

ASSIGNMENT #4 | CMPT 363 | FALL 2017

## *SUPERGROUP*

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# *KeePassX*

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## INTRODUCTION

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KeePassX is an open-source password manager that helps online users of multiple accounts save time on account verification processes and manage their account credentials in a secure, modern and highly learnable interface.

# USABILITY TEST PLAN

**TESTED PRODUCT:** KeePassX ( <https://www.keepassx.org> )

## BUSINESS CASE:

The test will help to determine whether our redesigns have effectively solved the key issues identified in our prior usability tests of the current product.

## PARTICIPANTS:

- 5-7 new (inexperienced) users
- Must be a current student, alumni, or faculty
- Recruited from r/simonfraser and as random volunteers

## EQUIPMENT:

- 1) Laptop for digital note-taking
- 2) Paper versions of design mock-ups (created in myBalsamiq)
- 3) We will record any usability issues and user complaints

## TEST TASKS:

- Create a new database
- Add a new entry
- Add entries to groups
- Search for an entry in a large database

## TEST OBJECTIVES:

Examine if users:

- Understand the process for setting up / creating a new database
- Understand exactly what they are doing at each stage of database creation and new entry creation?
- Understand the core functions of KeePassX
- Feel confident using KeePassX
- Understand the intent of icons/buttons without scrolling over or testing them

## RESPONSIBILITIES:

**Otakar Valek** - Lead Designer, Report Editor, Interviewer, Note-taker

**Woody Chang** - Report Editor, Interviewer, Note-taker

**James Araujo** - Report Writer, Report Editor, Interviewer, Note-taker,

**Kyle Moss** – Group Coordinator, Participant Recruiter, Report Writer

**John Xiang** – Designer, User Surveyor, Report Writer

## LOCATION AND DATES:

Testing will be conducted on and around the **SFU Burnaby campus** from **November 15<sup>th</sup>** to **November 24<sup>th</sup>**.

## PROCEDURE:

**0-5 minutes:** welcome participant, provide consent forms, inquire if they have any questions

**5-10 minutes:** Explain software and describe interaction with the mock-ups.

**10-15 minutes:** provide users with the test tasks

**15-20 minutes:** provide users with the post-test questionnaire

**20+ minutes:** thank users for their participation and pay incentive

## USABILITY TESTING SUMMARY

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### TOP 3 POSITIVE ISSUES

1. Users greatly benefited from the addition of a setup wizard and had no issues understanding what was expected from them at each stage.
2. The newly designed grid layout with large icons is a visually appealing, clean and concise way of displaying and differentiating account information to the user that minimizes their time scrolling or searching for an entry to access.
3. The addition of a search bar that is always present at the top of the main screen was often noticed and used by test participants. This is a strong improvement over the original design, where users were often unable to distinguish which icon they needed to press in order to search.

### TOP 3 NEGATIVE ISSUES

1. The Security Key / Keyfile option that was presented to the user during the Vault setup was often poorly understood, overlooked, or ignored by users. Note: This issue was addressed mid-way through our usability tests
2. Users were frustrated by the lack of seamless integration between the app and their browser; KeePassX requires that users go back-and-forth between the app and the browser in order to copy and paste their credentials into the website. This is a design flaw in the software itself that is not easily overcome by improving the UI.
3. Some users misunderstood the concept of a master password and thought that they would still need to remember the passwords they entered or generated at the Add Entry screen.

## TASK SUCCESS MATRIX

The overall success matrix containing all tasks performed by all tested users is as follows:

<i>USER</i>	<i>TASK 1</i>	<i>TASK 2</i>	<i>TASK 3</i>	<i>TASK 4</i>	<i>TASK 5</i>
<i>RS</i>	Success	Success	Fail	Success	Success
<i>VP</i>	Success	Success	Partial	Partial	Success
<i>ML</i>	Success	Partial	Success	Success	Success
<i>C</i>	Success	Success	Success	Success	Success
<i>TD</i>	Success	Success	Success	Success	Partial
<i>A</i>	Success	Partial	Success	Success	Partial
<i>SM</i>	Success	Success	Success	Success	Success

The breakdown of the individual task success rates of the original application compared to the redesign is as follows:

	<i>ORIGINAL KEEPASSX</i>	<i>REDESIGNED KEEPASSX</i>	<i>DIFFERENCE</i>
<i>TASK 1</i>	45%	100%	55%
<i>TASK 2</i>	75%	86%	11%
<i>TASK 3</i>	55%	79%	24%
<i>TASK 4</i>	55%	93%	38%
<i>TASK 5</i>	79%	86%	7%
<i>OVERALL</i>	62%	88%	26%

One of our worst tasks in the original application was Task #1, which was simply setting up the software. The redesign managed to reach a 100% success rate, and no user had issue with performing this task. The other tasks also reached very high success rates. The TSM can conclude that the redesign was successful in impacting all areas of weakness in the original application, and most new users can expect to achieve their goals without assistance.

## SYSTEM USABILITY SCALE (SUS) SCORES

The SUS scores measure the user satisfaction, learnability and usability of the redesigned application. The resulting SUS matrix from the usability tests is as follows:

	<i>Test 1</i>		<i>Test 2</i>		<i>Test 3</i>		<i>Test 4</i>		<i>Test 5</i>		<i>Test 6</i>		<i>Test 7</i>	
<i>Q</i>	<i>Answer</i>	<i>Score</i>	<i>Answer</i>	<i>Score</i>	<i>Answer</i>	<i>Score</i>	<i>Answer</i>	<i>Score</i>	<i>Answer</i>	<i>Score</i>	<i>Answer</i>	<i>Score</i>	<i>Answer</i>	<i>Score</i>
<b>1</b>	4	3	4	3	4	3	4	3	4	3	3	2	2	1
<b>2</b>	2	3	2	3	2	3	1	4	1	4	1	4	1	4
<b>3</b>	5	4	4	3	4	3	5	4	2	1	5	4	5	4
<b>4</b>	1	4	2	3	1	4	1	4	2	3	1	4	1	4
<b>5</b>	4	3	1	0	4	3	4	3	3	2	3	2	5	4
<b>6</b>	1	4	1	4	3	2	1	4	4	1	2	3	1	4
<b>7</b>	5	4	4	3	4	3	4	3	1	0	4	3	5	4
<b>8</b>	1	4	1	4	3	2	1	4	3	2	1	4	1	4
<b>9</b>	4	3	4	3	5	4	4	3	1	0	5	4	5	4
<b>10</b>	1	4	1	4	4	1	2	3	2	3	1	4	1	4
<b>Result</b>		<b>90</b>		<b>75</b>		<b>70</b>		<b>87.5</b>		<b>47.5</b>		<b>85</b>		<b>92.5</b>

With an exception of Test 5, all scores were above the 68 point mark, which is considered to be the standard “average”. The problematic Test 5 score is below the standard “fail” mark of 51.

The average rating across all tests is 78, surpassing the acceptable average for the test. This result is also a 40.25 point improvement over the original KeePassX’s score of 37.75. The results of the table make a strong assertion that the redesign has greatly improved levels of satisfaction, learnability and usability.

## PARTICIPANT TEST TASKS

## Task #1

You recently realized that you have too many accounts and passwords to keep track of and have been forgetting many of them when trying to login to your accounts. You have decided to start using a password manager, KeePassX. It has been downloaded, installed, and you would like to start using it.

## Task #2

You have an embarrassing email account that you created in high-school and it is time to create something new and more professional at Gmail.com. After you've set up your new account, you'd like to store your credentials in your new KeePassX password manager.

## Task #3

You've had KeePassX for a couple months now and have several usernames and passwords loaded into your database. Your boss just sent you an email and you need to quickly access your account: use KeePassX to find your Gmail entry and use it to log-in to your account.

## Task #4

You headed to a website you used to use and need to find an account you haven't used in a couple of months that you remember storing in your database. Find a way to gather the credentials necessary to login.

## Task #5

You now feel that your KeePassX database is becoming increasingly disorganized. You decide it's time to address this and categorize your database.



## DESIGN SCENARIOS

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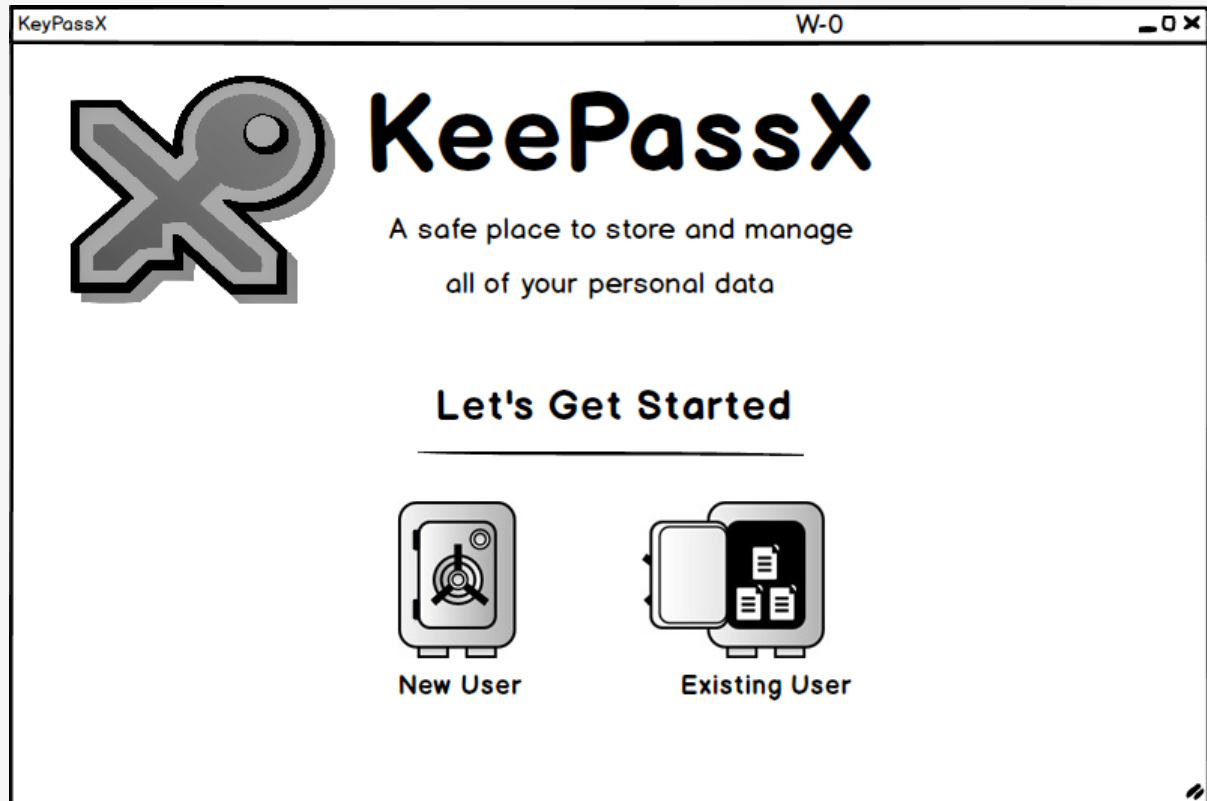
### Scenario #1

