** MINISTRY OF EDUCATION AND TRAINING**

**FPT UNIVERSITY**

Capstone Project Document

**Laptop Reviews**

|  |  |
| --- | --- |
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| **Capstone Project code** | LRA |

-Ho Chi Minh City, ***05/2015***-

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# Definitions, Acronyms, and Abbreviations

|  |  |
| --- | --- |
| LRA | Laptop Review |

# Report No.3 Software Requirement Specification

## User Requirement Specification

### Guest Requirement

Guests is a person who doesn’t have access to the system. Guest can use some functions in the system. These are some functions guest can use:

Guests are normal users who don’t have access to the system. Guests can use almost functions but the systems functions. Here are things guests can do with our website:

* Search products and their reviews.
* View products details with all useful information.
* Ask for not available products.
* Ask for notification when asked products are available.

### Staff Requirement

Staff is a person whose work is maintaining the system. Staff will be able to do following things:

* Update dictionary manually or through importing Excel file.
* Modify parser function.
* Train the system so that it can handle some tasks such as managing duplicated products.
* Configure the system
* Force parsing data

### Admin Requirement

Admin is the one who manage the overall system. Admin can do all Staff’s function plus:

* Manage users.

### System Requirement

System is also an actor help run the website. System will handle these works:

* Auto parse the data
* Auto find synonyms and antonyms
* Save not available laptops that request by guests

### Member Requirement

Member will be able to do following things:

* Edit profile
* Change password

## System Requirement Specification

### External Interface Requirement

#### User Interface

* + The interface of the website should be clear, easy to understand that does not require much time to learn to use.
  + The error, warning messages must be clear and should not contain technical words that may annoy users.

#### Hardware Interface

* + The system will use the standard hardware and data communication resources that can be easily found on any normal computers.

#### Software Interface

* + Web browsers such as Firefox, Chromes with Resolution (1024\*768) or bigger that support JavaScript and HTML5.

#### Communication Protocol

* Website using HTTP protocol for communication between the web browser and the web server.

