**國立臺北科技大學**

**資訊工程系**

**軟體測試與驗證**

**Software Test Plan**

**Turbo Editor**

**Team#6**

**專案成員：古兆瑋（108598019）**

**陳冠穎（108598034）**

**劉孝忠（108598044）**

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# Change History

| Version | Primary Author(s) | Description of Version | Date Completed |
| --- | --- | --- | --- |
| 1.0.0 | 古兆瑋、陳冠穎、劉孝忠 | 樣式及內容初稿。 | 2020/04/08 |
| 1.1.0 | 古兆瑋、陳冠穎、劉孝忠 | 依教授於期中報告提出之建議，於Phase 3修正2.5 Item Pass/Fail Criteria；以及依更新後之行事曆修正5. Test Schedule。 | 2020/05/20 |
| 1.2.0 | 古兆瑋、陳冠穎、劉孝忠 | 修正測試工具為Espresso及UI Automator；以及依更新後之行事歷修正5. Test Schedule。 | 2020/06/23 |

# Objectives and Overview

## Test Plan Identifier

NTUT-108-STV-TurboEditor\_STP。

## Test Scope

本次計畫將以一個在Android系統上的「Turbo Editor」APP進行測試，範圍以APP所有功能為限。

## Test Approach

本次計畫以APP UI測試自動化框架去進行，透過撰寫腳本進行自動化測試。

## Test Deliverables

本次針對Turbo Editor的測試，預計會有以下3種產出物：

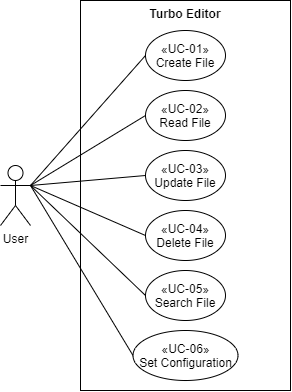
* Software Test Plan (STP)：（即為本文件）
* Test Design Specifications (TDS)：針對Software Test Plan (STP)中的Test Items設計Test Cases，並定義其測試的Feature Pass/Fail Criteria。
* Test Case Specifications (TCS)：針對Software Test Plan (STP)、Test Design Specifications (TDS)中的Test Items/Test Cases設計其Input Specifications、Output Specifications，並記錄其Intercase Dependencies。
* Test Result Summary (TRS)：執行那些根據上述文件的需求、設計、實作測試案例，其測試結果與分析報告。

# Test Items

## Description

本次測試將會以SUT中，以Turbo Editor的Feature List中，較常使用到的主要項目作為Test Items，並將其歸類為相對應的Use Cases，使往後Test Cases設計時有相對應的Use Cases。

## Use Cases



|  |  |
| --- | --- |
| **No** | UC-01 |
| **Use Case Name** | Create File |
| **Scope** | Turbo Editor |
| **Level** | User-goal |
| **Primary Actor** | User |
| **Stakeholders and Interests** | User: Intent to Create a New File. |
| **Preconditions** | None. |
| **Success Guarantee** | A File Created or Overwrote. |
| **Main success Scenario** | 1. User send “New File” request. 2. User input Filename. 3. User send “SAVE” request. 4. Turbo Editor will create a new File. |
| **Extensions** | 2a. User wants to overwrite an existed File.   1. User send “SAVE” request. 2. Turbo Editor will ask the User whether to overwrite the existed File. 3. User send “OK” request.   2b. A File with the Filename that User just input is already exist.   1. User send “SAVE” request. 2. Turbo Editor will create a new File but name it after a new alias. |
| **Special Requirements** | None. |
| **Technology** | None. |
| **Frequency of Occurrence** | Often. |
| **Miscellaneous** | None. |

|  |  |
| --- | --- |
| **No** | UC-02 |
| **Use Case Name** | Read File |
| **Scope** | Turbo Editor |
| **Level** | User-goal |
| **Primary Actor** | User |
| **Stakeholders and Interests** | User: Intent to Read an existed File. |
| **Preconditions** | None. |
| **Success Guarantee** | A File’s content showed. |
| **Main success Scenario** | 1. User select an existed File. 2. User send “Open a File” request. 3. File’s content and its Info showed. |
| **Extensions** | None. |
| **Special Requirements** | None. |
| **Technology** | None. |
| **Frequency of Occurrence** | Often. |
| **Miscellaneous** | None. |

