**20CYS404**

**Android Application Development**

**END SEM LAB EXAM**

**Name:** Navaneethan.S

**Roll No:** CH.EN.U4CYS21048

Aim:

To develop an Android application that allows users to enter company details (Company Name, Description, Founded Date), save the data in both SQLite and Firebase, and display the company names immediately after saving. The application will also display all saved company details in a new activity and provide a search functionality, where entering a query like 'G' filters and displays only relevant company details (e.g., Google). This experiment demonstrates the integration of local and cloud-based storage systems and search functionality in Android.

MainActivity.java

package com.example.forms;  
  
import android.content.Intent;  
import android.os.Bundle;  
import android.text.TextUtils;  
import android.widget.Button;  
import android.widget.EditText;  
import android.widget.Toast;  
  
import androidx.appcompat.app.AppCompatActivity;  
  
import com.google.firebase.database.DatabaseReference;  
import com.google.firebase.database.FirebaseDatabase;  
  
public class MainActivity extends AppCompatActivity {  
  
 EditText companyName, description, foundedDate;  
 Button saveButton, viewButton;  
 DatabaseHelper dbHelper; // SQLite helper for local storage  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_main*);  
  
 // Initialize Views  
 companyName = findViewById(R.id.*companyName*);  
 description = findViewById(R.id.*description*);  
 foundedDate = findViewById(R.id.*foundedDate*);  
 saveButton = findViewById(R.id.*saveButton*);  
 viewButton = findViewById(R.id.*viewButton*);  
  
 // Initialize SQLite helper  
 dbHelper = new DatabaseHelper(this);  
  
 // Initialize Firebase  
 FirebaseDatabase firebaseDatabase = FirebaseDatabase.*getInstance*();  
 DatabaseReference ref = firebaseDatabase.getReference("companies");  
  
 saveButton.setOnClickListener(v -> {  
 String name = companyName.getText().toString().trim();  
 String desc = description.getText().toString().trim();  
 String date = foundedDate.getText().toString().trim();  
  
 // Check for empty fields  
 if (TextUtils.*isEmpty*(name) || TextUtils.*isEmpty*(desc) || TextUtils.*isEmpty*(date)) {  
 Toast.*makeText*(MainActivity.this, "Please fill all fields", Toast.*LENGTH\_SHORT*).show();  
 return;  
 }  
  
 // Save to SQLite  
 boolean isInserted = dbHelper.insertCompany(name, desc, date);  
 if (isInserted) {  
 Toast.*makeText*(MainActivity.this, "Data saved locally", Toast.*LENGTH\_SHORT*).show();  
 } else {  
 Toast.*makeText*(MainActivity.this, "Local save failed", Toast.*LENGTH\_SHORT*).show();  
 }  
  
 // Save to Firebase  
 Company company = new Company(name, desc, date);  
 ref.push().setValue(company).addOnCompleteListener(task -> {  
 if (task.isSuccessful()) {  
 Toast.*makeText*(MainActivity.this, "Data saved to Firebase", Toast.*LENGTH\_SHORT*).show();  
 } else {  
 Toast.*makeText*(MainActivity.this, "Firebase save failed", Toast.*LENGTH\_SHORT*).show();  
 }  
 });  
 });  
  
 // View button to navigate to ShowCompanyActivity  
 viewButton.setOnClickListener(v -> {  
 Intent intent = new Intent(MainActivity.this, ShowCompanyActivity.class);  
 startActivity(intent);  
 });  
 }  
}

ShowCompanyActivity.java

package com.example.forms;  
  
import android.os.Bundle;  
import android.widget.ListView;  
import android.widget.SearchView;  
  
import androidx.appcompat.app.AppCompatActivity;  
  
import java.util.ArrayList;  
  
public class ShowCompanyActivity extends AppCompatActivity {  
  
 private ListView listView;  
 private SearchView searchView;  
 private CompanyAdapter adapter;  
 private DatabaseHelper dbHelper;  
 private ArrayList<Company> companyList;  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_show\_company*);  
  
 listView = findViewById(R.id.*listView*);  
 searchView = findViewById(R.id.*searchView*);  
 dbHelper = new DatabaseHelper(this);  
  
 // Load companies from SQLite database (you should implement this method)  
 companyList = dbHelper.getAllCompanies();  
  
 // Set up adapter  
 adapter = new CompanyAdapter(this, companyList, dbHelper);  
 listView.setAdapter(adapter);  
  
 // Set up search functionality  
 searchView.setOnQueryTextListener(new SearchView.OnQueryTextListener() {  
 @Override  
 public boolean onQueryTextSubmit(String query) {  
 return false;  
 }  
  
