Ontology-based Expert System for a Generic Drug Production of Pharmaceutical Dosage Forms

Software Requirement Specification

By

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# Document History

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# Chapter 1 | Introduction

Software Requirement describes the requirement specification of Ontology-base expert system for generic drug production of pharmaceutical dosage form. The Software Requirement is composed of the User requirement Specification (URS), User requirement description, System Requirement Specification (SRS) and non- functional requirement. The purpose of this document are making the same understanding of the stakeholder and supporting the future development.

# Chapter 2 | User Scenario

The client want to use the Ontology-base expert system for generic drug production of pharmaceutical dosage form on the tablet computer. The client need login before using the program. The program should show the current user after the user login to the system. The first page of program should be menu which consists of the history, evaluate case, manage a case and calculate drug reformulation as a generic version. The client need 3 types of the user. The first one is general pharmacists. The general pharmacists can register as member by sending the request to the administrator. The general pharmacist can use the system for evaluation and calculate drug reformulation. They also view their drug reformulate history. The drug reformulate history can search by drug’s name and date. The second type of user is an administrator. The administrator can manage the member, drug formulation cases and excipient in the program. They can approve the member register and change authorize status of member. They can change member status from general pharmacist to an expert pharmacist or the expert pharmacist to the general pharmacist. The administrator also add a new case in the program, update the existing case in the database and delete a case. The last user is expert pharmacists. The expert pharmacists come from general pharmacists. The expert pharmacist cannot register by themselves. This user must change by administrator. The expert pharmacists can use the program similar with the administrator but the expert pharmacists cannot manage make the member management.

From this User scenario above, it can divide into use case diagram. The diagram is illustrated in Figure 1.

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Figure 1: The use case diagram

# Chapter 3 | Requirement Specification

## 3.1 Functional Requirement

### 3.1.1 User Requirement Specification (URS)

From the use case diagram at the figure 1, there are 6 feature in the Ontology base expert system for generic drug production of pharmaceutical dosage form. The feature can divide into the User Requirement Specification. The User Requirement Specification (URS) is illustrated in Table below.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Feature Name** | **URS No.** | **URS Name** | **Actor** |
| 1 | Manage the user account | URS-01 | The user registers as a member. | General Pharmacists |
| URS-02 | The user updates their information. | General Pharmacists, Expert Pharmacists, Administrator |
| URS-03 | The Administrator deletes the member account. | Administrator |
| URS-04 | The Administrator approves a general pharmacist registration. |
| URS-05 | The Administrator changes an authorized person status. |
| 2 | Calculate the drug reformulation by using the inference engine. | URS-06 | The user calculates a drug reformulation by using an inference engine. | General Pharmacists, Expert Pharmacists, Administrator |
| 3 | View the drug reformulation history | URS-07 | The user views their drug reformulation history. | General Pharmacists, Expert Pharmacists, Administrator |
| 4 | Make the drug reformulation evaluation | URS-08 | The user makes the drug reformulation evaluation. | General Pharmacists, Expert Pharmacists, Administrator |
| 5 | Manage the drug excipient property | URS-09 | The user adds a new solubility into the database. | Expert Pharmacists, Administrator |
| URS-10 | The user updates the solubility into the database. |
| URS-11 | The user deletes an existing solubility from the database. |
| URS-12 | The user adds a new Degradation Mechanism into the database. |
| URS-13 | The user updates an existing Degradation Mechanism in to the database. |
| URS-14 | The user deletes an existing Degradation Mechanism from the database. |
| URS-15 | The user adds a new Kinetic Reaction into the database. |
| URS-16 | The user updates an existing Kinetic Reaction into the database. |
| URS-17 | The user deletes an existing Kinetic Reaction from the database. |
| URS-18 | The user adds a new Pka into the database. |
| URS-19 | The user updates an existing Pka into the database. |
| URS-20 | The user deletes an existing Pka from the database. |
| URS-21 | The user adds a new Partition Coefficient into the database. |
| URS-22 | The user updates an existing Partition Coefficient into the database. |
| URS-23 | The user deletes an existing Partition Coefficient from the database. |
| URS-24 | The user adds a new Solid state into the database. |
| URS-25 | The user updates an existing Solid state into the database. |
| URS-26 | The user deletes an existing Solid state from the database. |
| URS-27 | The user adds a new Hygroscopicity into the database. |
| URS-28 | The user updates an existing Hygroscopicity into the database. |
| URS-29 | The user deletes an existing Hygroscopicity from the database. |
| URS-30 | The user adds a new Particle Size into the database. |
| URS-31 | The user updates an existing Particle Size into the database. |
| URS-32 | The user deletes an existing Particle Size from the database. |
| URS-33 | The user adds a new Flow ability into the database. |
| URS-34 | The user updates an existing Flow ability into the database. |
| URS-35 | The user deletes an existing Flow ability from the database. |
| URS-36 | The user adds a new Density into the database. |
| URS-37 | The user updates an existing Density into the database. |
| URS-38 | The user deletes an existing Density from the database. |
| URS-39 | The user adds a new Compound Function into the database. |
| URS-40 | The user updates an existing Compound Function into the database. |
| URS-41 | The user deletes an existing Compound Function from the database. |
| 6 | Manage the drug excipient | URS-43 | The user adds a new solubility into the database. | Expert Pharmacists, Administrator |
| URS-44 | The user updates an existing solubility into the database. |
| URS-45 | The user deletes an existing solubility from the database. |
| URS-46 | The user view all drug excipient. |
| 7 | Manage the drug formulation | URS-47 | The user adds a new drug formulation case into the database. | Expert Pharmacists, Administrator |
| URS-48 | The user updates an existing drug formulation case in the database. |
| URS-49 | The user deletes an existing drug formulation case in the database. |
| URS-50 | The user view all drug formulation. |
| 8 | Login to the system | URS-51 | The user logins to the system. | General Pharmacists, Expert Pharmacists, Administrator |
| 9 | Logout from the system | URS-52 | The user logouts from the system. | General Pharmacists, Expert Pharmacists, Administrator |

### 3.1.2 User Requirement Description

#### Feature 1: Manage the user account

##### URS-01: The user register as a member.

###### Input and output

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No** | **Input Name** | **Description** | **Example** | **Remarks** | **Output** |
| 1 | Name | Name of the user should have length 1-40 characters | “Panupak Wichaidit” | The word should be the character. | The system show “Panupak Wichaidit” on the screen. |
| 2 | Username | Username of the user should have length 4-15 characters | “member01” | The word should be the character with number | The system show “member 01” on the screen. |
| 3 | Password | Password of the user should have length 4-15 characters | “password01” | The word should be the characters with the number. | The system show “password 01” on the screen. |
| 4 | Telephone Number | Telephone number of the user should have equal 10 digit. | “089999098” | The word should be the numeric number. | The system show “089999098” on the screen. |
| 5 | Email | Email should be the same as the email address that user used. | “newnok6@gmail.com” | The word should be the email format | The system show “newnok6@gmail.com” on the screen. |

###### Description

|  |  |  |  |
| --- | --- | --- | --- |
| **User Requirement Specification ID:** | URS-01 | | |
| **User Requirement Specification Name:** | The user register as a member. | | |
| **Create By :** | Panupak Wichaidit | **Last update by :** | Panupak Wichaidit |
| **Date Created :** | April 1, 2014 | **Last Revision Date :** | April 12, 2014 |
| **Actor:** | General Pharmacists | | |
| **Description:** | URS-01 is used, when the user want to use the Ontology base expert system for generic drug production of pharmaceutical dosage form at the first time. | | |
| **Trigger:** | The user select “Register” to create a general pharmacist account. | | |
| **Pre-condition:** | N/A | | |
| **Post-condition:** | * The system saves a user information into a database. * An administrator receives a member registration request from the user. | | |
| **Normal Flow:** | 1. The user open the registration page for create a new member account. 2. The user input username, password, name, telephone number and email for member registration. 3. The user select a submit symbol for sending the member registration to administrator. 4. The system validate the username, password, name, telephone number and email. 5. The system displays the sending registration to administrator successful page. | | |
| **Alternative Flow:** | * In step 3 of the normal flow, if the user select “cancel” instead of “submit”.  1. The system shows the login page of the program.  * In step 3 of the normal flow, if the user select “reset” instead of “submit”.  1. The system resets the user information for member registration such as username, password, name, telephone number and email. | | |
| **Exception:** | * In step 4 of the normal flow, if the user input a name more than 40 characters or in wrong format.  1. The system shows the error message about a user’s name is more than 40 characters or in wrong format. 2. The user go back to do a step 2 again.  * In step 4 of the normal flow, if the user input a telephone number not equal 10 digit.  1. The system shows the error message about a user’s telephone number is not equal 10 digit. 2. The user go back to do a step 2 of the normal flow again.  * In step 4 of the normal flow, if the user input a username more than 15 characters or less than 4 characters.  1. The system shows the error message about a username is more than 15 characters or less than 4 characters. 2. The user go back to do a step 2 of the normal flow again.  * In step 4 of the normal flow, if the user input a password less than 4 characters or more than 15 characters.  1. The system shows the error message about a password less than 4 characters or more than 15 characters. 2. The user go back to do a step 2 of the normal flow again  * In step 4 of the normal flow, if the user input an email in a wrong format  1. The system shows the error message about an email format is wrong. 2. The user go back to do a step 2 of the normal flow again      * In all of step of the normal flow, if the system disconnects from an internet  1. The system shows the error message about internet disconnection. | | |
| **Include:** | N/A | | |

##### URS-02: The user update their information.

###### Input and output

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No** | **Input Name** | **Description** | **Example** | **Remarks** | **Output** |
| 1 | Name | Name of the user should have length 1-40 characters | “Narangrit Sisuwan” | The word should be the character. | The system show the “Narangrit Sisuwan” on the screen. |
| 2 | Password | Password of the user should have length 4-15 characters | “password01” | The word should be the characters with the number. | The system show the “password01” on the screen. |
| 3 | Telephone Number | Telephone number of the user should have equal 10 digit. | “089999098” | The word should be the numeric number. | The system show the “089999098”number on the screen. |

###### Description

|  |  |  |  |
| --- | --- | --- | --- |
| **User Requirement Specification ID:** | URS-02 | | |
| **User Requirement Specification Name:** | The user update their information. | | |
| **Create By :** | Panupak Wichaidit | **Last update by :** | Panupak Wichaidit |
| **Date Created :** | April 2, 2014 | **Last Revision Date :** | April 12, 2014 |
| **Actor:** | General Pharmacists, Expert Pharmacists, Administrator | | |
| **Description:** | URS-02 is used, when the user want to update their information. | | |
| **Trigger:** | The user select “update” to update information of the user. | | |
| **Pre-condition:** | * The user must log in to the system. | | |
| **Post-condition:** | * The system saves the user information into a database. | | |
| **Normal Flow:** | 1. The user open updating information page. 2. The system shows the existing user information such as the password, name, and telephone number. 3. The user input a new password, name, telephone number for information updating. 4. The user select “confirm” to update the information. 5. The system validate the password, name and telephone number format. 6. The system save the information updating into the database. 7. The system shows updating information successfully page. | | |
| **Alternative Flow:** | * In step 3 of the normal flow, if user select “cancel” instead of “confirm”  1. The system shows the main page of the program. | | |
| **Exception:** | * In step 5 of the normal flow, if the user input a name more than 40 characters.  1. The system shows the error message about a user’s name is more than 40 characters. 2. The user go back to do a step 2 again.  * In step 5 of the normal flow, if the user input a telephone number not equal 10 digit.  1. The system shows the error message about a user’s telephone number is not equal 10 digit. 2. The user go back to do a step 2 of the normal flow again.  * In step 5 of the normal flow, if the user input a password less than 4 characters or more than 15 characters.  1. The system shows the error message about a password less than 4 characters or more than 15 characters. 2. The user go back to do a step 2 of the normal flow again  * In all of step of the normal flow, if the system disconnects from an internet  1. The system shows the error message about internet disconnection. | | |
| **Include:** | URS-15 | | |

##### URS-03: The administrator deletes the member account.

###### Input and output

N/A

###### Description

|  |  |  |  |
| --- | --- | --- | --- |
| **User Requirement Specification ID:** | URS-03 | | |
| **User Requirement Specification Name:** | The Administrator deletes the member account. | | |
| **Create By :** | Panupak Wichaidit | **Last update by :** | Panupak Wichaidit |
| **Date Created :** | April 12, 2014 | **Last Revision Date :** | May 20, 2014 |
| **Actor:** | Administrator | | |
| **Description:** | URS-03 is used, when the administrator want to delete the existing user account from the database. | | |
| **Trigger:** | The user select “delete the existing user” for deleting the existing user from the database. | | |
| **Pre-condition:** | * The administrator must log in to the system. | | |
| **Post-condition:** | * The system deletes the existing user from the database. | | |
| **Normal Flow:** | 1. The user open deleting the existing member page. 2. The system shows the list of member’s username from the database. 3. The administrator select the member username from the list of member username. 4. The administrator select “delete” for deleting the existing member account from the database. 5. The system shows the alert message for checking the member account deleting. 6. The administrator selects “Yes” for confirming to delete the member account. 7. The system delete the member account from the database. 8. The system shows deleting the existing excipient successful page. | | |
| **Alternative Flow:** | * In step 3 of the normal flow, if the user use search bar for searching the member account by using the username instead of selecting the username from the list of member’s username.  1. The administrator input the member’s username in a search bar. 2. The administrator select “searching” for searching the existing member account in the database. 3. The system show the information of member. 4. The step of this use case is resume at a step 4 of the normal flow.  * In the step 3 of the normal flow, if the user select “cancel” instead of selecting “Yes”.  1. The system shows the main page of the program. | | |
| **Exception:** | * In all of step of the normal flow, if the system disconnects from an internet.  1. The system shows the error message about internet disconnection. | | |
| **Include:** | URS-15 | | |

##### URS-04: The administrator approve a general pharmacist registration.

###### Input and output

* **Input:** The administrator select the member username from the list of member registration request.
* **Output:** The system approve member registration and send the approving message to the user.

###### Description

|  |  |  |  |
| --- | --- | --- | --- |
| **User Requirement Specification ID:** | URS-04 | | |
| **User Requirement Specification Name:** | The user approve a general pharmacist registration. | | |
| **Create By :** | Panupak Wichaidit | **Last update by :** | Panupak Wichaidit |
| **Date Created :** | April 2, 2014 | **Last Revision Date :** | May 20, 2014 |
| **Actor:** | Administrator | | |
| **Description:** | URS-04 is used, when the administrator want to approve a member registration that request from a person who want to be the general pharmacist. | | |
| **Trigger:** | The administrator select “approve member registration” to approve a member registration | | |
| **Pre-condition:** | * The administrator must log in to the system. * The administrator must receive the request of member registration from the general pharmacists. | | |
| **Post-condition:** | * The system saves an information about approving member registration into the database. * The system sends the email to the person who want to be general pharmacist about member registration is successful. * The system sends the email to the person who want to be general pharmacist about member registration is not approve by an administrator. This post condition is used when the user select “cancel” in Alternative flow. | | |
| **Normal Flow:** | 1. The administrator open the approving member registration page. 2. The system show the list of the general pharmacist registration that request from the person who want to be the general pharmacist. 3. The administrator select the request that want to approve as the general pharmacist. 4. The administrator select “confirm” to approve the request of member registration. 5. The system shows approving member registration is successfully. | | |
| **Alternative Flow:** | * In step 3 of the normal flow, if user select “cancel” instead of “confirm”  1. The system cancels the request of member registration. 2. The system shows the main page of the program. | | |
| **Exception:** | * In all of step of the normal flow, if the system disconnects from an internet  1. The system shows the error message about internet disconnection. | | |
| **Include:** | URS-15 | | |

##### URS-05: The administrator change an authorized person status.

###### Input and output

* **Input:** The administrator select the member username for change the authorized person status.
* **Output:** The system saves the changing of authorized person status into a database.

