

Raw requirement descriptions in dataset KeePass Password Safe

No.	Requirement descriptions in KeePass Password Safe
1	<p>Product Features</p> <p>Database: User can create a new database locked by a Master Key. The database can be opened and closed whenever the user wants it. Changes to the data are permitted and can be saved. The user can also print all data to keep a physical copy even when computers are unavailable. Additionally, the software includes a search engine allowing keyword-based database searches. Lastly, databases can be imported/exported from/to the internet.</p> <p>Access Database: When choosing to open a database a user is transferred to his documents where he navigates to find the database he wants. When the database is found, the master password is wanted so that the database will be unlocked. Once this is done the user is free to access his data. The user can view, modify, add, or delete the data if he has the proper permissions. The user also can perform backup and recovery operations on the data. If the user closes the database, the system returns to the navigation interface of the document.</p> <p>Group/Subgroup: Data can be organized into groups and subgroups in the order the user prefers and finds effective. These groups can be modified at any time, with new groups/subgroups easily added or removed using the same method. The search function can be applied to individual groups instead of the entire database as needed.</p> <p>Entry: A new entry can be added to any group or subgroup, containing customizable fields such as title, username, password, URL, and notes. Users can choose which fields to populate, as not all are mandatory. Entries can be duplicated or deleted with a single click.</p> <p>Change Language: At KeePass website there are available language translations that can be downloaded and applied easily.</p> <p>Auto-Type: The user can select a sequence of keypresses that KeePass will be able to perform and send them to any window or browser.</p> <p>Command Line Options: The user can pass a file path in the command line in order for KeePass to open this file at startup.</p> <p>Composite Master Key: To open a database you must use all key sources such as password, key file and/or Windows account details that were used when the Master Key was created. All these together form the Composite Master Key and are all required in order to open the database. So the user cannot use a combination of them to unlock the database.</p> <p>Configuration: This feature is used to explain how KeePass store its configuration and where.</p> <p>Import/Export: KeePass can support importing data from CSV files, Code Wallet, Password Safe and Personal Vault.</p> <p>Integration: KeePass uses Global Hot Key to restore KeePass main window and Limit to single instance option to run only one instance of KeePass at a time.</p> <p>Password Generator: There are available generations based on character sets and based on patterns the first for generating random passwords and the second for creating passwords which require specific patterns. There is also available generating passwords that follow rules which are determined further down on this document. Then there are security-reducing options which reduce the security of the passwords they are applied to. Finally, there are configuring settings of automatically generated passwords for new entries so that a random password will automatically be created by KeePass when a new entry is wanted.</p> <p>Secure Edit Controls: KeePass offers the ability for passwords and data to be appeared behind asterisks when the user wants it. When this option is turned on, secure edit controls stronger than the ones of Windows are protecting your data and no one can access them, see them or steal them.</p> <p>TAN Support: KeePass uses TAN-Transaction Authentication Numbers for even more security. This feature can be used for generating one time passwords so that there will not be any chance, for anyone to access e.g. your bank account even if user finds out that password. That is because when the password is entered one time it becomes useless. TANs can be added using the TANs wizard.</p> <p>URL Field: The URL field supports various special protocols and placeholders and can be used for Standard capabilities where URL field can execute valid URLs for which a protocol handler is defined. In addition to that, KeePass supports all registered protocols that Internet Explorer supports. URL field also offers the ability of executed command lines instead of URLs. Also, placeholders can be used that will be automatically replaced when the URL is executed.</p> <p>Using Stored Passwords: Passwords that are stored in the database can be copied to website accounts and applications with security and without retyping them again. This can be done by</p>

several methods such as Context-Sensitive Password List, Drag and Drop, Auto-Type and KeeForm. All of them are explained better further down.

Lock Workspace: Last but not least at all is the locking workspace feature. This feature is turned on and locks the database when minimized. So to unlock it the Master Key is required again. The workspace can be locked manually as well by selecting this option from File menu.

2 User Classes

Advanced end users: users that are familiar with programming and can personalize their database by creating auto-types, using command line options and generally can use features and maybe expand their use by adding more functions.

End users/Desktop: users with no particular knowledge on computer programming. They just use the database for organizing their data and to keep them safe.

System administrators: administrators working on computers that support a lot of accounts and personal data for other users. Using KeePass the administrator can save all data with no risk of leak to third persons.

