|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Use Case ID | UC-01 | | | | |
| Use Case Name | Log in | | | | |
| Created By | Nattapat Tamtrakool | | Last Update By | Nattapat Tamtrakool | |
| Date Created | 4/10/2018 | | Last Revision Date | 4/14/2018 | |
| Actors | Administrator ,farmer and farm owner | | | | |
| Description | Allow user to access to the system. | | | | |
| Trigger | The Administrator ,farmer or farm owner chooses to login to the system | | | | |
| Preconditions | User must have a valid account. | | | | |
| Use Case Input Specification | | | | | |
| Input | type | Constraint | | | Example |
| Username | String | - | | | Hello559 |
| Password | String | - | | | Hihi2540 |
| Post conditions | If the login is successful, the user is logged into the system. If not the  system state remains the same. | | | | |
| Normal flow | User | | System | | |
|  | 1.User input username and password  2.User click login button | | 3.System validate the input [A1: Username or password is incorrect.]  [A2:Account has not approve by administrator.]  4.The system shall redirect to the main page. | | |
| Alternative Flow | [A1]: Username or password is incorrect.  1.System will notify the user with “Username or password is incorrect”.  2.System will terminated  [A2]: Account has not approve by administrator.  1.System will notify the user with “Your account has not  been approved by administrator”.  2.System will terminated | | | | |
| Exception Flow | - | | | | |
| Assumption | Actor must already have the username and password. | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Use Case ID | UC-02 | | | | |
| Use Case Name | Log out | | | | |
| Created By | Nattapat Tamtrakool | | Last Update By | Nattapat Tamtrakool | |
| Date Created | 4/10/2018 | | Last Revision Date | 4/10/2018 | |
| Actors | Administrator ,farmer and farm owner | | | | |
| Description | Administrator ,farmer or farm owner chooses to log out. | | | | |
| Trigger | Log out button is clicked. | | | | |
| Preconditions | User must be logged in . | | | | |
| Use Case Input Specification | | | | | |
| Input | type | Constraint | | | Example |
| - | - | - | | | - |
| Post conditions | If the logout is successful, The system shall remove the session of the user and redirect to the log in page. | | | | |
| Normal flow | User | | System | | |
|  |  | | 1.System remove the session of user.  2.System redirect user to the login page. | | |
| Alternative Flow | - | | | | |
| Exception Flow | - | | | | |
| Assumption | Actor must already logged in. | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Use Case ID | UC-03 | | | | |
| Use Case Name | Register | | | | |
| Created By | Nattapat Tamtrakool | | Last Update By | Nattapat Tamtrakool | |
| Date Created | 4/11/2018 | | Last Revision Date | 4/11/2018 | |
| Actors | New farmer | | | | |
| Description | Registration for new farmer. | | | | |
| Trigger | User enter registration page. | | | | |
| Preconditions | User doesn’t has a valid account. | | | | |
| Use Case Input Specification | | | | | |
| Input | type | Constraint | | | Example |
| Username | String | - | | | Sunjido |
| Password | String | - | | | Sunnoobeieiza55 |
| First name | String | - | | | Pumipat |
| Last name | String | - | | | Tippayawong |
| Email | String | - | | | Yoyo@hotmail.com |
| Phone number | String | - | | | 0815559687 |
| Post conditions | If the registration is successful, The system shall wait for the administrator to approve the registration. | | | | |
| Normal flow | User | | System | | |
|  | 1.User input their personal information. | | 2.System validate user information [A1:Format is incorrect] [A2:User doesn’t fill all information needed.]  3.System provide confirmation pop-up.  [A3:User click confirm button ][A4:User click cancel button] | | |
| Alternative Flow | [A1]:Format is incorrect  1.System will notify user “Incorrect format”.  2.System will terminated  [A2]: User doesn’t fill all information needed  1.System will notify user “Please fill in all required fields”.  2.System will terminated  [A3]:User click confirm button  1.System shall add new account into database.  2.System notify user “Register successful! Wait for administrator  to approve”.  3.System will wait for administrator to approve the registration.  [A4:User click cancel button]  1.System will terminated | | | | |
| Exception Flow | - | | | | |
| Assumption | New farmer should know the farmer id before register for farmer account . | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Use Case ID | UC-04 | | | | |
| Use Case Name | Approve registration request | | | | |
| Created By | Nattapat Tamtrakool | | Last Update By | Nattapat Tamtrakool | |
| Date Created | 4/11/2018 | | Last Revision Date | 4/14/2018 | |
| Actors | Administrator | | | | |
| Description | Approved new famer registration request by administrator. | | | | |
| Trigger | Administrator enter new farmer page. | | | | |
| Preconditions | - The administrator must be connected to the internet  - The administrator must login with an administrator account | | | | |
| Use Case Input Specification | | | | | |
| Input | type | Constraint | | | Example |
| - | - | - | | | - |
| Post conditions | The new farmer account will added to the database . | | | | |
| Normal flow | User | | System | | |
|  | 1.Administrator click approve button on the new farmer account.  3.Administrator click confirm button. | | 2.The system show confirmation pop-up button [A1:User click cancel button]  4.The system approve the new farmer account  5.The system notify “The new farmer account has been approving from the system”.  6. The system display the list of new farmer account that is in the database to the administrator. | | |
| Alternative Flow | A1:User click cancel button  1.System will terminated | | | | |
| Exception Flow | - | | | | |
| Assumption | Have a new farmer account that want to approve. | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Use Case ID | UC-05 | | | | |
| Use Case Name | Remove new farmer account | | | | |
| Created By | Nattapat Tamtrakool | | Last Update By | Nattapat Tamtrakool | |