 @Override  
 public boolean onQueryTextChange(String newText) {  
 adapter.getFilter().filter(newText);  
 return false;  
 }  
 });  
 }  
}

AllCompaniesActivity:

package com.example.forms;  
  
import android.database.Cursor;  
import android.database.sqlite.SQLiteDatabase;  
import android.os.Bundle;  
import android.widget.ArrayAdapter;  
import android.widget.ListView;  
import android.widget.SearchView;  
import android.widget.Toast;  
  
import androidx.appcompat.app.AppCompatActivity;  
  
import java.util.ArrayList;  
  
public class AllCompaniesActivity extends AppCompatActivity {  
 ListView companyListView;  
 SearchView searchView;  
 ArrayList<String> companyList = new ArrayList<>();  
 ArrayAdapter<String> adapter;  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_all\_companies*);  
  
 companyListView = findViewById(R.id.*companyListView*);  
 searchView = findViewById(R.id.*searchView*);  
 adapter = new ArrayAdapter<>(this, android.R.layout.*simple\_list\_item\_1*, companyList);  
 companyListView.setAdapter(adapter);  
  
 // Fetch all companies from SQLite  
 loadCompaniesFromDatabase();  
  
 // Set up SearchView  
 searchView.setOnQueryTextListener(new SearchView.OnQueryTextListener() {  
 @Override  
 public boolean onQueryTextSubmit(String query) {  
 return false; // No action on submit, only filter as you type  
 }  
  
 @Override  
 public boolean onQueryTextChange(String newText) {  
 adapter.getFilter().filter(newText); // Filter companies as user types  
 return false;  
 }  
 });  
 }  
  
 private void loadCompaniesFromDatabase() {  
 SQLiteDatabase database = null;  
 Cursor cursor = null;  
 try {  
 database = openOrCreateDatabase("CompanyDB", *MODE\_PRIVATE*, null);  
 cursor = database.rawQuery("SELECT \* FROM Company", null);  
  
 if (cursor != null && cursor.getCount() > 0) {  
 while (cursor.moveToNext()) {  
 String name = cursor.getString(0); // Get company name  
 String desc = cursor.getString(1); // Get description  
 String date = cursor.getString(2); // Get founded date  
  
 companyList.add("Name: " + name + "\nDescription: " + desc + "\nFounded Date: " + date);  
 }  
 } else {  
 Toast.*makeText*(this, "No companies found in the database.", Toast.*LENGTH\_SHORT*).show();  
 }  
 } catch (Exception e) {  
 Toast.*makeText*(this, "Error fetching companies: " + e.getMessage(), Toast.*LENGTH\_LONG*).show();  
 } finally {  
 if (cursor != null) {  
 cursor.close();  
 }  
 if (database != null) {  
 database.close();  
 }  
 }  
  
 // Notify adapter to update ListView  
 adapter.notifyDataSetChanged();  
 }  
}

Company.java

package com.example.forms;  
  
public class Company {  
 private String name;  
 private String description;  
 private String foundedDate;  
  
 // Default constructor required for calls to DataSnapshot.getValue(Company.class)  
 public Company() {  
 }  
  
 // Constructor with parameters  
 public Company(String name, String description, String foundedDate) {  
 this.name = name;  
 this.description = description;  
 this.foundedDate = foundedDate;  
 }  
  
 // Getters  
 public String getName() {  
 return name;  
 }  
  
 public String getDescription() {  
 return description;  
 }  
  
 public String getFoundedDate() {  
 return foundedDate;  
 }  
  
 // Setters  
 public void setName(String name) {  
 this.name = name;  
 }  
  
 public void setDescription(String description) {  
 this.description = description;  
 }  
  
 public void setFoundedDate(String foundedDate) {  
 this.foundedDate = foundedDate;  
 }  
  
 // Optional: Override toString for better readability  
 @Override  
 public String toString() {  
 return "Company{" +  
 "name='" + name + '\'' +  
 ", description='" + description + '\'' +  
 ", foundedDate='" + foundedDate + '\'' +  
 '}';  
 }  
}

CompanyAdapter.java

package com.example.forms;  
  
import android.app.AlertDialog;  
import android.content.Context;  
import android.content.DialogInterface;  
import android.view.LayoutInflater;  
import android.view.View;  
import android.view.ViewGroup;  
import android.widget.BaseAdapter;  
import android.widget.Filter;  
import android.widget.Filterable;  
import android.widget.TextView;  
import android.widget.Toast;  
  
import java.util.ArrayList;  
import java.util.List;  
  
public class CompanyAdapter extends BaseAdapter implements Filterable {  
  
 private Context context;  
 private List<Company> companyList;  
 private List<Company> filteredList;  
 private DatabaseHelper dbHelper; // Add DatabaseHelper for deletion  
  
 public CompanyAdapter(Context context, ArrayList<Company> companyList, DatabaseHelper dbHelper) {  
 this.context = context;  
 this.companyList = companyList;  
 this.filteredList = companyList;  
 this.dbHelper = dbHelper; // Initialize DatabaseHelper  
 }  
  