### System Overview Use Case

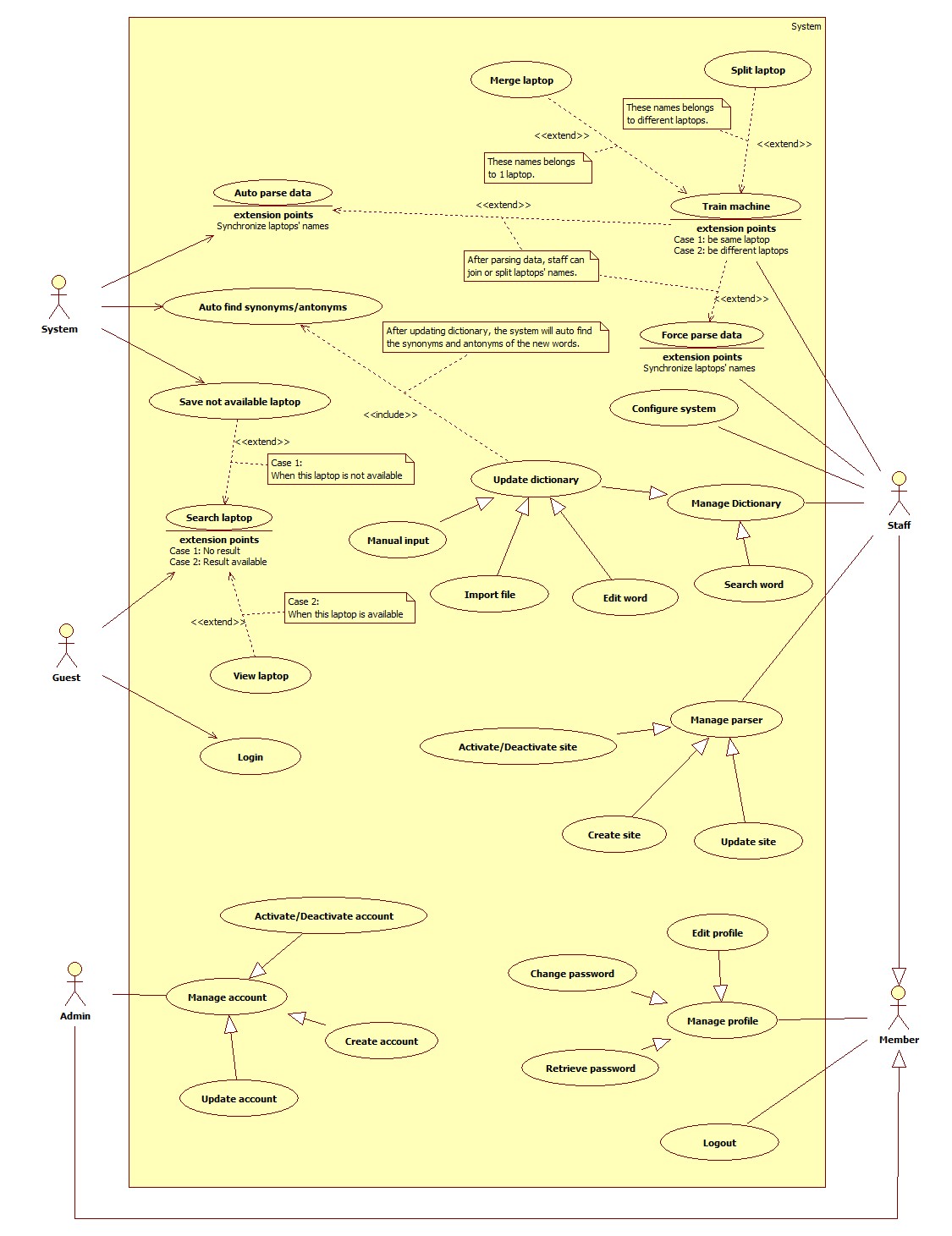


Figure 1: System Overview Use Case

### List of Use Case

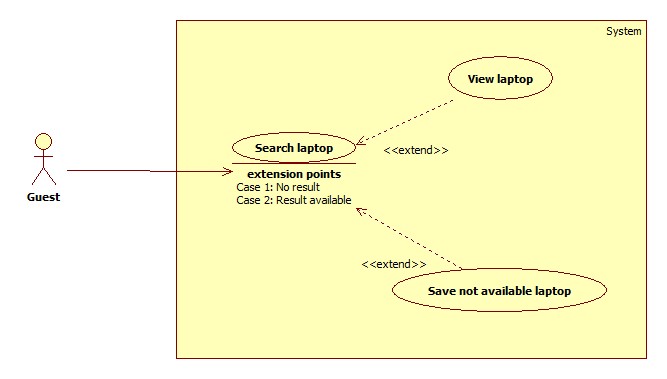
#### <System> Overview Use Case

##### <System> Auto Parse Data

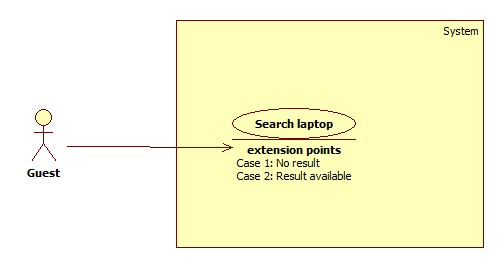
##### <System> Auto Find Synonyms/Antonyms

##### <System> Save Not Available Laptop

#### <Guest> Overview Use Case

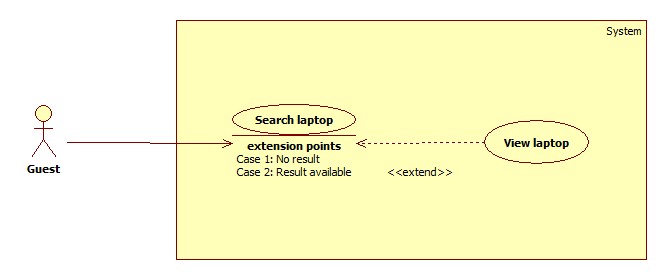


##### <Guest> Search Laptop



|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – LRA004** | | | |
| **Use Case No.** | LRA004 | **Use Case Version** | 2.0 |
| **Use Case Name** | Search Laptop | | |
| **Author** | Dinh Huu Toan | | |
| **Date** | 18/05/2015 | **Priority** | High |
| **Actor:**   * Guests   **Summary:**   * This use case allows guest to search and view laptops brief information.   **Goal:**   * A list of appropriate laptops will be shown to user.   **Triggers:**   * Guest search for laptops’ information.   **Preconditions:**   * N/A.   **Post Conditions:**   * **Success:** A list of appropriate laptops is shown along with laptops’ information: name and percentage of positive comments. * **Fail:** Show an error message.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Guest provides laptop information such as name. |  | | 2 | Guest sends Search command. | * System will show a list of appropriate laptops.[Alternative 1,2] * Each laptop will have following information: * Laptop’s image * Name * Percentage of positive comments |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | System cannot find searched laptops. | System will show a message: “This laptop is not available. Would you like to receive information about this laptop when it’s available?”, a free text input for email, and “Submit”/”No, Thanks!” command. | | 2 | Guest sends “Search” command without inputting search string | System will show a message: “Please input search string to search” |   **Exceptions:** N/A  **Relationships:** N/A  **Business Rules:**   * Guest can choose Brand when searching to maximize the result. * If guest doesn’t provide search string then system won’t do Search command. * Search process is based on the inputted text. The more accurate the search text, the more accurate the result. * Search results are ordered by matching percent. * If searched laptop is not found, system will save that laptop’s name and start finding that laptop information. System will also ask for guest email for noticing when their desired laptops are found. | | | |