| Date Created | 4/12/2018 | | Last Revision Date | 4/14/2018 | |
| Actors | Administrator | | | | |
| Description | Remove new farmer account by using farmer’id | | | | |
| Trigger | Administrator enter new farmer page. | | | | |
| Preconditions | - The administrator must be connected to the internet  - The administrator must login with an administrator account | | | | |
| Use Case Input Specification | | | | | |
| Input | type | Constraint | | | Example |
| - | - | - | | | - |
| Post conditions | The new farmer account will removed from the system. | | | | |
| Normal flow | User | | System | | |
|  | 1.Administrator click remove button on the new farmer account.  3.Administrator click confirm button. | | 2.The system show confirmation pop-up button [A1:User click cancel button]  4.The system remove the new farmer account  5.The system notify “The new farmer account has been removed from the system”.  6. The system display the list of new farmer account that is in the database to the administrator. | | |
| Alternative Flow | A1:User click cancel button  1.System will terminated | | | | |
| Exception Flow | - | | | | |
| Assumption | Have a new farmer account that want to remove. | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Use Case ID | UC-06 | | | | |
| Use Case Name | View farmer account | | | | |
| Created By | Nattapat Tamtrakool | | Last Update By | Nattapat Tamtrakool | |
| Date Created | 4/12/2018 | | Last Revision Date | 4/12/2018 | |
| Actors | Administrator | | | | |
| Description | View the list of new farmer account in the system, which  will include username, name, last name, and telephone number. | | | | |
| Trigger | Administrator enter new farmer page. | | | | |
| Preconditions | - The administrator must be connected to the internet  - The administrator must login with an administrator account | | | | |
| Use Case Input Specification | | | | | |
| Input | type | Constraint | | | Example |
| Username | String | - | | | kamiOchi01 |
| Password | String | - | | | Mamipoko55 |
| Last name | String | - | | | Tamtrakool |
| Phone number | String | - | | | 0805449644 |
| Post conditions | Administrator can view the list of new farmer account. | | | | |
| Normal flow | User | | System | | |
|  | 2.User fill all information needed  3.User click submit button | | 1.System provide new farmer page including “submit button”  4.System retrieve the list of new farmer account from the database.  5.System display the list of new famer account. | | |
| Alternative Flow | - | | | | |
| Exception Flow | - | | | | |
| Assumption | The list of farmer account must be in database. | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Use Case ID | UC-07 | | | | |
| Use Case Name | Edit farmer personal information. | | | | |
| Created By | Nattapat Tamtrakool | | Last Update By | Nattapat Tamtrakool | |
| Date Created | 4/12/2018 | | Last Revision Date | 4/14/2018 | |
| Actors | Administrator | | | | |
| Description | Administrator can edit farmer personal information by input new information. | | | | |
| Trigger | Administrator enter account management page. | | | | |
| Preconditions | - The administrator must be connected to the internet  - The administrator must login with an administrator account | | | | |
| Use Case Input Specification | | | | | |
| Input | type | Constraint | | | Example |
| First name | String | Only uppercase , lowercase and number are allow | | | kamiOchi01 |
| Last name | String | Only uppercase , lowercase and number are allow | | | Mamipoko55 |
| Age | String | Only uppercase , lowercase and number are allow | | | 28 |
| Date of birth | String | Only uppercase , lowercase and number are allow | | | 0805449644 |
| Email | String | Only uppercase , lowercase and number are allow | | | Elf03@hotmail.com |
| Phone number | String | Only uppercase , lowercase and number are allow | | | 0859698874 |
| Post conditions | Farmer personal information will updated. | | | | |
| Normal flow | User | | System | | |
|  | 1.User input new information [A1:Format is incorrect]  3. User click confirm button. | | 2.System provide confirmation pop up including confirm and cancel button [A2:User click cancel button ]  4. System update new user information to database.  5. System notify user “User’s personal information has been edited”  6. System display the list of farmer account that in the system. | | |
| Alternative Flow | [A1]: Format is in correct.  1.System notify user “Incorrect format” .  2.System will terminated  [A2]:User click cancel button  1.Sytem will terminate. | | | | |
| Exception Flow | - | | | | |
| Assumption | The list of farmer account must be in database. | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Use Case ID | UC-08 | | | | |
| Use Case Name | Remove farmer account. | | | | |
| Created By | Nattapat Tamtrakool | | Last Update By | Nattapat Tamtrakool | |
| Date Created | 4/13/2018 | | Last Revision Date | 4/13/2018 | |
| Actors | Administrator | | | | |
| Description | Administrator remove farmer account in the system by using farmer id. | | | | |
| Trigger | Administrator enter farmer page. | | | | |
| Preconditions | - The administrator must be connected to the internet  - The administrator must login with an administrator account | | | | |
| Use Case Input Specification | | | | | |
| Input | type | Constraint | | | Example |
| - | - | - | | | - |
| Post conditions | The system will remove the farmer account that has chosen. | | | | |
| Normal flow | User | | System | | |
|  | 1.User choose farmer id  4. User click confirm button. | | 2.System validate the farmer id  3.System provide confirmation pop-up  [A1:User click cancel button]  5. System remove the farmer account .  6. System notify user “The farmer account has been removed from the system”.  7. System display the list of farmer account that in the system | | |
| Alternative Flow | [A1]:User click cancel button  1.System will terminate . | | | | |
| Exception Flow | - | | | | |
| Assumption | The list of farmer account must be already in database. | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Use Case ID | UC-09 | | | | |