|  |  |
| --- | --- |
| **No** | UC-03 |
| **Use Case Name** | Update File |
| **Scope** | Turbo Editor |
| **Level** | User-goal |
| **Primary Actor** | User |
| **Stakeholders and Interests** | User: Intent to Update an existed File. |
| **Preconditions** | None. |
| **Success Guarantee** | A File Updated. |
| **Main success Scenario** | 1. User select an existed File. 2. User send “Update” request. 3. User edit File’s content. 4. User send “Save” request. 5. A File Updated to its new state. |
| **Extensions** | 2a. User send “Rename” request.   1. User Input new Filename. 2. User send “SAVE” request. 3. File Updated to its new Filename.   3a. User send “Undo” request.   1. File recover to its previous state.   3b. User send “Redo” request.   1. File recover to its next state.   4a. User send “Save as” request.   1. User select Folder. 2. User Input new Filename. 3. User send “SAVE” request. 4. File Updated to its new Path.   4b. User send “SAVE” request.   1. File Updated.   4c. User send “CANCEL” request.   1. File not Updated. |
| **Special Requirements** | None. |
| **Technology** | None. |
| **Frequency of Occurrence** | Often. |
| **Miscellaneous** | None. |

|  |  |
| --- | --- |
| **No** | UC-04 |
| **Use Case Name** | Delete File |
| **Scope** | Turbo Editor |
| **Level** | User-goal |
| **Primary Actor** | User |
| **Stakeholders and Interests** | User: Intent to Delete an existed File. |
| **Preconditions** | None. |
| **Success Guarantee** | A File Deleted. |
| **Main success Scenario** | 1. User select an existed File. 2. User send “DELETE” request. 3. User send “YES” request. 4. A File Deleted. |
| **Extensions** | 3a. User send “NO” request.   1. File not Deleted. |
| **Special Requirements** | None. |
| **Technology** | None. |
| **Frequency of Occurrence** | Often. |
| **Miscellaneous** | None. |

|  |  |
| --- | --- |
| **No** | UC-05 |
| **Use Case Name** | Search File |
| **Scope** | Turbo Editor |
| **Level** | User-goal |
| **Primary Actor** | User |
| **Stakeholders and Interests** | User: Intent to Search an existed File. |
| **Preconditions** | None. |
| **Success Guarantee** | A File Searched. |
| **Main success Scenario** | 1. User input File’s Info. 2. User send “Search” request. 3. A File Searched. |
| **Extensions** | 3a. A File with that Searching Info do not exist.   1. File not Searched. |
| **Special Requirements** | None. |
| **Technology** | None. |
| **Frequency of Occurrence** | Often. |
| **Miscellaneous** | None. |

|  |  |
| --- | --- |
| **No** | UC-06 |
| **Use Case Name** | Set Configuration |
| **Scope** | Turbo Editor |
| **Level** | User-goal |
| **Primary Actor** | User |
| **Stakeholders and Interests** | User: Intent to set Turbo Editor’s Configuration. |
| **Preconditions** | None. |
| **Success Guarantee** | A Configuration Set. |
| **Main success Scenario** | 1. User send “Preference” request. 2. User Set or Toggle Configuration. 3. User send “Set Configuration” request. 4. Configuration Set. |
| **Extensions** | 2a. User send “Default” request.   1. Configuration reset to its initial state.   3a. User send “Cancel” request.   1. Configuration not Set. |
| **Special Requirements** | None. |
| **Technology** | None. |
| **Frequency of Occurrence** | Often. |
| **Miscellaneous** | None. |

## 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 Not To Be Tested

|  |  |  |
| --- | --- | --- |
| **Feature ID** | **Description** | **Use Case** |
| F-NT-01 | Create New Folder | Create File |
| F-NT-02 | Open Folder | Read File |
| F-NT-03 | Share File |
| F-NT-04 | Rename Folder | Update File |
| F-NT-05 | Edit Folder |

## Item Pass/Fail Criteria

Test Item的Pass/Fail判斷標準，分為下列兩種方式：

1. 以User Scenario Technique設計之測試案例：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Use Case有關以及與2.3 Features To Be Tested有關之Test Case通過測試(Pass)，證明軟體有達成使用案例的需求。
2. 以Control-Flow Graph Coverage Technique設計之測試案例：以Basis Path Approach，須覆蓋所有分支，意即Statement Coverage及Branch Coverage是100%，證明測試案例是有實際將該段程式碼執行過的。

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。

# Environment Needs

## Operational Environment

本測試考量測試中觀測及紀錄(文字、圖像及影像)的方便性，將計畫於個人電腦(PC)上之Android模擬器，透過框架進行APP UI自動化測試，其硬體規格如3.2；軟體規格如3.3。

## Hardware Specification and Configuration

|  |  |  |
| --- | --- | --- |
| **種類** | **描述** | **備註** |
| 中央處理器 | Intel® Core™ i5-4590 |  |
| 圖形處理器 | Intel® HD Graphics 4600 | 位於中央處理器內 |
| 硬碟 | INTEL SSDSC2CT240A4 | Intel® SSD 335 Series |
| 記憶體 | DDR3-1333 | 16 GB |
| 顯示器 | VW247N、VN289N |  |