##### <Guest> View Laptop



|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – LRA005** | | | |
| **Use Case No.** | LRA005 | **Use Case Version** | 2.0 |
| **Use Case Name** | View Laptop | | |
| **Author** | Dinh Huu Toan | | |
| **Date** | 18/05/2015 | **Priority** | High |
| **Actor:**   * Guests   **Summary:**   * This use case allows guests to read laptop’s full details.   **Goal:**   * Show detail information of choosing laptop.   **Triggers:**   * Guest reads laptop details includes: name, reviews, specifications and images   **Preconditions:**   * N/A.   **Post Conditions:**   * **Success:** Navigate to new page shows laptops’ information: name, reviews statistic, and images. * **Fail:** Show an error message.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Guest sends “View Detail” command. | * Show “Detail” page with following information:   + Laptop name   + Image slide show   + Specifications   + Reviews which are ordered by Positive, Negative and Neutral   + Suggested laptops |   **Alternative Scenario:** N/A  **Exceptions:** N/A  **Relationships:** Search Laptop  **Business Rules:**   * Details of laptop should be well-organized so that guest can easily read them. | | | |

##### <Guest> Login

#### <Member> Overview Use Case

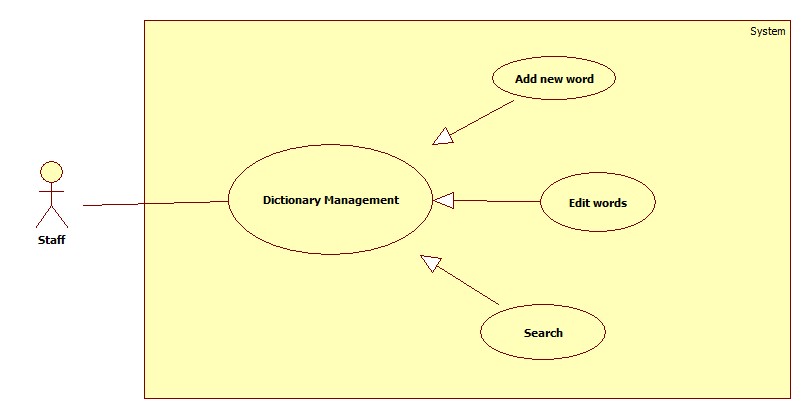
##### <Member> Edit Profile

##### <Member> Change Password

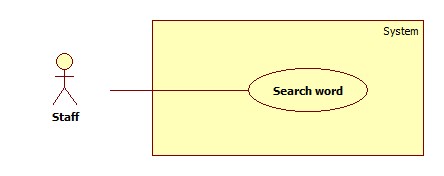
##### <Member> Retrieve Password

##### <Member> Log out

#### <Staff> Overview Use Case

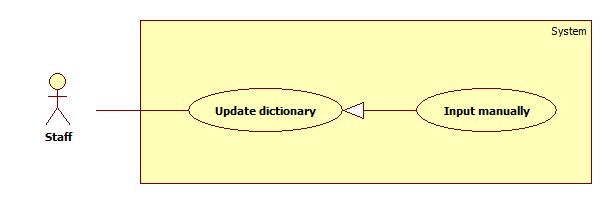


##### <Staff> Search Word



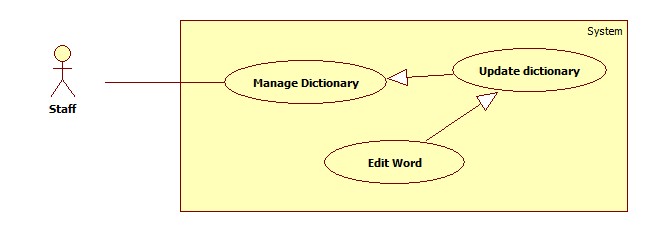
|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – LRA003** | | | |
| **Use Case No.** | LRA011 | **Use Case Version** | 2.0 |
| **Use Case Name** | Search Word | | |
| **Author** | Dinh Huu Toan | | |
| **Date** | 03/06/2015 | **Priority** | High |
| **Actor:**   * Staff   **Summary:**   * This use case helps staff to search for available word in dictionary   **Goal:**   * Show appropriate word to staff.   **Triggers:**   * Staff searches words in dictionary for editing or viewing.   **Preconditions:**   * User should login to the system under Staff role.   **Post Conditions:**   * **Success:** Show list of appropriate words with definition field when selecting each word. * **Fail:** Show an error message.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Staff sends “Dictionary Management” command to system. | Go to “Dictionary Management” page with following information:   * + Search free text input   + Add command | | 2 | Input search string into search free text input. | The list of words will be filtered and show only words that match search string with additional information such as:   * + Edit command   + List of words   + Definition of selected word   [Alternative 1] |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | System cannot find word match search string. | System will show a message: “This word is not available in the dictionary. Do you want to add it to dictionary?”, and “Add”/”No, Thanks!” command. |   **Exceptions:** N/A  **Relationships:** Dictionary Management  **Business Rules:**   * The search process is activated only when there are at least 3 characters inputted. After guest inputting at least 3 characters, the list will be filtered at the same time the next character is inputted. * The list is sorted by alphabetical order. | | | |

##### <Staff> Input Manually



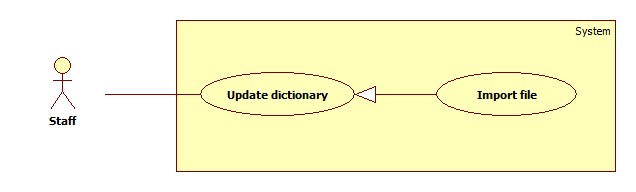
|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – LRA004** | | | |
| **Use Case No.** | LRA012 | **Use Case Version** | 2.0 |
| **Use Case Name** | Input Manually | | |
| **Author** | Dinh Huu Toan | | |
| **Date** | 03/06/2015 | **Priority** | High |
