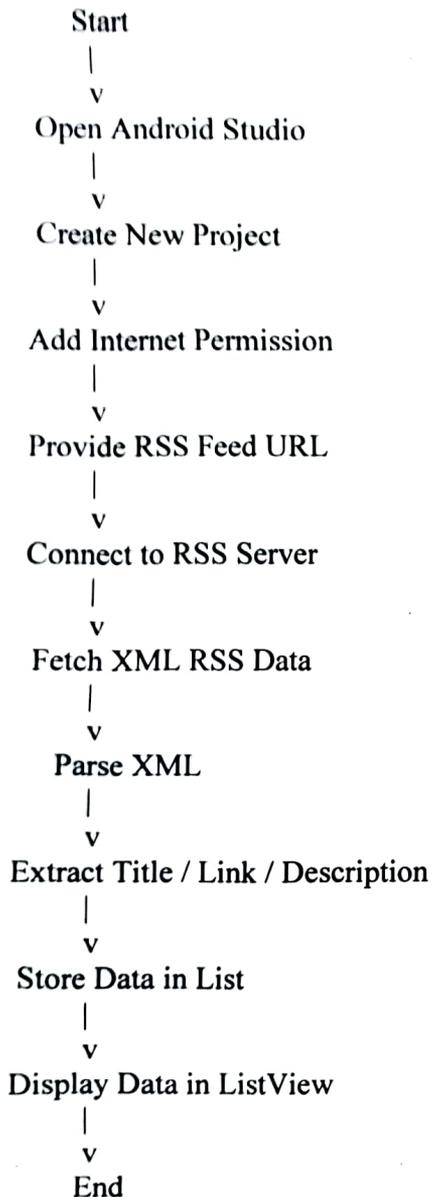
5. Algorithm (Step-by-Step)

1. Start the application.
2. Open **Android Studio**.
3. Create a new **Android project**.
4. Add **Internet permission** in the AndroidManifest file.
5. Add a **RecyclerView or ListView** in the layout file.
6. Provide the **RSS feed URL**.
7. Create a class to **fetch RSS feed data**.
8. Connect to the RSS URL using **HTTP connection**.
9. Download the **XML RSS data**.
10. Parse the XML using **XMLPullParser / SAX parser**.
11. Extract the following elements:
 - Title
 - Description
 - Link
12. Store extracted data in a **list structure**.
13. Display the list in **RecyclerView/ListView**.
14. Run the application on **emulator/device**.

15. RSS news headlines are displayed.

16. Stop the application.

6. Flowchart



7. Program Code (Java Example)

AndroidManifest.xml

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

activity_main.xml

```
<ListView  
    android:id="@+id/rssListView"  
    android:layout_width="match_parent"  
    android:layout_height="match_parent"/>
```

MainActivity.java

```
package com.example.rssfeed;

import android.os.Bundle;
import android.widget.ArrayAdapter;
import android.widget.ListView;
import androidx.appcompat.app.AppCompatActivity;

import org.xmlpull.v1.XmlPullParser;
import org.xmlpull.v1.XmlPullParserFactory;

import java.net.URL;
import java.util.ArrayList;

public class MainActivity extends AppCompatActivity {

    ListView listView;
    ArrayList<String> titles = new ArrayList<>();

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

        listView = findViewById(R.id.rssListView);

        new Thread(() -> fetchRSS()).start();
    }

    private void fetchRSS() {
        try {
            URL url = new URL("https://news.google.com/rss");

            XmlPullParserFactory factory = XmlPullParserFactory.newInstance();
            XmlPullParser parser = factory.newPullParser();

            parser.setInput(url.openStream(), null);

            int eventType = parser.getEventType();

            while (eventType != XmlPullParser.END_DOCUMENT) {

                if (eventType == XmlPullParser.START_TAG &&
                    parser.getName().equalsIgnoreCase("title")) {
                    titles.add(parser.nextText());
                }

                eventType = parser.next();
            }
        }
    }
}
```

```

runOnUiThread() -> {
    ArrayAdapter adapter = new ArrayAdapter(MainActivity.this,
        android.R.layout.simple_list_item_1, titles);
    listView.setAdapter(adapter);
});

} catch (Exception e) {
    e.printStackTrace();
}
}
}

```

8. Expected Output

- The application fetches RSS feed data.
- News headlines are displayed in a **ListView**.
- Users can see the latest updates from the RSS source.

9. Result

The Android application was successfully developed to **fetch and display RSS feed news using Android Studio**.

10. Viva Voce Questions

1. What is RSS?

RSS (Really Simple Syndication) is a web feed that allows users and applications to receive updates from websites in a standardized **XML format**.

2. What is an RSS Feed used for?

RSS feeds are used to:

- Deliver latest **news updates**
- Share **blog posts**
- Provide **podcast updates**
- Notify users of **website content changes**

3. In which format are RSS feeds written?

RSS feeds are written in **XML (Extensible Markup Language)** format.

4. What are the main elements in an RSS feed?

Common RSS elements include:

- **title**
- **description**
- **link**
- **pubDate**
- **channel**
- **item**

5. What is XML parsing in Android?

XML parsing is the process of **reading and extracting data from XML documents** so that the application can use the information.

6. Which XML parser is used in this experiment?

The experiment uses **XmlPullParser**, which is a lightweight XML parser used in Android applications.

7. Why is INTERNET permission required in this application?

The **INTERNET permission** allows the Android application to **access online resources and fetch RSS feed data from a web server**.

8. What is Android Studio?

Android Studio is the **official Integrated Development Environment (IDE)** used to develop Android applications.

9. What UI component is used to display RSS items?

A **Listview or RecyclerView** is used to display RSS feed items such as news headlines.

10. What is the difference between RSS and Atom feeds?

RSS	Atom
Older feed format	Newer feed format
Simpler structure	More standardized
Widely supported	More flexible

11. What is a RecyclerView in Android?

RecyclerView is a **flexible and efficient view** used to display large datasets in Android applications.

12. What is the role of a URL in RSS Feed applications?

The **URL** points to the location of the RSS feed from which the application retrieves XML data.

Example:

<https://news.google.com/rss>

13. What happens if there is no internet connection?

The application will **fail to retrieve RSS feed data**, and the news list will not be displayed.

14. Can RSS feeds be used for real-time updates?

Yes, RSS feeds provide **automatic updates whenever new content is published**.

15. What are the advantages of RSS feeds?

- Automatic content updates
- Easy information sharing
- Standardized format
- Saves time for users