| Use Case Name | View the list of farmer account. | | | | |
| Created By | Nattapat Tamtrakool | | Last Update By | Nattapat Tamtrakool | |
| Date Created | 4/13/2018 | | Last Revision Date | 4/13/2018 | |
| Actors | Administrator | | | | |
| Description | Administrator can view the list of farmer account in the system. | | | | |
| Trigger | Administrator enter farmer page. | | | | |
| Preconditions | - The administrator must be connected to the internet  - The administrator must login with an administrator account | | | | |
| Use Case Input Specification | | | | | |
| Input | type | Constraint | | | Example |
| - | - | - | | | - |
| Post conditions | The system will remove the farmer account that has chosen. | | | | |
| Normal flow | User | | System | | |
|  |  | | 1.System provide the farmer page.  2.System retrieve the list of farmer account  3.System shall display the list of farmer account in the list. | | |
| Alternative Flow | - | | | | |
| Exception Flow | - | | | | |
| Assumption | The list of farmer account must be already in database. | | | | |

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| --- | --- | --- | --- | --- | --- |
| Use Case ID | UC-10 | | | | |
| Use Case Name | Change password | | | | |
| Created By | Nattapat Tamtrakool | | Last Update By | Nattapat Tamtrakool | |
| Date Created | 4/13/2018 | | Last Revision Date | 4/13/2018 | |
| Actors | Administrator, Farmer, and Farm owner | | | | |
| Description | Administrator, Farmer, and Farm owner can change their password by inputting the current password and new password . | | | | |
| Trigger | User enter change password page . | | | | |
| Preconditions | - User must already logged in | | | | |
| Use Case Input Specification | | | | | |
| Input | type | Constraint | | | Example |
| Current password | String |  | | | Chinanumba1 |
| New password | String | Only uppercase A-Z , lowercase a-z and 0-9 are allow | | | Ohyeah888 |
| Confirm  new password | String | Only uppercase A-Z , lowercase a-z and 0-9 are allow | | | Ohyeah888 |
| Post conditions | The system will update new password into the database. | | | | |
| Normal flow | User | | System | | |
|  | 1.Input current password  [A1:Incorrect password]  2.Input new password  3.Input confirm new password  [A2:New password doesn’t match]  5.User click confirm button  [A3:User click cancel button] | | 4.System provide confirmation pop-up  6. The system shall update the new password into the database.  7. . The system notify user “Change password successful”. | | |
| Alternative Flow | A1:Incorrect password  1.System notify user “Incorrect password”  2.System will terminate.  A2:New password doesn’t match  1.System notify user “New password doesn’t match”  2.System will terminate.  A3:User click cancel button  1.System will terminate. | | | | |
| Exception Flow | - | | | | |
| Assumption | User must already have new password in their mind. | | | | |

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| --- | --- | --- | --- | --- | --- |
| Use Case ID | UC-11 | | | | |
| Use Case Name | View the list of each device monitor | | | | |
| Created By | Nattapat Tamtrakool | | Last Update By | Nattapat Tamtrakool | |
| Date Created | 4/13/2018 | | Last Revision Date | 4/13/2018 | |
| Actors | Farmer, and Farm owner | | | | |
| Description | View the list of each device monitor that is working, which will include device name, temperature, humidity, soil moisture, and latest update at current time. | | | | |
| Trigger | User enter environmental monitoring page. | | | | |
| Preconditions | - User must already logged in | | | | |
| Use Case Input Specification | | | | | |
| Input | type | Constraint | | | Example |
| - | - | - | | | - |
| Post conditions | The system display the environmental data. | | | | |
| Normal flow | User | | System | | |
|  |  | | 1.System provide monitoring page  2.The system retrieve the environmental data and record it into the database  3. The system retrieve the environmental data of current time. [A1:No data in database]  4.The display the environmental data of current time . | | |
| Alternative Flow | A1:No data in database.  1.System will terminate. | | | | |
| Exception Flow | - | | | | |
| Assumption | Device monitor must be recorded in database. | | | | |

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| --- | --- | --- | --- | --- | --- |
| Use Case ID | UC-12 | | | | |
| Use Case Name | View the list of statics monitor | | | | |
| Created By | Nattapat Tamtrakool | | Last Update By | Nattapat Tamtrakool | |
| Date Created | 4/13/2018 | | Last Revision Date | 4/13/2018 | |
| Actors | Farmer, and Farm owner | | | | |
| Description | View the list of statistics monitor, which will include lowest temperature, highest temperature, average temperature, lowest humidity, highest humidity, average humidity, lowest soil moisture, highest soil moisture, average soil moisture, and latest update at current hour. | | | | |
| Trigger | User chooses to view the list. | | | | |
| Preconditions | - User must already logged in  -User must enter environmental page | | | | |
| Use Case Input Specification | | | | | |
| Input | type | Constraint | | | Example |
| - | - | - | | | - |
| Post conditions | The system shall display the environmental data of current hour. | | | | |
| Normal flow | User | | System | | |
|  |  | | 1.System provide monitoring page  2.The system retrieve the environmental data of current hour to from the database[A1:No data]  3. The system retrieve the environmental current time data from the database and calculate the lowest, highest, and average of environmental data within the system and record it into the database in every hour.  4. The system display the environmental statistics data within selected hour of a day to the user | | |
| Alternative Flow | A1:No data in database.  1.System will terminate. | | | | |
| Exception Flow | - | | | | |
| Assumption | -The server will be able to perform the request effectively  -The environmental data must be in the database | | | | |