| **Actor:**   * Staff   **Summary:**   * This use case help staff to add new word to dictionary   **Goal:**   * New word is added to dictionary   **Triggers:**   * Staff adds word to dictionary.   **Preconditions:**   * User should login to the system under Staff role.   **Post Conditions:**   * **Success:** New word is added to dictionary. * **Fail:** Show an error message.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Staff sends “Dictionary Management” command to system. | Show “Dictionary Management” page with following information:   * + Search free text input   + Add command | | 2 | Staff sends “Add” command. | System will ask for new world information:   * Word: input the characters of that word * Type: Choose whether this word is Pros, Cons or Neutral * Class: Choose whether the word is Adjective, Noun, Verb and Order * Synonyms: Input word’s synonyms. Each synonym is separated by “,” and checked spelling. * Antonyms: Input word’s antonyms. Each antonyms is separated by “,” and checked spelling. * “Add” command | | 3 | Staff fills in all fields and sends “Add” command | New word is added to the dictionary. Show success message [Alternative 2] |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Added synonyms or antonyms’ spelling is not correct | System will show a message: “Word’s synonyms/antonyms are not correct. Please check again” | | 2 | Added word is already in dictionary | System will show a message: “This word is already in the dictionary. Do you want to edit it?”, and “Edit”/”No, Thanks!” command |   **Exceptions:** N/A  **Relationships:** Dictionary Management  **Business Rules:**   * After successfully add new word, system will show that word definition field for staff to check again. | | | |

##### <Staff> Edit Word



|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – LRA005** | | | |
| **Use Case No.** | LRA005 | **Use Case Version** | 2.0 |
| **Use Case Name** | Edit word | | |
| **Author** | Dinh Huu Toan | | |
| **Date** | 03/06/2015 | **Priority** | High |
| **Actor:**   * Staff   **Summary:**   * This use case help staff to edit word in dictionary.   **Goal:**   * Selected word is edited.   **Triggers:**   * Staff want to edit word in dictionary. * Click “Dictionary”, then “Dictionary Management”. Staff will search for the word they want to edit and then click “Edit”   **Preconditions:**   * User should login to the system under Staff role. * That word should be available in the dictionary.   **Post Conditions:**   * **Success:** Edited information will be saved. * **Fail:** Show an error message.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Staff click “Dictionary”, then “Dictionary Management” | * Navigate to “Dictionary Management” page with following information:   + Search textbox   + Add button   + Edit button   + List of words   + Definition of selected word include: definition, synonyms, antonyms, type of word (Pros/Cons/Neural) | | 2 | Search for the word they want to edit | * The list of words will be filtered and show only words that match search string. [Alternative 1] | | 3 | Staff click “Edit” | * A pop-up appear with the following fields: * Word: characters of that word. Staff can edit this word * Type: Staff can choose new type of the word * Synonyms: show all the synonyms of the words. Staff can add, edit or delete these synonyms. * Antonyms: show all the antonyms of the words. Staff can add, edit or delete these antonyms. * Edit button |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | System cannot find word match search string | System will show a pop-up. In that pop-up include: a message: “This word is not available in the dictionary. Do you want to add it to dictionary?”, and “Add”/”No, Thanks!” buttons |   **Exceptions:** N/A  **Relationships:** Search Dictionary  **Business Rules:**   * After successfully edit word, system will show that word definition field for staff to check again. | | | |

