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Software Engineering for Geoinformatics

Requirement Analysis and Specification Document

Web-based Visualization of Attraction Points of Milan

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Section 1

General overview:

Every place on earth has some interesting facts, it may be of spiritual places, enormous castles, beautiful beaches, massive mountains. Each person looks the world in a unique way.

Various locations can be classified into historical, monumental, excursion, relaxing and many more.

Based on attractions, a tourist place can be a bridge, beaches, breweries, caves, hiking, ghost towns, historical, mountains, museums, monuments, parks, waterfalls, vineyards etc.

The interface allows the user to visualize all the tourist attraction points in the city. It includes picturesque description of that place by using a web-based application,

The registered user has access to make changes in the location. Each modification allocates few points for task. In the end, will be rewarded by points or ranking if he reaches up to some limit.

Goal:

The aim of the project is to locate the major tourist attractions of the city and its description for the users, by providing a useful visualization and analysis tools in a desktop web-based application interface, using google maps or open street maps.

Scope:

this project is concerning about providing information to usersabout major tourist attractions and to let them have access to sample datasets of our interest (place **yet to be decided**), contribute ondata collection and data validation, and to make custom visualization on these data and get used of some analysis tools offered by a **desktop web- based application**.

The web-application will offer maps of dataset with the ability of the manipulation of the data and to add comment to database. also, the web-application will allow user to access and find information about coordinate regarding to dataset analysis to be displayed as points (To that user).

Section 2

Domain analysis:

Users
The user is a visitor who uses the web-application without any specific authority to update data or save its personal data.

The system allows users to visualize data within specified city boundaries.

On the other hand, the member is an authorized user who uses the advanced web site features concerning rating point of interests, adding new data or demanding updates on a specified point of interest.

Section 3

Relevant Phenomena:

In this section we discuss the phenomena's that the machine cannot observe "**World Phenomena**", phenomena located entirely in the machine "**Machine Phenomena**" and phenomena's that shared among the two.

World Phenomena:

1. Opening the web-application.
2. Visualizing the attraction points.
3. Description of the location and pictures.
4. Visualizing the comments or reviews of the points.

Machine Phenomena:

1. Storing the registration data into database.
2. Storing updated data by the user to the database.
3. Storing the ranking of user to the database.
4. Storing the comments of the points to the database.

Shared Phenomena:

1. The application asks members for username and password.
2. The member enters the username and password.
3. The request for visualization of points.
4. The software retrieves the data from the data base and visualize it to the users/members.
5. The member adds his collected data to the software.
6. The member adds comment to the software.

Section 4

Use Cases:

Use Case 1: Registration

Actor: User

Entry Condition: The user opens the website.

Flow:

1. The website opens the registration window.
2. The user chooses to register as a member.
3. The user enters his username, password and email.
4. The software checks if the username and email in the database.

Exit Condition:

The software saves the username and password to the database.

Exception:

The software return with "Username exists" if username exists.

Use Case 2: Open the web application as member or user

Actors: User, Member.

Entry Condition: The User/Member opens the web-application.

Flow:

1. The software offers to the User to log in as member or continue as a user.
2. The User chooses one of the options:
   2.1.User selects to continue as user.
   2.2.User selects to join as member.
   - The software ask member to enter his username and password.
   - The member submits his username and password.
   - The software check if the username and password are within the database.

Exit Condition:

The software retrieves the home page.

Exception:

If the username or the password are not within the database, the software shows an error message to the member.

Use Case 3: Adding points by members

The software gives preference to members over user's, preferences is the possibility of adding point to the database, updating currently available data, saving their individual point of interests.

Actor: Member

Entry condition: The member opens the web application.

Flow:

1. The member enters his username and password to login.

2. The system will offer ability to add data into database by clicking "add new point "icon under data section.
3. The system asks member to fill the data table (coordinates, place name, relevant links etc...).
4. The member adds its point of interests.

Exit Condition:

The software stores the input data into database.

Exception:

The application does not store the added data if one column at least is missed, and the software replay an “error” massage.

The application will not add data if it is not in the right format.

Use Case 4: Rating Point of Interests

The website display data that has been collected from admins and members of the website.

A member can rank point of interest to show their interest to the data being visualized by the website.

Actor: Member.

Enter condition: The member enters the website using credentials username and password.

Flow:

1. The user enters the website.
2. The member chooses to login.
3. The member enters his username and password.
4. The member selects point of interests on visualized screen.
5. The member selects number of stars (1-5) to rank the point of interest.
6. The member submits its ranking regarding the point

Exit Condition:

The software saves the ranking to the database.

Constrains:

The person who can rank the points must be a member.

Use Case 5: Visualization

Actors: Users, members**.**

Entry Conditions:

The User/Member opens the web application:

a) The user enters the website directly.
b) The member enters his username and password.

Flow:

1. the web application displays base map for both the member and the user.
2. the software offers to the user/member information about points on map that contain (location, name , relevant links etc.).

Exit Condition:

The member logout and the user close the website.

Use Case 6: Updating points

Actors: Members**.**

Entry Conditions:

The member opens the web application:

Flow:

1. The member goes to login page
2. The member enters his username and password.
3. The member goes visualization window and clicks to the point that is desired to be updated.

3. The member enters new informations about the points and submits.
4. The application visualize updated point on base map

Exit Conditions:
The member updates point and new point being visualized on base map.

Constrains:
If one or more field is left blank, application does not allow to finish updating procedure and returns to error “this space can not be left blank”.

Section 5

Requirements:

Technical Requirements

1. The dataset is collected using technicians and provided mapping platforms of search engines such as Yandex maps, Google maps etc.
2. The software should be coded in Python language.
3. The system should be available as web application that can be used throughout the web browser.

Non-Functional Requirements:

1. The system should be available for 24/7.

Functional Requirements:

1. The system should allow users to register by entering their (username, email and password).
2. The system should allow members to login using their (username and password).
3. Information about points can be retrieved by the user/member by clicking on a point.
4. The system will offer data addition for members.

Domain Assumptions:

- The quality of the data will depend on the accuracy of data collected open mapping platforms.
- The reliability of the descriptions for each points only as much reliable as the descriptions on the relevant websites that informations taken from

References

Websites that will be used for data collection

https://www.openstreetmap.org

yandex.com/maps/

http://www.google.com/maps/