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| --- | --- | --- | --- | --- | --- |
| Use Case ID | UC-13 | | | | |
| Use Case Name | View the history of statistics that is measured as a list | | | | |
| Created By | Nattapat Tamtrakool | | Last Update By | Nattapat Tamtrakool | |
| Date Created | 4/14/2018 | | Last Revision Date | 4/14/2018 | |
| Actors | Farmer, and Farm owner | | | | |
| Description | View the history of statistics that is measured as a list, which will include lowest temperature, highest temperature, average temperature, lowest humidity, highest humidity, average humidity, lowest soil moisture, highest soil moisture, average soil moisture, and date. | | | | |
| Trigger | User choose to view the history. | | | | |
| Preconditions | - User must already logged in | | | | |
| Use Case Input Specification | | | | | |
| Input | type | Constraint | | | Example |
| - | - | - | | | - |
| Post conditions | The system shall display the environmental statistics data | | | | |
| Normal flow | User | | System | | |
|  | 2.User input date and time | | 1.System provide monitoring page  2. The system validate the date and time of the statistics  3. The system retrieve the environmental data of current hour from the database [A1:No data] [A2:User not select statics date]  [A3:User select only date][A4:User select date and time] | | |
| Alternative Flow | A1:No data in database.  1.System notify user “No data”  2.System will terminate  A2:User not select statics date  1.System notify user ”please select the statistics date”  1.System will terminate  A3:User select only date  1. The system calculate the lowest, highest, and average of every environmental data within the system.  2. The system display the environmental statistics data within a day to the user if the user selects only date  A4:User select date and time  1. The system calculate the lowest, highest, and average of every environmental data within the system.  2. The system display the environmental statistics data within a day to the user if the user selects date and time | | | | |
| Exception Flow | - | | | | |
| Assumption | -The server will be able to perform the request effectively  -The environmental data must be in the database | | | | |

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| --- | --- | --- | --- | --- | --- |
| Use Case ID | UC-14 | | | | |
| Use Case Name | Add new device | | | | |
| Created By | Nattapat Tamtrakool | | Last Update By | Nattapat Tamtrakool | |
| Date Created | 4/14/2018 | | Last Revision Date | 4/14/2018 | |
| Actors | Farm owner | | | | |
| Description | Add new device into the system by inputting name and click “ADD” button | | | | |
| Trigger | User choose to add new device. | | | | |
| Preconditions | - User must already logged in  - User must enter device control page | | | | |
| Use Case Input Specification | | | | | |
| Input | type | Constraint | | | Example |
| Device name | Sting | Only uppercase A-Z, lowercase a-z, and 0-9 are allow | | | Hellokity78 |
| Post conditions | New device will be added in to the system | | | | |
| Normal flow | User | | System | | |
|  | 1.User input name of the new device  4.User click confirm button  [A3:User click cancel button] | | 2.System validate the name of the new device  [A1:Name already existed][A2:Wrong format]  3.System provide the confirmation pop-up  5. The system add the new device into the database  6. The system shall display the list of new device  7.System notify “New device has been added to the system” | | |
| Alternative Flow | [A1]:Name already existed  1.System notify user “The name of the device is taken”  2.System will terminate  [A2]:Wrong format  1.System notify user “incorrect format”  2.System will terminate  [A3]:User click cancel button  1.System terminate | | | | |
| Exception Flow | - | | | | |
| Assumption | - | | | | |

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| --- | --- | --- | --- | --- | --- |
| Use Case ID | UC-15 | | | | |
| Use Case Name | Edit device name | | | | |
| Created By | Nattapat Tamtrakool | | Last Update By | Nattapat Tamtrakool | |
| Date Created | 4/14/2018 | | Last Revision Date | 4/14/2018 | |
| Actors | Farm owner | | | | |
| Description | Edit device name inputting new name and click “Update” button | | | | |
| Trigger | User choose to edit device name. | | | | |
| Preconditions | - User must already logged in  - User must enter device control page | | | | |
| Use Case Input Specification | | | | | |
| Input | type | Constraint | | | Example |
| Device name | Sting | Only uppercase A-Z, lowercase a-z, and 0-9 are allow | | | Hellokity78 |
| Post conditions | Device name will be updated | | | | |
| Normal flow | User | | System | | |
|  | 1.User input new name of the device  4.User click confirm button  [A3:User click cancel button] | | 2.System validate the new name of the device  [A1:Name already existed][A2:Wrong format]  3.System provide the confirmation pop-up  5. The system update the edited name of the device into the database  6. The system display the device name that is edited  7.System notify “Device has been updated”. | | |
| Alternative Flow | [A1]:Name already existed  1.System notify user “The name of the device is taken”  2.System will terminate  [A2]:Wrong format  1.System notify user “incorrect format”  2.System will terminate  [A3]:User click cancel button  1.System terminate | | | | |
| Exception Flow | - | | | | |
| Assumption | - | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Use Case ID | UC-16 | | | | |
| Use Case Name | Remove device | | | | |
| Created By | Nattapat Tamtrakool | | Last Update By | Nattapat Tamtrakool | |
| Date Created | 4/14/2018 | | Last Revision Date | 4/14/2018 | |
| Actors | Farm owner | | | | |
| Description | Remove the device that the user wants to remove by clicking “Delete” button | | | | |
| Trigger | User choose to remove device. | | | | |
| Preconditions | - User must already logged in  - User must enter device control page | | | | |
| Use Case Input Specification | | | | | |
| Input | type | Constraint | | | Example |