 @Override  
 public int getCount() {  
 return filteredList.size();  
 }  
  
 @Override  
 public Object getItem(int position) {  
 return filteredList.get(position);  
 }  
  
 @Override  
 public long getItemId(int position) {  
 return position;  
 }  
  
 @Override  
 public View getView(int position, View convertView, ViewGroup parent) {  
 if (convertView == null) {  
 convertView = LayoutInflater.*from*(context).inflate(R.layout.*list\_item\_company*, parent, false);  
 }  
  
 TextView nameTextView = convertView.findViewById(R.id.*companyNameTextView*);  
 TextView descTextView = convertView.findViewById(R.id.*descriptionTextView*);  
 TextView dateTextView = convertView.findViewById(R.id.*foundedDateTextView*);  
  
 Company company = filteredList.get(position);  
 nameTextView.setText(company.getName());  
 descTextView.setText(company.getDescription());  
 dateTextView.setText(company.getFoundedDate());  
  
 // Add long click listener for deletion  
 convertView.setOnLongClickListener(v -> {  
 showDeleteConfirmationDialog(company, position);  
 return true;  
 });  
  
 return convertView;  
 }  
  
 private void showDeleteConfirmationDialog(Company company, int position) {  
 new AlertDialog.Builder(context)  
 .setTitle("Delete Company")  
 .setMessage("Are you sure you want to delete this company?")  
 .setPositiveButton("Delete", (dialog, which) -> {  
 // Delete from SQLite database  
 dbHelper.deleteCompany(company.getName());  
  
 // Remove from the list and notify adapter  
 filteredList.remove(position);  
 notifyDataSetChanged();  
  
 Toast.*makeText*(context, "Company deleted", Toast.*LENGTH\_SHORT*).show();  
 })  
 .setNegativeButton("Cancel", null)  
 .show();  
 }  
  
 @Override  
 public Filter getFilter() {  
 return new Filter() {  
 @Override  
 protected FilterResults performFiltering(CharSequence constraint) {  
 String query = constraint.toString().toLowerCase();  
 FilterResults results = new FilterResults();  
  
 if (query.isEmpty()) {  
 results.values = companyList;  
 } else {  
 ArrayList<Company> filtered = new ArrayList<>();  
 for (Company company : companyList) {  
 if (company.getName().toLowerCase().contains(query)) {  
 filtered.add(company);  
 }  
 }  
 results.values = filtered;  
 }  
  
 return results;  
 }  
  
 @Override  
 protected void publishResults(CharSequence constraint, FilterResults results) {  
 filteredList = (List<Company>) results.values;  
 notifyDataSetChanged();  
 }  
 };  
 }  
}

acticity\_all\_companies.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"  
 android:orientation="vertical"  
 android:padding="16dp">  
  
 <SearchView  
 android:id="@+id/searchView"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:queryHint="Search companies..." />  
  
 <ListView  
 android:id="@+id/companyListView"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content" />  
</LinearLayout>

Activity\_main.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"  
 android:orientation="vertical"  
 android:padding="16dp">  
  
 <EditText  
 android:id="@+id/companyName"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:hint="Company Name"/>  
  
 <EditText  
 android:id="@+id/description"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:hint="Description"/>  
  
 <EditText  
 android:id="@+id/foundedDate"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:hint="Founded Date"/>  
  
 <Button  
 android:id="@+id/saveButton"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Save"/>  
  
 <Button  
 android:id="@+id/viewButton"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="View Data"/>  
  
 <TextView  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Done by: Navaneethan"  
 android:textStyle="bold"  
 android:layout\_marginTop="50dp"  
 android:textSize="16sp"/>  
  
 <TextView  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Roll No: CYS21048"  
 android:textStyle="bold"  
 android:textSize="16sp"/>  
  
</LinearLayout>

Activity\_showcompaany.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"  
 android:orientation="vertical"  
 android:padding="16dp">  
  
 <SearchView  
 android:id="@+id/searchView"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:queryHint="Search companies"/>  
  
 <ListView  
 android:id="@+id/listView"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"/>  
</LinearLayout>

Output:

 

 