Alex, a first-year SFU student, needs to create a secure password for his new go.sfu.ca account and to remember his credentials for quick access on his upcoming enrolment date. He generates a strong password using his password manager and stores the new entry in a custom category he created, titled “School Stuff”. On his registration date, he conveniently accesses this entry to login to his account.

## SCREEN MOCK-UPS

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W-0) Welcome screen



User action:

The participant clicks on "New User" to proceed with the setup wizard.

## NV-1A) New Vault wizard - Vault name (empty)

**Create new Vault**

In order to begin securely storing your personal data, you must create a new Vault.

1 → 2 → 3 → 4

**Vault name** Master Password Security Key Ready

Please choose a name for your new Vault.

Vault name:

Vault location:

/Users/John/KeePassX/Vaults/

[Change location](#)


Cancel Continue

User action:

The participant types in the name they wish to use for the new Vault.

NV-1B) New Vault wizard - Vault name (filled)

KeePassX NV-1B

 **Create new Vault**

In order to begin securely storing your personal data, you must create a new Vault.

1 → 2 → 3 → 4

**Vault name** Master Password Security Key Ready

Please choose a name for your new Vault.

Vault name:

Vault location:  
/Users/John/KeePassX/Vaults/  
[Change location](#)


User actions(s):

Now that Vault name is typed in, user clicks on the “Continue” button.

## NV-2A) New Vault wizard – Master Password (empty)

The screenshot shows the 'Create new Vault' wizard in KeePassX. The window title is 'KeePassX' and the subtitle is 'NV-2A'. The wizard is at step 2, 'Master Password'. A progress bar at the top shows four steps: 1. Vault name (checked), 2. Master Password (current step), 3. Security Key, and 4. Ready. Below the progress bar, the text reads: 'Please create a Master Password. This is the password to access your Vault. It will be the only password you ever need to remember.' There are two input fields: 'Master Password:' and 'Confirm Master Password:'. At the bottom, there are three buttons: 'Cancel', 'Back', and 'Continue'.

KeePassX NV-2A

 **Create new Vault**

In order to begin securely storing your personal data, you must create a new Vault.

1 → 2 → 3 → 4

✓ Vault name **Master Password** Security Key Ready

**Please create a Master Password.**

This is the password to access your Vault. It will be the only password you ever need to remember.

Master Password:

Confirm Master Password:


Cancel Back Continue

User action:

The user is asked to choose a Master Password. They move their cursor to the fields and enter + re-enter their desired password.

NV-2B) New Vault wizard – Master Password (filled, not valid)

KeePassX NV-2B

 **Create new Vault**

In order to begin securely storing your personal data, you must create a new Vault.

1 → 2 → 3 → 4

✓ Vault name **Master Password** Security Key Ready

**Please create a Master Password.**

This is the password to access your Vault. It will be the only password you ever need to remember.

Master Password:  
\*\*\*

Confirm Master Password:  
[Empty field]

Strength: Weak  
At least 6 characters  
Passwords match

Cancel Back Continue


User action:

The user is presented with an indication of how strong their password is at any given moment while typing it in.

## NV-2C) New Vault wizard – Master Password (filled, valid)

The screenshot shows the 'Create new Vault' wizard in KeePassX. The window title is 'KeePassX' and the subtitle is 'NV-2C'. The wizard is at step 2, 'Master Password'. A progress bar at the top shows four steps: 1. Vault name (checked), 2. Master Password (current step), 3. Security Key, and 4. Ready. Below the progress bar, the text reads: 'Please create a Master Password. This is the password to access your Vault. It will be the only password you ever need to remember.' There are two input fields: 'Master Password:' and 'Confirm Master Password:', both containing six asterisks. To the right of the input fields is a strength indicator box showing 'Strength: Medium' with a progress bar and two checkmarks: 'At least 6 characters' and 'Passwords match'. At the bottom, there are three buttons: 'Cancel', 'Back', and 'Continue'.

KeePassX NV-2C

 **Create new Vault**

In order to begin securely storing your personal data, you must create a new Vault.

1 → 2 → 3 → 4

✓ Vault name **Master Password** Security Key Ready

**Please create a Master Password.**

This is the password to access your Vault. It will be the only password you ever need to remember.

Master Password:  
[password field]

Confirm Master Password:  
[password field]

Strength: Medium

✓ At least 6 characters  
✓ Passwords match


Cancel Back Continue

User action:

The user has typed in a matching password into both fields and now clicks "Continue" button to proceed.

## NV-3A) New Vault wizard – Security Key (unchecked)

KeePassX NV-3A

 **Create new Vault**

In order to begin securely storing your personal data, you must create a new Vault.



1 → 2 → 3 → 4

✓ Vault name ✓ Master Password **Security Key** Ready

**Create Security Key (Optional)**

You can increase the safety to your Vault by creating a Security Key: [\(What is a Security key ?\)](#)

☐ Yes! I'd like to create a Security Key.

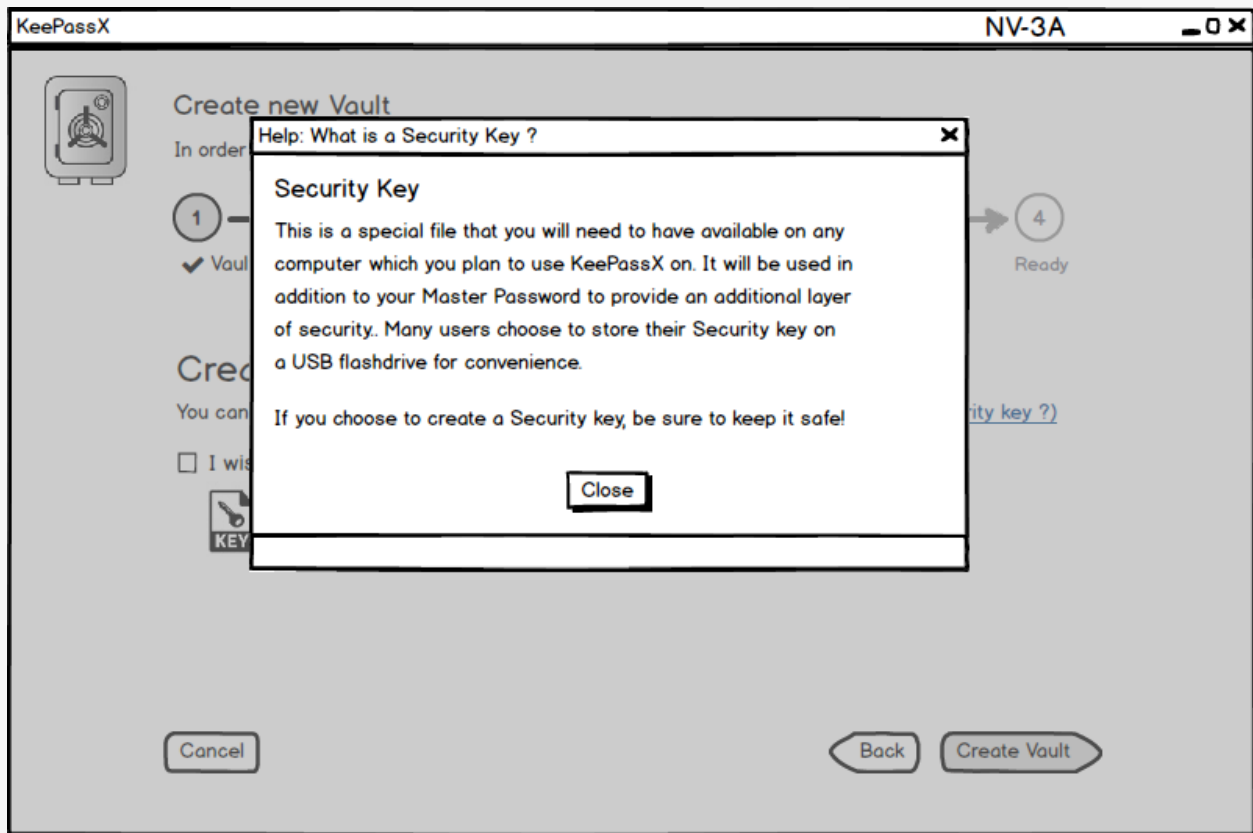
 

User action:

The user can either choose to create a Security Key or not, as it is an optional feature. The user clicks on the "What is a Security Key?" link to learn more about it.