|  |  |  | | |  |
| Post conditions | Device name will be deleted from the system | | | | |
| Normal flow | User | | System | | |
|  | 1.User input device id that wants to remove  4.User click confirm button  [A1:User click cancel button] | | 2.System validate the device id that the user has chosen  3.System provide the confirmation pop-up  5. The system remove device id out of the database  6. The system display the list of device that in the database  7.System notify “Device has been removed”. | | |
| Alternative Flow | [A1]:User click cancel button  1.System terminate | | | | |
| Exception Flow | - | | | | |
| Assumption | - | | | | |

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| --- | --- | --- | --- | --- | --- |
| Use Case ID | UC-17 | | | | |
| Use Case Name | View the list of every device | | | | |
| Created By | Nattapat Tamtrakool | | Last Update By | Nattapat Tamtrakool | |
| Date Created | 4/14/2018 | | Last Revision Date | 4/14/2018 | |
| Actors | Farm owner | | | | |
| Description | View the list of every device in the system, which will include device id, device name. | | | | |
| Trigger | User choose to view the list of device. | | | | |
| Preconditions | - User must already logged in  - User must enter device control page | | | | |
| Use Case Input Specification | | | | | |
| Input | type | Constraint | | | Example |
|  |  |  | | |  |
| Post conditions | System will show list of every device in the system | | | | |
| Normal flow | User | | System | | |
|  |  | | 1. The system provide the device control page including table for the list of every device in the system.  2.System retrieve the list of device from data base  3.System display list of the device to the user | | |
| Alternative Flow |  | | | | |
| Exception Flow | - | | | | |
| Assumption | Farm owner already added a device | | | | |

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| --- | --- | --- | --- | --- | --- |
| Use Case ID | UC-18 | | | | |
| Use Case Name | Set moisture level | | | | |
| Created By | Nattapat Tamtrakool | | Last Update By | Nattapat Tamtrakool | |
| Date Created | 4/14/2018 | | Last Revision Date | 4/14/2018 | |
| Actors | Farm owner | | | | |
| Description | Set the moisture level in the soil to water the plants and stop giving water to the plants when the average soil moisture in current hour is lower or higher than the user’s setting by inputting the value of soil moisture to the system. | | | | |
| Trigger | User choose to set the moisture level. | | | | |
| Preconditions | - User must already logged in  - User must enter device control page | | | | |
| Use Case Input Specification | | | | | |
| Input | type | Constraint | | | Example |
| Value of soil moisture | int | Only 0-9 | | | 20 |
| Post conditions | The system send message on/off to the board | | | | |
| Normal flow | User | | System | | |
|  | 1.User input the soil moisture value  4.User click confirm button  [A3:User click cancel button] | | 2.System validate the soil moisture value  [A1:User haven’t fill all information]  [A2:Format is incorrect]  3.System provide confirmation button  5.System record the settings from the user into the database  6.System shall message on/off to the board when the average soil moisture in current hour value meets the settings that the user has input to the system | | |
| Alternative Flow | A1:User haven’t fill all information  1.System notify user “Setting is incomplete”  2.System will terminate  A2:Format is incorrect  1.System notify user “incorrect format”  2.System will terminate  A3: User click cancel button  1.System will terminate | | | | |
| Exception Flow | - | | | | |
| Assumption | - | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Use Case ID | UC-19 | | | | |
| Use Case Name | Predict product yeild | | | | |
| Created By | Nattapat Tamtrakool | | Last Update By | Nattapat Tamtrakool | |
| Date Created | 4/14/2018 | | Last Revision Date | 4/14/2018 | |
| Actors | Farm owner | | | | |
| Description | predict the product yield by selecting the product name that is already in the system and inputting the number of time to make prediction then click “View” button. | | | | |
| Trigger | User choose to predict a product yield. | | | | |
| Preconditions | - User must already logged in  - User must enter prediction page | | | | |
| Use Case Input Specification | | | | | |
| Input | type | Constraint | | | Example |
| Number of time | int | Only 0-9 | | | 20 |
| Post conditions | The system display outcome of the prediction | | | | |
| Normal flow | User | | System | | |
|  | 1.User input number of time to make a prediction [A1:Format is not correct] | | 2.System retrieve the production stock data from the database  3. The system calculate the production stock data to find out the prediction of the selected product [A2:Not enough information]  4.System display the out come of the prediction | | |
| Alternative Flow | A1:Format is incorrect  1.System notify user “incorrect format”  2.System will terminate  A2: Not enough information  1. System notify user “Not enough information to calculate for prediction, In order to make prediction the system needs at least 6 months of the production stock data.”  2. System will terminate | |  | | |
| Exception Flow | - | | | | |
| Assumption | User must already add a product | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Use Case ID | UC-20 | | | | |
| Use Case Name | Create product | | | | |
| Created By | Nattapat Tamtrakool | | Last Update By | Nattapat Tamtrakool | |
| Date Created | 4/14/2018 | | Last Revision Date | 4/14/2018 | |
| Actors | Farm owner | | | | |
| Description | Create new product in the system by inputting name and unit. | | | | |
| Trigger | User choose to add a new product. | | | | |
| Preconditions | - User must already logged in  - User must enter product page | | | | |
| Use Case Input Specification | | | | | |
| Input | type | Constraint | | | Example |
| Product name | String | Only uppercase A-Z, lowercase a-z are allow | | | Apple |
| Unit | String | Only uppercase A-Z, lowercase a-z are allow | | | Hi |