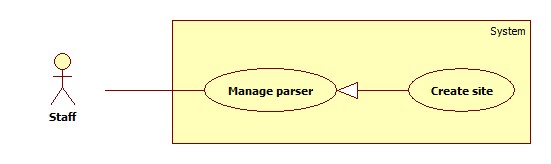
##### <Staff> Import File



|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – LRA014** | | | |
| **Use Case No.** | **LRA014** | **Use Case Version** | 1.0 |
| **Use Case Name** | Import File | | |
| **Author** | Nguyen Manh Khuong | | |
| **Date** | 3/06/2015 | **Priority** | High |
| **Actor:**   * Staff.   **Summary:**   * This use case allows staff to import new words into the system by using an excel file.   **Goal:**   * New words will be inserted into the system data.   **Triggers:**   * Click “Manage Dictionary” then “Import Excel File”.   **Preconditions:**   * User must log in the system with Staff role.   **Post Conditions:**   * **Success:** New words will be saved to system. * **Fail:** Show an error message.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Staff clicks “Import Excel File”. | Show “Import Excel File” page which contains:   * “Choose file”: command. * “Submit”: command. | | 2 | Send “Choose file” command. | Show “Open” dialog box. | | 3 | Select a file and click “Open”. | Show “Import Excel File” page which contains that filename next to “Choose file” command. | | 4 | Send “Submit” command.  [Alternative 1],  [Alternative 2],  [Alternative 3] | Read excel file, filter and add words are contained in file to a list.  Show list of new words in table with 3 columns:   * + “Select”: allow to choose or not.   + “Word”: free text input.   + “Type”: a list of values for staff to choose, include: Pros, Cons, Neutral or Negative.   + “Save to Database”: command. | | 5 | Staff selects which word will be save to the system and sends “Save to Database” command. | Save selected word to database. Find synonyms and antonyms of each word.  [Exception 2] |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | No file is chosen | Show message: “Please upload a file!” | | 2 | Extension of the chosen file is not supported. | Show message: “Please upload an Excel 2007 (or later) file! (.xlsx)” | | 3 | Excel file is incorrect structure. | Show message: “Excel file is not valid format!” |   **Exceptions:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Connection to database error. | Show error message: “Cannot save to database! Please try again later.” |   **Relationships:** Dictionary Management  **Business Rules:**   * Words already existed in database will be removed from list. * Misspelled words will be indicated by red color in text input field. * Correct spelling words will be unchangeable and checked “Selected” value. * File extension is Microsoft Office Excel 2007 (or later). (.xlsx) * File must have at least 1 row data. * File structure must be formatted as below: * Valid file format example: * Invalid file format example: | | | |