NV-3A-help) New Vault wizard – Security Key (help)

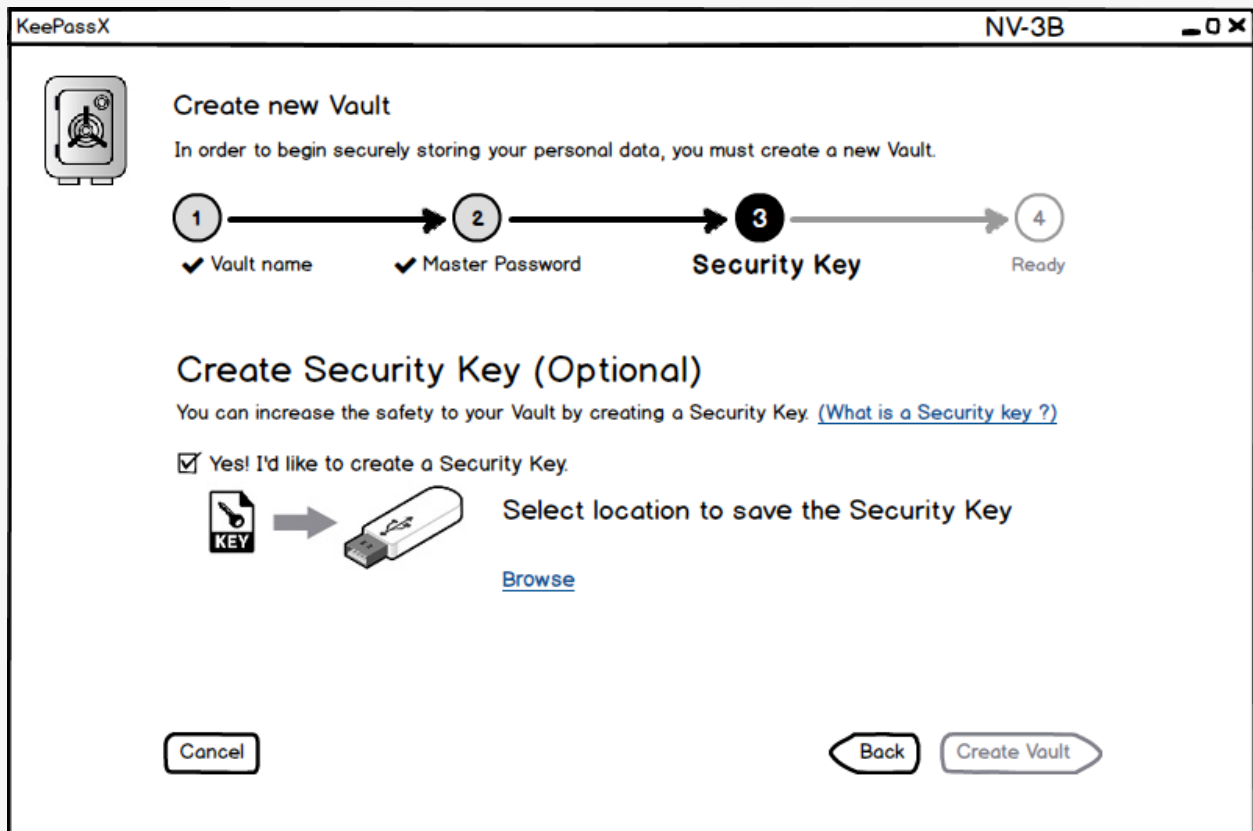




User action:

The user is provided with an explanation of the Security Key feature, which they can close by clicking the "Close" button or the 'x'.

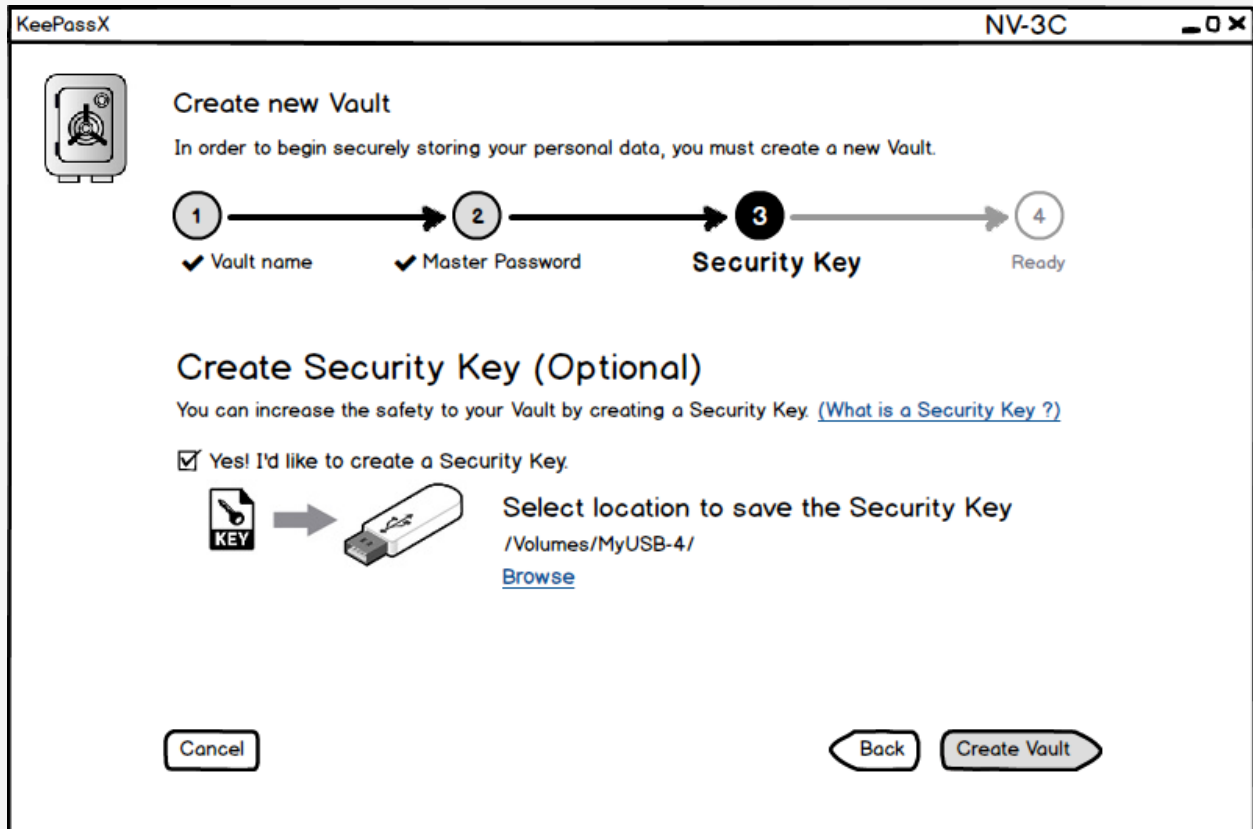
NV-3B) New Vault wizard – Security Key (checked)



User action:

The user is now informed about what a Security Key does, and they select this option.

NV-3C) New Vault wizard – Security Key (checked, location selected)



User action:

The user chooses the location to save their Security Key file and then clicks the "Create Vault" button to proceed to the next screen.

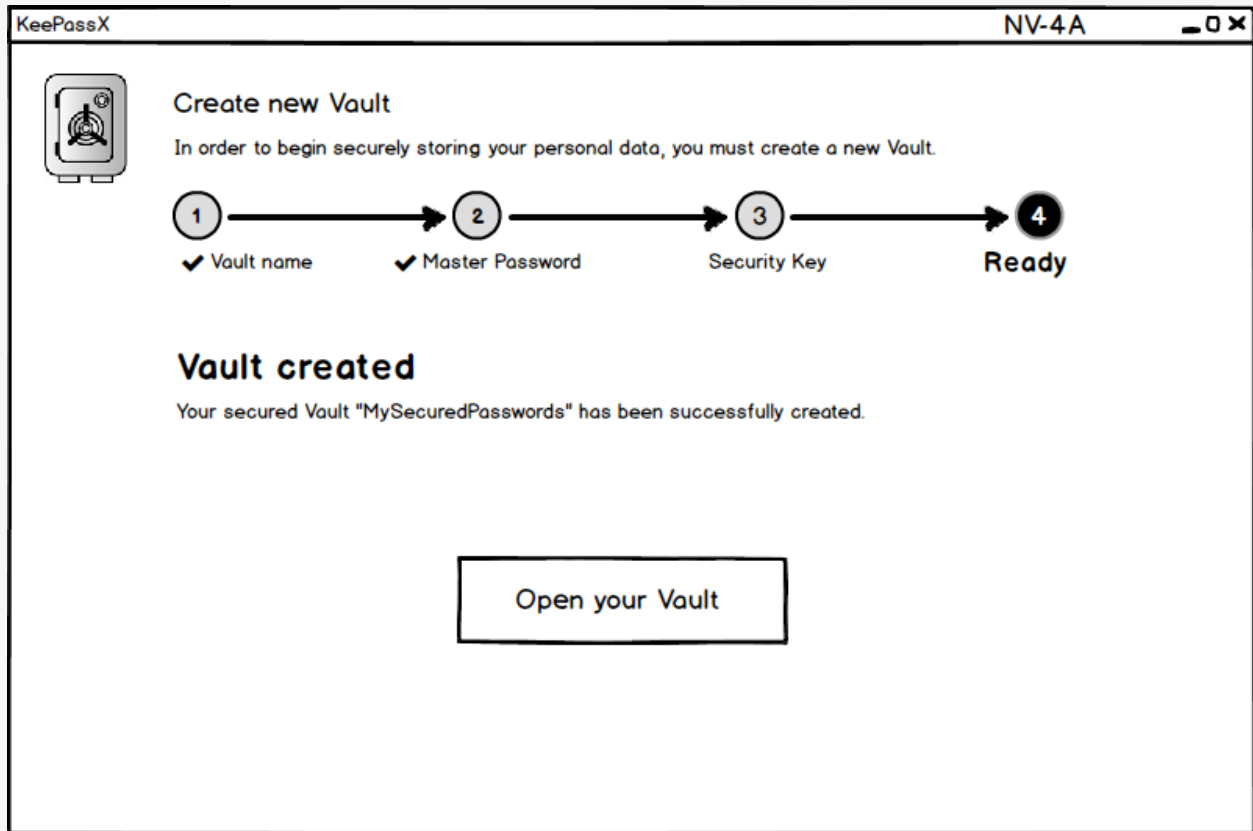
NV-3D-cancel) New Vault wizard – Confirm cancel



User action:

This screen demonstrates that the user is prompted with a confirmation box if they click the "Cancel" button. This protects the user in the case that they accidentally click the "Cancel" button.