###### Description

|  |  |  |  |
| --- | --- | --- | --- |
| **User Requirement Specification ID:** | URS-05 | | |
| **User Requirement Specification Name:** | The user change an authorized person status. | | |
| **Create By :** | Panupak Wichaidit | **Last update by :** | Panupak Wichaidit |
| **Date Created :** | April 2, 2014 | **Last Revision Date :** | May 20, 2014 |
| **Actor:** | Administrator | | |
| **Description:** | URS-05 is used, when the administrator want to change an authorized person status from a general pharmacist to an expert pharmacist. | | |
| **Trigger:** | The administrator select “change authorized person” to change the status of the members | | |
| **Pre-condition:** | * The administrator must log in to the system. * The system must have at least one of general pharmacist in the database. | | |
| **Post-condition:** | * The system saves the changing of authorized person status into a database. * The system sends the email to a person who has been change authorized person status by administrator. | | |
| **Normal Flow:** | 1. The administrator open the changing authorized person status page. 2. The system show the list of member username from the database. 3. The administrator select the member username for the authorize status changing. 4. The system shows the member detail which consist of username, name and authorize status. 5. The administrator select “change authorized status”. 6. The system show alert message for checking the authorized status changing. 7. The administrator select “confirm” to confirm an authorize status changing. 8. The system shows the changing authorized person status is successfully. | | |
| **Alternative Flow:** | * In step 3 of the normal flow, if the user use search bar for searching the member by username instead of selecting the member in a list of member username.  1. The administrator inputs the member username into the search bar. 2. The administrator selects “submit” for searching the member by the username. 3. The system shows the member username. 4. The process of this use case is continue at step 5 of the normal flow. | | |
| **Exception:** | * In all of step of the normal flow, if the system disconnects from an internet  1. The system shows the error message about internet disconnection. | | |
| **Include:** | URS-15 | | |

#### Feature 2: Calculate the drug reformulation by using the inference engine.

##### URS-06: The user calculates a drug reformulation by using an inference engine.

###### Input and output

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **No** | **Part** | **Name** | **Description** | **Example** | **Remarks** | **Output** |
| 1 | Active Pharmaceutical ingredient (API) | Name | Name of the drug should be the characters | “Paracetamol” | The word should be the character. | The system show the name on the screen. |
| Amount of strength | Amount of the strength should be the decimal value. | 500.00 | The value should be the decimal value. | The system show the amount of strength on the screen. |
| Solubility | Solubility of the drug | “Sparing soluble” | The word should be the character. | The system show the solubility on the screen. |
| Flow ability | Flow ability of the drug | “Poor” | The word should be the character. | The system show the flow ability on the screen. |
| Compatibility | Compatibility of the drug | “Good” | The word should be the character. | The system show the compatibility on the screen. |
| Temperature Stability | Temperature stability of the drug | “Stable” | The word should be the character. | The system show the Temperature Stability on the screen. |
| Moisture Stability | Moisture Stability of the drug | “Stable” | The word should be the character. | The system show the Moisture Stability on the screen. |
| 2 | DF properties | Total weight | The Total weight of the drug | 630.00 | The value should be the decimal value. | The system show the total weight on the screen. |
| Disintegration Time | Disintegration Time of the drug | 28 | The value should be the Integer value. | The system show the Disintegration Time on the screen. |
| Hardness | Hardness of the drug | 8.30 | The value should be the decimal value. | The system show Hardness on the screen. |
| Dissolution Profile | Dissolution Profile of the drug | 81.31 | The value should be the decimal value. | The system show the Dissolution Profile on the screen. |
| 3 | Excipients | Excipients’ name | The excipient that using for produce the generic drug. | “Microcrystalline cellulose” | The word should be the character. | The system show the Excipients’ name on the screen. |

###### Description

|  |  |  |  |
| --- | --- | --- | --- |
| **User Requirement Specification ID:** | URS-06 | | |
| **User Requirement Specification Name:** | The user calculates a drug reformulation by using an inference engine. | | |
| **Create By :** | Panupak Wichaidit | **Last update by :** | Panupak Wichaidit |
| **Date Created :** | April 2, 2014 | **Last Revision Date :** | April 2, 2014 |
| **Actor:** | General Pharmacists, Expert Pharmacists, Administrator | | |
| **Description:** | URS-06 is used, when the user wants to calculate a drug reformulation as a generic version by using an inference engine. | | |
| **Trigger:** | The user selects “Calculate” to calculate drug reformulation as a generic version. | | |
| **Pre-condition:** | * The user must log in to the system. | | |
| **Post-condition:** | * The system saves the user information into a database. | | |
| **Normal Flow:** | 1. The user opens the calculate drug reformulation page 2. The user inputs the Pharmaceutical value such as active Pharmaceutical ingredient (API), DF Properties and excipient. 3. The user select the evaluation symbol for calculate drug reformulation. 4. The system show the menu of inference engine. The menu is consist of rule base system, case base reasoning system and hybrid system. 5. The user select some of inference engine from the menu of inference engine for making calculation. 6. The system shows the result that include appropriate manufacturing and excipient. | | |
| **Alternative Flow:** | N/A | | |
| **Exception:** | * In step 2 of the normal flow, if the user input an Amount of strength at API part in a wrong format.  1. The system shows the error message about Amount of strength format is wrong. 2. The user go back to do the step 2 of the normal flow again.  * In step 2 of the normal flow, if the user input a Total weight at DF properties part in a wrong format.  1. The system shows the error message about Total weight format is wrong. 2. The user go back to do the step 2 of the normal flow again.  * In step 2 of the normal flow, if the user input a Disintegration Time at DF Properties in a wrong format.  1. The system shows the error message about Disintegration Time format is wrong. 2. The user go back to do the step 2 of the normal flow again.  * In step 2 of the normal flow, if user input a Hardness at DF Properties in a wrong format.  1. The system shows the error message about Hardness format is wrong. 2. The user go back to do the step 2 of the normal flow again.  * In step 2 of the normal flow, if user input Dissolution Profile at DF Properties in a wrong format.  1. The system shows the error message about Dissolution Profile format is wrong. 2. The user go back to the step 2 of the normal flow again.  * In all of step of the normal flow, if the system disconnects from an internet  1. The system shows the error message about internet disconnection. | | |
| **Include:** | URS-15 | | |

#### Feature 3: View the drug reformulation history.

##### URS-07: The user view their drug reformulation history.

###### Input and output

* **Input:** The user selects the date of drug reformulation from the list of drug reformulation history date for viewing the history.
* **Output:** The system shows the reformulation history detail from the database.

###### Description

|  |  |  |  |
| --- | --- | --- | --- |
| **User Requirement Specification ID:** | URS-07 | | |
| **User Requirement Specification Name:** | The user view their drug reformulation history. | | |
| **Create By :** | Panupak Wichaidit | **Last update by :** | Panupak Wichaidit |
| **Date Created :** | April 2, 2014 | **Last Revision Date :** | April 2, 2014 |
| **Actor:** | General Pharmacists, Expert Pharmacists, Administrator | | |
| **Description:** | URS-07 is used, when the user want to view the history of a drug reformulation. | | |
| **Trigger:** | The user select “view the history” to view the history of a drug reformulation. | | |
| **Pre-condition:** | * The user must log in to the system. | | |
| **Post-condition:** | * N/A | | |
| **Normal Flow:** | 1. The user opens the history of a drug reformulation page. 2. The system shows a list of a drug reformulation history date. 3. The user selects the date of drug reformulation that they want to see a detail. 4. The system shows a detail of the history that the user selected. | | |
| **Alternative Flow:** | * In step 3 of the normal flow, if the user use search bar for searching the history by date instead of selecting the history in a list.  1. The user input the date into the search bar. 2. The user select “submit” for searching a history by date. 3. The system shows the list of history. | | |
| **Exception:** | * In all of step of the normal flow, if the system disconnects from an internet  1. The system shows the error message about internet disconnection. | | |
| **Include:** | URS-15 | | |

#### Feature 4: Make the drug reformulation evaluation.

##### URS-08: The user make a drug formulation evaluation

###### Input and output

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No** | **Input Name** | **Description** | **Example** | **Remarks** | **Output** |
| 1 | Dissolution Profile | Dissolution profile of the drug. | 81.31 | The value should be the decimal value. | The system show the dissolution profile on the screen. |
| 2 | Disintegration time | Disintegration time of the drug. The time unit is second | 21 | The value should be the integer value. | The system show the disintegration time on the screen. |
| 3 | Pharmaceutical equivalence | Pharmaceutical value for making equivalence | 3 | The word should be the numeric number. | The system show the telephone number on the screen. |

###### Description

|  |  |  |  |
| --- | --- | --- | --- |
| **User Requirement Specification ID:** | URS-08 | | |
| **User Requirement Specification Name:** | The user makes a drug reformulation evaluation. | | |
| **Create By :** | Panupak Wichaidit | **Last update by :** | Panupak Wichaidit |
| **Date Created :** | April 7, 2014 | **Last Revision Date :** | April 7, 2014 |
| **Actor:** | General Pharmacists, Expert Pharmacists, Administrator | | |
| **Description:** | URS-08 is used, when the user wants to evaluate the drug formulation in the system after they produce a real generic drug in a lab. | | |
| **Trigger:** | The user select “Evaluate” for making drug evaluation. | | |
| **Pre-condition:** | * The user must log in to the system. | | |
| **Post-condition:** | * The system saves the drug formulation evaluation into the database. | | |
| **Normal Flow:** | 1. The user opens drug formulation evaluation page. 2. The system shows the list of drug reformulation history. 3. The user selects a drug formulation from the list of drug reformulation history. 4. The system shows a detail of the history that the user selected. 5. The user selects “evaluate” for inputting value of drug formulation evaluation. 6. The user inputs the Dissolution profile, Disintegration time and Pharmaceutical equivalence of generic drug that the user produced. 7. The user selects “confirm” for making drug formulation evaluation. 8. The system shows the drug formulation evaluation successful page. | | |
| **Alternative Flow:** | * In step 3 of the normal flow, if the user use a search bar for searching the history by date instead of selecting the history in a list.  1. The user input the date into the search bar. 2. The user select “submit” for searching the drug formulation by date. 3. The system shows the drug formulation. 4. The step of this use case is resume at step at step 3 of the normal flow.  * In step 3 of the normal flow, if the user use search bar for searching the history by drug name instead of selecting the history in a list.  1. The user input the drug name into the search bar. 2. The user select “submit” for searching the drug formulation by date. 3. The system shows the drug formulation. 4. The step of this use case is resume at step at step 3 of the normal flow.  * In step 6 of the normal flow, if the system gets “fail” result instead of getting “successful” result.  1. The system shows a new drug formulation to the user.  * In the step 5 of the normal flow, if the user select “cancel” instead of selecting “confirm”.  1. The system shows the administrator main page. | | |
| **Exception:** | * In step 4 of the normal flow, if the user input dissolution profile in the wrong format.  1. The system shows the error message about Dissolution profile format is wrong. 2. The user go back to do the step 4 of the normal flow again.  * In step 4 of the normal flow, if the user input a Disintegration time in a wrong format.  1. The system shows the error message about Disintegration time format is wrong. 2. The user go back to do the step 4 of the normal flow again.  * In step 4 of the normal flow, if the user input a Pharmaceutical equivalence in a wrong format.  1. The system shows the error message about Disintegration Time format is wrong. 2. The user go back to do the step 4 of the normal flow again.  * In all of step of the normal flow, if the system disconnects from an internet  1. The system shows the error message about internet disconnection. | | |
| **Include:** | URS-15 | | |

#### Feature 5: Manage the drug excipient property.

##### URS-09: The user adds a new solubility into the database.

###### Input and output

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Input Name** | **Example** | **Remarks** | **Output** |
| 1 | Type: | “SparinglySoluble” | The value should be the character. | The system show the type on the screen. |
| 2 | Maximum Value: | 3.56 | The value should be the float number. | The system show the Maximum Value on the screen. |
| 3 | Minimum Value: | 1.56 | The value should be the float number. | The system show the Minimum Value on the screen. |
| 4 | Solubility value | 2.30 | The value should be the float number. | The system show the Solubility value on the screen. |

###### Description

|  |  |  |  |
| --- | --- | --- | --- |
| **User Requirement Specification ID:** | URS-09 | | |
| **User Requirement Specification Name:** | The user adds a new solubility into the database. | | |
| **Create By :** | Panupak Wichaidit | **Last update by :** | Panupak Wichaidit |
| **Date Created :** | April 7, 2014 | **Last Revision Date :** | May 22, 2014 |
| **Actor:** | Expert Pharmacists, Administrator | | |
| **Description:** | URS-09 is used, when the user want to add a new solubility to the database. | | |
| **Trigger:** | The user select “Add the new solubility ” for adding the new solubility to the database. | | |
| **Pre-condition:** | * The user must log in to the system. | | |
| **Post-condition:** | * The system save the new solubility to the database. | | |
| **Normal Flow:** | 1. The user open adding the new solubility page. 2. The user input type, maximum Value, minimum Value and Solubility value 3. The user select “save” for adding the new solubility to the database. 4. The system validate the input value. 5. The system save the new solubility into the database. 6. The system shows the adding new soulubility successful page. | | |
| **Alternative Flow:** | * In the step 3 of the normal flow, if the user select “cancel” instead of selecting “save”.  1. The system resume at the step 2 of normal flow. | | |
| **Exception:** | * In step 4 of the normal flow, if the user input the type in a wrong format.  1. The system shows the error message about the type format is wrong. 2. The user go back to do the step 3 of the normal flow again.  * In step 5 of the normal flow, if the user input the maximum value in a wrong format.  1. The system shows the error message about the maximum value is wrong. 2. The user go back to do the step 3 of the normal flow again.  * In step 5 of the normal flow, if the user input the minimum value in a wrong format.  1. The system shows the error message about the minimum value is wrong. 2. The user go back to do the step 3 of the normal flow again.  * In step 5 of the normal flow, if the user input solubility value in a wrong format.  1. The system shows the error message about the solubility value is wrong. 2. The user go back to do the step 3 of the normal flow again.  * In all of step of the normal flow, if the system disconnects from an internet.  1. The system shows the error message about internet disconnection. | | |
| **Include:** | URS-02 | | |

##### URS-10: The user updates the solubility into the database.

###### Input and output

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Input Name** | **Example** | **Remarks** | **Output** |
| 1 | Type: | “SlightlySoluble” | The value should be the character. | The system show the type on the screen. |
| 2 | Maximum Value: | 0.98 | The value should be the float number. | The system show the Maximum Value on the screen. |
| 3 | Minimum Value: | 1.98 | The value should be the float number. | The system show the Minimum Value on the screen. |
| 4 | Solubility value | 4.98 | The value should be the float number. | The system show the Solubility value on the screen. |

###### Description

|  |  |  |  |
| --- | --- | --- | --- |
| **User Requirement Specification ID:** | URS-10 | | |
| **User Requirement Specification Name:** | The user updates the solubility into the database. | | |
| **Create By :** | Panupak Wichaidit | **Last update by :** | Panupak Wichaidit |
| **Date Created :** | April 7, 2014 | **Last Revision Date :** | May 25, 2014 |
| **Actor:** | Expert Pharmacists, Administrator | | |
| **Description:** | URS-10 is used, when the user want to update the existing solubility in the database. | | |
| **Trigger:** | The user select “Update the existing excipient” for updating the existing solubility in the database. | | |
| **Pre-condition:** | * The user must log in to the system. | | |
| **Post-condition:** | * The systems save the updating solubility to the database. | | |
| **Normal Flow:** | 1. The user opens updating the existing solubility in the database. 2. The user selects the existing solubility from a list. 3. The user input type, maximum Value, minimum Value and Solubility value. 4. The user selects “save” for updating the new solubility data to the database. 5. The system validates the input value. 6. The user selects “confirm to update” for update the existing solubility in the database. 7. The system shows the existing solubility updating successful page. | | |
| **Alternative Flow:** | * In step 2 of the normal flow, if the user use search bar for searching the existing solubility by the solubility type instead of selecting the solubility type in a list.  1. The user input the solubility type in a search bar. 2. The user select “searching” for searching the existing solubility in the database. 3. The system shows the solubility. 4. The step of this use case is resume at a step 3 of the normal flow.  * In the step 3 of the normal flow, if the user select “cancel” instead of selecting “confirm to update”.  1. The system shows the main page of the program. | | |
| **Exception:** | * In step 4 of the normal flow, if the user input the type in a wrong format.  1. The system shows the error message about the type format is wrong. 2. The user go back to do the step 3 of the normal flow again.  * In step 5 of the normal flow, if the user input the maximum value in a wrong format.  1. The system shows the error message about the maximum value is wrong. 2. The user go back to do the step 3 of the normal flow again.  * In step 5 of the normal flow, if the user input the minimum value in a wrong format.  1. The system shows the error message about the minimum value is wrong. 2. The user go back to do the step 3 of the normal flow again.  * In step 5 of the normal flow, if the user input solubility value in a wrong format.  1. The system shows the error message about the solubility value is wrong. 2. The user go back to do the step 3 of the normal flow again.  * In all of step of the normal flow, if the system disconnects from an internet.  1. The system shows the error message about internet disconnection. | | |
| **Include:** | URS-02 | | |

##### URS-11: The user deletes an existing solubility from the database.

###### Input and output

* **Input:**

1. The user selects the existing solubility from the list of the solubility type for deleting the excipient from the database.