3 Design and Implementation Constraints

When a password is copied for any reason, (e.g. copy to an application, account, and website) it remains in the memory for only 10 seconds. After 10 seconds pass there is nothing to paste and you have to recopy again. That provides security in a case a password is copied and not pasted anywhere so no one can find it out by pasting later.

4 Interface

User interface includes various forms and windows. The main database window consists of the main menu bar with file, edit, view, tools and help. Under main menu there is a toolbar with shortcuts to most used functions of KeePass. Those are: new, open, save, add entry, edit/view entry, delete entry, copy username to clipboard, copy password to clipboard, find in database and lock workspace. On the main database window are appeared entries from a selected group. Groups and subgroups can be found at a side bar. When a function is performed like adding, editing or deleting, the active window is the one performing the action. At this time the main database window is inactive and cannot be accessed unless the current active window is closed.

The use cases designed by a requirement engineer:

Use Case ID	01
Intent	New Database
Role	System administrators
Pre-conditions	KeePass must be downloaded and installed
Post-conditions	A new database is created successfully.
Basic Flow	
1. User opens KeePass and selects "Create Database" operation. 2. User inputs private master password and/or selects Key File. 3. Master password confirmation: the user retypes master password. 4. User clicks OK to operate "Create Database". 5. The main database window opens.	
Alternative Flow(s):	
1a. User does not know how to operate. 1a1. User selects Help. 1a2. The help file is opened. 2a. User does not know the style of the master password. 2a1. The user is prompted to enter a password or Key File. 4a. User cancels the operation. 4a1. Return to the main window of KeePass.	

Use Case ID	02
Intent	Open Database
Role	End users/Desktop
Pre-conditions	The selected folder must be a type that the database can read and the file name must end in .kdb.
Post-conditions	The database is unlocked and opened.
Basic Flow	
1. User opens KeePass and selects “Open Database” operation. 2. User navigates through his(her) folders. 3. User selects a database. 4. User inputs master password. 5. The main database window opens.	
Alternative Flow(s):	
3a. The user selects a folder type that is not suitable for a database. 3a1. The system displays “file not found” message. 3a2. Goto step 1. 3b. There is no database that can be selected. 3b1. User closes the folder. 4a. The master password is wrong. 4a1. The system displays “invalid/wrong key” message. 4a2. Go to step 4.	

Use Case ID	03
Intent	User accesses database content
Role	End users/Desktop
Pre-conditions	
Post-conditions	
Basic Flow	
1. User opens KeePass and selects “Open Database” operation. 2. System prompts for master password. 3. User enters master password. 4. System verifies master password. 5. System unlocks database. 6. User access his data: views, modifies, adds, or deletes the data, or perform backup and recovery operations on the data. 7. User closes database. 8. System returns to the main window.	
Alternative Flow(s):	
1a. User selects a type of folder non suitable for database. 1a1. System displays “file not found” message. 1b. There are too much databases in the system. 1b1. System provides a database search function. 3a. The system checks user has no permissions to access the database. 3a1. The system displays error message and access is denied. 3a2. User resets the master password. 4a. System verifies master password and password is incorrect. 4a1. System displays error message. 6a. User forgets to save modification. 6a1. The system saves user modifications in real time. 6b. User operations are inactive for long periods of time. 6b1. System automatically locks the database and the master password to be entered again for continued access.	

Use Case ID	04
Intent	Save Database
Role	Advanced end users, End users/Desktop, or System administrators
Pre-conditions	A database has been opened.
Post-conditions	The database is saved successfully.
Basic Flow	
1. User opens KeePass and opens a database. 2. User changes his(her) data. 3. User selects “Save Database” operation. 4. The database is saved.	

Alternative Flow(s):	
3a.	User wants to save it to another database.
3a1.	The user selects “Save As” operation.
3a2.	User inputs a new database name.
3a3.	Another database is saved that can be opened with the same master password.
3b.	User wants to discard changes.
3b1.	User selects “Discard Changes” operation and exit KeePass.
3c.	The user closes the database window.
3c1.	The system displays “save or not” message.
3c2.	User selects “no” and closes the database window.
3d.	The user closes the database window.
3d1.	The system displays “save or not” message.
3d2.	User selects “yes”.
3d3.	Go to step 3.

