Turbo Editor

108-2 Software Testing and Verification

Final Presentation#6

古兆瑋(108598019)、陳冠穎(108598034)、劉孝忠(108598044)

Outline

- **1.** Planned Test Criteria and Testing Tools
- **2.** Test Case Design Methods
- **3.** Live Demo
- **4.** Test Result and Summary
- **5.** Project Information
- **6.** Lessons Learned

1. Planned Test Criteria and Testing Tools

Item Pass/Fail Criteria (1/3)

➢User Scenario Technique:

◦Test Item的Pass/Fail判斷標準，以一功能之敘述句，在測試執行後是否成立為Pass/Fail標準，假使功能測試執行後，使敘述句成立則Pass；反之則Fail，而本次測試之目標為使所有與Features To Be Tested有關之Test Case通過測試(Pass)。

Item Pass/Fail Criteria (2/3)

➢Control-Flow Graph Coverage Technique:
◦以Basis Path Approach，須覆蓋所有分支，意即Statement Coverage及Branch Coverage是100%。

Item Pass/Fail Criteria (3/3)

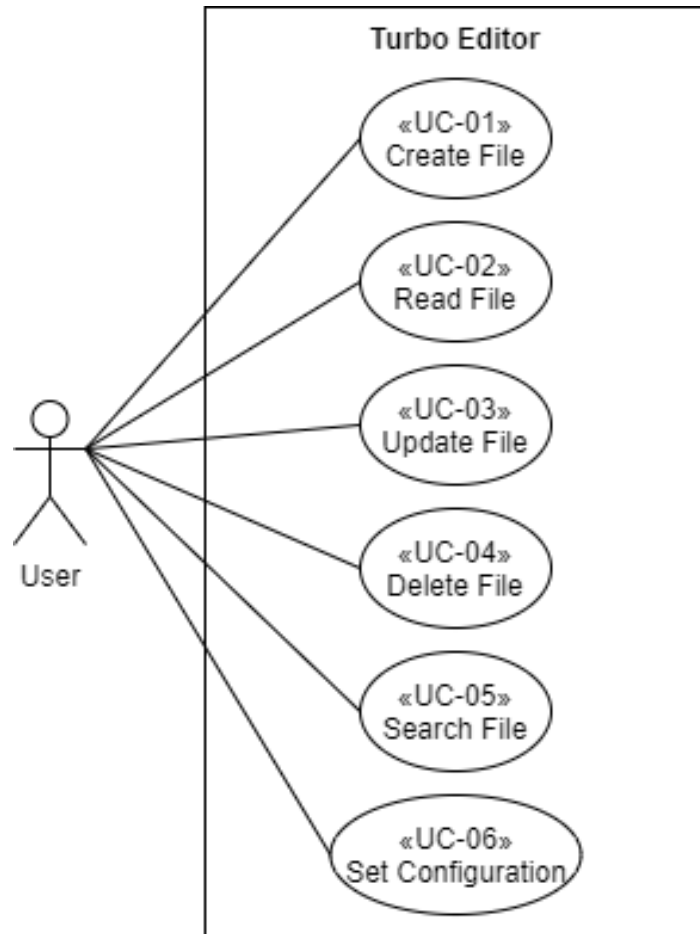➤不論判斷標準為何，最終希望本次測試能夠達成**80%**的**Code Coverage**，證明因為測試**涵蓋這麼高的覆蓋率**，所以測試的結果是**可以信任的**。

Test Tool - Espresso & UI Automator

2. Test Case Design Methods

Use Case → Features to be Tested

Feature ID	Description	Use Case
F-T-01	Create New File	Create File
F-T-02	Open File	Read File
F-T-03	Read File's Info	
F-T-04	Rename File	Update File
F-T-05	Edit File	
F-T-06	Undo Editing	
F-T-07	Redo Editing	
F-T-08	Search File with REGEX	Search File
F-T-09	Search File with MATCH CASE	
F-T-10	Search File with REPLACE	
F-T-11	Set Line Numbers	Set Configuration
F-T-12	Set Syntax Highlight	
F-T-13	Set Wrap Content	
F-T-14	Set Use Monospace	
F-T-15	Set Read Only	
F-T-16	Set Font Size	
F-T-17	Set Theme	
F-T-18	Set Accessory View	
F-T-19	Set Use the storage Access Framework	
F-T-20	Set Keyboard Suggestion and Swipe	
F-T-21	Set Auto Save	
F-T-22	Set Encoding	
F-T-23	Set Ignore Back Button	
F-T-24	Set Split The Text If Too Long	
F-T-25	Set Fullscreen Mode	
F-T-26	Set Open Last Viewed File At Startup	

Features to be Tested → Test Req.

