1 Introduction

This document specifies the system requirements and general information of Sweet Home 3D.

1.1 Purpose

The purpose of the document is to give detailed specification of software requirements for Sweet Home 3D including the relevant test cases. The system should assist users to design a plan for home. The intended audience for this document is developer, system analyst, system designer, test engineer and project manager. This specification describes the detailed requirements for each main requirements.

1.2 Scope

This document applies only to the relevant people in this project.

This specification is not concerned with any actual system design and implementation issues.

1.3 Definition, Acronyms, and Abbreviations

SRS - Software Requirements Specifications

IEEE - Institute of Electrical and Electronic Engineering

C/S - Client / Server

B/S - Browser / Server

1.4 Reference

[1] IEEE 830-1993: IEEE Recommended Practice for Software Requirements Specifications "IEEE Standards Collection, IEEE 1997"

1.5 Overview

In the following sections of this specification, User, Communication interface and Functional requirements and the relevant test cases will be presented. In section 2, the general product and its feature will be introduced. In section 3, all detailed requirements will be specified and grouped.

2.0 GENERAL DESCRIPTION

2.1 Product Perspective

This system allows interior designer to design and arrange the home in intuitive way. The system will display the whole view of home design plan including the 2D,3D view and it also will help user with not much knowledge of interior design to arrange the interior view of home with wide range of pre-defined design model. The system provides information about the interior design model.

2.2 Product Functions

The system provides the following functions:

Place items in the home and give real-time modelling 2D, 3D view.

Include a storage database for item model.

Export plans to video.

2.3 User Characteristic

User's computer Knowledge is not required, but at least could handle a mouse to manipulate the on-screen item. User with interior design knowledge could help manipulate the system.

2.4 General Constraints

This system develops under J2se 1.6 with C/S and B/S architecture, and java3d 1.6.

3 Specific Requirements

3.1 External Interface Requirements

3.1.1 User Interfaces

3.1.1.1 There should be a well-structured window for manipulating different functions.

3.1.1.1.1 Divide the window into four resizable panes, with a tool bar at its top.

3.1.1.1.1.1 the left-top pane is the furniture catalog, which contents should be organized by categories.

3.1.1.1.1.2 the left-bottom pane is the home furniture catalog, that lists the furniture contained in a home plan and displays attributes of each furniture.

3.1.1.1.1.3 the right-top pane is the home plan section, which displays the plan content upon a grid and surrounded by rules.

3.1.1.1.1.4 the right-bottom pane is the home 3D view, which should allow users view their home either from the top, or from a virtual visitor point of view.

3.1.1.2 A wizard for guiding users to add new models

3.1.1.2.1 Load a model directly by drag and drop, or manually select in the file dialog.

3.1.1.2.2 Able to orientate the model to see the front view

3.1.1.2.3 Able to change the name, size, the elevation, the color

3.1.1.2.4 Able to decide the model is movable, a door, a window or a staircase.

3.1.1.2.5 Able to give a icon of the model

3.1.2 Communication Interface

3.1.2.1 HttpUrlConnection support by Standard JDK 1.6

3.2 Functional Requirement

3.2.1 The furniture should have a build in search engine

3.2.1.1 A search engine has a search field for searching, and also able to filter the furniture lists by catalog.

3.2.1.2 Input the search keywords or choose a catalog.

3.2.1.3 Process the whole in-memory furniture, match the catalog name of furniture if choose a different catalog, else match the keywords with furniture name.

3.2.1.4 display the search results in the pane.