* **Output:** The system delete the solubility from the database and show successful message.

###### Description

|  |  |  |  |
| --- | --- | --- | --- |
| **User Requirement Specification ID:** | URS-11 | | |
| **User Requirement Specification Name:** | The user delete an existing solubility from the database. | | |
| **Create By :** | Panupak Wichaidit | **Last update by :** | Panupak Wichaidit |
| **Date Created :** | April 7, 2014 | **Last Revision Date :** | May 25, 2014 |
| **Actor:** | Expert Pharmacists, Administrator | | |
| **Description:** | URS-11 is used, when the user wants to delete the existing excipient solubility from the database. | | |
| **Trigger:** | The user selects “delete the existing excipient” for deleting the existing solubility from the database. | | |
| **Pre-condition:** | * The user must log in to the system. | | |
| **Post-condition:** | * The system deletes the solubility from the database. | | |
| **Normal Flow:** | 1. The user opens deleting the existing solubility page. 2. The user selects existing solubility from the list. 3. The user selects “confirm to delete” for deleting the existing solubility from the database. 4. The system shows the alert message for checking the drug solubility deleting. 5. The user selects “Yes” for confirming to delete the solubility 6. The system shows deleting the existing solubility successful page. | | |
| **Alternative Flow:** | * In step 2 of the normal flow, if the user use search bar for searching the existing solubility by the solubility type instead of selecting the existing solubility in a list.  1. The user input the excipient name in a search bar. 2. The user select “searching” for searching the existing solubility in the database. 3. The system show the excipient. 4. The step of this use case is resume at a step 3 of the normal flow.  * In the step 3 of the normal flow, if the user select “cancel” instead of selecting “Yes”.  1. The system shows the main page of the program. | | |
| **Exception:** | * In all of step of the normal flow, if the system disconnects from an internet. * The system shows the error message about internet disconnection. | | |
| **Include:** | URS-02 | | |

##### URS-12: The user adds a new Degradation Mechanism into the database.

###### Input and output

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Input Name** | **Example** | **Remarks** | **Output** |
| 1 | Type: | “Oxidation” | The value should be the character. | The system show the type on the screen. |

###### Description

|  |  |  |  |
| --- | --- | --- | --- |
| **User Requirement Specification ID:** | URS-09 | | |
| **User Requirement Specification Name:** | The user adds a new solubility into the database. | | |
| **Create By :** | Panupak Wichaidit | **Last update by :** | Panupak Wichaidit |
| **Date Created :** | April 7, 2014 | **Last Revision Date :** | May 22, 2014 |
| **Actor:** | Expert Pharmacists, Administrator | | |
| **Description:** | URS-12 is used, when the user want to add a new Degradation Mechanism to the database. | | |
| **Trigger:** | The user select “Add the new Degradation Mechanism” for adding the new Degradation Mechanism to the database. | | |
| **Pre-condition:** | * The user must log in to the system. | | |
| **Post-condition:** | * The system save the new Degradation Mechanism to the database. | | |
| **Normal Flow:** | 1. The user open adding the new Degradation Mechanism page. 2. The user input type. 3. the user select “save” for adding the new Degradation Mechanism to the database. 4. The system validate the input value. 5. The system save the new Degradation Mechanism into the database. 6. The system shows the adding new Degradation Mechanism successful page. | | |
| **Alternative Flow:** | * In the step 3 of the normal flow, if the user select “cancel” instead of selecting “save”.  1. The system resume at the step 2 of normal flow. | | |
| **Exception:** | * In step 4 of the normal flow, if the user input the type in a wrong format.  1. The system shows the error message about the type format is wrong. 2. The user go back to do the step 2 of the normal flow again.  * In all of step of the normal flow, if the system disconnects from an internet.  1. The system shows the error message about internet disconnection. | | |
| **Include:** | URS-02 | | |

##### URS-13: The user updates the Degradation Mechanism into the database.

###### Input and output

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Input Name** | **Example** | **Remarks** | **Output** |
| 1 | Type: | “OxidationAB” | The value should be the character. | The system show the type on the screen. |

###### Description

|  |  |  |  |
| --- | --- | --- | --- |
| **User Requirement Specification ID:** | URS-13 | | |
| **User Requirement Specification Name:** | The user updates the Degradation Mechanism into the database. | | |
| **Create By :** | Panupak Wichaidit | **Last update by :** | Panupak Wichaidit |
| **Date Created :** | April 7, 2014 | **Last Revision Date :** | May 25, 2014 |
| **Actor:** | Expert Pharmacists, Administrator | | |
| **Description:** | URS-13 is used, when the user want to update the existing Degradation Mechanism in the database. | | |
| **Trigger:** | The user select “Update the existing Degradation Mechanism” for updating the existing Degradation Mechanism in the database. | | |
| **Pre-condition:** | * The user must log in to the system. | | |
| **Post-condition:** | * The systems save the updating Degradation Mechanism to the database. | | |
| **Normal Flow:** | 1. The user opens updating the existing Degradation Mechanism in the database. 2. The user selects the existing Degradation Mechanism from a list. 3. The user input type. 4. The user selects “save” for updating the new Degradation Mechanism data to the database. 5. The system validates the input value. 6. The user selects “confirm to update” for update the existing Degradation Mechanism in the database. 7. The system shows the existing Degradation Mechanism updating successful page. | | |
| **Alternative Flow:** | * In step 2 of the normal flow, if the user use search bar for searching the existing Degradation Mechanism by the Degradation Mechanism type instead of selecting the solubility type in a list.  1. The user input the Degradation Mechanism type in a search bar. 2. The user select “searching” for searching the existing Degradation Mechanism in the database. 3. The system shows the Degradation Mechanism. 4. The step of this use case is resume at a step 3 of the normal flow.  * In the step 3 of the normal flow, if the user select “cancel” instead of selecting “confirm to update”.  1. The system shows the main page of the program. | | |
| **Exception:** | * In step 4 of the normal flow, if the user input the type in a wrong format.  1. The system shows the error message about the type format is wrong. 2. The user go back to do the step 3 of the normal flow again.  * In all of step of the normal flow, if the system disconnects from an internet.  1. The system shows the error message about internet disconnection. | | |
| **Include:** | URS-02 | | |

##### URS-14: The user deletes an existing Degradation Mechanism from the database.

###### Input and output

* **Input:** The user selects the existing Degradation Mechanism from the list of the Degradation Mechanism type for deleting the excipient from the database.
* **Output:** The system delete the Degradation Mechanism from the database and show successful message.

###### Description

|  |  |  |  |
| --- | --- | --- | --- |
| **User Requirement Specification ID:** | URS-14 | | |
| **User Requirement Specification Name:** | The user delete an existing Degradation Mechanism from the database. | | |
| **Create By :** | Panupak Wichaidit | **Last update by :** | Panupak Wichaidit |
| **Date Created :** | April 7, 2014 | **Last Revision Date :** | May 25, 2014 |
| **Actor:** | Expert Pharmacists, Administrator | | |
| **Description:** | URS-14 is used, when the user wants to delete the existing Degradation Mechanism from the database. | | |
| **Trigger:** | The user selects “delete the existing excipient” for deleting the existing Degradation Mechanism from the database. | | |
| **Pre-condition:** | * The user must log in to the system. | | |
| **Post-condition:** | * The system deletes the Degradation Mechanism from the database. | | |
| **Normal Flow:** | 1. The user opens deleting the existing Degradation Mechanism page. 2. The user selects existing Degradation Mechanism from the list. 3. The user selects “confirm to delete” for deleting the existing Degradation Mechanism from the database. 4. The system shows the alert message for checking the Degradation Mechanism deleting. 5. The user selects “Yes” for confirming to delete the Degradation Mechanism. 6. The system shows deleting the existing Degradation Mechanism successful page. | | |
| **Alternative Flow:** | * In step 2 of the normal flow, if the user use search bar for searching the existing Degradation Mechanism by the Degradation Mechanism type instead of selecting the existing Degradation Mechanism in a list.  1. The user input the Degradation Mechanism type in a search bar. 2. The user select “searching” for searching the existing Degradation Mechanism in the database. 3. The system show the Degradation Mechanism. 4. The step of this use case is resume at a step 3 of the normal flow.  * In the step 3 of the normal flow, if the user select “cancel” instead of selecting “Yes”.  1. The system shows the main page of the program. | | |
| **Exception:** | * In all of step of the normal flow, if the system disconnects from an internet.  1. The system shows the error message about internet disconnection. | | |
| **Include:** | URS-02 | | |

##### URS-15: The user adds a new Kinetic Reaction into the database.

###### Input and output

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Input Name** | **Example** | **Remarks** | **Output** |
| 1 | Type: | “PseudoFirstOrderKinetic” | The value should be the character. | The system show the type on the screen. |

###### Description

|  |  |  |  |
| --- | --- | --- | --- |
| **User Requirement Specification ID:** | URS-15 | | |
| **User Requirement Specification Name:** | The user adds a new Kinetic Reaction into the database. | | |
| **Create By :** | Panupak Wichaidit | **Last update by :** | Panupak Wichaidit |
| **Date Created :** | April 7, 2014 | **Last Revision Date :** | May 22, 2014 |
| **Actor:** | Expert Pharmacists, Administrator | | |
| **Description:** | URS-15 is used, when the user want to add a new Kinetic Reaction to the database. | | |
| **Trigger:** | The user select “Add the new Kinetic Reaction” for adding the new Kinetic Reaction to the database. | | |
| **Pre-condition:** | * The user must log in to the system. | | |
| **Post-condition:** | * The system save the new Kinetic Reaction to the database. | | |
| **Normal Flow:** | 1. The user open adding the new Kinetic Reaction page. 2. The user input type. 3. The user select “save” for adding the new Kinetic Reaction to the database. 4. The system validate the input value. 5. The system save the new Kinetic Reaction into the database. 6. The system shows the adding new Kinetic Reaction successful page. | | |
| **Alternative Flow:** | * In the step 3 of the normal flow, if the user select “cancel” instead of selecting “save”.  1. The system resume at the step 2 of normal flow. | | |
| **Exception:** | * In step 4 of the normal flow, if the user input the type in a wrong format.  1. The system shows the error message about the type format wrong. 2. The user go back to do the step 2 of the normal flow again.  * In all of step of the normal flow, if the system disconnects from an internet.  1. The system shows the error message about internet disconnection. | | |
| **Include:** | URS-02 | | |

##### URS-16: The user updates the Kinetic Reaction into the database.

###### Input and output

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Input Name** | **Example** | **Remarks** | **Output** |
| 1 | Type: | “PseudoFirstOrderKineticTest” | The value should be the character. | The system show the type on the screen. |

###### Description

|  |  |  |  |
| --- | --- | --- | --- |
| **User Requirement Specification ID:** | URS-16 | | |
| **User Requirement Specification Name:** | The user updates the Kinetic Reaction into the database. | | |
| **Create By :** | Panupak Wichaidit | **Last update by :** | Panupak Wichaidit |
| **Date Created :** | April 7, 2014 | **Last Revision Date :** | May 25, 2014 |
| **Actor:** | Expert Pharmacists, Administrator | | |
| **Description:** | URS-16 is used, when the user want to update the existing Kinetic Reaction in the database. | | |
| **Trigger:** | The user select “Update the existing Kinetic Reaction” for updating the existing Kinetic Reaction in the database. | | |
| **Pre-condition:** | * The user must log in to the system. | | |
| **Post-condition:** | * The systems save the updating Kinetic Reaction to the database. | | |
| **Normal Flow:** | 1. The user opens updating the existing Kinetic Reaction in the database. 2. The user selects the existing Kinetic Reaction from a list. 3. The user input type. 4. The user selects “save” for updating the new Kinetic Reaction data to the database. 5. The system validates the input value. 6. The user selects “confirm to update” for update the existing Kinetic Reaction in the database. 7. The system shows the existing Kinetic Reaction updating successful page. | | |
| **Alternative Flow:** | * In step 2 of the normal flow, if the user use search bar for searching the existing Kinetic Reaction by the Kinetic Reaction type instead of selecting the Kinetic Reaction type in a list.  1. The user input the Kinetic Reaction type in a search bar. 2. The user select “searching” for searching the existing Kinetic Reaction in the database. 3. The system shows the Kinetic Reaction. 4. The step of this use case is resume at a step 3 of the normal flow.  * In the step 3 of the normal flow, if the user select “cancel” instead of selecting “confirm to update”.  1. The system shows the main page of the program. | | |
| **Exception:** | * In step 4 of the normal flow, if the user input the type in a wrong format.  1. The system shows the error message about the type format is wrong. 2. The user go back to do the step 3 of the normal flow again.  * In all of step of the normal flow, if the system disconnects from an internet.  1. The system shows the error message about internet disconnection. | | |
| **Include:** | URS-02 | | |

##### URS-17: The user deletes an existing Kinetic Reaction from the database.

###### Input and output

* **Input:** The user selects the existing Kinetic Reaction from the list of the Kinetic Reaction type for deleting the Kinetic Reaction from the database.
* **Output:** The system delete the Kinetic Reaction from the database and show successful message.