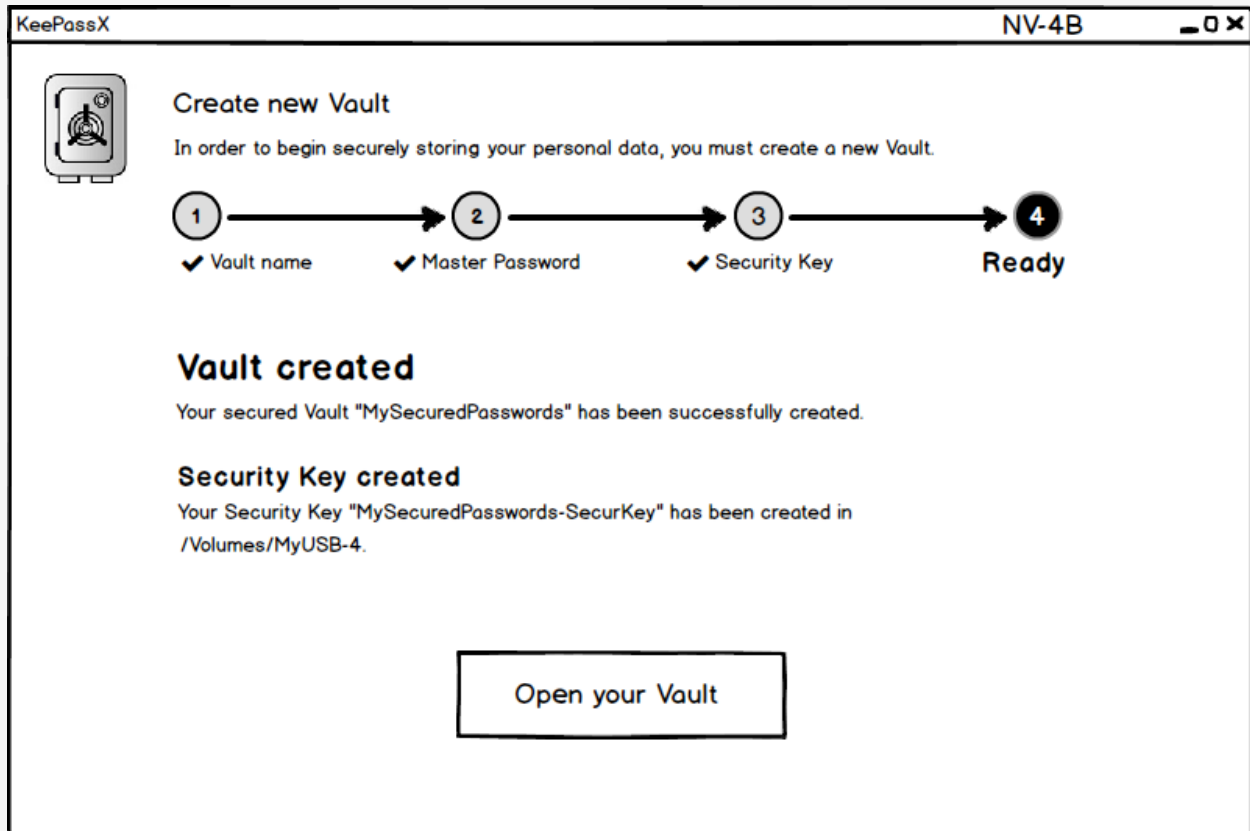
## NV-4A) New Vault wizard – Ready (without Security Key)



User action:

The user is prompted with a screen confirming the successful completion of setting up their new Vault.

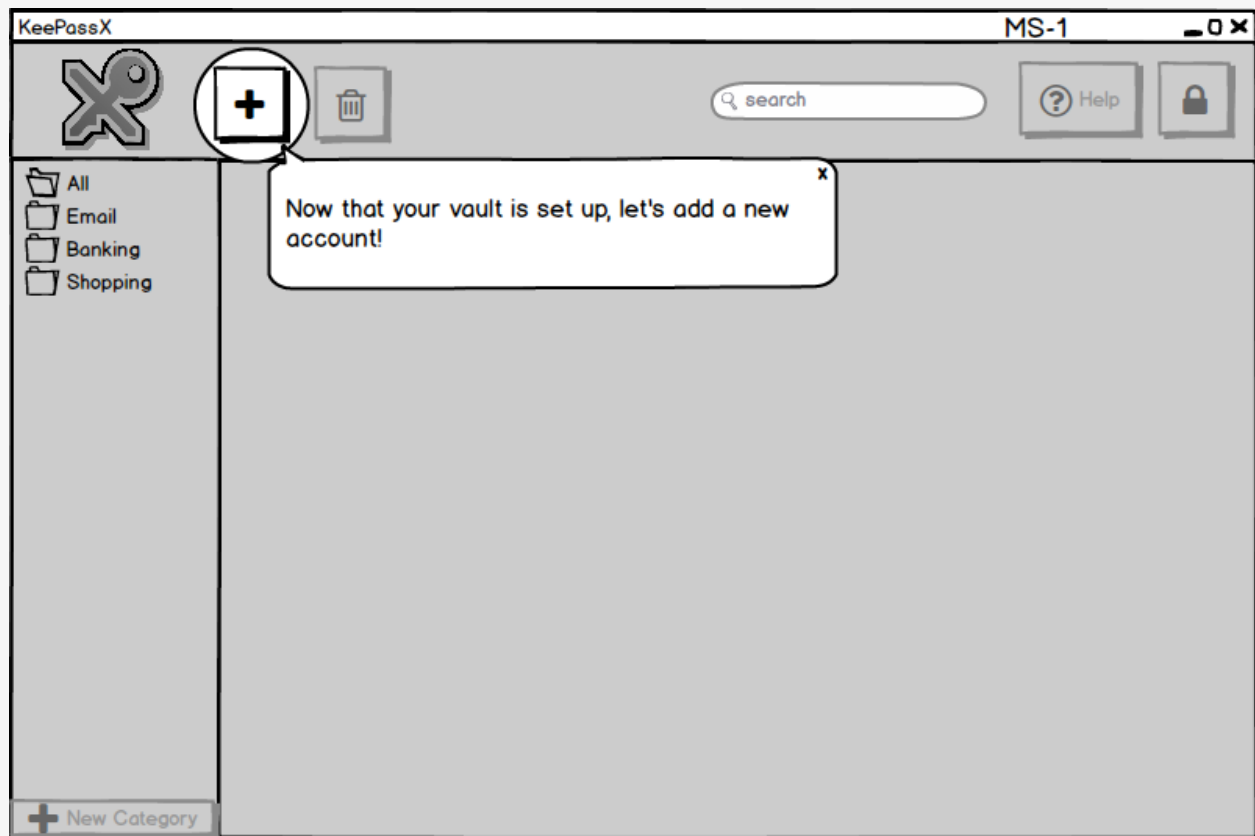
## NV-4B) New Vault wizard – Ready (with Security Key)



User action:

On this version of the screen, the user has selected the Security Key feature and is shown that their Vault AND their Security Key were successfully created. The user clicks the "Open your Vault" button to proceed.

MS-1-empty) Main screen (empty)



User action:

The user is brought to an empty-state version of the main screen of KeePassX. They are shown an overlay which they can dismiss by pressing the 'x' in the top right corner of the dialogue bubble, or they can click the '+' button as they are guided to do by the overlay.

## AE-1A) Add entry (empty)

The screenshot shows the 'Add New Entry' window in KeePassX. The window has a title bar with 'KeePassX' and standard window controls. The main area is divided into two columns. The left column contains: 'Entry name (required):' with a text input field; 'Username:' with a text input field; 'Password:' with a text input field and a 'Generate Password' button with a question mark icon; and 'Notes:' with a text area containing placeholder text: 'Enter any additional information here: - a security question reminder - the date you created this entry on - etc.'. The right column contains: 'Category:' with a dropdown menu; 'Website address:' with a text input field; and 'Icon:' with a search bar and a grid of 15 icons (Amazon, Android, Apple, G+, Dropbox, Facebook, Twitter, GitHub, Google, Instagram, LinkedIn, Last.fm, PayPal, Pinterest). At the bottom right are 'Cancel' and 'Save' buttons.

User action:

The user is shown the Add Entry window and their attention is focused on the Entry name field, as this is the only truly required field and the most natural field to fill out first.



