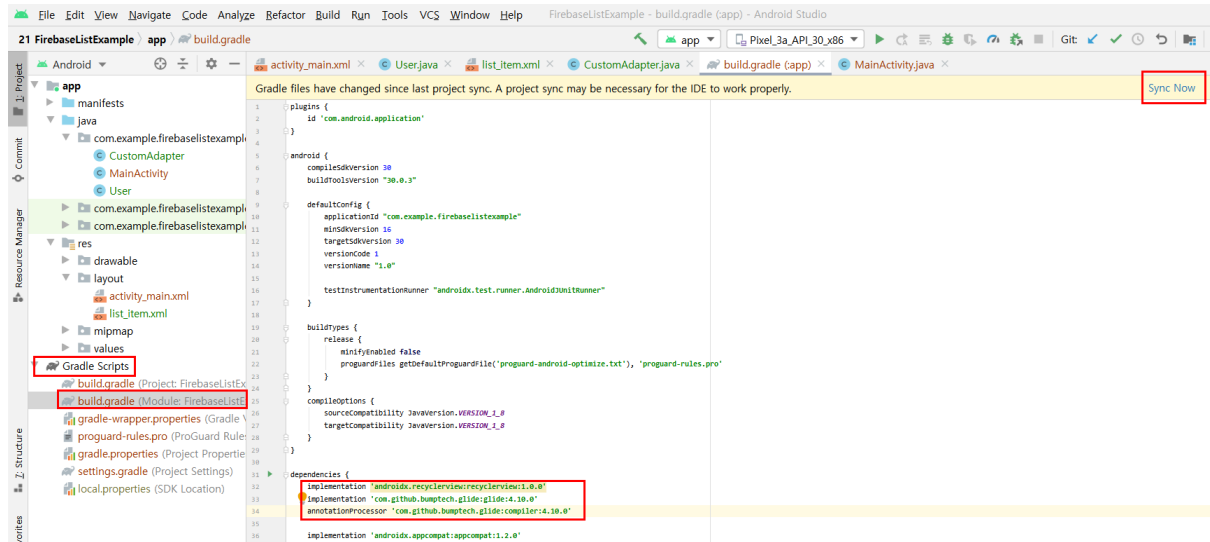# 21 Firebase DB연동, RecyclerView

1. Gradle Scripts 수정

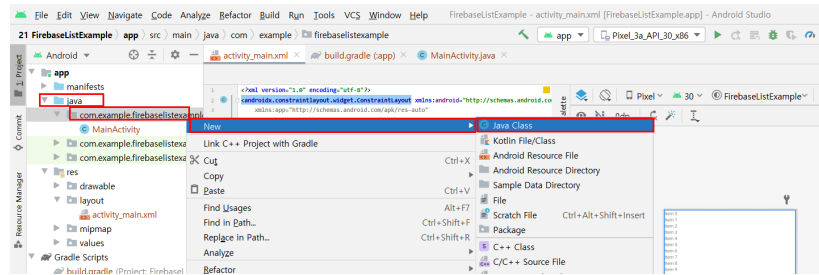## 2. activity_main.xml 코드

```xml
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.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">

    <androidx.recyclerview.widget.RecyclerView
        android:id="@+id/recyclerView"
        android:layout_width="match_parent"
        android:layout_height="match_parent"/>

</androidx.constraintlayout.widget.ConstraintLayout>
```

3. User.java 생성, 코드

```java
package com.example.firebaselistexample;

public class User {
    private String profile;
    private String id;
    private int pw;
    private String userName;

    public User() {};

    public String getProfile() {
        return profile;
    }

    public void setProfile(String profile) {
        this.profile = profile;
    }

    public String getId() {
        return id;
    }

    public void setId(String id) {
        this.id = id;
    }

    public int getPw() {
        return pw;
    }

    public void setPw(int pw) {
        this.pw = pw;
    }

    public String getUserName() {
        return userName;
    }

    public void setUserName(String userName) {
        this.userName = userName;
    }
}
```
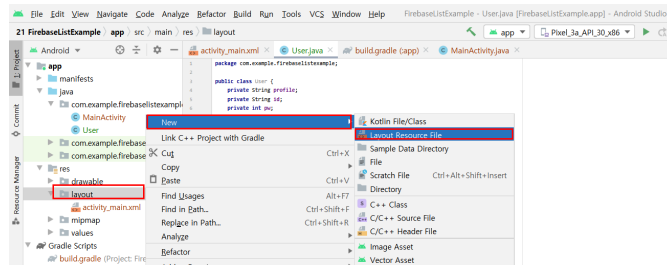
4. list_item.xml 생성, 코드