Use Case ID	05
Intent	Print Database
Role	Advanced end users, End users/Desktop, or System administrators
Pre-conditions	The database is opened.
Post-conditions	Print the selected data that are stored in the database.
Basic Flow	
1.	User opens KeePass and opens a database.
2.	User selects “Print” operation.
3.	The data fields, such as password groups, title, user name, password, URL, notes, etc. are listed.
4.	User checks the needed fields and clicks OK.
5.	Print the selected data.
6.	User closes the database window and returns to the main window.
Alternative Flow(s):	
3a.	There is no data in the database.
3a1.	Go to step 6.

Use Case ID	06
Intent	Search Database
Role	Advanced end users, End users/Desktop, or System administrators
Pre-conditions	A database has been opened.
Post-conditions	The database displays all data that matches the condition.
Basic Flow	
1.	User opens KeePass and opens a database.
2.	User inputs a keyword.
3.	User clicks “Search”.

4. The list of data displays in the database window.
Alternative Flow(s):
2a. User inputs more than one keyword 2a1. Nothing displays in the database window.
2b. User inputs no keyword. 2b1. The system displays “Input keyword” message.

Use Case ID	07
Intent	Add Group/Subgroup
Role	Advanced end users, End users/Desktop, or System administrators
Pre-conditions	
Post-conditions	The group/subgroup is created successfully.
Basic Flow	
1. User opens KeePass and opens a database. 2. User selects “Add New Group/Subgroup” operation. 3. User inputs a group/subgroup name. 4. User selects “OK” operation. 5. The system creates the group/subgroup. 6. The list of group/subgroups displays in the database window.	
Alternative Flow(s):	
3a. User leaves the group/subgroup name empty. 3a1. The system displays “Add a name for the group/subgroup” message. 4a. User selects “Cancel” operation. 4a1. Returns to the list of group/subgroups displayed in the database window.	

Use Case ID	08
Intent	Modify group/subgroup
Role	Advanced end users, End users/Desktop, or System administrators
Pre-conditions	
Post-conditions	The group/subgroup name is modified successfully.
Basic Flow	
1. User opens KeePass and opens a database. 2. User selects “Modify Group/subgroup” operation. 3. User inputs a new name. 4. User selects “Save” operation. 5. The list of group/subgroups displays in the database window.	
Alternative Flow(s):	
3a. User leaves the group/subgroup name empty. 3a1. The system displays “Add a name for the group/subgroup” message.	

4a. User selects “Cancel” operation.
4a1. Returns to the list of group/subgroups displayed in the database window.

Use Case ID	09
Intent	Delete Group/Subgroup
Role	Advanced end users, End users/Desktop, or System administrators
Pre-conditions	
Post-conditions	A group/subgroup is deleted successfully.
Basic Flow	
1. User opens KeePass and opens a database. 2. User selects a group/subgroup. 3. User selects “Delete Group/subgroup” operation. 4. The system prompts the user for confirmation. 5. User clicks “Yes”. 6. The list of group/subgroups displays in the database window after the group/subgroup is deleted.	
Alternative Flow(s):	
5a. User clicks “No”. 5a1. Returns to the list of group/subgroups displayed in the database window.	

Use Case ID	10
Intent	Find Group/Subgroup
Role	Advanced end users, End users/Desktop, or System administrators
Pre-conditions	
Post-conditions	
Basic Flow	
1. User opens KeePass and opens a database. 2. User inputs a keyword. 3. User selects the fields to search in. 4. User selects “OK” operation. 5. The search results are displayed in the database main window.	
Alternative Flow(s):	
2a. User leaves the keyword empty. 2a1. All data are displayed in the database main window. 3a. User does not check any fields. 3a1. Nothing displays in the database main window. 4a. User selects “Cancel” operation. 4a1. Returns to the main window.	

Use Case ID	11
Intent	Add Entry

Role	Advanced end users, End users/Desktop, or System administrators
Pre-conditions	An entry must belong to a group to be created.
Post-conditions	A new entry is added successfully.
Basic Flow	
1. User opens KeePass and opens a database. 2. User fills in the entry form. 3. User selects “OK” operation. 4. The new entry is added in the selected group.	
Alternative Flow(s):	
2a. The repeat password field is not identical with the password field. 2a1. System displays “the repeated password must be identical with the password” message. 2b. User does not know how to fill the form. 2b1. User selects “Help” operation. 3a. User selects “Cancel” operation. 3a1. Returns to the database window.	