| Post conditions | System will add new product into the system | | | | |
| Normal flow | User | | System | | |
|  | 1.User input the name and unit of product  4.User click confirm button [A3:User click cancel button] | | 2. The system validate the new product name and unit[A1:Format not correct][A2:Name already exist]  3. The system provide confirmation pop-up  5. The system add new product name and unit into the database  6.System notify user “Product has been added to the system”  7. The system display the list of product name and unit that is in the system | | |
| Alternative Flow | A1:Format is not correct  1.System notify user “incorrect format”  2.System will terminate  A2:Name already exist  1.System notify user “This product is already in the system”  2.System terminate  A3:User click cancel button  1.System will terminate | | | | |
| Exception Flow | - | | | | |
| Assumption | User must already added a farm | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Use Case ID | UC-21 | | | | |
| Use Case Name | Edit product | | | | |
| Created By | Nattapat Tamtrakool | | Last Update By | Nattapat Tamtrakool | |
| Date Created | 4/14/2018 | | Last Revision Date | 4/14/2018 | |
| Actors | Farm owner | | | | |
| Description | Edit product in the system by inputting name and unit. | | | | |
| Trigger | User choose to edit product in the system. | | | | |
| Preconditions | - User must already logged in  - User must enter product page | | | | |
| Use Case Input Specification | | | | | |
| Input | type | Constraint | | | Example |
| Product name | String | Only uppercase A-Z, lowercase a-z are allow | | | Apple |
| Unit | String | Only uppercase A-Z, lowercase a-z are allow | | | Hi |
| Post conditions | System edited product into the database system | | | | |
| Normal flow | User | | System | | |
|  | 1.User input the name and unit of product  4.User click confirm button [A3:User click cancel button] | | 2. The system validate the new product name and unit[A1:Format not correct][A2:Name already exist]  3. The system provide confirmation pop-up  5. The system edited product name and unit into the database  6.System notify user “Product has been edited”  7. The system display the list of product name and unit that is in the system | | |
| Alternative Flow | A1:Format is not correct  1.System notify user “incorrect format”  2.System will terminate  A2:Name already exist  1.System notify user “This product is already in the system”  2.System terminate  A3:User click cancel button  1.System will terminate | | | | |
| Exception Flow | - | | | | |
| Assumption | User must already added a product | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Use Case ID | UC-22 | | | | |
| Use Case Name | Remove product | | | | |
| Created By | Nattapat Tamtrakool | | Last Update By | Nattapat Tamtrakool | |
| Date Created | 4/14/2018 | | Last Revision Date | 4/14/2018 | |
| Actors | Farm owner | | | | |
| Description | Remove the product from the system by clicking “Delete” button on the same row | | | | |
| Trigger | User choose to remove product from the system. | | | | |
| Preconditions | - User must already logged in  - User must enter product page | | | | |
| Use Case Input Specification | | | | | |
| Input | type | Constraint | | | Example |
|  |  |  | | |  |
| Post conditions | Product will be removed from the system | | | | |
| Normal flow | User | | System | | |
|  | 1.User choose product id that user want to delete  4.User click confirm button [A1:User click cancel button] | | 2. The system validate the product id for removing product  3. The system provide confirmation pop-up  5. The system remove product name and unit from the database  6.System notify user “Product has been removed from the system”  7. The system display the list of product name and unit that is in the system | | |
| Alternative Flow | A1:User click cancel button  1.System will terminate | | | | |
| Exception Flow | - | | | | |
| Assumption | User must already added a product | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Use Case ID | UC-23 | | | | |
| Use Case Name | View the list of product | | | | |
| Created By | Nattapat Tamtrakool | | Last Update By | Nattapat Tamtrakool | |
| Date Created | 4/14/2018 | | Last Revision Date | 4/14/2018 | |
| Actors | Farm owner | | | | |
| Description | View the list of product in the system, which will include product name, product unit. | | | | |
| Trigger | User choose to view the list of product from the system. | | | | |
| Preconditions | - User must already logged in  - User must enter product page | | | | |
| Use Case Input Specification | | | | | |
| Input | type | Constraint | | | Example |
|  |  |  | | |  |
| Post conditions | Product will be removed from the system | | | | |
| Normal flow | User | | System | | |
|  |  | | 1.System retrieve the list of product from the database  2.System display the list of product in the system to the user. | | |
| Alternative Flow |  | | | | |
| Exception Flow | - | | | | |
| Assumption | User must already added a product | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Use Case ID | UC-24 | | | | |
| Use Case Name | Make a record of production yield | | | | |
| Created By | Nattapat Tamtrakool | | Last Update By | Nattapat Tamtrakool | |
| Date Created | 4/14/2018 | | Last Revision Date | 4/14/2018 | |
| Actors | Farmer | | | | |
| Description | Record the production yield by select the product and inputting the quantity | | | | |
| Trigger | User choose to record the production yield. | | | | |
| Preconditions | - User must already logged in  - User must enter product stock page | | | | |
| Use Case Input Specification | | | | | |
| Input | type | Constraint | | | Example |
| Quantity | Int | Only 0-9 | | | 5 |
| Post conditions | System shall add the production record into the database. | | | | |
| Normal flow | User | | System | | |
