**Programming Assignment Submission System (PASS)**

**系統需求規格書**

**Software Testing Document (STD)**

**Version: 1.0**

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# Section 1 Objectives and Acceptance Criteria

## Test Scope

Programming Assignment Submission System(PASS)系統提供一個作業繳交平台，讓學生能在網路上繳交自己的課堂作業；而老師也可以直接在網路上進行作業的指派與批改系統還能提供統計數據讓學生了解自己的學習狀況，教師也能迅速了解教學成效，進而達到良好的教學品質而本系統採用Web Application 設計方法 ，並依照功能分為兩個子系統：

* 使用者管理子系統(User Management Subsystem, UMS)
* 課程管理與作業繳交子系統(Course Managent and Homework Submit System,CMHSS)

本測試文件主要測試所有功能是否正常，各子系統之間的整合度是否正常，程式交付之系統功能是否與系統開發前的功能需求一致在此我們著重於整合系統測試(Integration Test)及接受度測試(Acceptance Test)本文件內容將依照系統功能測試功能是否正確與使用案例進行相關計畫與測試並希望透過此文件之描述與實踐，達到順利進行測試工作之目的

## Test Acceptance Criteria

本系統測試計畫需要滿足下列的測試接受準則：

* 所有本測試計畫的測試結果，皆需能符合預期測試結果才可通過（Pass）
* 本系統依據實際功能進行測試
* 測試程序需要依照本測試計畫所制定的程序進行，所有的測試結果都需要符合預期測試結果(Expected Result)才能接受
* 本測試計畫中，Test Case 為通過測試的最基本單位

# Section 2 Personnel and Responsibility

## 2.1 Personnel

本專案測試成員如下：

|  |  |  |
| --- | --- | --- |
| **姓名** | **英文名子** | **備註** |
| **陳佐昂** | Wayne | 專案管理者兼系統開發兼測試 |
| **林杰毅** | Jay | 系統開發兼測試 |
| **鍾承翰** | Hank | 系統開發兼測試 |
| **吳彥銘** | Johnson | 系統開發兼測試 |

## 2.2 Testing Schedule

* 時程

|  |  |  |
| --- | --- | --- |
| **Item** | **Start Date** | **Over Date** |
| **各子系統驗證測試** | 2017/12/27 | 2018/01/02 |
| **系統整合測試** | 2017/12/27 | 2018/01/02 |

* 查核點

|  |  |  |
| --- | --- | --- |
| **Item** | **Start Date** | **Over Date** |
| **各子系統驗證測試** | 2017/12/30 | 2018/01/02 |
| **系統整合測試** | 2017/12/30 | 2018/01/02 |

## 2.3 Responsibility

* UMS子系統

|  |  |  |
| --- | --- | --- |
| **Testing Activity** | **Personnel** | **測試時程** |
|  | Hank、Johnson | 1.5 H |
|  | Hank、Johnson | 0.5 H |

* CMHSS子系統

|  |  |  |
| --- | --- | --- |
| **Testing Activity** | **Personnel** | **測試時程** |
|  | Hank、Johnson | 2.5 H |
|  | Hank、Johnson | 3.5 H |
|  | Hank、Johnson | 1 H |
|  | Hank、Johnson | X |
|  | Hank、Johnson | 0.5 H |
|  | Hank、Johnson | 3.5 H |

# Section 3 Testing Environment

## 3.1 Operational Environment

本測試環境於Window的網路環境下進行，伺服器與客戶端需要先設定網路連線，進行測試前需要進行下面的環境的設定：

伺服器端採用Express

資料伺服器的資料庫存取採RESTFUL

各個子系統的內部單元測試為單機模式由開發者在開發平台環境做測試工作

## 3.2 Hardware Specification and Configuration

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **項目** | **名稱** | **數量** | **規格** | **備註** |
|  | Intel i7-6700 | 1 | 3.40GHz (4 CPUs)  64G RAM |  |
|  | Hard Disk | 1 | 500MB |  |
|  | Network |  | Ethernet Network |  |

## 3.3 Software Specification and Configuration

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 項目 | 名稱 | 數量 | 版本 | 備註 |
|  | Microsoft Windows | 1 | Windows 10 |  |
|  | MongoDB | 1 | 3.6 |  |
|  | Exprss | 1 | 4.14.0 |  |
|  | Chrome | 1 | 63.0.3239.84 |  |

## 3.4 Test Data Sources

* Testing PASS System Data (測試人員寫出的測試資料)
* Testing UMS System Data (使用者所輸入的帳號基本資料)
* Testing CMHSS System Data(使用者所輸入的課程與作業資料)

