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| Application Requirements Document (DRAFT) | November 13  2013 | |
| Provides a description of the mobile memorization, entry and recall testing application developed for the National Institute of Standards and Technology (NIST) by G2, Inc. | | Requirements for the Desktop Typing Proficiency Testing Application |

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# Typing Test Mobile Application

## Overview

This app is intended to assist in testing the ability of users to memorize and enter passwords of varying complexity on desktop computers. The application will proceed through several phases, a baseline typing proficiency measurement phase in which the user will be asked to type in a number of phrases in order to determine their average typing speed, a memorization and verification phase in which users must memorize and enter a set of specified strings, and a recall phase in which the user will be asked to remember and enter as many of the strings from the memorization and verification phase as they can.

The app will also provide an administrative settings section that will allow the test administrator to control variables such as string selection, string order, and number of test entities and entries required per entity.

## Target Device

The app will be designed to work on Windows 7 desktops with a minimum screen resolution of 800x600.

## Target OS

The app will target Windows 7 with the .NET framework 4.5 installed.

## Target Audience

The primary target audience will be the study participants; the secondary audience will be those who are administering the sessions.

## Mockups and Wireframes

Mockups and wireframes are included in the associated PDF documents. Please refer to the PDF documents as needed.

## Application Screens

### Welcome Screen

|  |  |
| --- | --- |
| Welcome Screen | |
| Purpose | The welcome screen will be the first screen presented to the user at the start of a session and is used to record the participant number |
| Description | It will consist of a text field used to enter the participant number, a button to proceed to the next screen, and a button to access the application settings |
| Mockup Name(s) | StartScreen |

#### Controls

|  |
| --- |
| Settings Button |
| Will always be active |
| Will take the user to the settings screen |

|  |
| --- |
| Start Button |
| Will be active once a valid participant number has been entered in the text box. A valid participant number is defined as a string that is >= 1 character in length |
| The button will take the user to the ready screen |

|  |
| --- |
| Participant Number Text Box |
| Not masked |
| Will not auto capitalize text |
| Will not perform spell checking |
| Will accept alphanumeric and special characters |

### Ready Screen

|  |  |
| --- | --- |
| Ready Screen | |
| Purpose | The ready screen is used to verify the participant number and provide a chance for any last minute interactions before the start of the session |
| Description | The ready screen will consist of a welcome message, which can be customized through the use of an HTML file, as well as a display of the participant number that was entered at the Welcome Screen. There will be two buttons, one that will allow the user to go back to the welcome screen in order to change the participant number and one that will allow the user to start the test session |
| Mockup Name(s) | ReadyScreen |

#### Controls

|  |
| --- |
| Cancel Button |
| Will always be active |
| Will take the user to the Welcome Screen |

|  |
| --- |
| Begin Button |
| Will always be active |
| Will take the user to the Typing Proficiency Screen |
| Pressing this button will indicate the start of the session |

|  |
| --- |
| Welcome Text |
| Will display text a HTML file |

|  |
| --- |
| Participant Number |
| Will display the participant number entered on the Welcome Screen |

### Typing Proficiency Screen

|  |  |
| --- | --- |
| Typing Proficiency Screen | |
| Purpose | The typing proficiency screen will be used to measure baseline typing proficiency of the user, by having the user enter a number of phrases on the device |
| Description | It will consist of a label indicating the users progress through the phase, a label displaying the text to be entered, a text box for the user to enter the phrase, a set of instructions for the screen, and a button to proceed to next phrase or phase of the test |
| Mockup Name(s) | TypingProficiency |

#### Controls

|  |
| --- |
| Done Button |
| Will only be active once text has been entered in the text box |
| Will take the user to the next phrase if they are still in the proficiency testing phase |
| Will take the user to the introduction screen if they have completed the required number of phrases |

|  |
| --- |
| Text Box |
| Not Masked  Auto-Capitalize on sentence |

|  |
| --- |
| Phase Progress Display |
| Will indicate the users overall progress through this phase of the session |