Table3: < Staff > Import File

##### <Staff> Create Site



|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – LRA015** | | | |
| **Use Case No.** | LRA015 | **Use Case Version** | 1.0 |
| **Use Case Name** | Create Site | | |
| **Author** | Vo Thi Minh Chau | | |
| **Date** | 02/06/2015 | **Priority** | High |
| **Actor:**   * Staff.   **Summary:**   * This use case allows staff to create new site for parser.   **Goal:**   * New site will be created.   **Triggers:**   * Staff clicks “Parser” then clicks “Create new site”.   **Preconditions:**   * User has logged in with Staff role.   **Post Conditions:**   * **Success**: New site is added to the system. Show success message. * **Fail:** Show error message.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | Sstem Response | | 1 | Staff clicks “Parser”. | Show sub menu which includes:   * Create New Site: submenu. * Parser Management: submenu. | | 2 | Staff clicks “Create New Site” sub menu. | Show “Create New Site” page which includes:   * Url of site: free text input. * View: command | | 3 | Staff enters url and sends “View” commands. | Show “Create New Site” page which includes:   * Url of product: free text input. * View: button. * Wizard to create site. * Staff’s selected page. * “Steps of creating site” panel includes a wizard to create a parser with 6 steps and the 1st step is selected. * “Xpath of product’s name” - free text input: will show the xpath of selected element. * “Next” - command: goes to next step.   [Alternative 1] | | 4 | At steps 1: “Product’s name”, staff clicks the mouse at the area which include product’s name in “Preview” panel | “Xpath of product’s name” - free text input: will be filled with the xpath string, required. | | 5 | Staff clicks “Next” button. | Show “Create New Site” page which includes:   * Url of product: displays entered value. * View: button. * Wizard to create site. * “Preview” panel: shows staff’s selected page. * “Step of creating site” panel includes a wizard to create a parser with 6 steps and the 2nd step is selected. * “Xpath of brand” textbox: will show the xpath of selected element. * “Next” button: goes to next step. * “Back” button: goes to previous step.   [Alternative 2] | | 6 | At steps 2: “Product’s brand”, staff clicks the mouse at the area which include product’s brand in “Preview” panel. | “Xpath of brand” textbox will be filled with the xpath string, required. | | 7 | Staff clicks “Next” button. | Show “Create New Site” page which includes:   * Url of product: displays entered value. * View: button. * Wizard to create site. * “Preview” panel: shows staff’s selected page. * “Step of creating site” panel includes a wizard to create a parser with 6 steps and the 3rd step is selected. * “Xpath of image” textbox: will show the xpath of selected element. * “Next” button: goes to next step. * “Back” button: goes to previous step.   [Alternative 3] | | 8 | At step 3: “Image”, staff clicks the mouse at the area which include image information in “Preview” panel. | “Xpath of image” textbox will be filled with the xpath string. | | 9 | Staff clicks “Next” button. | Show “Create New Site” page which includes:   * Url of product: displays entered value. * View: button. * Wizard to create site. * “Preview” panel: shows staff’s selected page. * “Step of creating site” panel includes a wizard to create a parser with 6 steps and the 4th step is selected. * “Xpath of description” textbox: will show the xpath of selected element. * “Next” button: goes to next step. * “Back” button: goes to previous step. | | 10 | At step 4:”Description”, staff click the mouse at the area which includes product’s description in “Preview” panel. | “Xpath of description” textbox will be filled with the xpath string, required. | | 11 | Staff clicks “Next” button. | Show “Create New Site” page which includes:   * Url of product: displays entered value. * View: button. * Wizard to create site. * “Preview” panel: shows staff’s selected page. * “Step of creating site” panel includes a wizard to create a parser with 6 steps and the 5th step is selected. * “Xpath of commented date” textbox: will show the xpath of selected element. * “Next” button: goes to next step. * “Back” button: goes to previous step.   [Alternative 4] | | 12 | At step 5:”Commented date”, staff click the mouse at the area which include commented date in “Preview” panel. | “Xpath of commented date” textbox will be filled with the xpath string, required. | | 13 | Staff clicks “Next” button. | Show “Create New Site” page which includes:   * Url of product: displays entered value. * View: button. * Wizard to create site. * “Preview” panel: shows staff’s selected page. * “Step of creating site” panel includes a wizard to create a parser with 6 steps and the 6th step is selected. * “Xpath of comment’s content” textbox: will show the xpath of selected element. * “Next” button: goes to next step. * “Back” button: goes to previous step.   [Alternative 5] | | 14 | At step 6: “Comment’s content”, staff click the mouse at the area which include comment’s content in “Preview” panel. | “Xpath of comment’s content” textbox will be filled with the xpath string, required. | | 15 | Staff clicks “Next” button. | Show “Create New Site” page which includes:   * Url of product: displays entered value. * View: button. * Wizard to create site. * “Preview” panel: shows staff’s selected page. * “Step of creating site” panel includes a wizard to create a parser with 6 steps and the last step is selected. * The message: “Are you sure with your selected items? You can click “Preview” button to see the information of product which will be parsed.” * “Finish” button: finishes the process of creating new site. * “Back” button: goes to previous step.   [Alternative 6] | | 16 | Staff clicks “Finish” button. | Send request to the parsed link.  Fetch data from the response based on the inputted XPaths.  Validate data.  If data is valid, insert to database.  [Exception 1]  [Alternative 7] |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | “Url of product” is blank. | Show message error: “Please input url of product which will be parsed”. | | 2 | “Xpath of product’s name” is blank. | Show message error: “Please select name of product which will be parsed”. | | 3 | “Xpath of brand” is blank. | Show message error: “Please select brand of product which will be parsed”. | | 4 | “Xpath of description” is blank. | Show message error: “Please select description of product which will be parsed”. | | 5 | “Xpath of commented date” is blank. | Show message error: “Please select name of product which will be parsed”. | | 6 | “Xpath of comment’s content” is blank. | Show message error: “Please select name of product which will be parsed”. | | 7 | At the last step, staff clicks “Preview” | A popup with these elements will be shown:  - Title “Preview Product’s Information”.  - The name, brand and description of this products.  - A panel with all images of this product.  - All comments with commented date of this product.  - “Close” button. |   **Exceptions:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Data is not valid. | Do not insert to database. |   **Relationships:** N/A  **Business Rules:**   * The data display structure of that page should be for a specified product. | | | |