## 3.5 Tools and Equipments

* 單元測試：本系統內部採用Express，來檢測功能
* 系統測試：Mocha, sinon, mongooseMock
* 書面資料：測試期間的所有資料整合是採用 Microsoft Word 2016

# Section 4 Test Cases

## 4.1 Definition of Severity Number

|  |  |
| --- | --- |
| Severity Number | Definition |
| 1 | Critical |

## 4.2 Definition of Severity Number

* **Test Objective**

本測試案例是測試系統運作是否正常

* **Test Cases**

## User Management Subsystem (UMS) Test Case

**Test Objective**

|  |  |
| --- | --- |
| **Identification** |  |
| **Name** | 建立帳戶功能測試 |
| **Tested target** | UMS |
| **Reference** | PASS-F-01**、**PASS-N-**1、**UMS-F-01、UMS-F04 |
| **Severity** | 1. (Critical) |
| **Instructions** | 1. Admin權限進行登入 2. 點選新增帳號 3. 填入相關資訊 4. 新增帳號完成 |
| **Expected Result** | 1. 成功登入系統 2. 顯示帳號列表 3. 進入新增帳號頁面 4. 欄位顯示輸入資訊 5. 資料庫成功新增一筆帳號資料 |
| **Cleanup** | 刪除帳號並且點選登出按鈕，回到登入頁面 |

|  |  |
| --- | --- |
| **Identification** |  |
| **Name** | 使用者登入，身分驗證功能測試 |
| **Tested target** | UMS |
| **Reference** | UMS-F-02、PASS-N-1、PASS-N-2、PASS-N-5、PASS-N-6 |
| **Severity** | 1. (Critical) |
| **Instructions** | 1. 登入畫面入正確的帳號及密碼 2. 按下登入 |
| **Expected Result** | 1. 顯示登入頁面 2. 登入頁面的帳號欄位會正常顯示使用者帳號   密碼欄位會消字顯示‘\*’   1. 進行帳號驗證 2. 成功進入登入畫面 |
| **Cleanup** | 點選登出按鈕，回到登入頁面 |

## 4.4 Course Managent and Homework Submit System (CMHSS) Test Case

|  |  |
| --- | --- |
| **Identification** |  |
| **Name** | 教師建立作業功能測試 |
| **Tested target** | CMHSS |
| **Reference** | CMHSS-F-02 |
| **Severity** | 1. (Critical) |
| **Instructions** | 1. 以Teacher權限登入 2. 進入課程，並導向作業區 3. 點選新增作業 4. 填入作業的相關資訊 5. 新增作業完成 |
| **Expected Result** | 1. 成功登入系統 2. 顯示課程列表 3. 顯示作業列表 4. 進入新增作業頁面 5. 欄位內顯示輸入的作業資訊 6. 資料庫內成功新增一筆作業資料 |
| **Cleanup** | 刪除作業並點選登出按鈕，回到登入頁面 |

|  |  |
| --- | --- |
| **Identification** |  |
| **Name** | 批改作業功能測試 |
| **Tested target** | CMHSS |
| **Reference** | PASS-F-05、CMHSS-F-03 |
| **Severity** | 1. (Critical) |
| **Instructions** | 1. Teacher權限登入 2. 進入課程，並導向作業區 3. 點選批改作業 4. 批改作業 5. 批改作業完成 |
| **Expected Result** | 1. 成功登入系統 2. 顯示課程列表 3. 顯示作業列表 4. 進入批改作業頁面 5. 欄位內顯示輸入的批改成績 6. 資料庫內成功更新作業的成績 |
| **Cleanup** | 將更改的作業成績初始化並點選登出按鈕，回到登入頁面 |

|  |  |
| --- | --- |
| **Identification** |  |
| **Name** | 使用者查詢成績測試 |
| **Tested target** | CMHSS |
| **Reference** | CMHSS-F-04、CMHSS-F-05 |
| **Severity** | 1. (Critical) |
| **Instructions** | 1. 使用者登入 2. 進入課程，並導向作業區 3. 點選查詢成績 |
| **Expected Result** | 1. 成績資料與資料庫資料相同 |
| **Cleanup** | 點選登出按鈕，回到登入頁面 |

|  |  |
| --- | --- |
| **Identification** |  |
| **Name** | 使用者上傳檔案的功能測試 |
| **Tested target** | CMHSS |
| **Reference** | PASS-F-04、CMHSS-F-06、PASS-N-9 |
| **Severity** | 1. (Critical) |
| **Instructions** | 1. 使用者登入 2. 使用者選取課程 3. 使用者進入作業區 4. 使用者點選上傳作業 5. 確認上傳 6. 上傳完成 |
| **Expected Result** | 1. 成功進入系統 2. 顯示課程資訊 3. 顯示作業區資訊 4. 跳出檔案管理視窗 5. 上傳完成 |
| **Cleanup** | 點選登出按鈕，回到登入頁面 |