|  | 1.User select product and input quantity of product  4.User click confirm button  [A2:User click cancel button] | | 2. The system shall validate the production record[A1:Format is not correct]  3. The system provide confirmation pop-up  5. The system shall retrieve the water on and water off value in device setting from database to record  6. The system retrieve user account that’s making a record from database to record with the production record.  7. The system add the production record into the database.  8.System notify user “Production record has been added into the system”  9. The system display the production record that is in the system | | |
| Alternative Flow | A1:Format is not correct  1.User notify the user “incorrect format”  2.System will terminate  A2:User click cancel button  1.System will terminate | | | | |
| Exception Flow | - | | | | |
| Assumption | User must already added a product | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Use Case ID | UC-25 | | | | |
| Use Case Name | Edit production record | | | | |
| Created By | Nattapat Tamtrakool | | Last Update By | Nattapat Tamtrakool | |
| Date Created | 4/14/2018 | | Last Revision Date | 4/14/2018 | |
| Actors | Farmer | | | | |
| Description | Edit the production record in the system by selecting the product that is already in the system and inputting the quantity | | | | |
| Trigger | User choose to edit the production record. | | | | |
| Preconditions | - User must already logged in  - User must enter product stock page | | | | |
| Use Case Input Specification | | | | | |
| Input | type | Constraint | | | Example |
| Quantity | Int | Only 0-9 | | | 5 |
| Post conditions | System shall add the production record into the database. | | | | |
| Normal flow | User | | System | | |
|  | 1.User select product and input quantity of product  4.User click confirm button  [A2:User click cancel button] | | 2. The system shall validate the production record [A1:Format is not correct]  3. The system provide confirmation pop-up  5. The system shall update the production record into the database  6.System notify user “Production record has been edited”  7. The system display the production record | | |
| Alternative Flow | A1:Format is not correct  1.User notify the user “incorrect format”  2.System will terminate  A2:User click cancel button  1.System will terminate | | | | |
| Exception Flow | - | | | | |
| Assumption | User must already added a product | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Use Case ID | UC-26 | | | | |
| Use Case Name | Remove production record | | | | |
| Created By | Nattapat Tamtrakool | | Last Update By | Nattapat Tamtrakool | |
| Date Created | 4/14/2018 | | Last Revision Date | 4/14/2018 | |
| Actors | Farmer | | | | |
| Description | Remove production record from the system that user wants to remove | | | | |
| Trigger | User choose to remove the production record. | | | | |
| Preconditions | - User must already logged in  - User must enter product stock page | | | | |
| Use Case Input Specification | | | | | |
| Input | type | Constraint | | | Example |
| Quantity | Int | Only 0-9 | | | 5 |
| Post conditions | System shall add the production record into the database. | | | | |
| Normal flow | User | | System | | |
|  | 1.User select production record id that wants to remove  4.User click confirm button  [A1:User click cancel button] | | 2.System validate the production record id for removing production record  3. The system provide confirmation pop-up  5.System notify user “Production record has been removed from the system”  6. The system display the list of production record | | |
| Alternative Flow | A1:Format is not correct  1.User notify the user “incorrect format”  2.System will terminate  A2:User click cancel button  1.System will terminate | | | | |
| Exception Flow | - | | | | |
| Assumption | User must already added a product | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Use Case ID | UC-27 | | | | |
| Use Case Name | View the list of production record | | | | |
| Created By | Nattapat Tamtrakool | | Last Update By | Nattapat Tamtrakool | |
| Date Created | 4/14/2018 | | Last Revision Date | 4/14/2018 | |
| Actors | Farmer and farm owner | | | | |
| Description | View the list of production record which will include product name, and quantity | | | | |
| Trigger | User choose to remove the production record. | | | | |
| Preconditions | - User must already logged in  - User must enter product stock page | | | | |
| Use Case Input Specification | | | | | |
| Input | type | Constraint | | | Example |
| Quantity | Int | Only 0-9 | | | 5 |
| Post conditions | System shall add the production record into the database. | | | | |
| Normal flow | User | | System | | |
|  |  | | 1. The system retrieve the list of production record from the database.  2.The system shall display the list of production record in the system to the user. | | |
| Alternative Flow |  | | | | |
| Exception Flow | - | | | | |
| Assumption | User must already added a product | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Use Case ID | UC-28 | | | | |
| Use Case Name | Simulate the product yield | | | | |
| Created By | Nattapat Tamtrakool | | Last Update By | Nattapat Tamtrakool | |
| Date Created | 4/14/2018 | | Last Revision Date | 4/14/2018 | |
| Actors | Farm owner | | | | |
| Description | Do a simulation for the product yield by selecting the product name that already exists in the system then selecting the level of soil moisture for turning water on and off automatically to make simulation | | | | |
| Trigger | User choose to simulate the product yeild | | | | |
| Preconditions | - User must already logged in  - User must enter simulation page | | | | |
| Use Case Input Specification | | | | | |
| Input | type | Constraint | | | Example |
| Quantity | Int | Only 0-9 | | | 5 |
| Post conditions | System shall add the production record into the database. | | | | |
| Normal flow | User | | System | | |
|  | 1.User input select the product and set the soil moisture level | | 2. system retrieve the production stock data from the database [A1:Information to calculate is not enough]  3.System calculate the production stock data to find out the product yield by using Markov Chains  4.System display the outcome of the simulation | | |