Use Case ID	12
Intent	View/Edit Entry
Role	Advanced end users, End users/Desktop, or System administrators
Pre-conditions	
Post-conditions	Entries are viewed or edited successfully.
Basic Flow	
1. User opens KeePass and opens a database. 2. User selects a group/subgroup. 3. User selects an existing entry to view/edit. 4. User changes the fields in the form. 5. User selects “OK” operation. 6. The modified entry is saved in the selected group.	
Alternative Flow(s):	
3a. The repeat password field is not identical with the password field. 3a1. System displays “the repeated password must be identical with the password” message. 3b. User does not know how to fill the form. 3b1. User selects “Help” operation. 4a. User selects “Cancel” operation. 4a1. Returns to the database window.	

Use Case ID	13
Intent	Duplicate Entry
Role	Advanced end users, End users/Desktop, or System administrators
Pre-conditions	

Post-conditions	An entry is copied successfully.
Basic Flow	
<ol style="list-style-type: none"> 1. User opens KeePass and opens a database. 2. User selects a group/subgroup. 3. User selects an entry. 4. User selects “Duplicate” operation. 5. The new entry is added below the first one. 	
Alternative Flow(s):	
<ol style="list-style-type: none"> 4a. User cancel the duplication. <ol style="list-style-type: none"> 4a1. Returns to the database window. 	

Use Case ID	14
Intent	Delete Entry
Role	Advanced end users, End users/Desktop, or System administrators
Pre-conditions	
Post-conditions	An entry is deleted successfully.
Basic Flow	
<ol style="list-style-type: none"> 1. User opens KeePass and opens a database. 2. User selects a group/subgroup. 3. User selects one or more entries. 4. User selects “Delete” operation. 5. The system prompts the user for confirmation. 6. User clicks “Yes”. 7. The entry list displays in the database main window. 	
Alternative Flow(s):	
<ol style="list-style-type: none"> 6a. User clicks “No”. <ol style="list-style-type: none"> 6a1. Go to step 7. 	

Use Case ID	15
Intent	Change Language
Role	Advanced end users, End users/Desktop, or System administrators
Pre-conditions	An internet connection and a browser are required in order to download new language translations.
Post-conditions	The language translation is chosen and available.
Basic Flow	
<ol style="list-style-type: none"> 1. User opens KeePass. 2. User selects “Change language” operation. 3. The user selects a language to download. 4. System displays “Installation Completed” message. 5. User selects “Yes” operation. 	

6. KeePass asks to save any changes that may have been made in the database and restarts
7. User unlocks the database using the Master password.
Alternative Flow(s):
3a. User selects more than one language. 3a1. More than one language files are downloaded.
5a. System needs to restart. 5a1. The system prompts the user "Save any changes before restart".
5b. User selects "Close" operation. 5b1. No changes are made in the database.

Use Case ID	16
Intent	Set Auto-type
Role	Advanced end users, End users/Desktop, or System administrators
Pre-conditions	Only one database file is allowed in command line options
Post-conditions	KeePass will automatically perform
Basic Flow	
1. User navigates to an entry's edit interface. 2. User inputs a custom Auto-Type sequence (optional). 3. User saves the entry. 4. User selects the entry. 5. User selects "Auto-Type" operation. 6. The system detects actions in the sequence, and searches the database for entries with valid Auto-Type sequences. 7. The system executes the first valid Auto-Type sequence associated with the target entry/window.	
Alternative Flow(s):	
2b. The user does not input any sequence. 2b1. The default sequence is set as {USERNAME} {TAB} {PASSWORD} {ENTER}. 3a. User defines an Auto-Type sequence without the required "Auto-Type:" prefix. 3a1. The system displays "Auto-Type sequence must start with 'Auto-Type:'" message. 3b. User defines an Auto-Type sequence exceeding one line. 3b1. The system displays "Auto-Type sequence must be a single line" message. 7a. User triggers Auto-Type but no valid sequence exists for the target window. 7a1. The system displays "No matching Auto-Type sequence found" message.	