3.2.2 Create image of 3D view in PNG format

3.2.2.1 Able to choose the size of image.

3.2.2.2 Able to choose the proportion of image.

3.2.2.3 Able to choose the quality of image.

3.2.2.4 Able to choose the illumination of image by time of day or adding lights.

3.3 Security requirements

3.2.1 To identify the user in online system

3.2.1.1 Checking the user name whether it exits

3.2.1.2 Able to sign in as a new user and log out

3.2.1.3 Able to sign in as a old user ,log out and able to retrieve the user's history and stored information.

4 . Use case

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| Use case | Interactions between 4 panes in the main window |
| Description | Content Display currently in the each of 4 panes |
| Precondition | Main window successfully pops up and some furniture models in the catalog |
| Success | The attributes of selected furniture display currently, they place in the plan and 3D view |
| Failed | Attributes of selected furniture are missing |
| Actors | A User |
| Trigger | After the main window pops up |
| Flow | 1. User start the application.  2. Select some models in the furniture catalog and drag and drop them into the plan pane.  3. User should see the furniture draw simultaneously in the furniture list, in the plan and in the 3D view.  4. Add more attribute columns in the furniture list pane. |

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| Use case | Add a furniture model |
| Description | User import a new model into the software |
| Precondition | Main window successfully pops up and user should have model file, that is in OBJ, DAE or 3DS format. |
| Success | Successfully add a new model into the furniture catalog |
| Failed | Furniture catalog does not display the added model |
| Actors | A User |
| Trigger | Click the Import furniture tab or drag and drop a model file into main window |
| Flow | 1. Click the Import furniture tab.  2. Choose a model file in the file dialog, click continue.  3. Orientate the model with arrow buttons to see the front face.  4. change the name and choose the type of furniture as movable.  5. turn the model to get a view for defining the model icon. |

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| Use case | Save a home plan in online version of the software |
| Description | Use the online version base on the google chrome browser, save a plan to the server |
| Precondition | User register for sweet home 3d service |
| Success | successfully save a home plan created by user |
| Failed | can not read a saved plan on the server |
| Actors | A User |
| Trigger | After the main window pops up |
| Flow | 1. User open chrome. 2. place some furniture in the plan. 3. click the save home plan button on the top menu bar. 4. enter the name of plan in the promoted window. 5. a progress notification window display 6. click the open plan button on the top menu bar. 7. the pop up window displays previous saved home plan with its name on each line. |

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| Use case | Search a furniture in the furniture catalog pane |
| Description | User inputs some keywords in the search field, find the specific furniture |
| Precondition | Main window successfully pops up and some furniture exist in the furniture catalog |
| Success | Successfully find the desired furniture |
| Failed | Search results does not display the furniture that should be some exist |
| Actors | A User |
| Trigger | Click preference and change display mode of furniture catalog pane |
| Flow | 1. Input keywords in the search field.  2. Display the furniture of name matching the keywords. |

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| Use case | Create photos of the 3D view of home plan |
| Description | User create photos with different quality, size, proportion and illumination |
| Precondition | Main window successfully pops up and a home plan created |
| Success | Successfully export to PNG image files |
| Failed | can not export to PNG image files or fail to generate image |
| Actors | A User |
| Trigger | Click on the create photo tool on the top menu bar |
| Flow | 1. enter pixel for width and height of a desired size. 2. slide the proportion slider to apply a desired proportion. 3. slide the quality slider to choose a quality level of a image file. 4. enter the time to change illumination of the image file. 5. click the create button to generate a image in the create photo window. 6. click the save button. |

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| Use case | Able to sign in online |
| Description | old user can sign in online in order to manage the user database |
| Precondition | Registering window successfully pops up and let user insert username and password |
| Success | Successfully sign in |
| Failed | can not retrieve the user's information (3D image, floorplan.. ) when old user log in. |
| Actors | A User |
| Trigger | Click on the registering button |
| Flow | 1. insert "username" and "password" on the registering window 2. click the " sign in " button 3. display the stored information of the user |

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| Use case | Able to sign up online |
| Description | New user can sign up for a new account |
| Precondition | Registering window successfully pops up and let user insert username and password |
| Success | Successfully sign in or sign up |
| Failed | can not create a new account for a new user ;  can not retrieve the user's information (3D image, floorplan.. ) when old user log in. |
| Actors | A User |
| Trigger | Click on the registering button |
| Flow | 1. click the " sign up " button on the registering window 2. insert "username " and "password"   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   1. insert "username" and "password" on the registering window 2. click the " sign in " button 3. display the stored information of the user |