###### Description

|  |  |  |  |
| --- | --- | --- | --- |
| **User Requirement Specification ID:** | URS-17 | | |
| **User Requirement Specification Name:** | The user deletes an existing Kinetic Reaction from the database. | | |
| **Create By :** | Panupak Wichaidit | **Last update by :** | Panupak Wichaidit |
| **Date Created :** | April 7, 2014 | **Last Revision Date :** | May 25, 2014 |
| **Actor:** | Expert Pharmacists, Administrator | | |
| **Description:** | URS-17 is used, when the user wants to delete the existing Kinetic Reaction from the database. | | |
| **Trigger:** | The user selects “delete the existing Kinetic Reaction” for deleting the existing Kinetic Reaction from the database. | | |
| **Pre-condition:** | * The user must log in to the system. | | |
| **Post-condition:** | * The system deletes the Kinetic Reaction from the database. | | |
| **Normal Flow:** | 1. The user opens deleting the existing Kinetic Reaction page. 2. The user selects existing Kinetic Reaction from the list. 3. The user selects “confirm to delete” for deleting the existing Kinetic Reaction from the database. 4. The system shows the alert message for checking the Kinetic Reaction deleting. 5. The user selects “Yes” for confirming to delete the Kinetic Reaction. 6. The system shows deleting the existing Kinetic Reaction successful page. | | |
| **Alternative Flow:** | * In step 2 of the normal flow, if the user use search bar for searching the existing Kinetic Reaction by the Kinetic Reaction type instead of selecting the existing Kinetic Reaction in a list.  1. The user input the Kinetic Reaction type in a search bar. 2. The user select “searching” for searching the existing Kinetic Reaction in the database. 3. The system show the Kinetic Reaction. 4. The step of this use case is resume at a step 3 of the normal flow.  * In the step 3 of the normal flow, if the user select “cancel” instead of selecting “Yes”.  1. The system shows the main page of the program. | | |
| **Exception:** | * In all of step of the normal flow, if the system disconnects from an internet.  1. The system shows the error message about internet disconnection. | | |
| **Include:** | URS-02 | | |

##### URS-18: The user adds a new Pka into the database.

###### Input and output

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Input Name** | **Example** | **Remarks** | **Output** |
| 1 | Type: | “Strong” | The value should be the character. | The system show the type on the screen. |
| 2 | Maximum Value: | 2.67 | The value should be the float number. | The system show the Maximum Value on the screen. |
| 3 | Minimum Value: | 3.67 | The value should be the float number. | The system show the Minimum Value on the screen. |
| 4 | Pka value | 9.08 | The value should be the float number. | The system show the Pka value on the screen. |

###### Description

|  |  |  |  |
| --- | --- | --- | --- |
| **User Requirement Specification ID:** | URS-18 | | |
| **User Requirement Specification Name:** | The user adds a new Pka into the database. | | |
| **Create By :** | Panupak Wichaidit | **Last update by :** | Panupak Wichaidit |
| **Date Created :** | April 7, 2014 | **Last Revision Date :** | May 22, 2014 |
| **Actor:** | Expert Pharmacists, Administrator | | |
| **Description:** | URS-18 is used, when the user want to add a new Pka to the database. | | |
| **Trigger:** | The user select “Add the new Pka ” for adding the new Pka to the database. | | |
| **Pre-condition:** | * The user must log in to the system. | | |
| **Post-condition:** | * The system save the new Pka to the database. | | |
| **Normal Flow:** | 1. The user open adding the new Pka page. 2. The user input type, maximum Value, minimum Value and Pka value. 3. The user select “save” for adding the new Pka to the database. 4. The system validate the input value. 5. The system save the new Pka into the database. 6. The system shows the adding new Pka successful page. | | |
| **Alternative Flow:** | * In the step 3 of the normal flow, if the user select “cancel” instead of selecting “save”.  1. The system resume at the step 2 of normal flow. | | |
| **Exception:** | * In step 4 of the normal flow, if the user input the type in a wrong format.  1. The system shows the error message about the type format is wrong. 2. The user go back to do the step 3 of the normal flow again.  * In step 5 of the normal flow, if the user input the maximum value in a wrong format.  1. The system shows the error message about the maximum value is wrong. 2. The user go back to do the step 3 of the normal flow again.  * In step 5 of the normal flow, if the user input the minimum value in a wrong format.  1. The system shows the error message about the minimum value is wrong. 2. The user go back to do the step 3 of the normal flow again.  * In step 5 of the normal flow, if the user input Pka value in a wrong format.  1. The system shows the error message about the Pka value is wrong. 2. The user go back to do the step 3 of the normal flow again.  * In all of step of the normal flow, if the system disconnects from an internet.  1. The system shows the error message about internet disconnection. | | |
| **Include:** | URS-02 | | |

##### URS-19: The user updates the pKa into the database.

###### Input and output

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Input Name** | **Example** | **Remarks** | **Output** |
| 1 | Type: | “Very weak” | The value should be the character. | The system show the type on the screen. |
| 2 | Maximum Value: | 1.67 | The value should be the float number. | The system show the Maximum Value on the screen. |
| 3 | Minimum Value: | 1.67 | The value should be the float number. | The system show the Minimum Value on the screen. |
| 4 | pKa Value: | 1.89 | The value should be the float number. | The system show the Pka value on the screen. |

###### Description

|  |  |  |  |
| --- | --- | --- | --- |
| **User Requirement Specification ID:** | URS-19 | | |
| **User Requirement Specification Name:** | The user updates the pKa into the database. | | |
| **Create By :** | Panupak Wichaidit | **Last update by :** | Panupak Wichaidit |
| **Date Created :** | April 7, 2014 | **Last Revision Date :** | May 25, 2014 |
| **Actor:** | Expert Pharmacists, Administrator | | |
| **Description:** | URS-19 is used, when the user want to update the existing pKa in the database. | | |
| **Trigger:** | The user select “Update the existing pKa” for updating the existing pKa in the database. | | |
| **Pre-condition:** | * The user must log in to the system. | | |
| **Post-condition:** | * The systems save the updating pKa to the database. | | |
| **Normal Flow:** | 1. The user opens updating the existing pKa in the database. 2. The user selects the existing pKa from a list. 3. The user input type, maximum Value, minimum Value and pKa value. 4. The user selects “save” for updating the new pKa data to the database. 5. The system validates the input value. 6. The user selects “confirm to update” for update the existing pKa in the database. 7. The system shows the existing pKa updating successful page. | | |
| **Alternative Flow:** | * In step 2 of the normal flow, if the user use search bar for searching the existing pKa by the pKa type instead of selecting the pKa type in a list.  1. The user input the pKa type in a search bar. 2. The user select “searching” for searching the existing pKa in the database. 3. The system shows the pKa. 4. The step of this use case is resume at a step 3 of the normal flow.  * In the step 3 of the normal flow, if the user select “cancel” instead of selecting “confirm to update”.  1. The system shows the main page of the program. | | |
| **Exception:** | * In step 4 of the normal flow, if the user input the type in a wrong format.The system shows the error message about the type format is wrong.  1. The user go back to do the step 3 of the normal flow again.  * In step 5 of the normal flow, if the user input the maximum value in a wrong format.  1. The system shows the error message about the maximum value is wrong. 2. The user go back to do the step 3 of the normal flow again.  * In step 5 of the normal flow, if the user input the minimum value in a wrong format.  1. The system shows the error message about the minimum value is wrong. 2. The user go back to do the step 3 of the normal flow again.  * In step 5 of the normal flow, if the user input pKa value in a wrong format.  1. The system shows the error message about the pKa value is wrong. 2. The user go back to do the step 3 of the normal flow again.  * In all of step of the normal flow, if the system disconnects from an internet.  1. The system shows the error message about internet disconnection. | | |
| **Include:** | URS-02 | | |

##### URS-20: The user deletes an existing pKa from the database.

##### URS-21: The user adds a new Partition Coefficient into the database.

##### URS-22: The user updates the Partition Coefficient into the database.

##### URS-23: The user deletes an existing Partition Coefficient from the database.

##### URS-24: The user adds a new Solid state into the database.

##### URS-25: The user updates the Solid state into the database.

##### URS-26: The user deletes an existing Solid state from the database.

##### URS-27: The user adds a new Hygroscopicity into the database.

##### URS-28: The user updates the Hygroscopicity into the database.

##### URS-29: The user deletes an existing Hygroscopicity from the database.

##### URS-30: The user adds a new Particle Size into the database.

##### URS-31: The user updates the Particle Size into the database.

##### URS-32: The user deletes an existing Particle Size from the database.

##### URS-33: The user adds a new Flow ability into the database.

##### URS-34: The user updates the Flow ability into the database.

##### URS-35: The user deletes an existing Flow ability from the database.

##### URS-36: The user adds a new Density into the database.

##### URS-37: The user updates the Density into the database.

##### URS-38: The user deletes an existing Density from the database.

##### URS-39: The user adds a new Compound Function into the database.

##### URS-40: The user updates the Compound Function into the database.

##### URS-41: The user deletes an existing Compound Function from the database.

##### URS-42: The user adds a new solubility into the database.

##### URS-43: The user updates the solubility into the database.

##### URS-44: The user deletes an existing solubility from the database.

##### Input and output

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No** | **Input Name** | **Example** | | **Remarks** | **Output** |
| 1 | Solubility | Type : | “SlightlySoluble” | Type should be the character | The system show the value of water solubility property on the screen. |
| Maximum Value : | 30.0 | Maximum Value should be the float number |
| Minimum Value : | 10.12 | Minimum Value should be the float number |
| Solubility Value : | 2.3 | Solubility Value should be the float number |
| 2 | Degradation Mechanism | Type: | “Solvolysis” | The word should be the character. The user can choose input nothing. | The system show the value of Degradation Mechanism on the screen. |
| 3. | Kinetic Reaction | Type: | “PseudoFirstOrderKinetic” | The word should be the character. The user can choose input nothing | The system show the value of Kinetic Reaction on the screen. |
| 3 | Pka | Maximum Pka : | 20.23 | Maximum Pka should be the float number | The system show the value of Pka on the screen. |
| Minimal PKa : | 10.80 | Minimal Pka should be the float number |
| Pka Type : | “Strong” | Type should be the character |
| PKa Value : | 4.23 | Pka Value should be the float number |
| 4 | Partition Coefficient Property | Partition Coefficient Value : | 2.67 | Partition Coefficient Value should be the float number | The system show the value of Partition Coefficient Property on the screen. |
| Partition Coefficient Type : | ”GoodAbsorbtion” | The word should be the character. |
| 5 | Solid state | Type : | “CrystallineMaterials” | The word should be the character. | The system show the value of Solid state on the screen. |
| 6 | Hygroscopicity | type | “Slightly hygroscopic” | The word should be the character. | The system show the value Hygroscopicity on the screen. |
| 7 | ParticleSize | Type : | “FineParticle” | Type should be the character | The system show the value of Particle Property on the screen. |
| Maximum Value : | 2.40 | Maximum Value should be the float number |
| Minimum Value : | 3.40 | Minimum Value should be the float number |
| Particle Value : | 2.60 | Particle Value should be the float number |
| 9 | Flow ability Property | Type: | “FairFlowability” | The word should be the character. | The system show the value of Flow ability Property on the screen. |
| 10 | Density | Type : | “TrueDentity” | Type should be the character | The system show the value of Density on the screen. |
| Powder Density Value : | 2.87 | Powder Density Value should be the float number |
| 11 | Compound Function | Type : | “Binder” | The word should be the character. | The system show the value of Compound Function on the screen. |
| Max Concentration: | 2.0 | Maximum Value should be the float number |
| Min Concentration : | 1.0 | Minimum Value should be the float number |

###### Description

|  |  |  |  |
| --- | --- | --- | --- |
| **User Requirement Specification ID:** | URS-09 | | |
| **User Requirement Specification Name:** | The user add a new excipient into the database. | | |
| **Create By :** | Panupak Wichaidit | **Last update by :** | Panupak Wichaidit |
| **Date Created :** | April 7, 2014 | **Last Revision Date :** | May 22, 2014 |
| **Actor:** | Expert Pharmacists, Administrator | | |
| **Description:** | URS-09 is used, when the user want to add a new excipient property to the database. | | |
| **Trigger:** | The user select “Add the new excipient property” for adding the new excipient property to the database. | | |
| **Pre-condition:** | * The user must log in to the system. | | |
| **Post-condition:** | * The system save the new excipient property to the database. | | |
| **Normal Flow:** | 1. The user open adding the new excipient property page. 2. The user select the some kind of the excipient property such as Solubility, Degradation Mechanism, Kinetic Reaction, Pka, Partition Coefficient Property, Solid state , Hygroscopicity, Particle Property, Flow ability Property, Density, Salt Property, Compound Function. 3. The user input data follow the kind excipient property. The example of input is illustrated on the table above. 4. The user select “save” for adding the new excipient property to the database. 5. The system validate the input value. 6. The system save the new excipient property into the database. 7. The system shows the adding new excipient property successful page. | | |
| **Alternative Flow:** | * In the step 3 of the normal flow, if the user select “cancel” instead of selecting “save”.  1. The system resume at the step 2 of normal flow. | | |
| **Exception:** | * In step 5 of the normal flow, if the user input the Solubility Property in a wrong format.  1. The system shows the error message about the Water Solubility Property format is wrong. 2. The user go back to do the step 3 of the normal flow again.  * In step 5 of the normal flow, if the user input Degradation Mechanism in a wrong format.  1. The system shows the error message about the other data is wrong. 2. The user go back to do the step 3 of the normal flow again.  * In step 5 of the normal flow, if the user input Dissolution Property in a wrong format.  1. The system shows the error message about the Dissolution Property is wrong. 2. The user go back to do the step 3 of the normal flow again.  * In step 5 of the normal flow, if the user input Kinetic Reaction Property in a wrong format.  1. The system shows the error message about the Partition Coefficient is wrong. 2. The user go back to do the step 3 of the normal flow again.  * In step 5 of the normal flow, if the user input Pka in a wrong format.  1. The system shows the error message about the Pka is wrong. 2. The user go back to do the step 3 of the normal flow again.  * In step 5 of the normal flow, if the user input Partition Coefficient Property in a wrong format.  1. The system shows the error message about the Partition Coefficient Property is wrong. 2. The user go back to do the step 3 of the normal flow again.  * In step 5 of the normal flow, if the user input Solid state in a wrong format.  1. The system shows the error message about the Solid state is wrong. 2. The user go back to do the step 3 of the normal flow again.  * In step 5 of the normal flow, if the user input Hygroscopicity Property in a wrong format.  1. The system shows the error message about the Hygroscopicity Property is wrong. 2. The user go back to do the step 3 of the normal flow again.  * In step 5 of the normal flow, if the user input Particle Property in a wrong format.  1. The system shows the error message about the Particle Property is wrong. 2. The user go back to do the step 3 of the normal flow again.  * In step 5 of the normal flow, if the user input Flow ability Property in a wrong format.  1. The system shows the error message about the Flow ability Property is wrong. 2. The user go back to do the step 3 of the normal flow again.  * In step 5 of the normal flow, if the user input Density in a wrong format.  1. The system shows the error message about Density is wrong. 2. The user go back to do the step 3 of the normal flow again.  * In step 5 of the normal flow, if the user input Compound Function in a wrong format.  1. The system shows the error message about the Compound Function is wrong. 2. The user go back to do the step 3 of the normal flow again.  * In all of step of the normal flow, if the system disconnects from an internet.  1. The system shows the error message about internet disconnection. | | |
| **Include:** | URS-02 | | |

##### URS-10: The user update an existing excipient property in the database.

###### Input and output

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No** | **Input Name** | **Example** | | **Remarks** | **Output** |
| 1 | Solubility | Type : | “SlightlySoluble” | Type should be the character | The system show the value of water solubility property on the screen. |
| Maximum Value : | 30.0 | Maximum Value should be the float number |
| Minimum Value : | 10.12 | Minimum Value should be the float number |
| Solubility Value : | 2.3 | Solubility Value should be the float number |
| 2 | Degradation Mechanism | Type: | “Solvolysis” | The word should be the character. The user can choose input nothing. | The system show the value of Degradation Mechanism on the screen. |
| 3. | Kinetic Reaction | Type: | “PseudoFirstOrderKinetic” | The word should be the character. The user can choose input nothing | The system show the value of Kinetic Reaction on the screen. |
| 3 | Pka | Maximum Pka : | 20.23 | Maximum Pka should be the float number | The system show the value of Pka on the screen. |
| Minimal PKa : | 10.80 | Minimal Pka should be the float number |
| Pka Type : | “Strong” | Type should be the character |
| PKa Value : | 4.23 | Pka Value should be the float number |
| 4 | Partition Coefficient Property | Partition Coefficient Value : | 2.67 | Partition Coefficient Value should be the float number | The system show the value of Partition Coefficient Property on the screen. |
| Partition Coefficient Type : | ”GoodAbsorbtion” | The word should be the character. |
| 5 | Solid state | Type : | “CrystallineMaterials” | The word should be the character. | The system show the value of Solid state on the screen. |
| 6 | Hygroscopicity | type | “Slightly hygroscopic” | The word should be the character. | The system show the value Hygroscopicity on the screen. |
| 7 | ParticleSize | Type : | “FineParticle” | Type should be the character | The system show the value of Particle Property on the screen. |
| Maximum Value : | 2.40 | Maximum Value should be the float number |
| Minimum Value : | 3.40 | Minimum Value should be the float number |
| Particle Value : | 2.60 | Particle Value should be the float number |
| 9 | Flow ability Property | Type: | “FairFlowability” | The word should be the character. | The system show the value of Flow ability Property on the screen. |
| 10 | Density | Type : | “TrueDentity” | Type should be the character | The system show the value of Density on the screen. |
| Powder Density Value : | 2.87 | Powder Density Value should be the float number |
| 11 | Compound Function | Type : | “Binder” | The word should be the character. | The system show the value of Compound Function on the screen. |
| Max Concentration: | 2.0 | Maximum Value should be the float number |
| Max Concentration : | 1.0 | Minimum Value should be the float number |