## AE-1B) Add entry – Generate password help

**KeePassX**

### Add New Entry

Entry name (required):

Category:

Username:

Website address:

Password:

?

Notes:

Enter any additional information:

- a security question related to the entry
- the date you created the entry
- etc.

This option will automatically create a secure and randomized password that will be stored in your database. You will not need to remember this password (we've got that covered).

Icon:

User action:

The user visually scans the screen and clicks the "Generate Password" info button to find out more. They are presented with an explanation of how this feature will benefit them.

### AE-1C) Add entry – Category dropdown options

**KeePassX**

### Add New Entry

Entry name (required):

Username:

Password:

Generate Password ?

Notes:

Enter any additional information here:

- a security question reminder
- the date you created this entry on
- etc.

Category:

All  
Email  
Banking  
Shopping

Icon:

Q

Amazon, Android, Apple, G+, Dropbox, Facebook, Twitter, GitHub, Google, Instagram, LinkedIn, Mastercard, PayPal, Pinterest

Cancel Save

User action:

The user presses the "Category" dropdown menu to see all of their available options for categorizing a new entry.

#### AE-1D) Add entry – Icon selected

**KeePassX**

### Add New Entry

Entry name (required):

Category:

Username:

Website address:

Password:

?

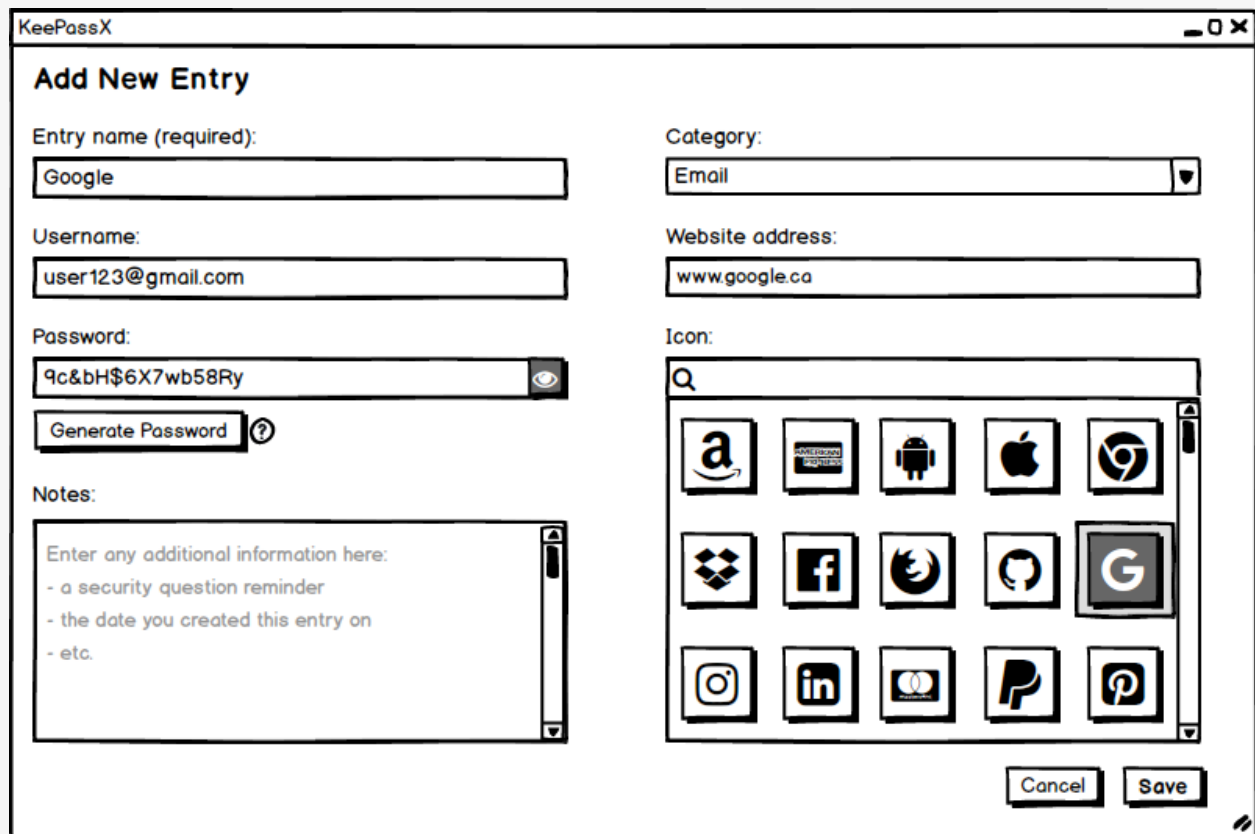
Notes:

Icon:

User action:

The user has filled in the minimum required information (an Entry name) plus many of the optional fields as well. User has selected the icon. User can now proceed by clicking the "Save" button in the bottom-right corner.

## AE-1E) Add entry - Password revealed



The screenshot shows the 'Add New Entry' window in KeePassX. The window has a title bar 'KeePassX' and standard window controls. The main area is divided into two columns. The left column contains fields for 'Entry name (required):' (containing 'Google'), 'Username:' (containing 'user123@gmail.com'), 'Password:' (containing '9c&bH\$6X7wb58Ry'), and a 'Generate Password' button with a help icon. Below these is a 'Notes:' section with a text area containing placeholder text. The right column contains a 'Category:' dropdown (set to 'Email'), a 'Website address:' field (containing 'www.google.ca'), and an 'Icon:' section with a search bar and a grid of 15 icons. At the bottom right are 'Cancel' and 'Save' buttons.

**Add New Entry**

Entry name (required):  
Google

Category:  
Email

Username:  
user123@gmail.com

Website address:  
www.google.ca

Password:  
9c&bH\$6X7wb58Ry

Generate Password ?

Icon:  
Q

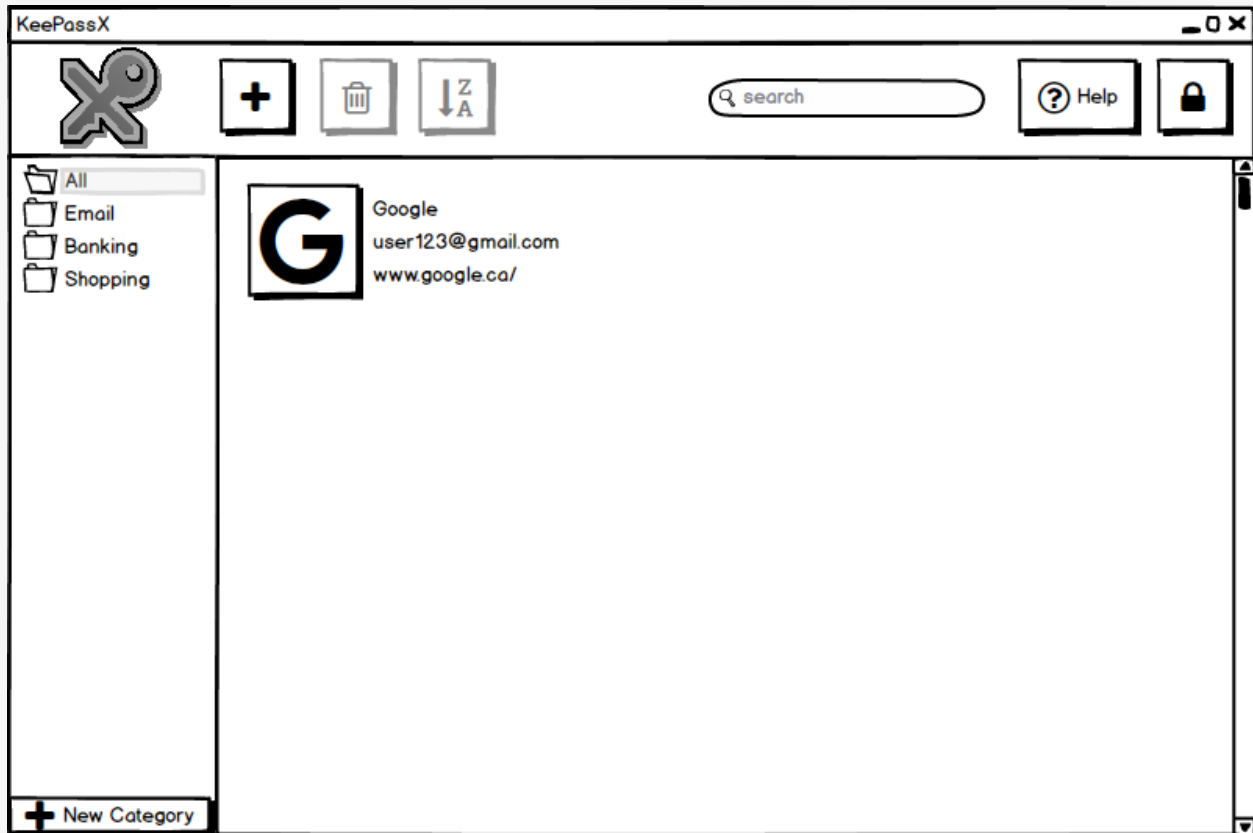
Notes:  
Enter any additional information here:  
- a security question reminder  
- the date you created this entry on  
- etc.

Cancel Save

User action:

The user presses the “eye” icon next to password field to reveal and verify the password string.

