

COMP-SCI 5560 - Knowledge Discovery And Management

Project Preproposal

Esave Project

Under Guidance
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By

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Project Preproposal

- **Project Goal and Objectives**

- **Motivation**

The main intension of our project is to motivate people towards the utilization of energy resources in the day to day life. In the household activities, as the utilization of energy resources increasing with the availability of new advanced equipment there is a need to provide information for the optimal consumption of energy resources.

- **Significance**

The improvement of energy efficient management tool to regulate the energy levels in the day to day life is important. The advantage of our project is to make an interactive environment where users can select their own appliances and visualize the amount of usage and also can have financial management.

The advantage of using our project is to control the energy consumption of resources and also saving the earth from shortage of resources. In this project the user can have real time interactive environment where several virtual people can perform several actions such as controlling the appliances , cooking, playing etc.

- **Objectives**

The main objective of our project is to design a intelligent house where user can have a real world experience by performing certain actions like purchasing appliances ,managing them by viewing the energy consumption level and also providing them with the several smart selection options like character selection based on that performing certain predefined actions. The final outcome of our project is to help the users in selecting their own appliances provided the real time utilization of energy values and also providing the control to users to manage them.

System Features

1. **Character Selection Menu**

The User can select the character and enters into the 3d environment based upon the character selection like Child /Parent etc the behavior of

the person changes. If is the child, then playing with the ball .if it is parent then doing some exercises or cooking etc.

2. Visualization of Appliance energy levels

When the user selects the appliance then the energy levels and also the history of usage are reviewed. The progress bar is displayed with percentage of usage.

3. Appliance Selection and Relocation(Inventory management)

The user can select the several appliances and replace their location and also can get total consumption level with the new appliance.

4. Intelligent power management system

There is a power station where every appliance power details are maintained ,power station also maintains the additional information like the selected appliances total consumption with cost of appliance and cost of usage.

5. Solar panel Deployment

The Solar panel is deployed on the top of the house which connects to power system of the house. The flow of current from solar panel to storage is presented

6. Creating Day/night time activities

In this project the user is presented with simulated day/night times ,snowy /rainy etc .

7. House hold activities

The several house hold activities like playing, cooking, watching tv, playing multiplayer games are presented.

Related Work

Research work “**Resource efficiency: Visualizing energy consumption to optimize tool design** “ done by Schuh, G. Lab. for Machine Tools & Production Eng., RWTH Aachen Univ., Aachen, Germany

Backup project

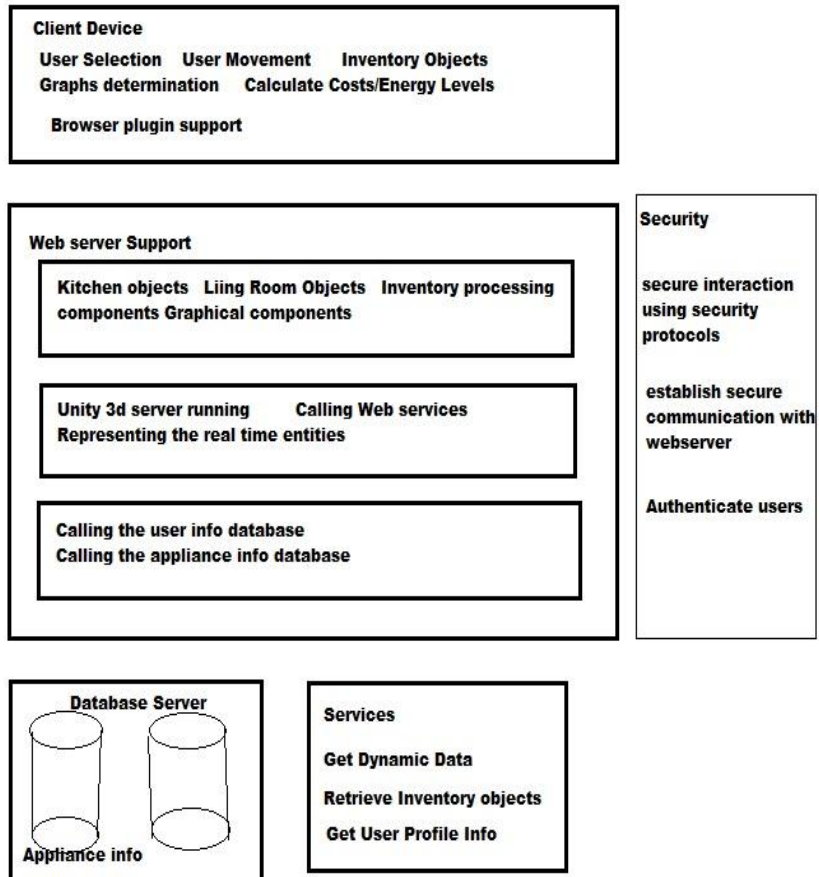
Design a smart scheduler which schedules the timings based upon the flexibility of available timings. The system takes the input from the user like available timings ,busy timings ,current events, new events and adjustment of these timings and reschedule the events because of the unexpected events. The ontology is designed in such a way to schedule every unexpected event in a user friendly timings.