Use Case ID	17
Intent	Use Command Line
Role	Advanced end users, End users/Desktop, or System administrators
Pre-conditions	Only one database file is allowed in command line options
Post-conditions	Pass a file patch in the command line so that KeePass will open it immediately after start up.
Basic Flow	

<ol style="list-style-type: none"> 1. User opens KeePass via command line with a file path argument. 2. KeePass parses the command line arguments. 3. KeePass starts and immediately opens the specified database.
Alternative Flow(s):
<ol style="list-style-type: none"> 1a. User specifies multiple files in the command line. <ol style="list-style-type: none"> 1a1. The system displays “Only one database file is allowed” message. 1b. User provides an invalid path. <ol style="list-style-type: none"> 1b1. The system displays “Invalid path” message. 1b2. User corrects the path. 2a. The file does not exist. <ol style="list-style-type: none"> 2a1. The system displays “Database file not found.” message.

Use Case ID	18
Intent	Composite Master Key
Role	Advanced end users, End users/Desktop, or System administrators
Pre-conditions	Both master password and key file are required
Post-conditions	The database can be unlocked by the composition.
Basic Flow	
<ol style="list-style-type: none"> 1. User opens KeePass and opens a database. 2. KeePass retrieves the setting of the composition, such as “password + key file”, “password only”, or “key file only”. 3. Users provide passwords or files according to settings. 4. The system validates the input against the setting. 5. The database unlocks. 	
Alternative Flow(s):	
<ol style="list-style-type: none"> 2a. The setting of the composition is “password + key file” but user only provides the key file. <ol style="list-style-type: none"> 2a1. The system displays “Master password is required” message. 2a2. Go to step 3. 2b. The setting of the composition is “password + key file” but user only provides the master password. <ol style="list-style-type: none"> 2b1. The system displays “Key file is required” message. 2b2. Go to step 3. 	

Use Case ID	19
Intent	Import/Export Data
Role	Advanced end users, End users/Desktop, or System administrators
Pre-conditions	
Post-conditions	User import/export files from/to database successfully.
Basic Flow	
<ol style="list-style-type: none"> 1. User opens KeePass and opens a database. 2. User selects “Import/Export” operation. 3. User chooses an import/export file format. 	

4. Import from a file or export to a file.
Alternative Flow(s):
2a. User selects a non-supported format. 2a1. System displays "Unsupported import/export file format" message.
2b. User imports a corrupted/invalid file. 2b1. System displays a "File format mismatch or corruption" message. 2b2. User re-selects a valid file or cancels.

Use Case ID	20
Intent	Integrate with APP
Role	Advanced end users, End users/Desktop, or System administrators
Pre-conditions	Global hot key has been set.
Post-conditions	Switching back from an application to KeePass.
Basic Flow	
1. User is working in a third-party application. 2. User presses the global hot key. 3. The system detects the hot key trigger, checks for active KeePass instances, and identifies the first opened one. 4. The system restores the first instance's window to the foreground and activates it.	
Alternative Flow(s):	
2a. User attempts to modify the global hot key. 2a1. System prevents the change and displays "Global hot key cannot be modified." message. 3a. User presses the hot key but not switching to KeePass. 3a1. User checks if at least one instance of KeePass is running. 3b. The hot key is already in use by another application. 3b1. System does not trigger KeePass. 3b2. User checks system settings to resolve the hot key conflict.	

Use Case ID	21
Intent	Generate Password
Role	Advanced end users, End users/Desktop, or System administrators
Pre-conditions	KeePass is running.
Post-conditions	Random passwords is generated successfully.
Basic Flow	
1. User selects "Generate Password" operation. 2. System displays the generated password to the user. 3. User clicks "OK" and saves the password.	
Alternative Flow(s):	
1a. User customizes generation rules. 1a1. User modifies settings (selects specific character subsets, enables a pattern, or defines	

custom rules).

1a2. System regenerates the password.

Use Case ID	22
Intent	Use TAN
Role	Advanced end users, End users/Desktop, or System administrators
Pre-conditions	TAN entries cannot be changed.
Post-conditions	When a TAN is used, it expires automatically and can never be used again.
Basic Flow	
1. User utilizes wizard to create a TAN (Transaction Authentication Number) for one-time password generation. 2. The TAN is added to the user's database as a typical entry, with its title explicitly containing. 3. User uses the TAN. 4. The system automatically sets its expiration time to the current time.	
Alternative Flow(s):	
1a. User attempts to modify the title, username, or URL of a TAN entry. 1a1. The system blocks the modification. 3a. User tries to reuse an expired/expended TAN. 3a1. The system rejects the TAN.	