###### Description

|  |  |  |  |
| --- | --- | --- | --- |
| **User Requirement Specification ID:** | URS-10 | | |
| **User Requirement Specification Name:** | The user update an existing excipient property in the database. | | |
| **Create By :** | Panupak Wichaidit | **Last update by :** | Panupak Wichaidit |
| **Date Created :** | April 7, 2014 | **Last Revision Date :** | May 25, 2014 |
| **Actor:** | Expert Pharmacists, Administrator | | |
| **Description:** | URS-10 is used, when the user want to update the existing excipient property in the database. | | |
| **Trigger:** | The user select “Update the existing excipient” for updating the existing excipient property in the database. | | |
| **Pre-condition:** | * The user must log in to the system. | | |
| **Post-condition:** | * The systems save the updating excipient property to the database. | | |
| **Normal Flow:** | 1. The user opens updating the existing excipient property in the database. 2. The user selects the excipient property from a list. 3. The user selects the some kind of the excipient property such as Solubility, Degradation Mechanism, Kinetic Reaction, Pka, Partition Coefficient Property, Solid state , Hygroscopicity, Particle Property, Flow ability Property, Density, Salt Property, Compound Function. 4. The user selects “save” for adding the new excipient property to the database. 5. The system validates the input value. 6. The user selects “confirm to update” for update the existing excipient in the database. 7. The system shows the existing excipient updating successful page. | | |
| **Alternative Flow:** | * In step 2 of the normal flow, if the user use search bar for searching the existing excipient by the excipient name instead of selecting the existing excipient in a list.  1. The user input the excipient name in a search bar. 2. The user select “searching” for searching the existing drug formulation in the database. 3. The system shows the excipient. 4. The step of this use case is resume at a step 3 of the normal flow.  * In the step 3 of the normal flow, if the user select “cancel” instead of selecting “confirm to update”.  1. The system shows the main page of the program. | | |
| **Exception:** | * In step 5 of the normal flow, if the user input the Solubility Property in a wrong format.  1. The system shows the error message about the Water Solubility Property format is wrong. 2. The user go back to do the step 3 of the normal flow again.  * In step 5 of the normal flow, if the user input Degradation Mechanism in a wrong format.  1. The system shows the error message about the other data is wrong. 2. The user go back to do the step 3 of the normal flow again.  * In step 5 of the normal flow, if the user input Dissolution Property in a wrong format.  1. The system shows the error message about the Dissolution Property is wrong. 2. The user go back to do the step 3 of the normal flow again.  * In step 5 of the normal flow, if the user input Kinetic Reaction Property in a wrong format.  1. The system shows the error message about the Partition Coefficient is wrong. 2. The user go back to do the step 3 of the normal flow again.  * In step 5 of the normal flow, if the user input Pka in a wrong format.  1. The system shows the error message about the Pka is wrong. 2. The user go back to do the step 3 of the normal flow again.  * In step 5 of the normal flow, if the user input Partition Coefficient Property in a wrong format.  1. The system shows the error message about the Partition Coefficient Property is wrong. 2. The user go back to do the step 3 of the normal flow again.  * In step 5 of the normal flow, if the user input Solid state in a wrong format.  1. The system shows the error message about the Solid state is wrong. 2. The user go back to do the step 3 of the normal flow again.  * In step 5 of the normal flow, if the user input Hygroscopicity Property in a wrong format.  1. The system shows the error message about the Hygroscopicity Property is wrong. 2. The user go back to do the step 3 of the normal flow again.  * In step 5 of the normal flow, if the user input Particle Property in a wrong format.  1. The system shows the error message about the Particle Property is wrong. 2. The user go back to do the step 3 of the normal flow again.  * In step 5 of the normal flow, if the user input Flow ability Property in a wrong format.  1. The system shows the error message about the Flow ability Property is wrong. 2. The user go back to do the step 3 of the normal flow again.  * In step 5 of the normal flow, if the user input Density in a wrong format.  1. The system shows the error message about Density is wrong. 2. The user go back to do the step 3 of the normal flow again.  * In step 5 of the normal flow, if the user input Compound Function in a wrong format.  1. The system shows the error message about the Compound Function is wrong. 2. The user go back to do the step 3 of the normal flow again.  * In all of step of the normal flow, if the system disconnects from an internet.  1. The system shows the error message about internet disconnection. | | |
| **Include:** | URS-02 | | |

##### URS-11: The user delete an existing excipient into the database.

###### Input and output

* **Input:**

1. The user selects the existing excipients property from the list of the excipient property name for deleting the excipient from the database.

* **Output:** The system delete the excipient property from the database and show successful message.

###### Description

|  |  |  |  |
| --- | --- | --- | --- |
| **User Requirement Specification ID:** | URS-11 | | |
| **User Requirement Specification Name:** | The user delete an existing excipient property into the database. | | |
| **Create By :** | Panupak Wichaidit | **Last update by :** | Panupak Wichaidit |
| **Date Created :** | April 7, 2014 | **Last Revision Date :** | May 25, 2014 |
| **Actor:** | Expert Pharmacists, Administrator | | |
| **Description:** | URS-11 is used, when the user wants to delete the existing excipient property from the database. | | |
| **Trigger:** | The user selects “delete the existing excipient” for deleting the existing excipient property from the database. | | |
| **Pre-condition:** | * The user must log in to the system. | | |
| **Post-condition:** | * The system deletes the excipient property from the database. | | |
| **Normal Flow:** | 1. The user opens deleting the existing excipient property page. 2. The user selects existing excipient property from the list. 3. The user selects “confirm to delete” for deleting the existing excipient from the database. 4. The system shows the alert message for checking the drug excipient deleting. 5. The user selects “Yes” for confirming to delete the member account. 6. The system shows deleting the existing excipient successful page. | | |
| **Alternative Flow:** | * In step 2 of the normal flow, if the user use search bar for searching the existing excipient by the excipient name instead of selecting the existing excipient in a list.  1. The user input the excipient name in a search bar. 2. The user select “searching” for searching the existing drug formulation in the database. 3. The system show the excipient. 4. The step of this use case is resume at a step 3 of the normal flow.  * In the step 3 of the normal flow, if the user select “cancel” instead of selecting “Yes”.  1. The system shows the main page of the program. | | |
| **Exception:** | * In all of step of the normal flow, if the system disconnects from an internet.  1. The system shows the error message about internet disconnection. | | |
| **Include:** | URS-02 | | |

#### Feature 6: Manage the drug excipient.

##### URS-12: The user add a new excipient into the database.

###### Input and output

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No** | **Input Name** | **Example** | | **Remarks** | **Output** |
| 1 | Excipient’s name | “Aplo” | | The word should be the character. | The system show the “Aplo” on the screen. |
| 2 | Water Solubility Property | “SlightlySoluble” | | The value should be the integer value. | The system show the “SlightlySoluble” on the screen. |
| 3 | Stability Property | Degradation Mechanism: | “Oxidation” | The word should be the character. | The system show the “PseudoFirstOrderKinetic”on the screen. |
| Kinetic Reaction: | “FirstOrderKinetics” | The word should be the character. |
| 4 | Dissolution Property | “Weak” | | The word should be the character. | The system show the “Weak”on the screen. |
| 5 | Partition Coefficient Property | “GoodAbsorbtion” | | The word should be the character. | The system show the “GoodAbsorbtion” on the screen. |
| 6 | Physical Form Property | “CrystallineMaterials” | | The word should be the character. | The system show the “CrystallineMaterials” on the screen. |
| 7 | Hygroscopicity Property | “Slightly hygroscopic” | | The word should be the character. | The system show the “Slightly hygroscopic” on the screen. |
| 8 | Particle Property | “MicronizedParticle” | | The word should be the character. | The system show the “MicronizedParticle” on the screen. |
| 9 | Alcohol Solubility Property | “FreelySoluble” | | The word should be the character. | The system show the “FreelySoluble” on the screen. |
| 10 | Flow ability Property | “ExcellentFlowability” | | The word should be the character. | The system show the “ExcellentFlowability” on the screen. |
| 11 | Powder Density Property | “TrueIdentity” | | The word should be the character. | The system show the “TrueIdentity” on the screen. |
| 12 | Salt Property | Pka: | “Very weak” | The word should be the character. | The system show the “Salt Property”on the screen. |
| Molecular Weight: | 2.45 | The value should be the float value. |
| 13 | Weight Property | 2.55 | | The value should be the float value. | The system show the 2.55 on the screen. |
| 14 | Iconicity | “good” | | The word should be the character. | The system show the value of Iconicity on the screen. |

###### Description

|  |  |  |  |
| --- | --- | --- | --- |
| **User Requirement Specification ID:** | URS-12 | | |
| **User Requirement Specification Name:** | The user add a new excipient into the database. | | |
| **Create By :** | Panupak Wichaidit | **Last update by :** | Panupak Wichaidit |
| **Date Created :** | April 7, 2014 | **Last Revision Date :** | April 7, 2014 |
| **Actor:** | Expert Pharmacists, Administrator | | |
| **Description:** | URS-09 is used, when the user want to add a new excipient to the database. | | |
| **Trigger:** | The user select “Add the new excipient” for adding the new excipient to the database. | | |
| **Pre-condition:** | * The user must log in to the system. | | |
| **Post-condition:** | * The system save the new excipient to the database. | | |
| **Normal Flow:** | 1. The user open adding the new excipient page. 2. The user input the excipient name, Water Solubility Property, Stability Property, Dissolution Property, Partition Coefficient Property, Physical Form Property, Hygroscopicity Property, Particle Property, Alcohol Solubility Property, Flow ability Property,, Powder Density Property, Salt Property, Weight Property and Iconicity. 3. The user select “save” for adding the new excipient. 4. The system validate the input value. 5. The system save the excipient updating into the database 6. The system shows the new excipient adding successful page. | | |
| **Alternative Flow:** | * In the step 3 of the normal flow, if the user select “cancel” instead of selecting “save”.  1. The system shows the main page of the program. | | |
| **Exception:** | * In step 4 of the normal flow, if the user input the excipient name that same as other excipient name in the database.  1. The system shows the error message about the excipient name is already used. 2. The user go back to do the step 2 of the normal flow again.  * In step 4 of the normal flow, if the user input the Water Solubility Property in a wrong format.  1. The system shows the error message about the Water Solubility Property format is wrong. 2. The user go back to do the step 2 of the normal flow again.  * In step 4 of the normal flow, if the user input Stability Property in a wrong format.  1. The system shows the error message about the other data is wrong. 2. The user go back to do the step 2 of the normal flow again.  * In step 4 of the normal flow, if the user input Dissolution Property in a wrong format.  1. The system shows the error message about the Dissolution Property is wrong. 2. The user go back to do the step 2 of the normal flow again.  * In step 4 of the normal flow, if the user input Partition Coefficient Property in a wrong format.  1. The system shows the error message about the Partition Coefficient is wrong. 2. The user go back to do the step 2 of the normal flow again.  * In step 4 of the normal flow, if the user input Physical Form Property in a wrong format.  1. The system shows the error message about the Physical Form Property is wrong. 2. The user go back to do the step 2 of the normal flow again.  * In step 4 of the normal flow, if the user input Hygroscopicity Property in a wrong format.  1. The system shows the error message about the Hygroscopicity Property is wrong. 2. The user go back to do the step 2 of the normal flow again.  * In step 4 of the normal flow, if the user input Particle Property in a wrong format.  1. The system shows the error message about the Particle Property is wrong. 2. The user go back to do the step 2 of the normal flow again.  * In step 4 of the normal flow, if the user input Alcohol Solubility Property in a wrong format.  1. The system shows the error message about the Alcohol Solubility is wrong. 2. The user go back to do the step 2 of the normal flow again.  * In step 4 of the normal flow, if the user input Flow ability Property in a wrong format.  1. The system shows the error message about the Flow ability Property is wrong. 2. The user go back to do the step 2 of the normal flow again.  * In step 4 of the normal flow, if the user input Powder Density Property in a wrong format.  1. The system shows the error message about the Powder Density is wrong. 2. The user go back to do the step 2 of the normal flow again.  * In step 4 of the normal flow, if the user input Salt Property in a wrong format.  1. The system shows the error message about the Salt Property is wrong. 2. The user go back to do the step 2 of the normal flow again.  * In step 4 of the normal flow, if the user input Weight Property in a wrong format.  1. The system shows the error message about the Weight Property is wrong. 2. The user go back to do the step 2 of the normal flow again.  * In step 4 of the normal flow, if the user input Iconicity in a wrong format.  1. The system shows the error message about the Iconicity is wrong. 2. The user go back to do the step 2 of the normal flow again.  * In all of step of the normal flow, if the system disconnects from an internet.  1. The system shows the error message about internet disconnection. | | |
| **Include:** | URS-02 | | |

##### URS-13: The user update an existing excipient in the database.

###### Input and output

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No** | **Input Name** | **Example** | | **Remarks** | **Output** |
| 1 | Excipient’s name | “Aplo” | | The word should be the character. | The system show the “Aplo” on the screen. |
| 2 | Water Solubility Property | “SlightlySoluble” | | The value should be the integer value. | The system show the “SlightlySoluble” on the screen. |
| 3 | Stability Property | Degradation Mechanism: | “Oxidation” | The word should be the character. | The system show the “PseudoFirstOrderKinetic”on the screen. |
| Kinetic Reaction: | “FirstOrderKinetics” | The word should be the character. |
| 4 | Dissolution Property | “Weak” | | The word should be the character. | The system show the “Weak”on the screen. |
| 5 | Partition Coefficient Property | “GoodAbsorbtion” | | The word should be the character. | The system show the “GoodAbsorbtion” on the screen. |
| 6 | Physical Form Property | “CrystallineMaterials” | | The word should be the character. | The system show the “CrystallineMaterials” on the screen. |
| 7 | Hygroscopicity Property | “Slightly hygroscopic” | | The word should be the character. | The system show the “Slightly hygroscopic” on the screen. |
| 8 | Particle Property | “MicronizedParticle” | | The word should be the character. | The system show the “MicronizedParticle” on the screen. |
| 9 | Alcohol Solubility Property | “FreelySoluble” | | The word should be the character. | The system show the “FreelySoluble” on the screen. |
| 10 | Flow ability Property | “ExcellentFlowability” | | The word should be the character. | The system show the “ExcellentFlowability” on the screen. |
| 11 | Powder Density Property | “TrueIdentity” | | The word should be the character. | The system show the “TrueIdentity” on the screen. |
| 12 | Salt Property | Pka: | “Very weak” | The word should be the character. | The system show the “Salt Property”on the screen. |
| Molecular Weight: | 2.45 | The value should be the float value. |
| 13 | Weight Property | 2.55 | | The value should be the float value. | The system show the 2.55 on the screen. |
| 14 | Iconicity | “good” | | The word should be the character. | The system show the value of Iconicity on the screen. |