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

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="horizontal">

        <ImageView
            android:id="@+id/tv_profile"
            android:layout_width="80dp"
            android:layout_height="80dp"
            android:layout_margin="5dp"
            android:src="@drawable/ic_launcher_background"/>

        <LinearLayout
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_marginLeft="15dp"
            android:orientation="vertical">

            <TextView
                android:id="@+id/tv_id"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:text="아이디"
                android:layout_margin="5dp"/>

            <TextView
                android:id="@+id/tv_pw"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:text="비밀번호"
                android:layout_margin="5dp"/>
            <TextView
                android:id="@+id/tv_userName"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:text="이원영"
                android:layout_margin="5dp"/>

        </LinearLayout>

    </LinearLayout>

</LinearLayout>
```
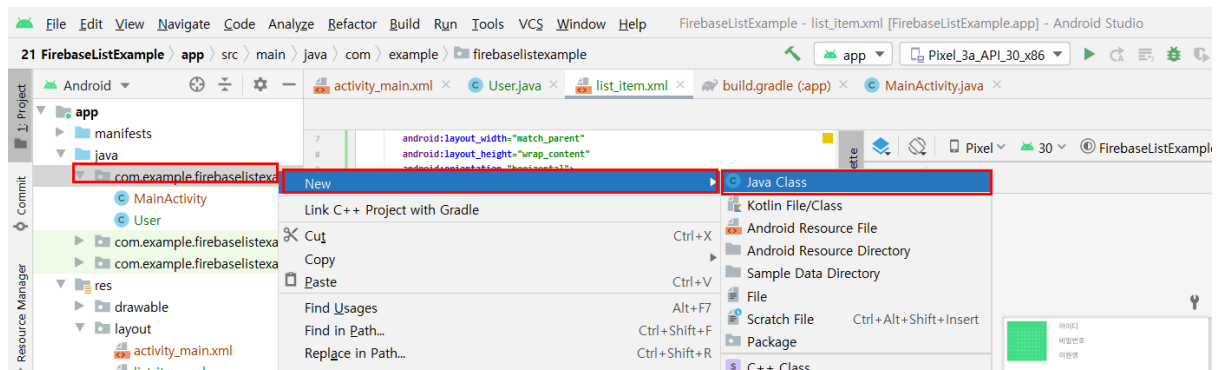
5. CustomAdapter. java 생성, 코드

```java
package com.example.firebaselistexample;

import android.content.Context;
import android.media.Image;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.widget.ImageView;
import android.widget.TextView;

import androidx.annotation.NonNull;
import androidx.recyclerview.widget.RecyclerView;

import com.bumptech.glide.Glide;

import java.util.ArrayList;

public class CustomAdapter extends RecyclerView.Adapter<CustomAdapter.CustomViewHolder> {

    private ArrayList<User> arrayList;
    private Context context;

    public CustomAdapter(ArrayList<User> arrayList, Context context) {
        this.arrayList = arrayList;
        this.context = context;
    }

    @NonNull
    @Override
    public CustomViewHolder onCreateViewHolder(@NonNull ViewGroup parent, int viewType) {
        View view = LayoutInflater.from(parent.getContext()).inflate(R.layout.list_item, parent, false);
        CustomViewHolder holder = new CustomViewHolder(view);

        return holder;
    }

    @Override
    public void onBindViewHolder(@NonNull CustomViewHolder holder, int position) {
        Glide.with(holder.itemView)
                .load(arrayList.get(position).getProfile())
                .into(holder.iv_profile);
        holder.tv_id.setText(arrayList.get(position).getId());
        holder.tv_pw.setText(String.valueOf(arrayList.get(position).getPw()));
        holder.tv_userName.setText(arrayList.get(position).getUserName());