| Alternative Flow | A1: Information to calculate is not enough  1.System notify user “Not enough information to calculate for simulation, In order to make a simulation the system needs at least 6 months of the production stock data”  2.System will terminate | | | | |
| Exception Flow | - | | | | |
| Assumption | User must already added a product in the system | | | | |

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| --- | --- | --- | --- | --- | --- |
| Use Case ID | UC-29 | | | | |
| Use Case Name | Fill in disease in the record | | | | |
| Created By | Nattapat Tamtrakool | | Last Update By | Nattapat Tamtrakool | |
| Date Created | 4/14/2018 | | Last Revision Date | 4/14/2018 | |
| Actors | Farmer | | | | |
| Description | Fill in disease in the disease record by selecting the product (plant) that is already in the system and inputting the disease name | | | | |
| Trigger | User choose to fill in disease in the record | | | | |
| Preconditions | - User must already logged in  - User must enter disease record page | | | | |
| Use Case Input Specification | | | | | |
| Input | type | Constraint | | | Example |
| Disease name | String | Only uppercase A-Z, lowercase a-z, and 0-9 are allow | | | Kaiwatnok |
| Post conditions | System shall add the disease record into the database. | | | | |
| Normal flow | User | | System | | |
|  | 1.User select the product and input disease name[A1:Format is not correct]  3.User click confirm button [A2:User click cancel button] | | 2. The system provide confirmation pop-up  4. The system retrieve user account that’s making a record from database to record with the disease record  5. The system add the disease into the database.  6.System notify “Disease has been added into the system”  7.System display the disease record to user | | |
| Alternative Flow | A1: Format is not correct  1.System notify user “incorrect format”  2.System will terminate  A2:User click cancel button  1.System will terminate | | | | |
| Exception Flow | - | | | | |
| Assumption | - | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Use Case ID | UC-30 | | | | |
| Use Case Name | Edit disease record | | | | |
| Created By | Nattapat Tamtrakool | | Last Update By | Nattapat Tamtrakool | |
| Date Created | 4/14/2018 | | Last Revision Date | 4/14/2018 | |
| Actors | Farmer | | | | |
| Description | Edit the disease record in the system by selecting the product | | | | |
| Trigger | User choose to edit disease in the record | | | | |
| Preconditions | - User must already logged in  - User must enter disease record page | | | | |
| Use Case Input Specification | | | | | |
| Input | type | Constraint | | | Example |
| Disease name | String | Only uppercase A-Z, lowercase a-z, and 0-9 are allow | | | Kaiwatnokv2 |
| Post conditions | System shall update the disease record into the database. | | | | |
| Normal flow | User | | System | | |
|  | 1.User input new disease name[A1:Format is not correct]  3.User click confirm button [A2:User click cancel button] | | 2. The system provide confirmation pop-up  4.system update the disease record into the database  5.System notify user “Disease record has been edited”.  6. The system display the disease record that is in the system to the user. | | |
| Alternative Flow | A1: Format is not correct  1.System notify user “incorrect format”  2.System will terminate  A2:User click cancel button  1.System will terminate | | | | |
| Exception Flow |  | | | | |
| Assumption | User must added disease record in the database | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Use Case ID | UC-31 | | | | |
| Use Case Name | Remove disease record | | | | |
| Created By | Nattapat Tamtrakool | | Last Update By | Nattapat Tamtrakool | |
| Date Created | 4/14/2018 | | Last Revision Date | 4/14/2018 | |
| Actors | Farmer | | | | |
| Description | remove the disease record from the system | | | | |
| Trigger | User choose to remove disease in the record | | | | |
| Preconditions | - User must already logged in  - User must enter disease record page | | | | |
| Use Case Input Specification | | | | | |
| Input | type | Constraint | | | Example |
|  |  |  | | |  |
| Post conditions | System shall remove the disease record from the database. | | | | |
| Normal flow | User | | System | | |
|  | 1.User select disease id that wants to remove  4.User click confirm button  [A1:User click cancel button ] | | 2. The system validate the disease record id for removing disease record  3. The system provide confirmation pop-up  5. The system remove the disease record from the database  6.System notify user “Disease record has been removed from the system”  7. The system display the list of disease record that is in the database | | |
| Alternative Flow | A1:User click cancel button  1.System will terminate | | | | |
| Exception Flow |  | | | | |
| Assumption | User must added disease record in the database | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Use Case ID | UC-32 | | | | |
| Use Case Name | View the list of disease record | | | | |
| Created By | Nattapat Tamtrakool | | Last Update By | Nattapat Tamtrakool | |
| Date Created | 4/14/2018 | | Last Revision Date | 4/14/2018 | |
| Actors | Farmer and farm owner | | | | |
| Description | View the disease record from the system which will include product name (plant), and disease name. | | | | |
| Trigger | User choose to view disease in the record | | | | |
| Preconditions | - User must already logged in  - User must enter disease record page | | | | |
| Use Case Input Specification | | | | | |
| Input | type | Constraint | | | Example |
|  |  |  | | |  |
| Post conditions | System shall display the list of disease record in the system to the user. | | | | |
| Normal flow | User | | System | | |
|  |  | | 1. The system retrieve the list of disease record from the database.  2. The system display the list of disease record in the system to the user. | | |
| Alternative Flow | - | | | | |
| Exception Flow | - | | | | |
| Assumption | User must added disease record in the database | | | | |