###### Description

|  |  |  |  |
| --- | --- | --- | --- |
| **User Requirement Specification ID:** | URS-13 | | |
| **User Requirement Specification Name:** | The user update an existing excipient in the database. | | |
| **Create By :** | Panupak Wichaidit | **Last update by :** | Panupak Wichaidit |
| **Date Created :** | April 7, 2014 | **Last Revision Date :** | April 7, 2014 |
| **Actor:** | Expert Pharmacists, Administrator | | |
| **Description:** | URS-10 is used, when the user want to update the existing excipient in the database. | | |
| **Trigger:** | The user select “Update the existing excipient” for updating the existing excipient in the database. | | |
| **Pre-condition:** | * The user must log in to the system. | | |
| **Post-condition:** | * The systems save the excipient updating to the database. | | |
| **Normal Flow:** | 1. The user open updating the existing excipient in the database. 2. The user select the excipient from a list. 3. The user The user input the excipient name, Water Solubility Property, Stability Property, Dissolution Property, Partition Coefficient Property, Physical Form Property, Hygroscopicity Property, Particle Property, Alcohol Solubility Property, Flow ability Property,, Powder Density Property, Salt Property, Weight Property and Iconicity. 4. The user select “confirm to update” for update the existing excipient in the database. 5. The system validate the input value. 6. The system save the excipient updating into the database. 7. The system shows the existing excipient updating successful page. | | |
| **Alternative Flow:** | * In step 2 of the normal flow, if the user use search bar for searching the existing excipient by the excipient name instead of selecting the existing excipient in a list.  1. The user input the excipient name in a search bar. 2. The user select “searching” for searching the existing drug formulation in the database. 3. The system shows the excipient. 4. The step of this use case is resume at a step 3 of the normal flow.  * In the step 4 of the normal flow, if the user select “cancel” instead of selecting “confirm to update”.  1. The system resume at the step 3 of the normal flow. | | |
| **Exception:** | * In step 4 of the normal flow, if the user input the excipient name that same as other excipient name in the database.  1. The system shows the error message about the excipient name is already used. 2. The user go back to do the step 2 of the normal flow again.  * In step 4 of the normal flow, if the user input the Water Solubility Property in a wrong format.  1. The system shows the error message about the Water Solubility Property format is wrong. 2. The user go back to do the step 2 of the normal flow again.  * In step 4 of the normal flow, if the user input Stability Property in a wrong format.  1. The system shows the error message about the other data is wrong. 2. The user go back to do the step 2 of the normal flow again.  * In step 4 of the normal flow, if the user input Dissolution Property in a wrong format.  1. The system shows the error message about the Dissolution Property is wrong. 2. The user go back to do the step 2 of the normal flow again.  * In step 4 of the normal flow, if the user input Partition Coefficient Property in a wrong format.  1. The system shows the error message about the Partition Coefficient is wrong. 2. The user go back to do the step 2 of the normal flow again.  * In step 4 of the normal flow, if the user input Physical Form Property in a wrong format.  1. The system shows the error message about the Physical Form Property is wrong. 2. The user go back to do the step 2 of the normal flow again.  * In step 4 of the normal flow, if the user input Hygroscopicity Property in a wrong format.  1. The system shows the error message about the Hygroscopicity Property is wrong. 2. The user go back to do the step 2 of the normal flow again.  * In step 4 of the normal flow, if the user input Particle Property in a wrong format.  1. The system shows the error message about the Particle Property is wrong. 2. The user go back to do the step 2 of the normal flow again.  * In step 4 of the normal flow, if the user input Alcohol Solubility Property in a wrong format.  1. The system shows the error message about the Alcohol Solubility is wrong. 2. The user go back to do the step 2 of the normal flow again.  * In step 4 of the normal flow, if the user input Flow ability Property in a wrong format.  1. The system shows the error message about the Flow ability Property is wrong. 2. The user go back to do the step 2 of the normal flow again.  * In step 4 of the normal flow, if the user input Powder Density Property in a wrong format.  1. The system shows the error message about the Powder Density is wrong. 2. The user go back to do the step 2 of the normal flow again.  * In step 4 of the normal flow, if the user input Salt Property in a wrong format.  1. The system shows the error message about the Salt Property is wrong. 2. The user go back to do the step 2 of the normal flow again.  * In step 4 of the normal flow, if the user input Weight Property in a wrong format.  1. The system shows the error message about the Weight Property is wrong. 2. The user go back to do the step 2 of the normal flow again.  * In step 4 of the normal flow, if the user input Iconicity in a wrong format.  1. The system shows the error message about the Iconicity is wrong. 2. The user go back to do the step 2 of the normal flow again.  * In all of step of the normal flow, if the system disconnects from an internet.  1. The system shows the error message about internet disconnection. | | |
| **Include:** | URS-02 | | |

##### URS-14: The user delete an existing excipient into the database.

###### Input and output

* **Input:** The administrator select the existing excipients from the list of the excipient’s name for deleting the excipient from the database.
* **Output:** The system delete the excipients from the database and show successful message.

###### Description

|  |  |  |  |
| --- | --- | --- | --- |
| **User Requirement Specification ID:** | URS-14 | | |
| **User Requirement Specification Name:** | The user delete an existing excipient into the database. | | |
| **Create By :** | Panupak Wichaidit | **Last update by :** | Panupak Wichaidit |
| **Date Created :** | April 7, 2014 | **Last Revision Date :** | April 7, 2014 |
| **Actor:** | Expert Pharmacists, Administrator | | |
| **Description:** | URS-11 is used, when the user want to delete the existing excipient from the database. | | |
| **Trigger:** | The user select “delete the existing excipient” for deleting the existing excipient from the database. | | |
| **Pre-condition:** | * The user must log in to the system. | | |
| **Post-condition:** | * The system deletes the excipient from the database. | | |
| **Normal Flow:** | 1. The user open deleting the existing excipient page. 2. The user select existing excipient from the list. 3. The user select “confirm to delete” for deleting the existing excipient from the database. 4. The system shows the alert message for checking the drug excipient deleting. 5. The administrator selects “Yes” for confirming to delete the member account. 6. The system shows deleting the existing excipient successful page. | | |
| **Alternative Flow:** | * In step 2 of the normal flow, if the user use search bar for searching the existing excipient by the excipient name instead of selecting the existing excipient in a list.  1. The user input the excipient name in a search bar. 2. The user select “searching” for searching the existing drug formulation in the database. 3. The system show the excipient. 4. The step of this use case is resume at a step 3 of the normal flow.  * In the step 3 of the normal flow, if the user select “cancel” instead of selecting “Yes”.  1. The system shows the main page of the program. | | |
| **Exception:** | * In all of step of the normal flow, if the system disconnects from an internet.  1. The system shows the error message about internet disconnection. | | |
| **Include:** | URS-02 | | |

#### Feature 7: Manage the drug formulation.

##### URS-15: The user add a new drug formulation case into the database.

###### Input and output

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Input Name** | **Example** | **Remarks** | **Output** |
| 1 | Drug name | “Lexapro” | The word should be the character. | The system show “Lexapro” on the screen. |
| 2 | Excipient type | talc, croscarmellose sodium, microcrystalline cellulose/colloidal, silicon dioxide and magnesium | The list of excipient should be the character. | The system show list of excipient on the screen. |
| 3 | Excipient Role | Diluent, antiadherent, Libran, disintegrant | The list of excipient role should be the character. | The system show list of excipient role on the screen. |
| 3 | Substance Intensity | 5.34 | The value of a substance Intensity should be the float number | The system show the substance Intensity on the screen. |
| 4 | Substance Quantity | 4.55 | The value of a substance quantity should be the float number | The system show the substance quantity on the screen. |

###### Description

|  |  |  |  |
| --- | --- | --- | --- |
| **User Requirement Specification ID:** | URS-15 | | |
| **User Requirement Specification Name:** | The user add a new drug formulation case into the database. | | |
| **Create By :** | Panupak Wichaidit | **Last update by :** | Panupak Wichaidit |
| **Date Created :** | April 7, 2014 | **Last Revision Date :** | April 7, 2014 |
| **Actor:** | Expert Pharmacists, Administrator | | |
| **Description:** | URS-12 is used, when the user want to add a new reformulation case into the database for using with case base reasoning system. | | |
| **Trigger:** | The user select “Add a new case” for adding a new case into the database. | | |
| **Pre-condition:** | * The user must log in to the system. | | |
| **Post-condition:** | * The system saves the new drug reformulation case into the database. | | |
| **Normal Flow:** | 1. The user open add new drug reformulation case page. 2. The user input drug name, Excipient type, Excipient Role, substance Intensity and substance Quantity. 3. The user select “save” for saving a new drug reformation case into the database. 4. The system validate the input data. 5. The system save a new drug formulation to the database. 6. The system shows a new drug reformulation case successful page. | | |
| **Alternative Flow:** | In the step 3 of the normal flow, if the user select “cancel” instead of selecting “save”.   1. The system shows the administrator main page. | | |
| **Exception:** | * In all of step of the normal flow, if the system disconnects from an internet  1. The system shows the error message about internet disconnection.  * In step 4 of the normal flow, if the user input the drug excipient type in a wrong format.  1. The system shows the error message about the excipient type format is wrong. 2. The user go back to do the step 2 of the normal flow again.  * In step 4 of the normal flow, if the user input the drug excipient role in a wrong format.  1. The system shows the error message about the excipient role format is wrong. 2. The user go back to do the step 2 of the normal flow again.  * In step 4 of the normal flow, if the user input the substance Intensity in a wrong format.  1. The system shows the error message about the substance Intensity format is wrong. 2. The user go back to do the step 2 of the normal flow again.  * In step 4 of the normal flow, if the user input the substance Quantity in a wrong format.  1. The system shows the error message about the substance quantity format is wrong.   The user go back to do the step 2 of the normal flow again.   * In step 4 of the normal flow, if the user input the drug name that same as with other drug name in the database.  1. The system shows the error message about the drug name is already used. 2. The user go back to do the step 2 of the normal flow again.  * In step 4 of the normal flow, if the user input the drug name that in the wrong format.  1. The system shows the error message about the drug name is wrong format. 2. The user go back to do the step 2 of the normal flow again. | | |
| **Include:** | URS-02 | | |

##### URS-16: The user update an existing drug formulation case in the database.

###### Input and output

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Input Name** | **Example** | **Remarks** | **Output** |
| 1 | Drug name | “Lexapro” | The word should be the character. | The system show “Lexapro” on the screen. |
| 2 | Excipient type | talc, croscarmellose sodium, microcrystalline cellulose/colloidal, silicon dioxide and magnesium | The list of excipient should be the character. | The system show list of excipient on the screen. |
| 3 | Excipient Role | Diluent, antiadherent, Libran, disintegrant | The list of excipient role should be the character. | The system show list of excipient role on the screen. |
| 3 | Substance Intensity | 5.34 | The value of a substance Intensity should be the float number | The system show the substance Intensity on the screen. |
| 4 | Substance Quantity | 4.55 | The value of a substance quantity should be the float number | The system show the substance quantity on the screen. |

###### Description

|  |  |  |  |
| --- | --- | --- | --- |
| **User Requirement Specification ID:** | URS-16 | | |
| **User Requirement Specification Name:** | The user update an existing drug formulation case in the database. | | |
| **Create By :** | Panupak Wichaidit | **Last update by :** | Panupak Wichaidit |
| **Date Created :** | April 7, 2014 | **Last Revision Date :** | May 25, 2014 |
| **Actor:** | Expert Pharmacists, Administrator | | |
| **Description:** | URS-13 is used, when the user update an existing drug reformulation case in the database. | | |
| **Trigger:** | The user select “update an existing drug reformulation case” to update an existing case in the database. | | |
| **Pre-condition:** | * The user must log in to the system. | | |
| **Post-condition:** | * The system saves the drug reformulation updating into the database. | | |
| **Normal Flow:** | 1. The user open the drug reformulation updating page. 2. The user select an existing drug reformulation from a list for updating. 3. The user input a new data for updating such as Excipient type, Excipient Role, substance Intensity and substance Quantity. 4. The user select “confirm to update” for update an existing drug reformulation. 5. The system validates the input data. 6. The system shows the existing drug reformulation updating successful page. | | |
| **Alternative Flow:** | * In step 2 of the normal flow, if the user use search bar for searching the existing drug formulation by the drug’s name instead of selecting the existing drug formulation in a list.  1. The user input the drug name in a search bar. 2. The user select “searching” for searching the existing drug formulation in the database. 3. The system shows the drug formulation. 4. The step of this use case is resume at a step 3 of the normal flow.  * In the step 3 of the normal flow, if the user select “cancel” instead of selecting “confirm to update”.  1. The system shows the administrator main page. | | |
| **Exception:** | * In all of step of the normal flow, if the system disconnects from an internet  1. The system shows the error message about internet disconnection.  * In step 5 of the normal flow, if the user input the drug excipient type in a wrong format.  1. The system shows the error message about the excipient type format is wrong. 2. The user go back to do the step 2 of the normal flow again.  * In step 5 of the normal flow, if the user input the drug excipient role in a wrong format.  1. The system shows the error message about the excipient role format is wrong. 2. The user go back to do the step 2 of the normal flow again.  * In step 5 of the normal flow, if the user input the substance Intensity in a wrong format.  1. The system shows the error message about the substance Intensity format is wrong. 2. The user go back to do the step 2 of the normal flow again.  * In step 5 of the normal flow, if the user input the substance Quantity in a wrong format.  1. The system shows the error message about the substance quantity format is wrong. 2. The user go back to do the step 2 of the normal flow again  * In step 5 of the normal flow, if the user input the drug name that same as with other drug name in the database.  1. The system shows the error message about the drug name is already used. 2. The user go back to do the step 2 of the normal flow again.  * In step 5 of the normal flow, if the user input the drug name that in the wrong format.  1. The system shows the error message about the drug name is wrong format. 2. The user go back to do the step 2 of the normal flow again. | | |
| **Include:** | URS-02 | | |

##### URS-17: The user delete an existing drug formulation case in the database.

###### Input and output

* **Input:** The administrator select the existing drug formulation from the list of the drug formulation name for deleting the formulation from the database.
* **Output:** The system delete the formulation from the database and show successful message.