    }

    @Override
    public int getItemCount() {
        return (arrayList != null ? arrayList.size() : 0);
    }

    public class CustomViewHolder extends RecyclerView.ViewHolder {
        ImageView iv_profile;
        TextView tv_id;
        TextView tv_pw;
        TextView tv_userName;
```
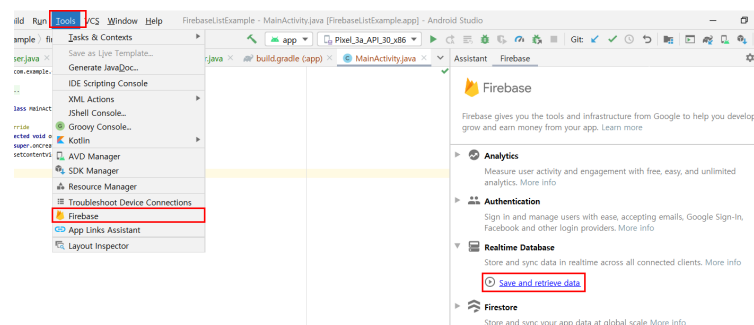
```
        public CustomViewHolder(@NonNull View itemView) {
            super(itemView);
            this.iv_profile = itemView.findViewById(R.id.iv_profile);
            this.tv_id = itemView.findViewById(R.id.tv_id);
            this.tv_pw = itemView.findViewById(R.id.tv_pw);
            this.tv_userName = itemView.findViewById(R.id.tv_userName);

        }
    }

}
```
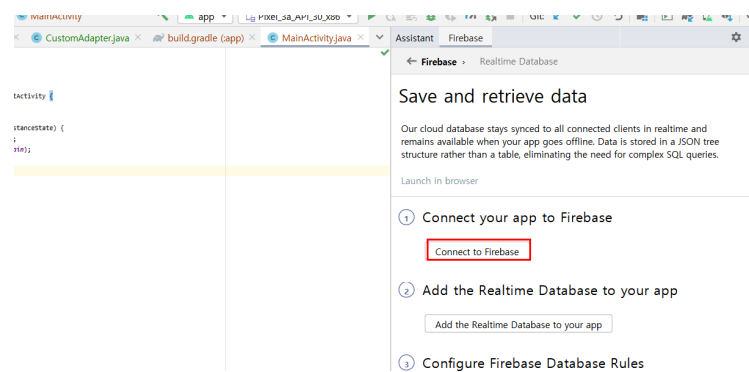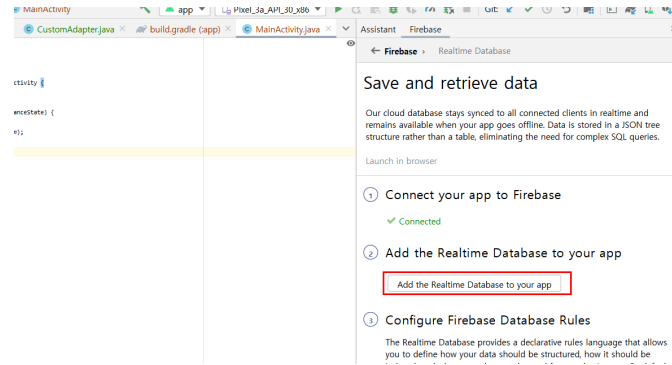
6. Firebase

- Tools - Firebase - Realtime Database - Save and retrieve data
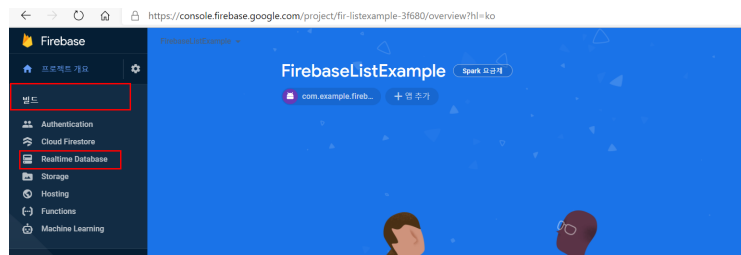

- Connect to Firebase

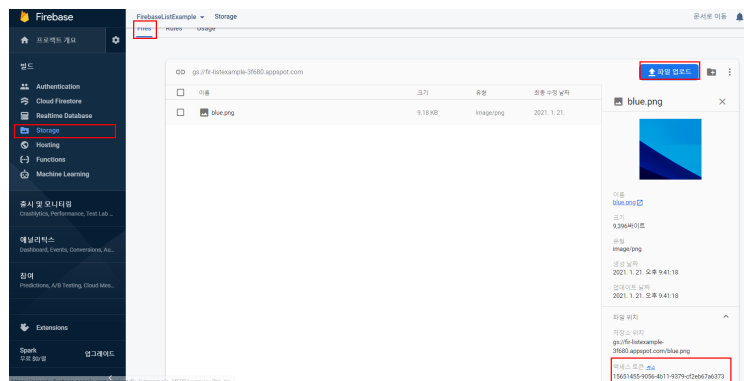- Add the Realtime Database to your app
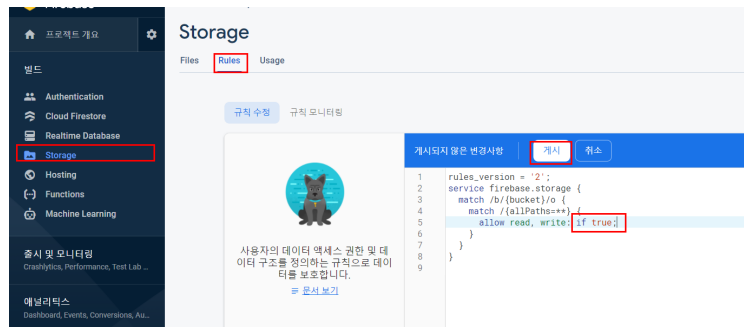
?. Firebase

- Firebase Console 접속 - 해당 프로젝트 - 빌드 - Realtime Database

- 데이터베이스 만들기 - 테스트 모드에서 시작 - 사용 설정

- Storage - 시작하기 - Rules - 코드 수정 - 게시 후 Files에서 원하는 사진 업로드, 파일URL 복사

- database 추가

7. MainActivity. java 코드