## Software Specification and Configuration

|  |  |  |
| --- | --- | --- |
| **名稱** | **版本** | **備註** |
| Microsoft Windows 10專業版 | 1903 |  |
| Android Studio | 3.6.2 | SDK Platform Required |
| Espresso | 3.1.0 |  |
| UI Automator | 2.2.0 |  |

# Personnel and Responsibility

## Role and Responsibilities

|  |  |  |
| --- | --- | --- |
| **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 |

備註：角色因故無法執行職務時，得視情況調度其他人員取代或代理其職務。

## Staffing and Training

|  |  |  |
| --- | --- | --- |
| **訓練項目** | Turbo Editor 操作流程 | Appium 測試方法 |
| **訓練時間** | （預計於Phase 1結束以前） | |
| **訓練地點** | 宏裕科技大樓1623室 | |
| **講師** | 劉孝忠 | |
| **學員** | 古兆瑋、陳冠穎 | |

備註：訓練項目得同時或批次進行。

# Test Schedule

## Schedule and Milestones

|  |  |  |
| --- | --- | --- |
| **日期/期間** | **行程** | **備註** |
| 2020/04/08 | 訓練Turbo Editor操作流程及Appium測試方法 | 無 |
| 2020/04/09  ～  2020/04/21 | 撰寫Test Design Specifications (TDS)  撰寫Test Case Specifications (TCS)  籌備Midterm Presentation | 無 |
| 2020/04/22 | 里程碑：Midterm Presentation (Phase 2 due) | 無 |
| 2020/04/23  ～  2020/05/26 | 達成Phase 3需求 | 無 |
| 2020/05/27 | 里程碑：Phase 3 due | 無 |
| 2020/05/28  ～  2020/06/22 | 達成Phase 4需求 | 無 |
| 2020/06/23 | 里程碑：Phase 4 due | 無 |
| 2020/06/24  ～  2020/06/29 | 籌備Final Presentation  達成Final Submission需求 | 無 |
| 2020/06/30 | 里程碑：Final Presentation (Final Report due) | 無 |

備註：由於專案成員之身分為學生，針對課業之作業不定性，無法提供明確的時間點，故以各Due Date及期間為主要目標及里程碑劃分。

# Glossary

|  |  |
| --- | --- |
| **SUT** | 軟體系統測試則通常是以被測系統（System Under Test，SUT）表示正在被測試的系統，目的是測試系統是否能正確操作。這一詞語常用於軟體測試中。[1] |
|  |  |
| **Android** | Android（讀音：英：['ændrɔɪd]，美：[ˈænˌdrɔɪd]），中文常譯作安卓或安致，是一個基於Linux核心的開放原始碼行動作業系統，由Google（Google）成立的開放手機聯盟持續領導與開發，主要設計用於觸控螢幕行動裝置如智慧型手機和平板電腦與其他可攜式裝置。[2] |
|  |  |
| **APP** | A short of “Application” |
|  |  |
| **Turbo Editor** | Simple, Powerful and Open Source Text Editor for Android. Built following the latest Android Guidelines to make the experience the most intuitive on the Store, also on Tablets![3][4] |
|  |  |
| **Espresso** | The core API is small, predictable, and easy to learn and yet remains open for customization. Espresso tests state expectations, interactions, and assertions clearly without the distraction of boilerplate content, custom infrastructure, or messy implementation details getting in the way.  Espresso tests run optimally fast! It lets you leave your waits, syncs, sleeps, and polls behind while it manipulates and asserts on the application UI when it is at rest.[5] |
|  |  |
| **UI Automator** | The UI Automator testing framework provides a set of APIs to build UI tests that perform interactions on user apps and system apps. The UI Automator APIs allows you to perform operations such as opening the Settings menu or the app launcher in a test device. The UI Automator testing framework is well-suited for writing black box-style automated tests, where the test code does not rely on internal implementation details of the target app.[6] |

# Reference

[1] 被測系統(Wikipedia) <https://zh.wikipedia.org/wiki/%E8%A2%AB%E6%B5%8B%E7%B3%BB%E7%BB%9F>

[2] Android(Wikipedia) <https://zh.wikipedia.org/wiki/Android>

[3] Turbo Editor(Google Play) <https://play.google.com/store/apps/details?id=com.maskyn.fileeditor>

[4] Turbo Editor(Github) <https://github.com/vmihalachi/turbo-editor>

[5] Espresso <https://developer.android.com/training/testing/espresso>

[6] UI Automator <https://developer.android.com/training/testing/ui-automator>

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