##### <Staff> Update Site

##### <Staff> Activate/Deactivate Site

##### <Staff> Configure System

##### <Staff> Force Parse Data

##### <Staff> Merge Laptop

##### <Staff> Split Laptop

#### <Admin> Overview Use Case

##### <Admin> Create Account

##### <Admin> Update Account

##### <Admin> Activate/Deactivate Account

## Software System Attribute

### Usability

#### Graphic User Interface

* All the texts, labels and should be written in Vietnamese.

#### Usability

* Admin, staff should need less than one week of training to be productive with the system.
* Guest and member can use the system easily without training.

#### Installation

* The system must be easy to deploy. Customer can deploy successfully and learn to configure, maintain the system within one day of training.
* The mobile app must be easy to install. Compatible with almost Android Phone.
* The attached manual guide must be clear. User can read and do themselves without developer’s help.

### Reliability

* The system can analyze almost comments, classify them base on dictionary with above 80% accuracy.

### Availability

* N/A

### Security

* Privacy: Each role of user has a specific permission to interact with system.
* System always checks authorization and authenticated before doing anything.
* Only admin can grant permission to staff.

### Maintainability

* Dictionary data is easy to change and update.

### Portability

* The web application can be used anywhere, where has Internet Connection, by Smart phones or PC.

### Performance

* Server responses in 3 seconds for normal progresses, in 10 seconds for complex progresses.
* The page resources are lightly to reduce loading time.