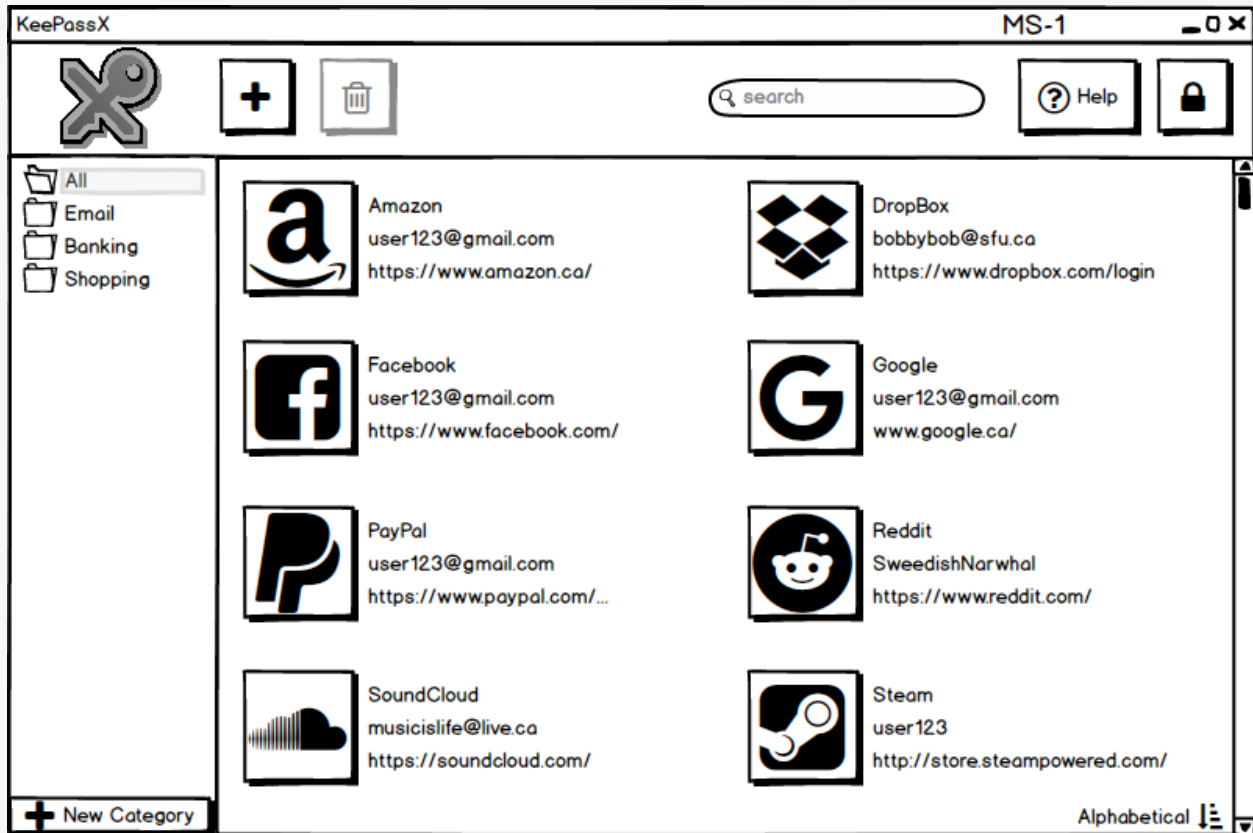
AE-1F) Add entry –entry added



User action:

User added new entry. He can add another entry or to choose the existing entry and perform some operation on it.

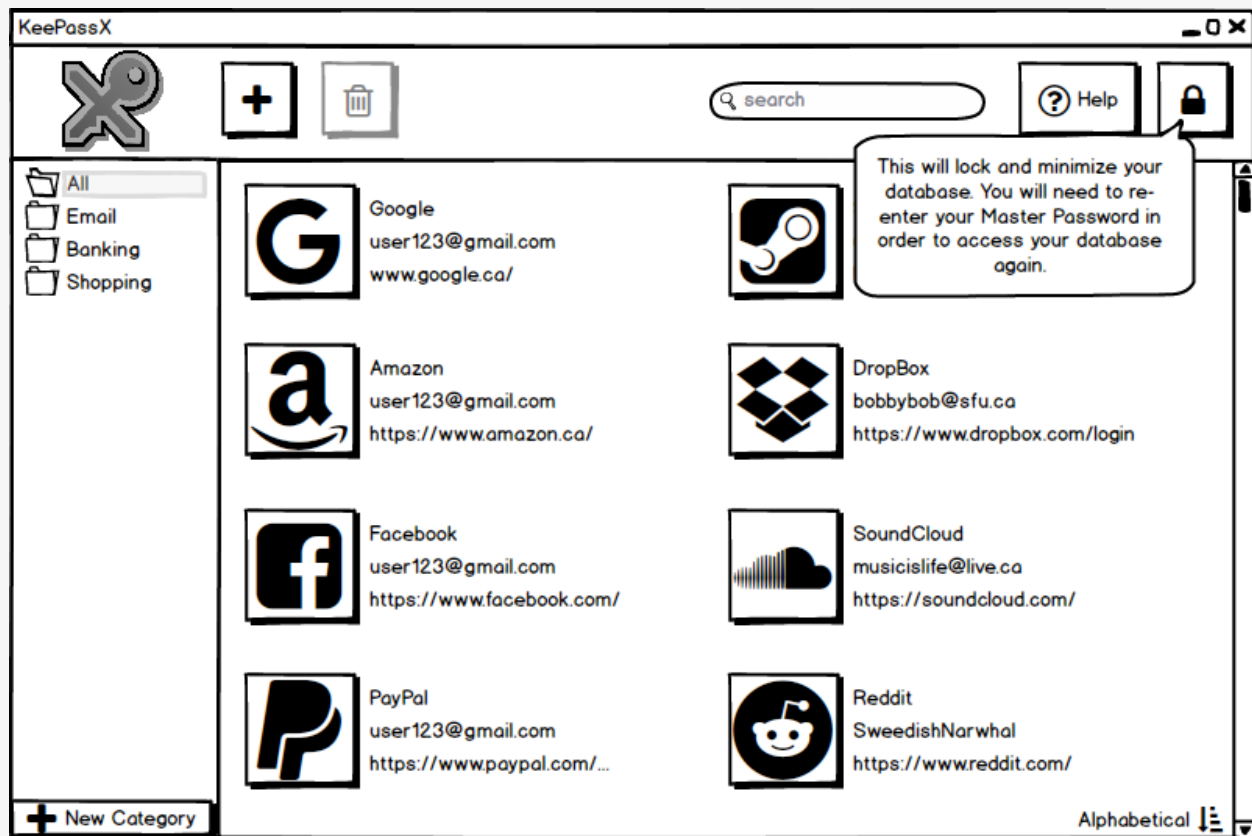
MS-1) Main screen – With many entries



User action:

This is the main screen the user sees at a hypothetical future state when they have added several accounts to their KeePassX manager.

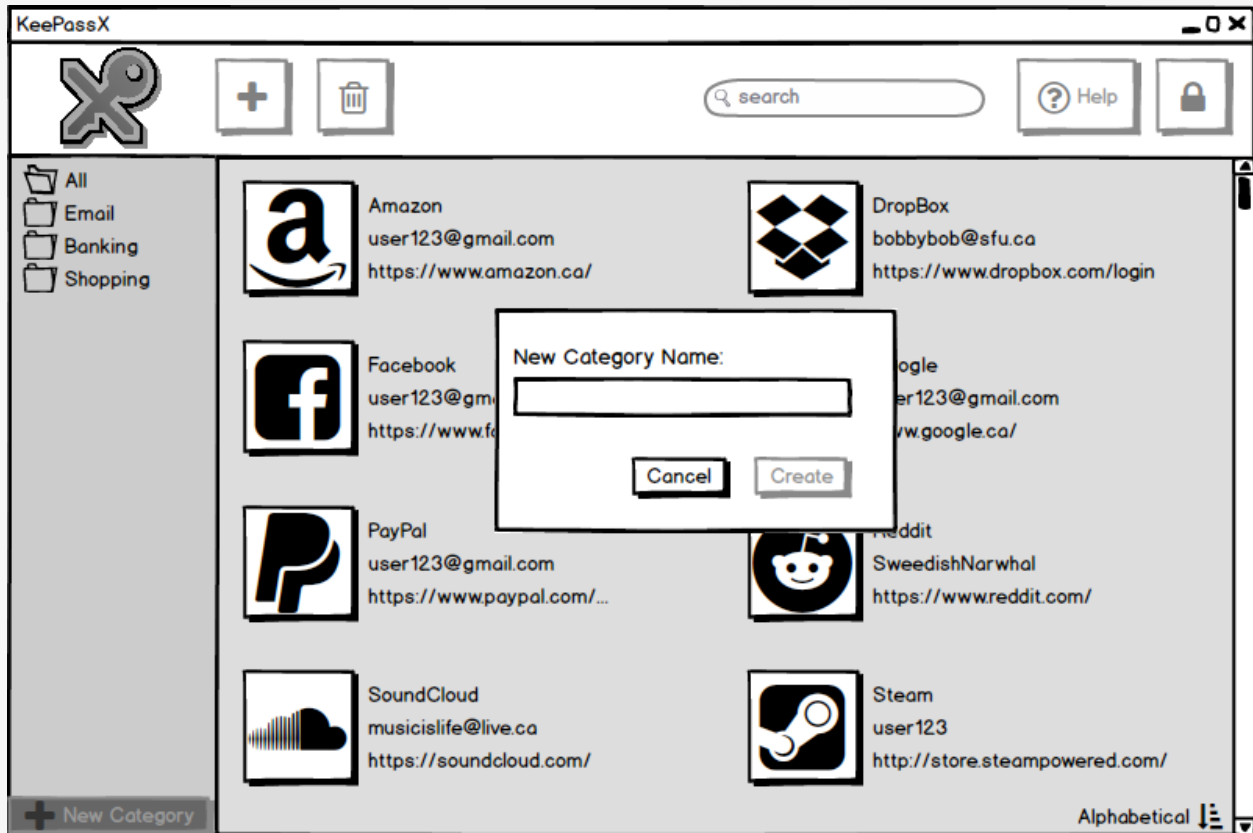
## MS-2) Main screen – Lock button hover



User action:

When the user hovers over the lock button, they are presented with a pop-up dialogue informing them of how this feature works.