###### Description

|  |  |  |  |
| --- | --- | --- | --- |
| **User Requirement Specification ID:** | URS-17 | | |
| **User Requirement Specification Name:** | The user delete an existing drug formulation case in the database. | | |
| **Create By :** | Panupak Wichaidit | **Last update by :** | Panupak Wichaidit |
| **Date Created :** | April 7, 2014 | **Last Revision Date :** | April 7, 2014 |
| **Actor:** | Expert Pharmacists, Administrator | | |
| **Description:** | URS-14 is used, when the user want delete the existing drug formulation case from the database. | | |
| **Trigger:** | The user select “Delete the existing drug reformulation” to delete a drug reformulation case from the database. | | |
| **Pre-condition:** | * The user must log in to the system. | | |
| **Post-condition:** | * The system deletes the existing drug formulation from the database. | | |
| **Normal Flow:** | 1. The user open the existing drug formulation deleting page. 2. The user select the drug name from the list. 3. The user select “delete” for delete the existing formulation case from the database. 4. The system shows the alert message for checking the drug excipient deleting. 5. The administrator selects “Yes” for confirming to delete the member account. 6. The system shows the existing drug formulation deleting successful page. | | |
| **Alternative Flow:** | * In the step 3 of the normal flow, if the user select “cancel” instead of selecting “Yes”.  1. The system shows the administrator main page.  * In step 2 of the normal flow, if the user use search bar for searching the existing drug formulation by the drug’s name instead of selecting the existing drug formulation in a list.  1. The user input the drug name in a search bar. 2. The user select “searching” for searching the existing drug formulation in the database. 3. The system shows the drug formulation. 4. The step of this use case is resume at a step 3 of the normal flow. | | |
| **Exception:** | * In all of step of the normal flow, if the system disconnects from an internet  1. The system shows the error message about internet disconnection. | | |
| **Include:** | URS-02 | | |

#### Feature 8: Login to the system.

##### URS-18: The user log in to the system.

###### Input and output

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No** | **Input Name** | **Description** | **Example** | **Remarks** | **Output** |
| 1 | Username | Username of the user should have length 4-15 characters | “member01” | The word should be the character with number | The system show the username on the screen. |
| 2 | Password | Password of the user should have length 4-15 characters | “password01” | The word should be the characters with the number. | The system show the password on the screen. |

###### Description

|  |  |  |  |
| --- | --- | --- | --- |
| **User Requirement Specification ID:** | URS-18 | | |
| **User Requirement Specification Name:** | The user log in to the system. | | |
| **Create By :** | Panupak Wichaidit | **Last update by :** | Panupak Wichaidit |
| **Date Created :** | April 1, 2014 | **Last Revision Date :** | April 1, 2014 |
| **Actor:** | General Pharmacists, Expert Pharmacists, Administrator | | |
| **Description:** | URS-15 is used, when the user want to use the Ontology base expert system for generic drug production of pharmaceutical dosage form. | | |
| **Trigger:** | The user select “login” to log in to the system. | | |
| **Pre-condition:** | * The user has been install the program into the tablet computer. * The user has been register as a member. | | |
| **Post-condition:** | * The system saves a member history in a database. | | |
| **Normal Flow:** | 1. The user open login page. 2. The user input username and password for login into a system. 3. The user select a login symbol for log in to the system 4. The system shows main page of the program. | | |
| **Alternative Flow:** | N/A | | |
| **Exception:** | * In step 3 of the normal flow, if the user input a username or password wrong.  1. The system shows the error message about the username or password is wrong. 2. The user go back to do step 2 of the normal flow again.  * In all of step of the normal flow, if the system disconnects from an internet  1. The system shows the error message about internet disconnection. | | |
| **Include:** | URS-01 | | |

#### Feature 9: Logout from the system

##### URS-19: The user logouts from the system.

###### Input and output

* **Input:** The user selects the logout symbol for the system log out.
* **Output:** The user log out from the system.

###### Description

|  |  |  |  |
| --- | --- | --- | --- |
| **User Requirement Specification ID:** | URS-19 | | |
| **User Requirement Specification Name:** | The user logouts from the system. | | |
| **Create By :** | Panupak Wichaidit | **Last update by :** | Panupak Wichaidit |
| **Date Created :** | April 1, 2014 | **Last Revision Date :** | April 1, 2014 |
| **Actor:** | General Pharmacists, Expert Pharmacists, Administrator | | |
| **Description:** | URS-16 is used, when the user want to log out from the Ontology base expert system for generic drug production of pharmaceutical dosage form. | | |
| **Trigger:** | The user select “log out” to log out from the system. | | |
| **Pre-condition:** | N/A | | |
| **Post-condition:** | N/A | | |
| **Normal Flow:** | 1. The user selects the log out symbols. 2. The system show log in page after the log out is successful. | | |
| **Alternative Flow:** | N/A | | |
| **Exception:** | * In all of step of the normal flow, if the system disconnects from an internet  1. The system shows the error message about internet disconnection. | | |
| **Include:** | URS-15 | | |

### 3.1.3 System Requirement Specification (SRS)

From the normal flow, alternative flow and exception of the User Requirement Description, it can divide into System requirement specification (SRS).

#### URS-01: The user register as a member.

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| **No** | **System requirement specification (SRS)** |
| SRS-01 | The system provides the Graphic user interface (GUI) which receive username, password, retype - password, name, telephone number and email for member registration. |
| SRS-02 | The system can check the name format. The name format should be character and not more than 40 character. |
| SRS-03 | The system can check the username format. The username must be 4-15 character. |
| SRS-04 | The system can check the password format. The password must be 4-15 character. |
| SRS-05 | The system can check the telephone number format. The telephone number must be numeric number and equal 10 digit. |
| SRS-06 | The system can check the email format. The email must be the email format. |
| SRS-07 | The system shall retrieve the existing member data from username. |
| SRS-08 | The system shall send the request of a member registration to an administrator. |
| SRS-09 | The system shall show the successful sending request member registration page. |
| SRS-10 | The system shall show the error message “The name must be characters” |
| SRS-11 | The system shall display the error message “The name must be less than 40 characters” |
| SRS-12 | The system shall display the error message “The username length should be 4-15”. |
| SRS-13 | The system shall display the error message “The password length should be 4-15”. |
| SRS-14 | The system shall display the error message “The email format is not correct”. |
| SRS-15 | The system shall display the error message “The telephone format is not correct”. |
| SRS-16 | The system shall display the error message “The telephone number is not equal 10 digit”. |
| SRS-17 | The system shall display the error message “The username is already existed” |
| SRS-18 | The system shall display the error message “The email is already existed” |
| SRS-19 | The system shall display the error message “The system is disconnect from the internet”. |
| SRS-20 | The system shall display the error message “The retype-password is not same as password”. |

#### URS-02: The user update their information.

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| **No** | **System requirement specification (SRS)** |
| SRS-21 | The system provides the Graphic user interface (GUI) which receive username, password, retype-password, name, telephone number and email for member information updating. |
| SRS-02 | The system can check the name format. The name format should be character and not more than 40 character. |
| SRS-04 | The system can check the password format. The password must be 4-15 character. |
| SRS-05 | The system can check the telephone number format. The telephone number must be numeric number and equal 10 digit. |
| SRS-07 | The system shall retrieve the existing member data from username. |
| SRS-22 | The system shall show the successful member information updating page. |
| SRS-10 | The system shall show the error message “The name must be characters” |
| SRS-11 | The system shall display the error message “The name must be less than 40 characters” |
| SRS-13 | The system shall display the error message “The password length should be 4-15”. |
| SRS-15 | The system shall display the error message “The telephone format is not correct”. |
| SRS-16 | The system shall display the error message “The telephone number is not equal 10 digit”. |
| SRS-19 | The system shall display the error message “The system is disconnect from the internet”. |

#### URS-03: The Administrator deletes the member account.

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| **No** | **System requirement specification (SRS)** |
| SRS-23 | The system provides the Graphic user interface (GUI) which consists the list member username. |
| SRS-24 | The system shows the detail of the member account such as member username, email and telephone number. |
| SRS-25 | The system shows the Confirm dialog box (YES/NO option).For making confirm when the administrator want to delete the member account. |
| SRS-26 | The system shall show the successful member account deleting. |
| SRS-27 | The system provides the search bar for searching the member account The search bar use the member’s username for searching. |

#### URS-04: The administrator approve a general pharmacist registration.

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| **No** | **System requirement specification (SRS)** |
| SRS-28 | The system provides the Graphic user interface (GUI) which consists the list member registration request. |
| SRS-29 | The system shows the detail of the member registration request. The member registration detail include the username of a sender, time and date. |
| SRS-30 | The system shall show the successful member registration approving page. |
| SRS-31 | The system provides the search bar for searching the member registration request. The search bar use the date for searching. |
| SRS-32 | The system provides the search bar for searching the member registration request. The search bar use the username of a sender for searching. |

#### URS-05: The administrator changes an authorized person status.

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| --- | --- |
| **No** | **System requirement specification (SRS)** |
| SRS-33 | The system provides the Graphic user interface (GUI) which consists the list member in the database. |
| SRS-34 | The system shows the detail of the member information. The member information detail include the username of a member, name and authorize status. |
| SRS-35 | The system provides the Graphic user interface (GUI) which consist the method of authorized person status changing. |
| SRS-36 | The system shall show the successful member registration approving page. |
| SRS-37 | The system provides the search bar for searching the member in the database. The search bar use the date for searching. |
| SRS-38 | The system provides the search bar for searching the member in the database. The search bar use the username of a sender for searching. |

#### URS-06: The user calculate a drug reformulation by using an inference engine.

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| **No** | **System requirement specification (SRS)** |
| SRS-39 | The system provides the Graphic user interface (GUI) which receive active Pharmaceutical ingredient (API), DF Properties and excipient. |
| SRS-40 | The system can check the amount of strength format at Pharmaceutical ingredient (API).The amount of strength format must be a decimal value. |
| SRS-41 | The system can check the total weight at DF property. The total weight must be a decimal value. |
| SRS-42 | The system can check the disintegration time. The disintegration time must be an integer value. |
| SRS-43 | The system can check the hardness at DF property. The hardness must be a decimal value. |
| SRS-44 | The system can check the Dissolution Profile at DF property. The Dissolution Profile must be a decimal value. |
| SRS-45 | The system provides the inference engine page .the page is include case base reasoning system, rule base system and hybrid system. |
| SRS-46 | The system shows the result page that include manufacturing and appropriate excipient. |
| SRS-47 | The system shall display the error message “The amount of strength must be the decimal value”. |
| SRS-48 | The system shall display the error message “The total weight must be the decimal value”. |
| SRS-49 | The system shall display the error message “The disintegration time must be the integer value”. |
| SRS-50 | The system shall display the error message “The hardness must be the decimal value”. |
| SRS-51 | The system shall display the error message “The dissolution profile must be the decimal value”. |
| SRS-19 | The system shall display the error message “The system is disconnect from the internet”. |

#### URS-07: The user view their drug reformulation history.

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| --- | --- |
| **No** | **System requirement specification (SRS)** |
| SRS-52 | The system shows the list of drug formulation history. |
| SRS-53 | The system provides the search bar for searching the history. The search bar use the date of making drug reformulation for searching. |
| SRS-54 | The system shows the detail of the history. The history detail include the drug’s name, date, manufacturing and ingredient. |
| SRS-19 | The system shall display the error message “The system is disconnect from the internet”. |

#### URS-08: The user make a drug reformulation evaluation.

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| --- | --- |
| **No** | **System requirement specification (SRS)** |
| SRS-52 | The system shows the list of drug formulation history. |
| SRS-55 | The system provides the Graphic user interface (GUI) which receive Dissolution profile, Disintegration time and Pharmaceutical equivalence. |
| SRS-44 | The system can check the Dissolution Profile at DF property. The Dissolution Profile must be a decimal value. |
| SRS-53 | The system provides the search bar for searching the history. The search bar use the date of making drug reformulation for searching. |
| SRS-56 | The system shall show the successful member information updating page. |
| SRS-42 | The system can check the disintegration time. The disintegration time must be an integer value. |
| SRS-57 | The system can check the Pharmaceutical equivalence. The Pharmaceutical equivalence must be the decimal value. |
| SRS-49 | The system shall display the error message “The disintegration time must be the integer value”. |
| SRS-51 | The system shall display the error message “The dissolution profile must be the decimal value”. |
| SRS-58 | The system shall display the error message “The Pharmaceutical equivalence must be the decimal value”. |
| SRS-19 | The system shall display the error message “The system is disconnect from the internet”. |

#### URS-09: The user add a new excipient property into the database.

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| --- | --- |
| **No** | **System requirement specification (SRS)** |
| SRS-59 | The system provides the Graphic user interface (GUI) which receive excipient property such as Solubility, Degradation Mechanism, Kinetic Reaction, Pka, Partition Coefficient Property, Solid state, Hygroscopicity, Particle Property, Flow ability Property, Density, Salt Property, Compound Function. |
| SRS-60 | The system can check the solubility type format. The solubility type format should be the character. |
| SRS-61 | The system can check the solubility maximum format. The solubility maximum format should be the float number. |
| SRS-62 | The system can check the solubility minimal format. The solubility minimal format should be the float number. |
| SRS-63 | The system can check the solubility value format. The solubility value format should be the float number. |
| SRS-64 | The system can check the Degradation Mechanism type format. The Degradation Mechanism type format should be the character. |
| SRS-65 | The system can check the Kinetic Reaction type format. The Kinetic Reaction type format should be the character. |
| SRS-66 | The system can check the Particle size type format. The Particle size type format should be the character. |
| SRS-67 | The system can check the Particle size maximum format. The Particle size maximum format should be the float number. |
| SRS-68 | The system can check the Particle size minimal format. The Particle size minimal format should be the float number. |
| SRS-69 | The system can check the Particle size value format. The Particle size value format should be the float number. |
| SRS-71 | The system can check the Partition Coefficient type format. The Partition Coefficient type format should be the character. |
| SRS-72 | The system can check the Partition Coefficient value format. The Partition Coefficient vale format should be the float number. |
| SRS-73 | The system can check the Solid state type format. The Solid state type format should be the character. |
| SRS-74 | The system can check the Hygroscopicity type format. The Hygroscopicity type format should be the character. |
| SRS-75 | The system can check the Pka type format. The Pka type format should be the character. |
| SRS-76 | The system can check the Pka maximum format. The Pka maximum format should be the float number. |
| SRS-77 | The system can check the Pka minimal format. The Pka minimal format should be the float number. |
| SRS-78 | The system can check the Pka value format. The Pka value format should be the float number. |
| SRS-79 | The system can check the flow ability type format. The flow ability type format should be the character. |
| SRS-80 | The system can check the density type format. The density type format should be the character. |
| SRS-81 | The system can check the density value format. The density value format should be the float number. |
| SRS-82 | The system can check the Compound Function type format. The Compound Function type format should be the character. |
| SRS-83 | The system can check the Compound Function maximum concentration format. The Compound Function concentration maximum format should be the float number. |
| SRS-84 | The system can check the Compound Function minimal concentration format. The Compound Function minimal concentration format should be the float number. |
| SRS-85 | The system shall show the successful add a new excipient property page. |
| SRS-86 | The system shall display the error message “The solubility type should be the characters”. |
| SRS-87 | The system shall display the error message “The solubility maximum should be the float number”. |
| SRS-88 | The system shall display the error message “The solubility minimal should be the float number”. |
| SRS-89 | The system shall display the error message “The solubility value should be the float number”. |
| SRS-90 | The system shall display the error message “The Degradation Mechanism type should be the characters”. |
| SRS-91 | The system shall display the error message “The Kinetic Reaction type should be the characters”. |
| SRS-92 | The system shall display the error message “The Pka type should be the characters”. |
| SRS-93 | The system shall display the error message “The Pka maximum should be the float number”. |
| SRS-94 | The system shall display the error message “The Pka minimal should be the float number”. |
| SRS-95 | The system shall display the error message “The Pka value should be the float number”. |
| SRS-96 | The system shall display the error message “The Partition Coefficient type should be the characters”. |
| SRS-97 | The system shall display the error message “The Partition Coefficient value should be the float number”. |
| SRS-98 | The system shall display the error message “The solid state type should be the characters”. |
| SRS-99 | The system shall display the error message “The Hygroscopicity type should be the characters”. |
| SRS-100 | The system shall display the error message “The particle size type should be the characters”. |
| SRS-101 | The system shall display the error message “The particle size maximum should be the float number”. |
| SRS-102 | The system shall display the error message “The particle size minimal should be the float number”. |
| SRS-103 | The system shall display the error message “The particle size value should be the float number”. |
| SRS-104 | The system shall display the error message “The Particle Property should be the characters”. |
| SRS-105 | The system shall display the error message “The Flow ability type should be the characters”. |
| SRS-106 | The system shall display the error message “The denisity type should be the characters”. |
| SRS-107 | The system shall display the error message “The dendity value should be the float number”. |
| SRS-108 | The system shall display the error message “The compound function type should be the characters”. |
| SRS-109 | The system shall display the error message “The compound function maximum concentration should be the float number”. |
| SRS-110 | The system shall display the error message “The compound function minimal concentration should be the float number”. |
| SRS-19 | The system shall display the error message “The system is disconnect from the internet”. |