Feature ID	Description	Use Case
F-T-01	Create New File	Create File
F-T-02	Open File	Read File
F-T-03	Read File's Info	
F-T-04	Rename File	Update File
F-T-05	Edit File	
F-T-06	Undo Editing	
F-T-07	Redo Editing	
F-T-08	Search File with REGEX	Search File
F-T-09	Search File with MATCH CASE	
F-T-10	Search File with REPLACE	
F-T-11	Set Line Numbers	Set Configuration
F-T-12	Set Syntax Highlight	
F-T-13	Set Wrap Content	
F-T-14	Set Use Monospace	
F-T-15	Set Read Only	
F-T-16	Set Font Size	
F-T-17	Set Theme	
F-T-18	Set Accessory View	
F-T-19	Set Use the storage Access Framework	
F-T-20	Set Keyboard Suggestion and Swipe	
F-T-21	Set Auto Save	
F-T-22	Set Encoding	
F-T-23	Set Ignore Back Button	
F-T-24	Set Split The Text If Too Long	
F-T-25	Set Fullscreen Mode	
F-T-26	Set Open Last Viewed File At Startup	

Test ID	Description	Related Use Case
TD-01	Create New File	Create File
TD-02	Open File	Read File
TD-03	Read File's Info	
TD-04	Rename File	Update File
TD-05	Edit File	
TD-06	Undo Editing	
TD-07	Redo Editing	
TD-08	Search File with REGEX	Search File
TD-09	Search File with MATCH CASE	
TD-10	Search File with REPLACE	
TD-11	Set Line Numbers	Set Configuration
TD-12	Set Syntax Highlight	
TD-13	Set Wrap Content	
TD-14	Set Use Monospace	
TD-15	Set Read Only	
TD-16	Set Font Size	
TD-17	Set Theme	
TD-18	Set Accessory View	
TD-19	Set Use the storage Access Framework	
TD-20	Set Keyboard Suggestion and Swipe	
TD-21	Set Auto Save	
TD-22	Set Encoding	
TD-23	Set Ignore Back Button	
TD-24	Set Split The Text If Too Long	
TD-25	Set Fullscreen Mode	
TD-26	Set Open Last Viewed File At Startup	

Test Req. Covered by Test Case

Test Case ID	Description	Related Test Item
TC-01	Create File	TD-01
TC-02	Read File	TD-02、TD-03
TC-03	Update File	TD-04、TD-05、TD-06、TD-07
TC-04	Search File	TD-08、TD-09、TD-10
TC-05	Set Configuration	TD-11、TD-12、TD-13、TD-14、TD-15、TD-16、TD-17、TD-18、TD-19、TD-20、TD-21、TD-22、TD-23、TD-24、TD-25、TD-26
TC-06	Back When Create File	TD-01
TC-07	Close APP When Create File	TD-01
TC-08	undo	
TC-09	replaceTextKeepCursor	

User Scenario

Test Case ID	TC-04
Test Case Name	Search File
Related Use Case	UC-04
Related Test Item	TD-08、TD-09、TD-10
Scope	Turbo Editor
Input Specification	1. Launch Application. 2. Click menu button 3. Click "Open a file" on menu. 4. Click search icon. 5. Enter text for searching. 6. Select the wanted file in searching results.
Output Specification	1. Menu displays on the left side of screen. 2. File explorer shows up. 3. Search field shows up for input 4. Search results displays on screen. 5. The selected file opens after clicking on it.

Control-Flow Graph

➢Turbo Editor - Test Design Specification & Test Case Specification (pp.12)

3. Live Demo

Live Demo (cont'd)
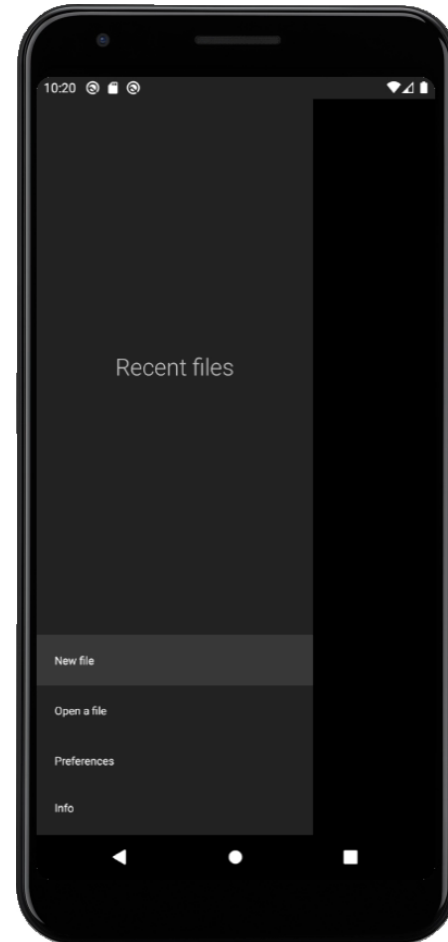
4. Test Result and Summary