|  |  |
| --- | --- |
| **Identification** |  |
| **Name** | 新增課程的功能測試 |
| **Tested target** | CMHSS |
| **Reference** | PASS-F-02、CMHSS-F-01 |
| **Severity** | 1. (Critical) |
| **Instructions** | 1. 以admin權限登入系統 2. 點選新增課程 3. 輸入課程資訊 4. 成功添增課程 |
| **Expected Result** | 1. 成功進入系統 2. 點選新增課程 3. 進入課程新增頁面 4. 欄位顯示輸入的課程資訊 5. 資料庫成功添增一筆課程資料 |
| **Cleanup** | 刪除新增課程並點選登出按鈕，回到登入頁面 |

|  |  |
| --- | --- |
| **Identification** |  |
| **Name** | 選課功能測試 |
| **Tested target** | CMHSS |
| **Reference** | PASS-F-02 |
| **Severity** | 1. (Critical) |
| **Instructions** | 1. 以admin權限登入系統 2. 點選選課 3. 點選選課人員與課程 4. 成功添增課程 |
| **Expected Result** | 1. 成功進入系統 2. 點選選課 3. 進入選課頁面 4. 勾選課程與上課的學生 5. 資料庫成功更新選課資訊 |
| **Cleanup** | 初始化選課資訊並點選登出按鈕，回到登入頁面 |

# Section 5 Test Procedure and Schedule

* 1. **Testing Schedule**

|  |  |  |
| --- | --- | --- |
| Deliverable | Responsibility | Completion Date |
| Develop Test Cases | Wayne,Jay | 2017/12/30 |
| Test Cases Review | Wayne,Jay | 2018/1/2 |
| Requirements  Validation Matrix | Hank,Johnson | 2017/12/31 |
| Execute User Acceptance Tests | Hank,Johnson | 2018/1/2 |

* 1. **User Management Subsystem (UMS)**
     1. Schedule

|  |  |  |
| --- | --- | --- |
| Deliverable | Responsibility | Completion Date |
| Develop Test Cases | Wayne,Jay | 2017/12/30 |
| Test Cases Review | Wayne,Jay | 2018/1/2 |
| Requirements  Validation Matrix | Hank,Johnson | 2017/12/31 |
| Execute User Acceptance Tests | Hank,Johnson | 2018/1/2 |

* + 1. Initialization Condition
  + UMS Account Verification is complete
  + Complete the establishment of a database interface
    1. Test Cases Sequences

|  |
| --- |
| Test Cases Sequences |
|  |
|  |

* 1. Course Managent and Homework Submit System (CMHSS)
     1. Schedule

|  |  |  |
| --- | --- | --- |
| Deliverable | Responsibility | Completion Date |
| Develop Test Cases | Wayne,Jay | 2017/12/30 |
| Test Cases Review | Wayne,Jay | 2018/1/2 |
| Requirements  Validation Matrix | Hank,Johnson | 2017/12/31 |
| Execute User Acceptance Tests | Hank,Johnson | 2018/1/2 |
| Deliverable | Responsibility | Completion Date |

* + 1. Initialization Condition
  + UMS Account Verification is complete
  + Complete the establishment of a database interface
    1. Test Cases Sequences

|  |
| --- |
| Test Cases Sequences |
|  |
|  |
|  |
|  |
|  |
|  |

# Section 6 Test Results and Analysis

* 1. UMS

|  |  |  |
| --- | --- | --- |
| Test Case # | Results (PASS/FAIL) | Comment |
|  | PASS |  |
|  | PASS |  |

* 1. CMHSS

|  |  |  |
| --- | --- | --- |
| Test Case # | Results (PASS/FAIL) | Comment |
|  | PASS |  |
|  | PASS |  |
|  | PASS |  |
|  | PASS |  |
|  | PASS |  |
|  | PASS |  |

