Android: Saving Data

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Disclaimer

- This time, we will have two hands-on lab
- We will focus on saving data in files and DB this time

Outline

- Saving data
  - Files
  - SQLite Database
  - Shared Preferences

Java Saving Data in Files

- Recall what did in Java SE
- ```
  FileWriter fw = new FileWriter(file.getAbsoluteFile());
  BufferedWriter bw = new BufferedWriter(fw);
  bw.write(content);
  bw.close();
  ```
  ```

```
package org.nmsl;
import java.io.BufferedWriter;
import java.io.File;
import java.io.FileWriter;
import java.io.IOException;
public class Main3 {
	public static void main(String[] args) {
		try {
			String content = "I love Taiwan";
			//Windows read file
			//File file = new File(".\\Taiwan.txt");
			//Linux read file
			File file = new File("./Taiwan.txt");
```

```
                    if (!file.exists()) {
                        file.createNewFile();
                    }
            FileWriter fw = new
        FileWriter(file.getAbsoluteFile());
                    BufferedWriter bw = new BufferedWriter(fw);
                    bw.write(content);
                    bw.close();
                    System.out.println("Done");
                } catch (IOException e) {
                    e.printStackTrace();
                }
        }
}
```

Android Saving Data in Files

- Always check the permission first

```
<manifest ...>
    <uses-permission
    android:name="android.permission.WRITE_EXTERNAL_STORAGE" />
<uses-permission
    android:name="android.permission.RAED_EXTERNAL_STORAGE" />
    ...
</manifest>
```

Save Text to File

- Use `FileWriter(String filename, boolean append)`

```
try{
    Filewriter fw =new Filewriter("Log.txt",true);
    fw.append("I am an Android expert");
    fw.close();
}
catch (IOException e) {
    e.printStackTrace();
}
```

Save Image to File

- Use `FileOutputStream(filename)`

```
Bitmap savePic = ....
FileOutputStream fos = new FileOutputStream(
SDStorage+filename+".png");
savePic.compress(Bitmap.CompressFormat.PNG, 90, fos);
fos.close();
```

Hands-on Lab 1

- Download code from http://nmsl.cs.nthu.edu.tw/dropbox/Application.zip
- Here is an example which save images from a http server
- Please insert an image view and load the local image into it

SQLite DB

- SQLite DB is the default DB of Android
- It has several features
  - Serverless
  - Single Database File: An SQLite database is a single ordinary disk file
  - Compact: The whole SQLite library with everything enabled can be less than 400KB in size

Define a Schema and Create DB

```
public static final String TABLE_COMMENTS = "comments";
public static final String COLUMN_ID = "_id";
public static final String COLUMN_COMMENT = "comment";

private static final String DATABASE_NAME = "commments.db";
private static final int DATABASE_VERSION = 1;

// Database creation sql statement
private static final String DATABASE_CREATE = "create table "
                + TABLE_COMMENTS + "(" + COLUMN_ID
                + " integer primary key autoincrement, " + COLUMN_COMMENT
                + " text not null);";
```

Define a SQL Helper

- A useful set of APIs is available in the SQLiteOpenHelper class
- public MySQLiteHelper(Context context)
  - Constructor
- onCreate(SQLiteDatabase database)
  - Create DB
- onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion)

Hands-on Lab 2

- http://nmsl.cs.nthu.edu.tw/dropbox/MySQLiteTest.zip
- In the sample code, we have a DAO to wrap up basic CRUD operations of DB
- We already have CRD operations
- Implement UPDATE operation in the DAO, CommentsDataSource

Shared Preferences

- Shared preferences are used for a small key-value set
- Get sharedpreferences

```
Context context = getActivity();

SharedPreferences sharedPref = context.getSharedPreferences(

        getString(R.string.preference_file_key),

Context.MODE_PRIVATE);
```

Read Shared Preferences

- To write to a shared preferences file, create a SharedPreferences. Editor by calling edit() on your SharedPreferences.

```
SharedPreferences sharedPref =
getActivity().getPreferences(Context.MODE_PRIVATE);
SharedPreferences.Editor editor = sharedPref.edit();
editor.putInt(getString(R.string.saved_high_score), newHighScore);
editor.commit();
```

Write Shared Preferences

- To retrieve values from a shared preferences, call methods such as getInt() and getString(), providing the key for the value you want

```
SharedPreferences sharedPref =
getActivity().getPreferences(Context.MODE_PRIVATE);
int defaultValue =
getResources().getInteger(R.string.saved_high_score_default);
long highScore =
sharedPref.getInt(getString(R.string.saved_high_score),
defaultValue);
```