#### URS-10: The user update an existing excipient into the database.

|  |  |
| --- | --- |
| **No** | **System requirement specification (SRS)** |
| SRS-59 | The system provides the Graphic user interface (GUI) which receive excipient name, quantity and other data. |
| SRS-110 | The system shows the list of the existing excipient property in the database. |
| SRS-111 | The system provides the search bar for searching the list of excipient property. The search bar use the name of excipient property for searching. |
| SRS-60 | The system can check the solubility type format. The solubility type format should be the character. |
| SRS-61 | The system can check the solubility maximum format. The solubility maximum format should be the float number. |
| SRS-62 | The system can check the solubility minimal format. The solubility minimal format should be the float number. |
| SRS-63 | The system can check the solubility value format. The solubility value format should be the float number. |
| SRS-64 | The system can check the Degradation Mechanism type format. The Degradation Mechanism type format should be the character. |
| SRS-65 | The system can check the Kinetic Reaction type format. The Kinetic Reaction type format should be the character. |
| SRS-66 | The system can check the Particle size type format. The Particle size type format should be the character. |
| SRS-67 | The system can check the Particle size maximum format. The Particle size maximum format should be the float number. |
| SRS-68 | The system can check the Particle size minimal format. The Particle size minimal format should be the float number. |
| SRS-69 | The system can check the Particle size value format. The Particle size value format should be the float number. |
| SRS-71 | The system can check the Partition Coefficient type format. The Partition Coefficient type format should be the character. |
| SRS-72 | The system can check the Partition Coefficient value format. The Partition Coefficient vale format should be the float number. |
| SRS-73 | The system can check the Solid state type format. The Solid state type format should be the character. |
| SRS-74 | The system can check the Hygroscopicity type format. The Hygroscopicity type format should be the character. |
| SRS-75 | The system can check the Pka type format. The Pka type format should be the character. |
| SRS-76 | The system can check the Pka maximum format. The Pka maximum format should be the float number. |
| SRS-77 | The system can check the Pka minimal format. The Pka minimal format should be the float number. |
| SRS-78 | The system can check the Pka value format. The Pka value format should be the float number. |
| SRS-79 | The system can check the flow ability type format. The flow ability type format should be the character. |
| SRS-80 | The system can check the density type format. The density type format should be the character. |
| SRS-81 | The system can check the density value format. The density value format should be the float number. |
| SRS-82 | The system can check the Compound Function type format. The Compound Function type format should be the character. |
| SRS-83 | The system can check the Compound Function maximum concentration format. The Compound Function concentration maximum format should be the float number. |
| SRS-84 | The system can check the Compound Function minimal concentration format. The Compound Function minimal concentration format should be the float number. |
| SRS-112 | The system shall show the successful the existing excipient property updating page. |
| SRS-86 | The system shall display the error message “The solubility type should be the characters”. |
| SRS-87 | The system shall display the error message “The solubility maximum should be the float number”. |
| SRS-88 | The system shall display the error message “The solubility minimal should be the float number”. |
| SRS-89 | The system shall display the error message “The solubility value should be the float number”. |
| SRS-90 | The system shall display the error message “The Degradation Mechanism type should be the characters”. |
| SRS-91 | The system shall display the error message “The Kinetic Reaction type should be the characters”. |
| SRS-92 | The system shall display the error message “The Pka type should be the characters”. |
| SRS-93 | The system shall display the error message “The Pka maximum should be the float number”. |
| SRS-94 | The system shall display the error message “The Pka minimal should be the float number”. |
| SRS-95 | The system shall display the error message “The Pka value should be the float number”. |
| SRS-96 | The system shall display the error message “The Partition Coefficient type should be the characters”. |
| SRS-97 | The system shall display the error message “The Partition Coefficient value should be the float number”. |
| SRS-98 | The system shall display the error message “The solid state type should be the characters”. |
| SRS-99 | The system shall display the error message “The Hygroscopicity type should be the characters”. |
| SRS-100 | The system shall display the error message “The particle size type should be the characters”. |
| SRS-101 | The system shall display the error message “The particle size maximum should be the float number”. |
| SRS-102 | The system shall display the error message “The particle size minimal should be the float number”. |
| SRS-103 | The system shall display the error message “The particle size value should be the float number”. |
| SRS-104 | The system shall display the error message “The Particle Property should be the characters”. |
| SRS-105 | The system shall display the error message “The Flow ability type should be the characters”. |
| SRS-106 | The system shall display the error message “The denisity type should be the characters”. |
| SRS-107 | The system shall display the error message “The dendity value should be the float number”. |
| SRS-108 | The system shall display the error message “The compound function type should be the characters”. |
| SRS-109 | The system shall display the error message “The compound function maximum concentration should be the float number”. |
| SRS-110 | The system shall display the error message “The compound function minimal concentration should be the float number”. |
| SRS-19 | The system shall display the error message “The system is disconnect from the internet”. |

#### URS-11: The user delete an existing excipient into the database.

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| **No** | **System requirement specification (SRS)** |
| SRS-110 | The system shows the list of the existing excipient property in the database. |
| SRS-111 | The system provides the search bar for searching the list of excipient. The search bar use the name of excipient for searching. |
| SRS-113 | The system shows the Confirm dialog box (YES/NO option).For making confirm when the user want to delete an existing excipient. |
| SRS-114 | The system shall show the successful delete the existing excipient page. |
| SRS-19 | The system shall display the error message “The system is disconnect from the internet”. |

#### URS-12: The user add a new excipient into the database.

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| --- | --- |
| **No** | **System requirement specification (SRS)** |
| SRS-115 | The system provides the Graphic user interface (GUI) which receive excipient name, Water Solubility Property, Stability Property, Dissolution Property, Partition Coefficient Property, Physical Form Property, Hygroscopicity Property, Particle Property, Alcohol Solubility Property, Flow ability Property, Powder Density Property, Salt Property, Weight Property and Iconicity. |
| SRS-116 | The system can check the excipient name format. The excipient name format should be the character. |
| SRS-117 | The system can check the Water Solubility Property format. The Water Solubility Property format should be the character. |
| SRS-118 | The system can check the Stability Property format. The Stability Property format should be the character. |
| SRS-119 | The system can check the Dissolution Property format. The Dissolution Property format should be the character. |
| SRS-120 | The system can check the Partition Coefficient Property format. The Partition Coefficient Property format should be the character. |
| SRS-121 | The system can check the Physical Form Property format. The Physical Form Property format should be the character. |
| SRS-122 | The system can check the Hygroscopicity Property format. The Hygroscopicity Property format should be the character. |
| SRS-123 | The system can check the Particle Property format. The Particle Property format should be the character. |
| SRS-124 | The system can check the Alcohol Solubility Property format. The Alcohol Solubility Property format should be the character. |
| SRS-125 | The system can check the Flow ability Property format. The Flow ability Property format should be the character. |
| SRS-126 | The system can check the Powder Density Property format. The Powder Density Property format should be the character. |
| SRS-127 | The system can check the Salt Property format. The Salt Property format should be the float value. |
| SRS-128 | The system can check the Weight Property format. The Weight Property format should be float value. |
| SRS-129 | The system can check the Iconicity format. The Iconicity format should be the character. |
| SRS-130 | The system shall show the successful add a new excipient page. |
| SRS-131 | The system shall display the error message “The excipient name should be the characters”. |
| SRS-132 | The system shall display the error message “The Water Solubility Property should be the characters”. |
| SRS-133 | The system shall display the error message “The Stability Property should be the characters”. |
| SRS-134 | The system shall display the error message “The Dissolution Property should be the characters”. |
| SRS-135 | The system shall display the error message “The Partition Coefficient should be the characters”. |
| SRS-136 | The system shall display the error message “The Physical Form Property should be the characters”. |
| SRS-137 | The system shall display the error message “The Hygroscopicity Property should be the characters”. |
| SRS-138 | The system shall display the error message “The Particle Property should be the characters”. |
| SRS-139 | The system shall display the error message “The Alcohol Solubility Property should be the characters”. |
| SRS-140 | The system shall display the error message “The Flow ability Property should be the characters”. |
| SRS-141 | The system shall display the error message “The Powder Density Property should be the characters”. |
| SRS-142 | The system shall display the error message “The Salt Property should be the float value”. |
| SRS-143 | The system shall display the error message “The Weight Property should be the float value”. |
| SRS-144 | The system shall display the error message “The Iconicity should be the characters”. |
| SRS-19 | The system shall display the error message “The system is disconnect from the internet”. |

#### URS-13: The user update an existing excipient into the database.

|  |  |
| --- | --- |
| **No** | **System requirement specification (SRS)** |
| SRS-115 | The system provides the Graphic user interface (GUI) which receive excipient name, Water Solubility Property, Stability Property, Dissolution Property, Partition Coefficient Property, Physical Form Property, Hygroscopicity Property, Particle Property, Alcohol Solubility Property, Flow ability Property, Powder Density Property, Salt Property, Weight Property and Iconicity. |
| SRS-146 | The system shows the list of the existing excipient in the database. |
| SRS-147 | The system provides the search bar for searching the list of excipient. The search bar use the name of excipient for searching. |
| SRS-116 | The system can check the excipient name format. The excipient name format should be the character. |
| SRS-117 | The system can check the Water Solubility Property format. The Water Solubility Property format should be the character. |
| SRS-118 | The system can check the Stability Property format. The Stability Property format should be the character. |
| SRS-119 | The system can check the Dissolution Property format. The Dissolution Property format should be the character. |
| SRS-120 | The system can check the Partition Coefficient Property format. The Partition Coefficient Property format should be the character. |
| SRS-121 | The system can check the Physical Form Property format. The Physical Form Property format should be the character. |
| SRS-122 | The system can check the Hygroscopicity Property format. The Hygroscopicity Property format should be the character. |
| SRS-123 | The system can check the Particle Property format. The Particle Property format should be the character. |
| SRS-124 | The system can check the Alcohol Solubility Property format. The Alcohol Solubility Property format should be the character. |
| SRS-125 | The system can check the Flow ability Property format. The Flow ability Property format should be the character. |
| SRS-126 | The system can check the Powder Density Property format. The Powder Density Property format should be the character. |
| SRS-127 | The system can check the Salt Property format. The Salt Property format should be the float value. |
| SRS-128 | The system can check the Weight Property format. The Weight Property format should be float value. |
| SRS-129 | The system can check the Iconicity format. The Iconicity format should be the character. |
| SRS-148 | The system shall show the successful the existing excipient updating page. |
| SRS-131 | The system shall display the error message “The excipient name should be the characters”. |
| SRS-132 | The system shall display the error message “The Water Solubility Property should be the characters”. |
| SRS-133 | The system shall display the error message “The Stability Property should be the characters”. |
| SRS-134 | The system shall display the error message “The Dissolution Property should be the characters”. |
| SRS-135 | The system shall display the error message “The Partition Coefficient should be the characters”. |
| SRS-136 | The system shall display the error message “The Physical Form Property should be the characters”. |
| SRS-137 | The system shall display the error message “The Hygroscopicity Property should be the characters”. |
| SRS-138 | The system shall display the error message “The Particle Property should be the characters”. |
| SRS-139 | The system shall display the error message “The Alcohol Solubility Property should be the characters”. |
| SRS-140 | The system shall display the error message “The Flow ability Property should be the characters”. |
| SRS-141 | The system shall display the error message “The Powder Density Property should be the characters”. |
| SRS-142 | The system shall display the error message “The Salt Property should be the float value”. |
| SRS-143 | The system shall display the error message “The Weight Property should be the float value”. |
| SRS-144 | The system shall display the error message “The Iconicity should be the characters”. |
| SRS-19 | The system shall display the error message “The system is disconnect from the internet”. |

#### URS-14: The user delete an existing excipient into the database.

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| **No** | **System requirement specification (SRS)** |
| SRS-146 | The system shows the list of the existing excipient in the database. |
| SRS-147 | The system provides the search bar for searching the list of excipient. The search bar use the name of excipient for searching. |
| SRS-148 | The system shows the Confirm dialog box (YES/NO option).For making confirm when the user want to delete an existing excipient. |
| SRS-149 | The system shall show the successful delete the existing excipient page. |
| SRS-19 | The system shall display the error message “The system is disconnect from the internet”. |

#### URS-15: The user add a new drug formulation case into the database.

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| **No** | **System requirement specification (SRS)** |
| SRS-150 | The system provides the Graphic user interface (GUI) which receive the drug name, excipient type, excipient role, Substance Quantity, Substance Intensity. |
| SRS-151 | The system can check the drug name format. The drug name format should be the character. |
| SRS-152 | The system can check the excipient type format. The excipient type format should be the characters. |
| SRS-153 | The system can check the excipient role format. The excipient type format should be the characters. |
| SRS-154 | The system can check the substance quantity format. The substance quantity format should be the float number. |
| SRS-155 | The system can check the substance Intensity format. The substance Intensity format should be the float number. |
| SRS-156 | The system shall show the successful add a new drug formulation page. |
| SRS-157 | The system shall display the error message “The drug name is not the characters”. |
| SRS-158 | The system shall display the error message “The excipient type is not the characters”. |
| SRS-159 | The system shall display the error message “The excipient role is not the characters”. |
| SRS-160 | The system shall display the error message “The substance quantity is not the float number”. |
| SRS-161 | The system shall display the error message “The substance intensity is not the float number”. |
| SRS-162 | The system shall display the error message “The drug name is already used”. |
| SRS-19 | The system shall display the error message “The system is disconnect from the internet”. |

#### URS-16: The user update an existing drug formulation case in the database.

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| **No** | **System requirement specification (SRS)** |
| SRS-150 | The system provides the Graphic user interface (GUI) which receive the drug name, excipient type, excipient role, Substance Quantity, Substance Intensity. |
| SRS-163 | The system shows the list of drug formulation. |
| SRS-164 | The system provides the search bar for searching the list of drug formulation. The search bar use the name of drug for searching. |
| SRS-151 | The system can check the drug name format. The drug name format should be the character. |
| SRS-152 | The system can check the excipient type format. The excipient type format should be the characters. |
| SRS-153 | The system can check the excipient role format. The excipient type format should be the characters. |
| SRS-154 | The system can check the substance quantity format. The substance quantity format should be the float number. |
| SRS-155 | The system can check the substance Intensity format. The substance Intensity format should be the float number. |
| SRS-165 | The system shall show the successful update existing drug formulation case page. |
| SRS-157 | The system shall display the error message “The drug name is not the characters”. |
| SRS-158 | The system shall display the error message “The excipient type is not the characters”. |
| SRS-159 | The system shall display the error message “The excipient role is not the characters”. |
| SRS-160 | The system shall display the error message “The substance quantity is not the float number”. |
| SRS-161 | The system shall display the error message “The substance intensity is not the float number”. |
| SRS-162 | The system shall display the error message “The drug name is already used”. |
| SRS-19 | The system shall display the error message “The system is disconnect from the internet”. |

#### URS-17: The user delete an existing drug formulation case in the database.

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| **No** | **System requirement specification (SRS)** |
| SRS-163 | The system shows the list of drug formulation. |
| SRS-164 | The system provides the search bar for searching the list of drug formulation. The search bar use the name of drug for searching. |
| SRS-166 | The system shows the Confirm dialog box (YES/NO option).For making confirm when the administrator want to delete the existing drug formulation. |
| SRS-167 | The system shall show the successful delete existing drug formulation case page. |
| SRS-19 | The system shall display the error message “The system is disconnect from the internet”. |

#### URS-18: The user log in to the system.

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| **No** | **System requirement specification (SRS)** |
| SRS-168 | The system provide the Graphic user interface (GUI) which receive username, password for logging in to the system. |
| SRS-169 | The system retrieves the username and password. |
| SRS-170 | The system can verify the username and password. |
| SRS-171 | The system retrieves the user information from the username. |
| SRS-172 | The system stores the user information as the current user. |
| SRS-173 | The system shows the main page of the program. |
| SRS-174 | The system shall display the error message “The username or password is invalid” |
| SRS-19 | The system shall display the error message “The system is disconnect from the internet”. |

#### URS-19: The user logouts from the system.

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| **No** | **System requirement specification (SRS)** |
| SRS-175 | The system provide the Graphic user interface (GUI) which show the log out symbols |
| SRS-176 | The system shall show the successful member log out. |
| SRS-19 | The system shall display the error message “The system is disconnect from the internet”. |