## NC-1) New Category - empty

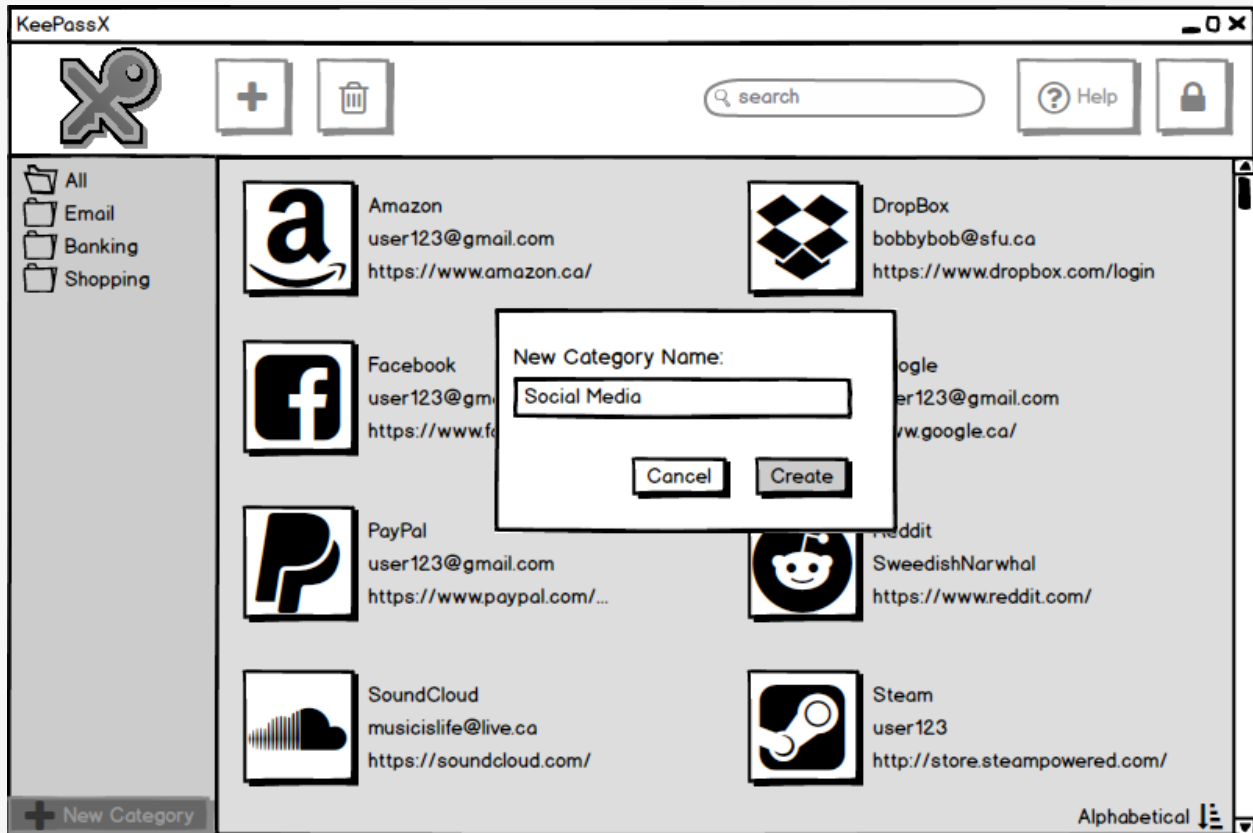


User action:

The user has clicked the "New Category" button in the bottom-left corner. The user is presented with an empty popup windows to name their new category.



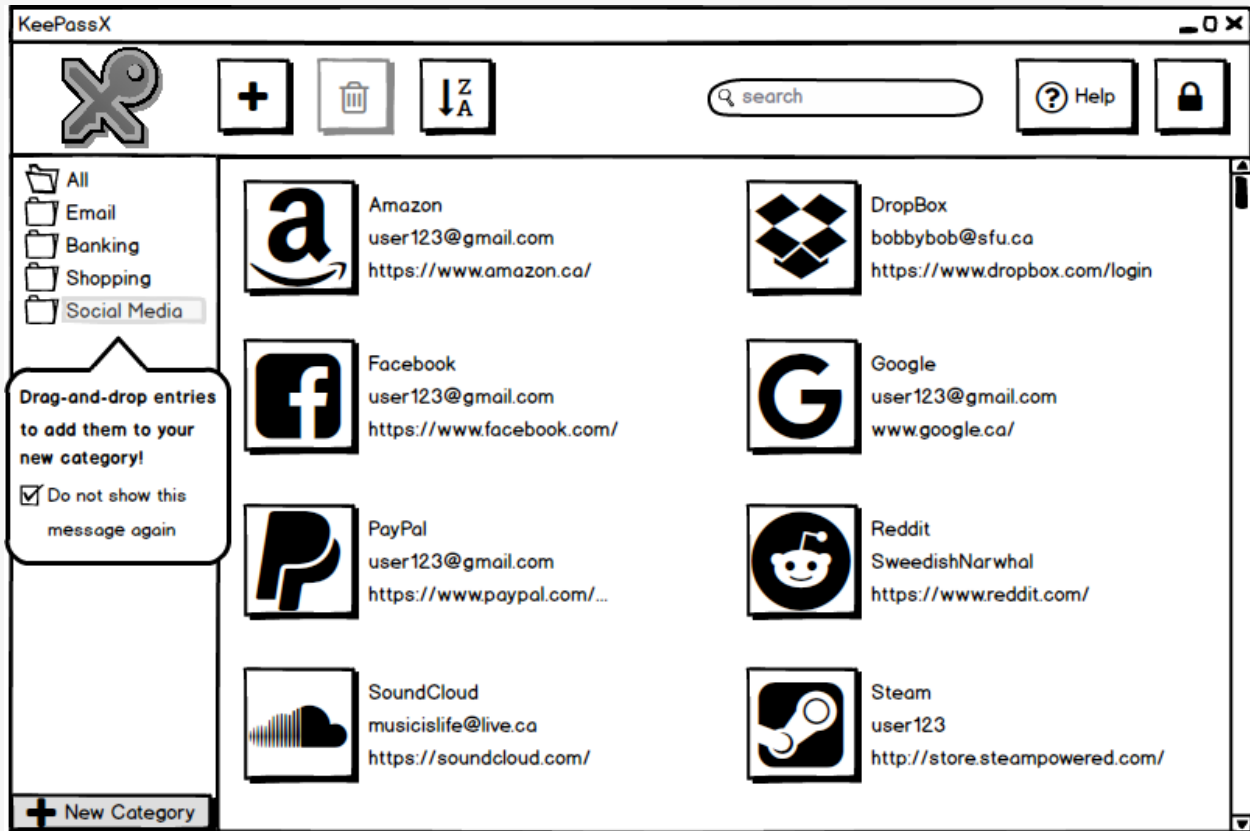
## NC-2) New Category – filled



User action:

User enters new unique Category and clicks "Create" button.

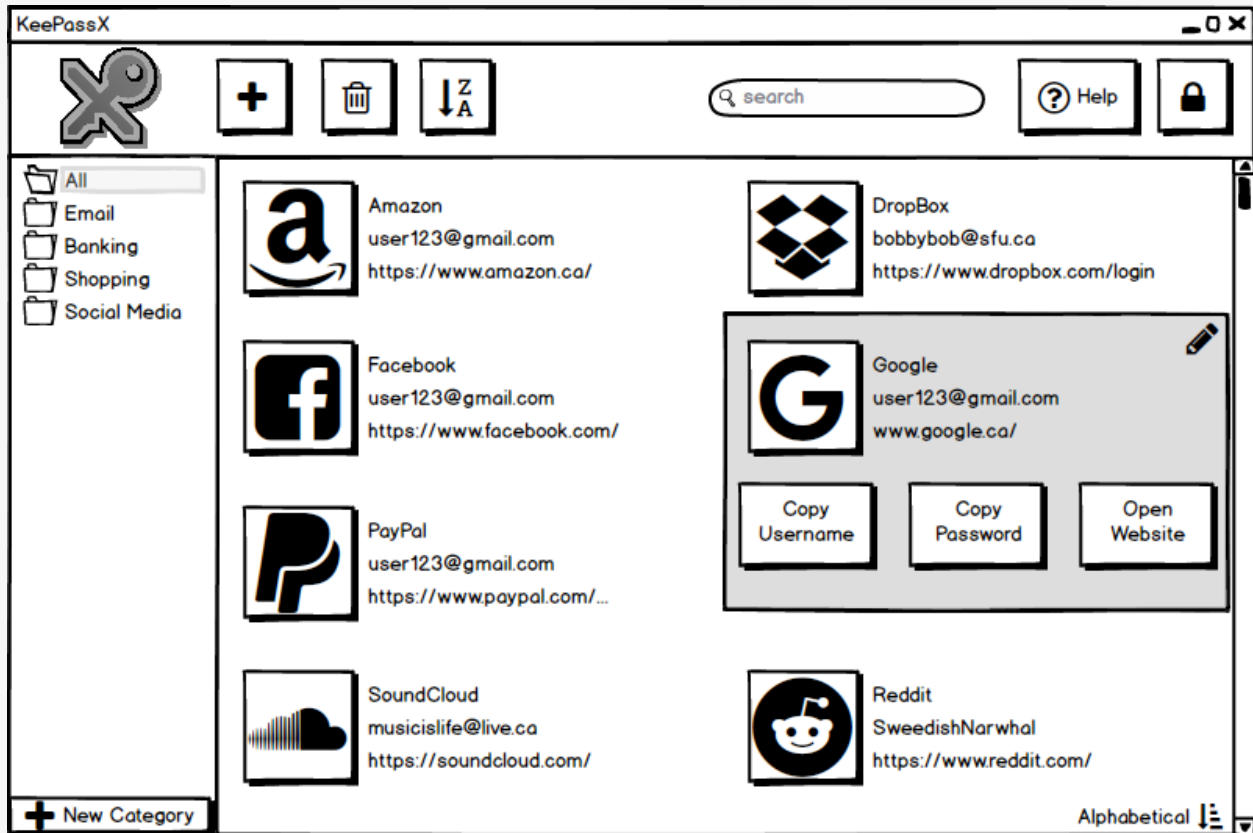
### NC-3) New Category – added



User action:

The user has successfully created a new category and is provided with a confirmation message indicating where the new category can be accessed and how to add new entries. The message is dismissed by clicking anywhere on screen, and the "Do not show this message again" option is checked by default.