# Glossary

**Database** 記錄資料的地方，提供新增、刪除、更新記錄的功能

**NodeJS** Node.js是一個能夠在伺服器端運行JavaScript的開放原始碼、跨平台JavaScript執行環境

**Git** 是一個分散式版本控制軟體

**Vue** 是一個用於建立使用者介面的開源JavaScript框架，也是一個建立單頁面應用的Web應用框架

**Mocha** Javascript測試框架

**Express** 提供了一系列強大特性幫助你創建各種Web 應用，和豐富的HTTP 工具

**Robot FrameWork** 自動化測試軟體框架用於重複性的回歸測試以及驗收測試

# Traceability Matrix

## A Traceability Matrix of Test Cases vs Requirements

|  |  |  |
| --- | --- | --- |
|  | UMS-TC01 | UMS-TC02 |
| UMS-F-01 | O |  |
| UMS-F-02 |  | O |
| UMS-F-03 |  |  |
| UMS-F-04 | O |  |
| UMS-F-05 | O |  |
| UMS-N-01 |  | O |
| UMS-N-02 |  | O |
| UMS-N-03 |  |  |
| UMS-N-04 | O | O |
| UMS-N-05 | O | O |
| UMS-N-06 |  |  |
| UMS-N-07 |  | O |
| UMS-N-08 |  |  |
| UMS-N-09 |  | O |
| UMS-N-10 | O | O |
| UMS-N-11 |  |  |
| UMS-N-12 | O | O |
| UMS-N-13 | O | O |
| UMS-N-14 | O | O |
| UMS-N-15 |  |  |
| UMS-N-16 | O | O |
| UMS-N-17 | O | O |
| UMS-N-18 | O | O |
| UMS-N-19 | O | O |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | CMHSS-  TC01 | CMHSS-  TC02 | CMHSS-  TC03 | CMHSS-  TC04 | CMHSS-  TC05 | CMHSS-  TC06 |
| CMHSS -F-01 |  |  |  |  |  |  |
| CMHSS-F-02 | O |  |  |  |  |  |
| CMHSS-F-03 |  | O |  |  |  |  |
| CMHSS-F-04 |  |  | O |  |  |  |
| CMHSS-F-05 |  |  | O |  |  |  |
| CMHSS-F-06 |  |  |  | O |  |  |
| CMHSS-F-07 |  |  |  |  |  |  |
| CMHSS-F-08 |  |  |  |  |  |  |
| CMHSS-N-01 |  |  |  |  |  |  |
| CMHSS-N-02 |  |  |  |  |  | O |
| CMHSS-N-03 |  |  |  |  |  | O |
| CMHSS-N-04 |  |  |  |  |  |  |
| CMHSS-N-05 | O | O | O | O | O | O |
| CMHSS-N-06 |  |  |  |  |  | O |
| CMHSS-N-07 | O | O |  |  |  |  |
| CMHSS-N-08 |  |  | O |  |  |  |
| CMHSS-N-09 |  |  | O |  |  |  |
| CMHSS-N-10 |  |  |  | O |  |  |
| CMHSS-N-11 |  |  | O |  |  |  |
| CMHSS-N-12 | O | O | O | O | O | O |
| CMHSS-N-13 |  |  |  |  |  |  |
| CMHSS-N-14 |  |  |  |  |  |  |
| CMHSS-N-15 | O | O | O | O | O | O |
| CMHSS-N-16 |  |  |  |  |  |  |
| CMHSS-N-17 | O | O | O |  | O | O |
| CMHSS-N-18 | O | O | O | O | O | O |
| CMHSS-N-19 |  |  |  |  |  |  |
| CMHSS-N-20 | O | O | O | O | O | O |
| CMHSS-N-21 | O | O | O | O | O | O |
| CMHSS-N-22 | O | O | O | O | O | O |

## B Traceability Matrix of Test Cases vs Use Cases

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | UMS-TC01 | UMS-TC02 | CMHSS-  TC01 | CMHSS-  TC02 | CMHSS-  TC03 | CMHSS-  TC04 | CMHSS-  TC05 | CMHSS-  TC06 |
| UMS-01 | O |  |  |  |  |  |  |  |
| UMS-02 |  |  |  |  |  |  |  |  |
| UMS-03 |  |  |  |  |  |  | O |  |
| UMS-04 |  |  |  |  |  |  |  |  |
| CMHSS-01 |  |  |  |  |  |  |  |  |
| CMHSS-02 |  |  | O |  |  |  |  |  |
| CMHSS-03 |  |  | O |  |  |  |  |  |
| CMHSS-04 |  |  |  |  | O |  |  |  |
| CMHSS-05 |  |  |  |  |  |  |  |  |
| CMHSS-06 |  |  |  |  |  | O |  |  |
| CMHSS-07 |  |  |  |  |  |  |  |  |
| CMHSS-08 |  |  |  |  |  |  |  |  |
| CMHSS-09 |  |  |  |  |  |  |  |  |
| CMHSS-10 |  |  |  |  | O |  |  |  |
| CMHSS-11 |  |  |  | O |  |  |  |  |
| CMHSS-12 |  |  |  |  |  |  |  |  |
| CMHSS-13 |  |  |  |  |  |  |  |  |