```java
package com.example.firebaselistexample;

import androidx.annotation.NonNull;
import androidx.appcompat.app.AppCompatActivity;
import androidx.recyclerview.widget.LinearLayoutManager;
import androidx.recyclerview.widget.RecyclerView;

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

import com.google.firebase.database.DataSnapshot;
import com.google.firebase.database.DatabaseError;
import com.google.firebase.database.DatabaseReference;
import com.google.firebase.database.FirebaseDatabase;
import com.google.firebase.database.ValueEventListener;

import java.util.ArrayList;

public class MainActivity extends AppCompatActivity {

    private RecyclerView recyclerView;
    private RecyclerView.Adapter adapter;
    private RecyclerView.LayoutManager layoutManager;
    private ArrayList<User> arrayList;
    private FirebaseDatabase database;
    private DatabaseReference databaseReference;


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

        recyclerView = findViewById(R.id.recyclerView);
        recyclerView.setHasFixedSize(true); // RecyclerView 기존 성능 강화
        layoutManager = new LinearLayoutManager(this);
        recyclerView.setLayoutManager(layoutManager);
        arrayList = new ArrayList<>(); // User 객체를 담을 ArrayList -> Adapter

        database = FirebaseDatabase.getInstance(); // Firebase Database 연동

        databaseReference = database.getReference("User");

        databaseReference.addListenerForSingleValueEvent(new ValueEventListener() {
            @Override
            public void onDataChange(@NonNull DataSnapshot dataSnapshot) {
                // Firebase Database의 데이터를 받아오는 곳
                arrayList.clear(); // 기존 arrayList가 존재하지 않도록 초기화
                for (DataSnapshot snapshot : dataSnapshot.getChildren()) { // 반복문으로 데이터 List를 추출
                    User user = snapshot.getValue(User.class); // 만들어뒀던 User객체에 데이터를 담는다.
                    arrayList.add(user); // 담은 데이터를 배열리스트에 넣고 RecyclerView로 보낼 준비
                }
                adapter.notifyDataSetChanged(); // 리스트 저장 및 새로고침
            }

            @Override
            public void onCancelled(@NonNull DatabaseError databaseError) {
                // DB를 가져오던 중 에러 발생 시
                Log.e("MainActivity", String.valueOf(databaseError.toException()));
            }
        });

        adapter = new CustomAdapter(arrayList, this);
        recyclerView.setAdapter(adapter); // RecyclerView로 Adapter 구현


    }
}
```