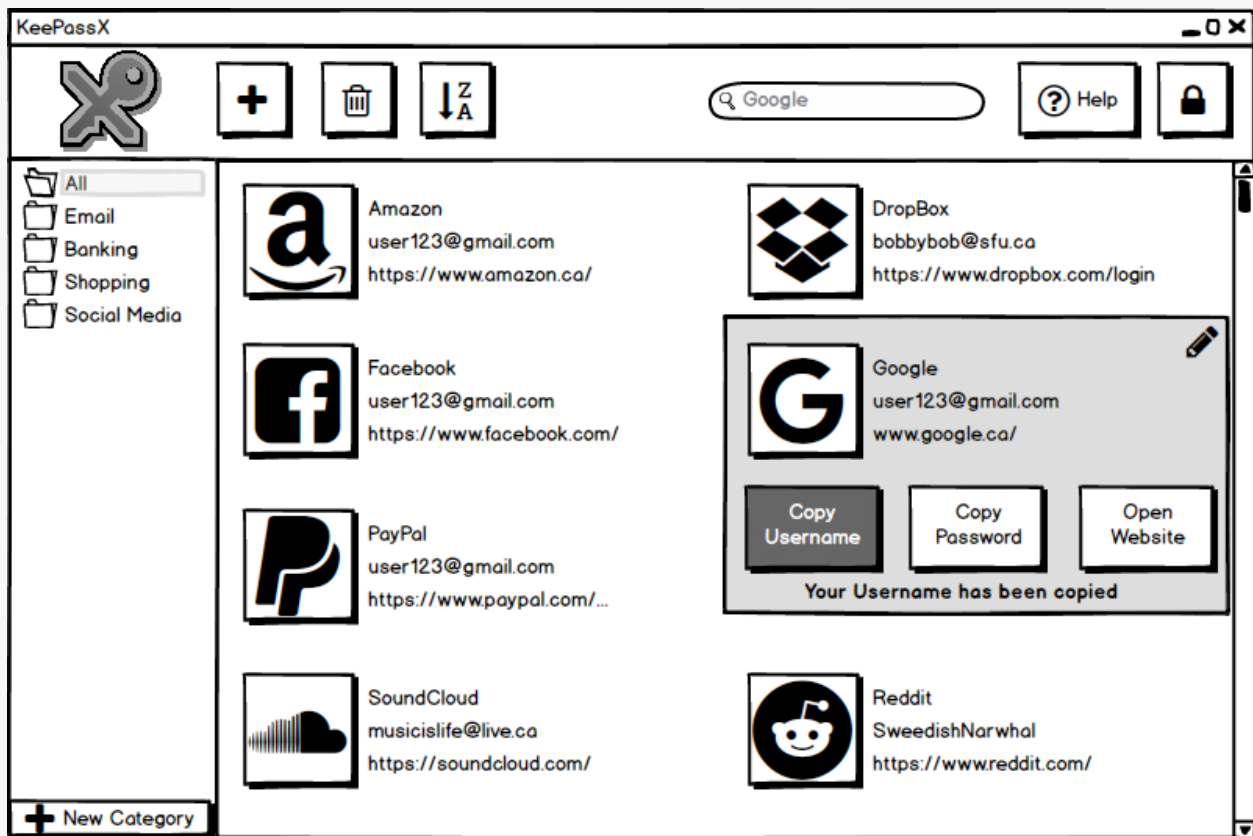
### MS-3) Main screen – Entry selected



User action:

User has selected the screen in list and can perform various action on it. The most likely scenario is that he will open the Website.

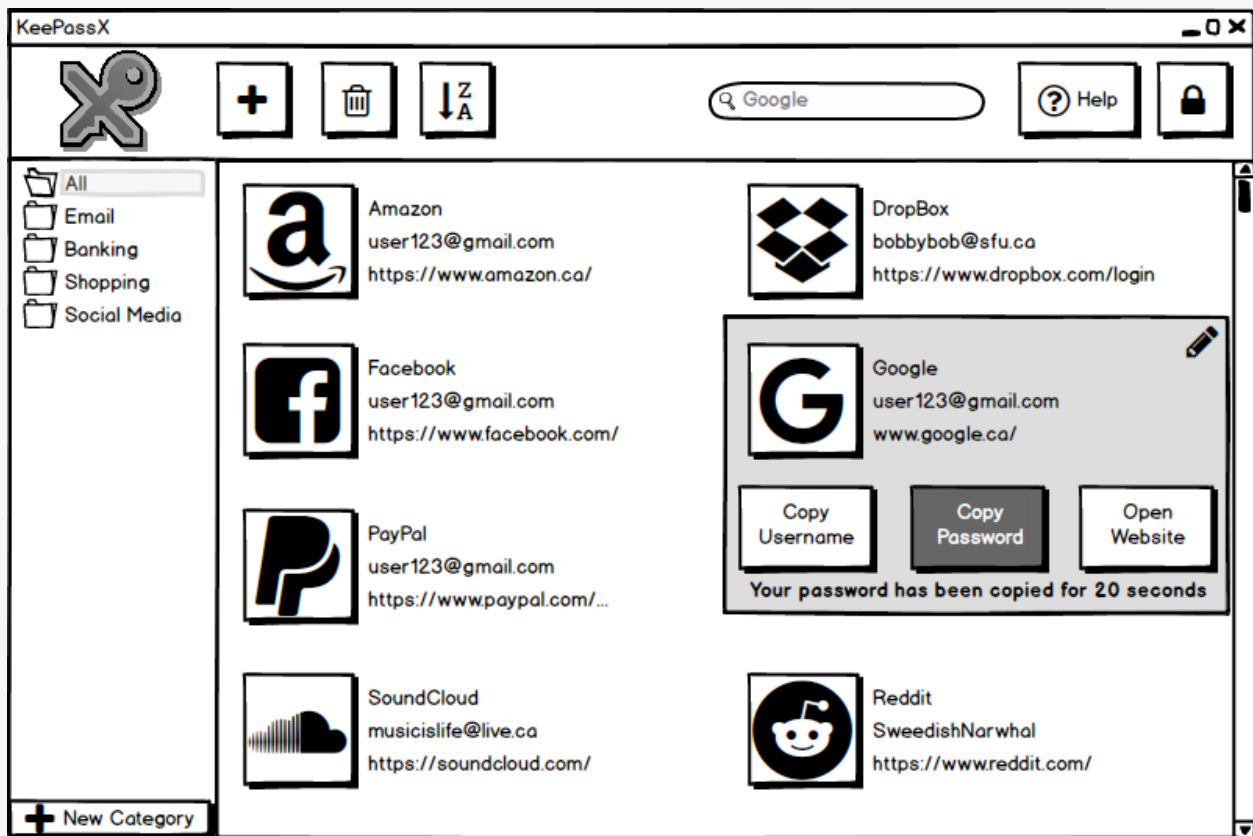
MS-4) Main Screen – Entry selected – copy Username



User action:

User copied the Username and can use it (paste) in the website.

#### MS-4) Main Screen – Entry selected – copy Password



User action:

User selected to copy the password for his/her website account. It will be kept in memory for 20 seconds. User will go to the Website within this time limit and paste the password.

## SELF - ASSESSMENT

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Design Usability – 8/10

Usefulness – 8/10

Desirability – 8/10

## APPENDIX

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### Usability Test #1

Target: RS

Interviewer: Woody

Note-taker: James

Place/Time: SFU Burnaby Starbucks, 11/17/2017 @ 4:50 PM

### Usability Test #2

Participant: VP

Interviewer: John

Note-taker: Kyle

Place/Time: SFU Burnaby Library, 11/17/2017 @ 4:30 PM

### Usability Test #3

Participant: ML

Interviewer: Otakar

Note-taker: Kyle

Place/Time: SFU Campus near CSIL, 11/24/2017 @ 3:30 PM

### Usability Test #4

Participant: A

Interviewer: Otakar

Note-taker: John

Place/Time: SFU Burnaby, 11/24/2017 @ 4:00 PM

### Usability Test #5

Participant: SM

Interviewer: Woody

Note-taker: James

Place/Time: SFU Burnaby, 11/24/2017 @ 4:30 PM

### Usability Test #6

Participant: C

Interviewer: John

Note-taker: Kyle

Place/Time: SFU Campus near CSIL, 11/25/2017 @ 4:30 PM

### Usability Test #7

Participant: TD

Interviewer: John

Note-taker: Kyle

Place/Time: SFU Campus near CSIL, 11/25/2017 @ 5:30 PM