Code Coverage

app-pro

Element	Missed Instructions	Cov.	Missed Branches	Cov.	Missed	Cxty	Missed	Lines	Missed	Methods	Missed	Classes
shared.turboeditor.home		50%		40%	330	501	485	1,130	70	182	15	34
shared.turboeditor.util		51%		24%	174	218	280	407	68	102	7	20
shared.turboeditor.dialogfragment		33%		14%	102	131	255	394	54	81	18	30
shared.turboeditor.explorer		0%		0%	76	76	199	199	25	25	5	5
shared.turboeditor.home.texteditor		43%		32%	75	105	132	227	32	53	3	12
shared.turboeditor.adapter		29%		13%	39	48	107	145	18	25	6	10
shared.turboeditor.util.systemui		0%		0%	61	61	128	128	37	37	8	8
shared.turboeditor.views		41%		18%	42	59	55	111	19	34	1	5
shared.turboeditor.preferences		79%		45%	31	97	58	211	23	87	0	20
shared.turboeditor.files		57%		30%	25	36	42	93	3	13	1	4
shared.turboeditor.markdown		0%		n/a	2	2	7	7	2	2	1	1
shared.turboeditor.application		41%		0%	1	3	5	10	0	2	0	1
com.maskyn.fileeditorpro		60%		n/a	1	2	1	2	1	2	0	1
Total	9,139 of 16,570	44%	973 of 1,373	29%	959	1,339	1,754	3,064	352	645	65	151
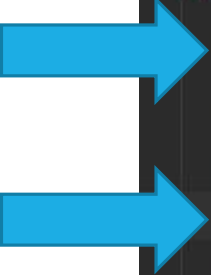
Test Result

Test Case ID	Description	Pass / Fail
TC-01	Create File	Pass
TC-02	Read File	Pass
TC-03	Update File	Pass
TC-04	Search File	Pass
TC-05	Set Configuration	Pass
TC-06	Back When Create File	Pass
TC-07	Close APP When Create File	Pass
TC-08	undo	Pass
TC-09	replaceTextKeepCursor	Pass
Pass Rate		9/9 (100%)
Code Coverage		44% (<80%)

Test Result Analysis

Test Case ID	Description	Related Test Item
TC-01	Create File	TD-01
TC-02	Read File	TD-02、TD-03
TC-03	Update File	TD-04、TD-05、TD-06、TD-07
TC-04	Search File	TD-08、TD-09、TD-10
TC-05	Set Configuration	TD-11、TD-12、TD-13、TD-14、TD-15、TD-16、TD-17、TD-18、TD-19、TD-20、TD-21、TD-22、TD-23、TD-24、TD-25、TD-26
TC-06	Back When Create File	TD-01
TC-07	Close APP When Create File	TD-01
TC-08	undo	
TC-09	replaceTextKeepCursor	

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TD-26	Set Open Last Viewed File At Startup	

Software Bug Found through Testing


```
if (Device.hasKitKatApi() && TextUtils.isEmpty(viewModel!!.greatUri!!.filePath)) {
    var newUri: Uri? = null
    try {
        DocumentsContract.renameDocument(contentResolver, viewModel!!.greatUri!!.uri!!, result)
    } catch (e: FileNotFoundException) {
        newUri = null
    }
}
```

```
override fun onEdittextDialogEnded(result: String, hint: String, action: EditTextDialog.Actions) {

    if (Device.hasKitKatApi() && TextUtils.isEmpty(viewModel!!.greatUri!!.filePath)) {
        var newUri: Uri? = null
        newUri = try {
            DocumentsContract.renameDocument(contentResolver, viewModel!!.greatUri!!.uri!!, result)
        } catch (e: FileNotFoundException) {
            null
        }
    }
```

Summary

➢ All test cases were promptly implemented.

➢ We found 1 bug that causes rename function failure.

➢ We are over optimistic about Code Coverage.

5. Project Information

Responsibility of Team Members

姓名	主要職稱/角色	主要職務/角色描述
古兆瑋	測試設計人員	進行測試設計，協助測試實作
陳冠穎	測試設計人員	調控專案時程，協助測試設計及實作
劉孝忠	測試實作人員	進行測試實作及環境建置

6. Lessons Learned

Lessons Learned

➢Testing Criteria (ISP, CFG, etc..)

➢Android APP Black-box Testing.

➢Web APP Testing. (Selenium)

➢Load/Stress Testing. (JMeter)

➢How to generate Code Coverage by using the right Testing Tools.

Q & A