General Plan of Work

Proposed system

- Domain analysis:
 - Draw an architecture diagram

Architectural Diagram

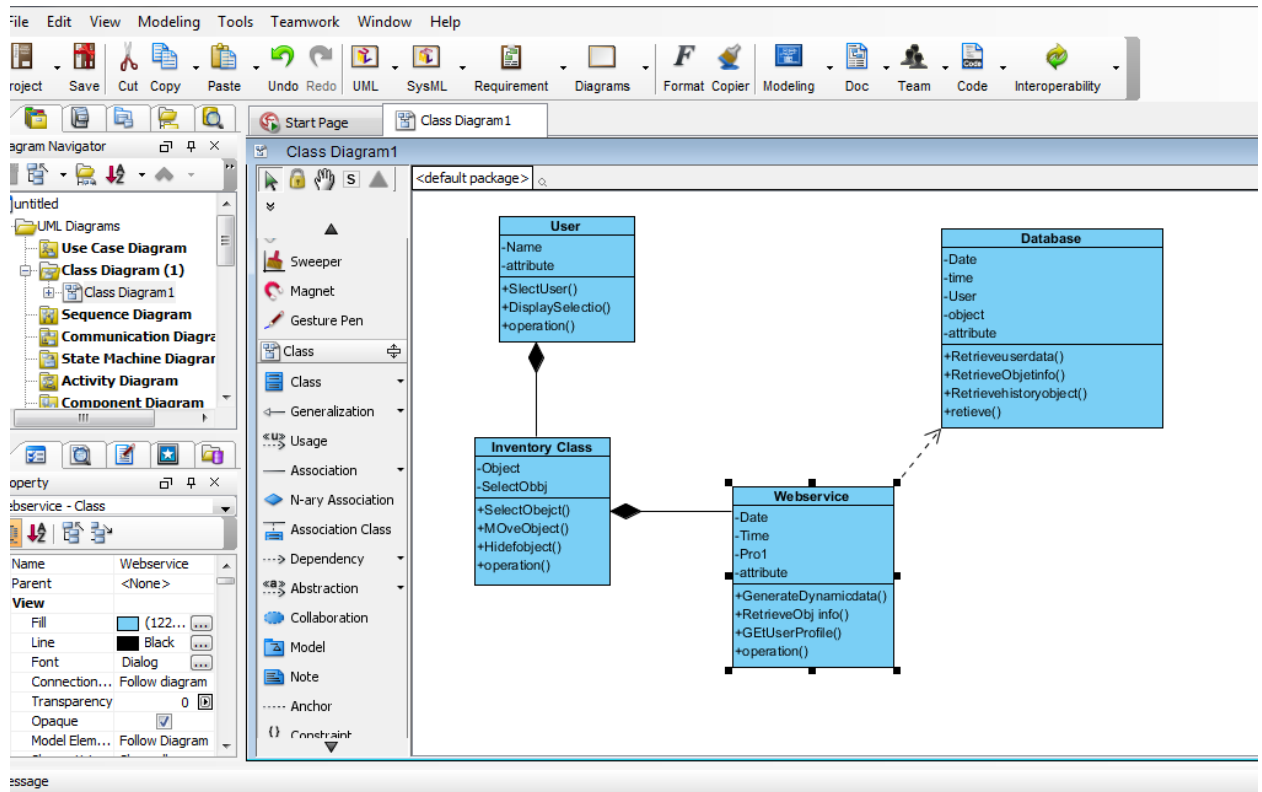


Provide a complete Scenario and Use case Specification
Use Case Diagram for Energy Consumption Levels

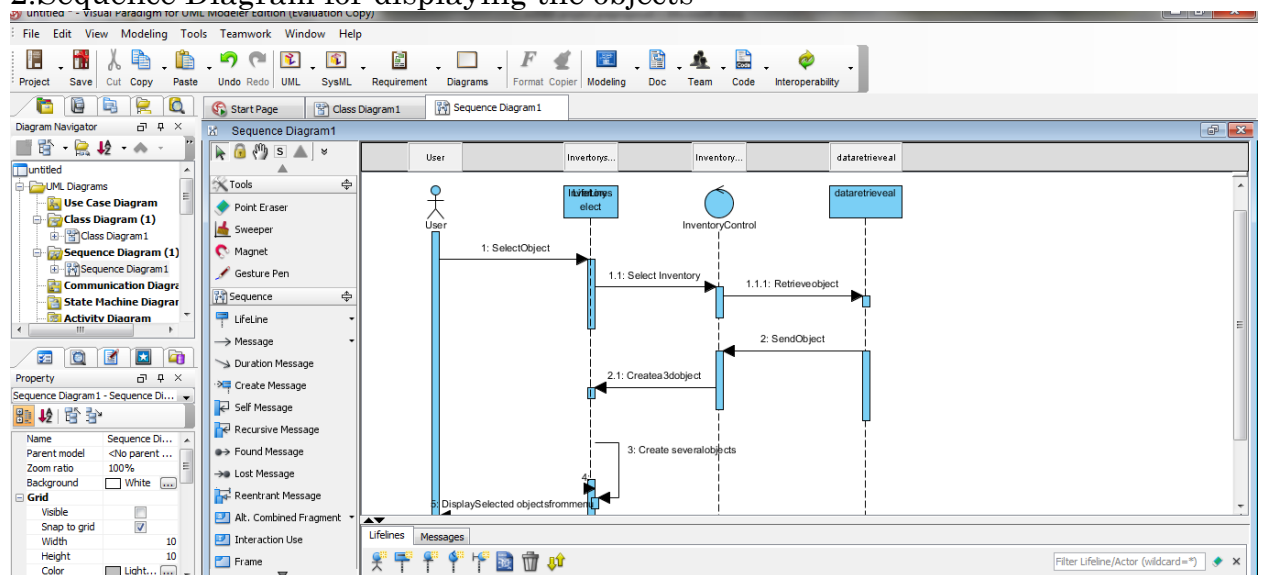
USE CASE #	< Determine Energy Consumption >	
Goal in Context	<Calculate the cost of appliances>	
Scope & Level	<Designing the 3d objects in unity 3d Application with interactive environment> <Degree of difficulty is high as the unity 3d support the several languages ,one should have the object scripting knowledge>	
Preconditions	<The user browser should support the unity 3d plugin >	
Success End Condition	<The user can determine the cost of energy consumption in the unity 3d application>	
Failed End Condition	<the user needs to finds his own cost by calculating the individual appliance cost>	
Primary, Secondary Actors	<user should select the character and perform the duties >. <main user calculates the cost with the help of secondary users>	
Trigger	<the user selection triggers the menu selection /graphs generation>	
DESCRIPTION	Step	Action
	1	User enters into the kitchen area and selects the appliance
	2	The appliance displays the dynamic graph for appliance
	3	The user selects the calculate cost option
	4	The server requests the data from database
	5	The web service determines the values and sends the data
	6	The unity interface displays the data.