### Introduction Screen

|  |  |
| --- | --- |
| Introduction Screen | |
| Purpose | The introduction screen will provide a web view that displays a local HTML file that can be used to give instructions for the following phase to the user |
| Description | There will be a Start button that will advance the user to the next phase once they have read the instructions |
| Mockup Name(s) | Introduction |

#### Controls

|  |
| --- |
| Introduction Text |
| Will display text from a platform defined HTML file |

|  |
| --- |
| Start Button |
| Will always be active |
| Will take the user to the Memorize screen |

### Memorize Screen

|  |  |
| --- | --- |
| Memorize Screen | |
| Purpose | The memorize screen will present the user with a string to be memorized (an entity) |
| Description | The memorize screen will present the user with an indicator of their progress through the session, the string the user should memorize (the entity), a work area that the user may use to aid them in the memorization process, instructions for the screen and a button that will move them to the next screen |
| Mockup Name(s) | Memorize |

#### Controls

|  |
| --- |
| Phase Progress Display |
| Will indicate the users overall progress through this phase of the session |

|  |
| --- |
| Entity Display |
| Will display the string (entity) that the user is to memorize |
| Will be of a larger font size |
| Will be the Consolas font |

|  |
| --- |
| Work Area |
| Will not be masked |

|  |
| --- |
| Done Button |
| Will always be active |
| Will take the user to the Forced Practice screen |

### Forced Practice Screen

|  |  |
| --- | --- |
| Forced Practice Screen | |
| Purpose | The forced practice screen is used to ensure that the user makes an attempt to memorize the entity |
| Description | The forced practice screen will present the user with indicators of their overall progress through the session, their progress through this practice session, the string to be memorized, a text box to enter the string, instructions for the screen, a button to go to the previous screen, and a button to go to the next practice entry or the next screen depending on their progress. The user must enter the string in the text box correctly to move to the next entry or screen |
| Mockup Name(s) | ForcedPractice |

#### Controls

|  |
| --- |
| Phase Progress Display |
| Will indicate the users overall progress through this phase of the session |

|  |
| --- |
| Entity Progress Display |
| Will indicate the users overall progress for this entity on this screen |

|  |
| --- |
| Entity Display |
| Will display the string (entity) that the user is to memorize |
| Will be of a larger font size |
| Will be the Consolas font |

|  |
| --- |
| Text Entry Field |
| Will not be masked |
| Will allow entry of a ‘secret phrase’ to skip to recall screen |

|  |
| --- |
| Done Button |
| Will be active once the user has correctly entered the entity |
| Will take the user to the next practice screen if more practice is required |
| Will take the prompt the user to move to the Verify screen if no more practice is required |

|  |
| --- |
| Memorize Button |
| Will always be active |
| Will take the user to the Memorize Screen |

### Verify Screen

|  |  |
| --- | --- |
| Verify Screen | |
| Purpose | The verify screen is used to ensure that the user has memorized the entity |
| Description | It will consist of an indicator of overall progress, a text box, instructions, and buttons allowing the user to return to the practice screen or to check their entry to see if it is correct.  If the user checks their entry they will be given an indicator of whether or not they entered the string correctly. They will have the option to go back to the practice screen, and if they entered the string correctly the option to proceed to the entry screen. If they did not enter the string correctly they will have the option to re-enter and check their string. |
| Mockup Name(s) | Verify |

#### Controls

|  |
| --- |
| Phase Progress Display |
| Will indicate the users overall progress through this phase of the session |

|  |
| --- |
| Entry Field |
| Will not be masked |
| Will allow entry of a ‘secret phrase’ to skip to the recall screen |

|  |
| --- |
| Check Button |
| Will be active once the user has entered text |
| Will take the user to the Entry screen if the text in the Entry Field == the current entity |
| Will allow the user to recheck if the text in the Entry Field is != current entity |
| Will cause a correct/incorrect indicator to be displayed to the user based on whether or not the text in the Entry Field is == (correct) or != (incorrect) to the current entity |

|  |
| --- |
| Practice Button |
| Will always be active |
| Will take the user to the Forced Practice screen |