## Conceptual Diagram

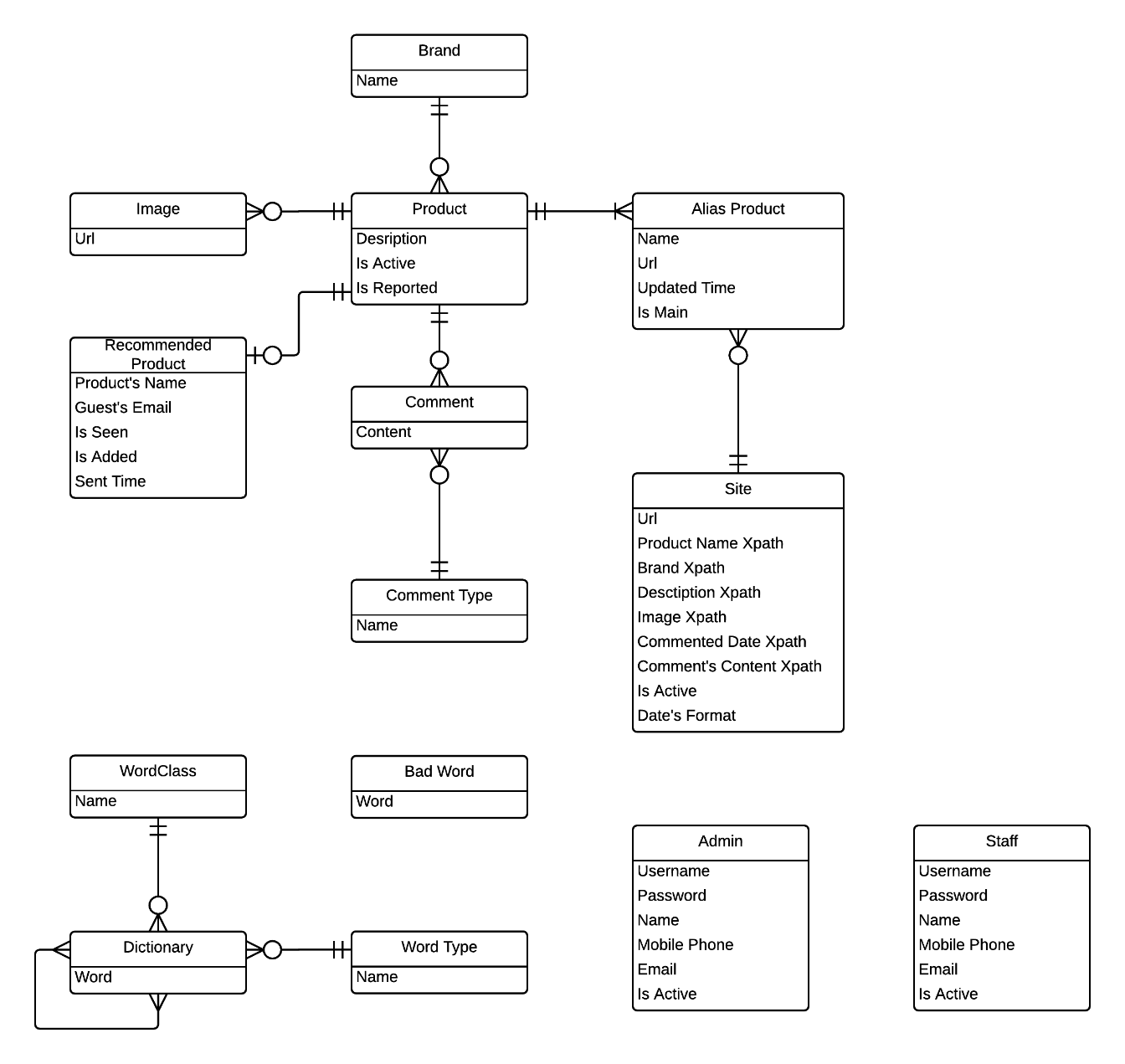


Figure 2: Conceptual Diagram

Data Dictionary

|  |  |
| --- | --- |
| **Entity Data dictionary: describe content of all entities** | |
| **Entity Name** | **Description** |
| Image | Describe all image link that product is included. |
| Product | Describe all products in the system. |
| Alias Product | Describe all alias name of product in the system. |
| RecommendProduct | Describe the product that user recommend for system. |
| Brand | Describe all brands the products are belonged. |
| Comment | Describe all comments of products. |
| Comment Type | Describe all types of comments. |
| Site | Describe all site parse data. |
| Dictionary | Describe all words |
| Word Type | Describe all types of words in Dictionary. |
| WordClass | Describe all classes of words in Dictionary |
| Bad Word | Describe all bad words |
| Staff | Describe all information of staff. |
| Admin | Describe all information of admin. |

Table 1: Entity Data Dictionary

|  |  |  |
| --- | --- | --- |
| **Entity name** | **Attributes** | **Description** |
| Image | Url | Describe all image link that product is included. |
| Product | Description | Describe all descriptions of all products |
| Is Active | Describe whether products are active or not |
| Is Reported | Describe whether products are reported or not |
| Alias Product | Name | Describe names of alias products |
| Url | Describe links to websites contain alias products |
| Updated Time | Describe time alias products are updated |
| Is Main | Describe whether alias products are main products or not |
| Recommend Product | Product’s Name | Describe names of recommended products |
| Guest’s Email | Describe emails of guests who suggest the products |
| Is Seen | Describe whether staff have seen the guests’ requests or not |
| Is Added | Describe whether staff have collected the recommend products information or not |
| Sent Time | Describe the time the guests’ requests were sent |
| Brand | Name | Describe names of brands |
| Comment | Content | Describe contents of comments |
| Comment Date | Describe date of the comments |
| Comment Type | Name | Describe name of types of comments. |
| Site | Url | Describe sites’ url information |
| Product Name Xpath | Describe Xpath that define products names in the websites |
| Brand Xpath | Describe Xpath that define products brands in the websites |
| Description Xpath | Describe Xpath that define products descriptions in the websites |
| Image Xpath | Describe Xpath that define products images in the websites |
| Commented Date Xpath | Describe Xpath that define products commented date in the website |
| Comment’s Content Xpath | Describe Xpath that define products comments content in the website |
| Is Active | Describe whether sites are active or not |
| Date’s Format | Describe date’s format in sites. |
| Dictionary | Word | Describe words of dictionary |
| Word Type | Name | Describe names of word type. |
| Word Class | Name | Describe names of word class. |
| Bad Word | Word | Describe bad words. |
| Staff | Username | Describe username information |
| Password | Describe password information |
| Name | Describe Staff names |
| Mobile Phone | Describe Staff mobile phone numbers |
| Email | Describe Staff Emails |
| Is Active | Describe whether Staff is active or not |
| Admin | Username | Describe username information |
| Password | Describe password information |
| Name | Describe Admin names |
| Mobile Phone | Describe Admin mobile phone numbers |
| Email | Describe Admin Emails |
| Is Active | Describe whether Admin is active or not |

Table 2: Entities' Attributes Data Dictionary