Provide Class/Sequence diagrams for each of the use cases

1. Class Diagram for displaying the objects



2. Sequence Diagram for displaying the objects



- Sketch the ontologies as per the above analysis

Class:User

User selects the objects.

Class:inventory:

Create objects from menu by retrieving from the database.

Class:inventoryControl

Create the inventory control to move,swap or to remove objects in the interface.

Class:DataRetrieval

Request the data store for the object and sends it to menu selection .

- Description of services (name, input/output parameters and short description, also indicate if these are existing or new services,)

Name	Dynamic Data Generation
	<p>Input :</p> <p> Selects either hourly based ,daily based ,weekly based or monthly based .</p> <p>Output:</p> <p> Represents the graphs in any of the above selection.</p> <p>Description:</p> <p> The consumption of energy levels per time is represented in the graphs by the hourly time ,monthly time ,weekly time etc</p>
Name	Determine Cost
	<p>Input:</p> <p> Selects appliance to find cost.</p> <p>Output:</p> <p> The graph outputs the cost of energy consumption.</p> <p>Description:</p> <p> When a user selects the appliance to determine the cost of energy levels the appliance requests the web server to determine the energy consumption based on past month and compare to it other appliance.</p>
Name	Comfort level
	<p>Input:</p> <p> The user automatically enters into the living room.</p> <p>Output:</p> <p> The cooling system adjusts the temperature to the users comfort.</p> <p>Description:</p> <p> Based on past history of user comfort level the ontology automatically detects the comfort level of user when he/she enters into the living room and adjusts the temperature.</p>

Expected outcomes and Project success criteria

Design of mobile phone and Web based interfaces (GUI)

Design on Mobile devices

The android app has been generated to the user.so the several operation can be performed through the mobile device.

Design on Web based interface(GUI)

The web based interface has been deployed on the html browser to have the 3d interface interaction.

Technological and Architectural requirements

Requirements:

1. Support of 3d plugins in the web browser.
2. The web browser should support the html5 scripting.
3. In windows the support of unity-3d .dll files to run the application without the web browser.
4. Operating system :windows,Mac(X-code)
5. RAM:512MB ,Graphic card support.

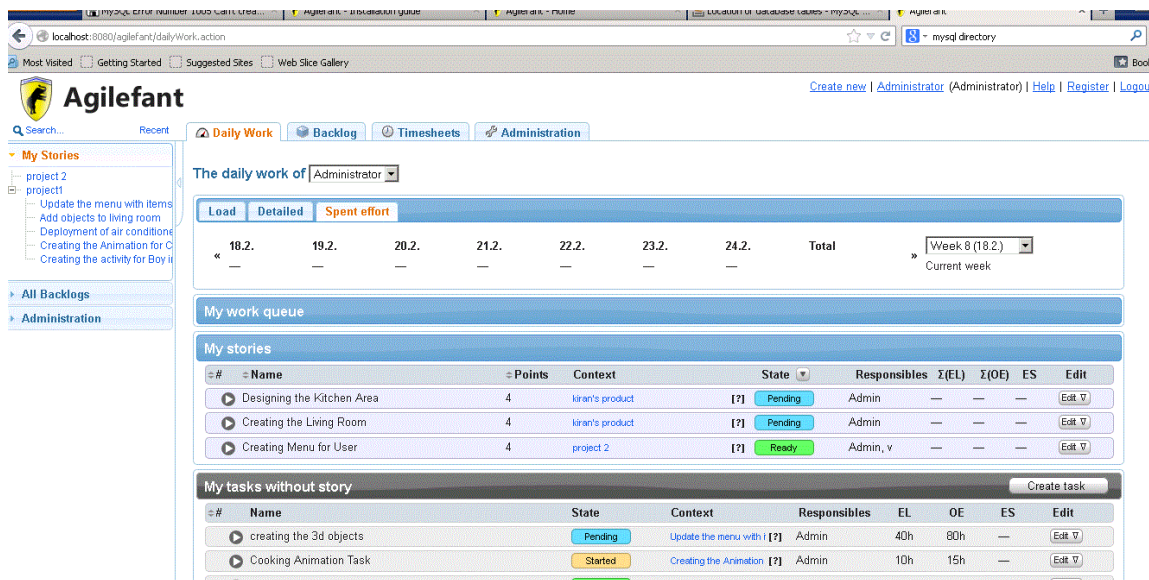
Project Timelines:

1. Internet Access
 - Project Website (URL) – Create an project website on IBM Cloud Site URL For My Project which is running the application:

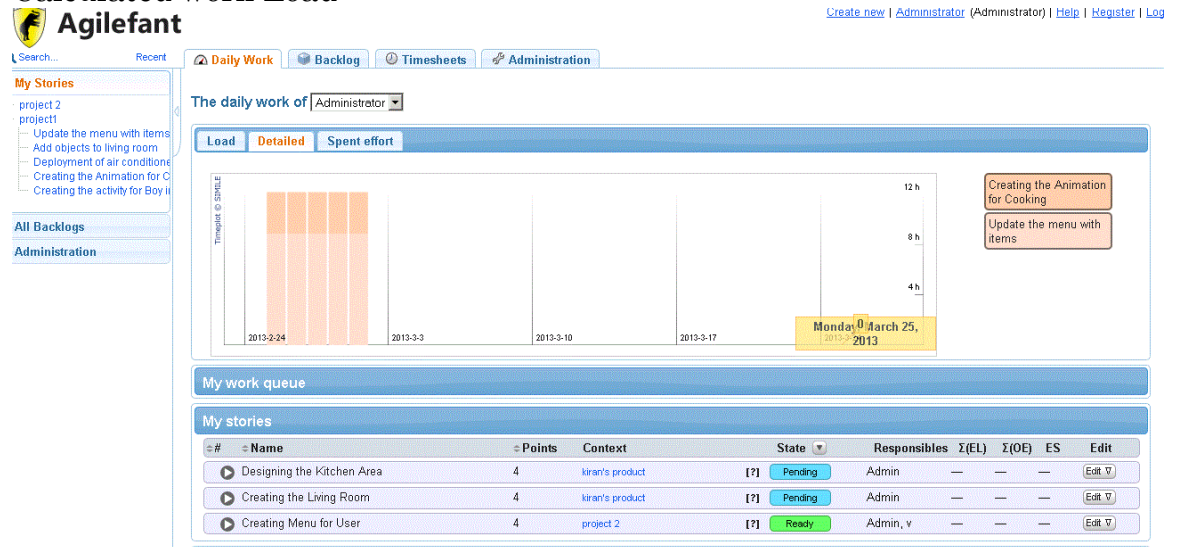
[http:// vhost2083.site1.compute.ihost.com/agilefant/dailyWork.action](http://vhost2083.site1.compute.ihost.com/agilefant/dailyWork.action)

- Agilefant (URL) – construct project plan/responsibility/members using Afilefant:

1.Calculated hours:



Calculated work Load



- GitHub (URL) – post this report your project GitHub site.

Bibliography

1. <http://info.umkc.edu/sustainability/green-campus/energy/>
2. <http://wiki.unity3d.com/index.php/Scripts>