### Entry Screen

|  |  |
| --- | --- |
| Entry Screen | |
| Purpose | The entry screen is used to measure the participant’s speed and accuracy when entering the entity in a situation that is similar to a regular password entry procedure. |
| Description | It will provide progress indicators showing the overall progress through the session and the progress for this particular entity. It will also include a text box, instructions and a button to proceed to the next entry or screen. |
| Mockup Name(s) | Entry1  Entry2 |

#### Controls

|  |
| --- |
| Phase Progress Display |
| Will indicate the users overall progress through this phase of the session |

|  |
| --- |
| Entity Progress Display |
| Will indicate the users overall progress for this entity on this screen |

|  |
| --- |
| Entry Field |
| Will be masked |
| Will allow entry of a ‘secret phrase’ to take the user to the recall phase |

|  |
| --- |
| Next Button |
| Will be active once the user has entered text in the Entry Field |
| Will take the user to the next Entry Screen if more entries are required for the entity |
| Will take the user to the Memorize Screen for the next entity if no more entries are required for the current entity and there are more entities to complete the session |
| Will take the user to the Recall Screen if no more entries or entities remain |

### Recall Screen

|  |  |
| --- | --- |
| Recall Screen | |
| Purpose | The Recall Screen is used to test a participants ability to recall previous entities from session |
| Description | It consists of instructions, a variable number of text boxes, depending on the number of entities, and a button to move to the next screen. |
| Mockup Name(s) | Recall |

#### Controls

|  |
| --- |
| Done Button |
| Will be active once text has been entered in one entry field |
| Will take the user to the Thank You Screen |

|  |
| --- |
| Entry Field (Multiple) |
| Will not be masked |

### Thank You Screen

|  |  |
| --- | --- |
| Than You Screen | |
| Purpose | The thank you screen is the final screen of the application and is used to display a message to the user. |
| Description | The message will be displayed in a web control that displays a HTML file, and will provide a button allowing the user to finish the session. |
| Mockup Name(s) | ThankYou |

#### Controls

|  |
| --- |
| Thank You Display |
| Will display text from a HTML file |

|  |
| --- |
| Done Button |
| Will take the user to the Start Screen |

### Settings Screen

|  |  |
| --- | --- |
| Settings Screen | |
| Purpose | The settings screen provides a number of options to allow the session administrator to customize the parameters of the session. |
| Description | It will consist of a number of controls allowing customization of the settings, a button to cancel the changes made, and a button to save the changes made.   * Number of entities to be presented to the user * # of entries per entity * Randomize the entity order * Seed for entity order * Randomize entity selection * Seed for entity selection * Reset settings to default * Specification of secret phrase to terminate test session (“skip to recall”) * Specfiication of secret phrase to skip current entity. |
| Mockup Name(s) | Settings |

#### Controls

|  |
| --- |
| Cancel Button |
| Will take the user to the Start Screen |
| Will discard any changes made by the user to the settings |

|  |
| --- |
| Save Button |
| Will take the user to the Start Screen |
| Will commit any changes made by the user to the settings |

## Logging

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| Log Files |
| The application will create one raw log file per session |
| The application will create one summary log file per session |
| Log files will be accessible from the users documents directory |

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| Raw Log File Format |
| The raw log file will be tab delimited plain text |
| Column 1 – Time of event |
| Column 2 – Time of event since start of session in ms |
| Column 3 – Participant number |
| Column 4 – Event Type |
| Column 5 –Phase |
| Column 6 – Subphase |
| Column 7 – Target String |
| Column 8 – X coordinate of mouse click |
| Column 9 – Y coordinate of mouse click |
| Column 10 – Key Pressed |
| Column 11 – Current Value of text field |
| Column 12 – Additional notes |

|  |
| --- |
| Summary Log File |
| The summary log file will be plain text |
| Participant ID |
| Session Settings |
| Strings selected for session |
| Session Start |
| Start Time for each phase |
| End time For each phase |
| Time spent in each phase |
| Time spent in each sub phase. For sub phases that are re-entrant (Free Practice, Forced Practice, Memorize) individual sub phase times and overall sub phase times per entity will be recorded. |
| Total time spent per entity |
| Total session time |

## Input File Format

Input phrases for the program will be provided in the XML format specified in the “typingInput.xsd” file. A sample input file is provided with the application code.