Title: Marketing Effects Report Generator (MERG)
Team Name: Team H
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Overview
The Marketing Report Generator is a web application that pulls data from various online tools, the data is then consolidated and displayed on a web page. The application is used by the account managers of White Stone Marketing, a digital marketing agency, to create marketing reports for their clients. The purpose of the report is to convey the results of the current marketing strategy and to facilitate the elicitation of future strategies. The report is presented via a secure website, during scheduled meetings, as the participants are remotely located.

Definitions
1. Users
    1.1. Inn Owners (IO) - The clients of White Stone Marketing.
    1.2. Account Managers (AM)- employees of White Stone Marketing. (typically, service ~20 clients).
    1.3. Senior Account Managers (SAM) - The supervisor of Account Managers.
2. User Type – used to determine which pages the user will be allowed to view upon logging in.
3. Profile – refers to the database record which holds user's information including but not limited to ID, Name, Email, ClientID, API Key, and Clearance Level.
4. Edit - in reference to user profiles, to edit, means to create, remove, update, or display.
5. Login Page – the webpage used to gather user information required for authentication.
6. Marketing report – a web page which displays information in the form of charts, graphs, and text. Specific details regarding which information will be displayed to be provided by White Stone Marketing in the future as feasibility is still being established.
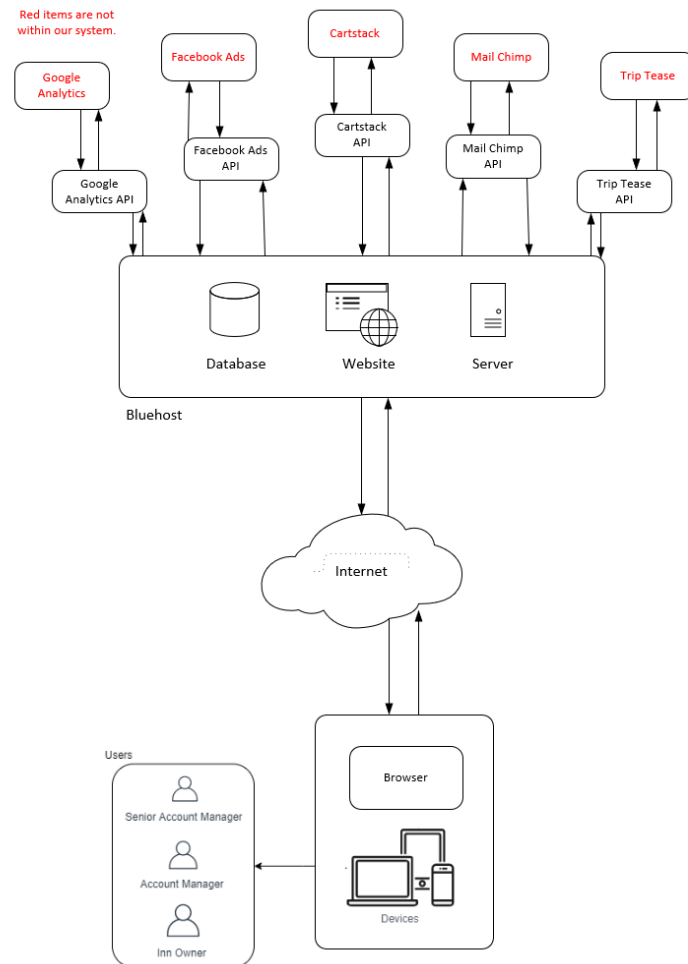
System Overview Diagram

Figure 1 Overview of MERG System

Figure 1 shows the system architecture of MERG. The database and website will be hosted on the Bluehost server. Records will be added, updated, and fetched from the database via the website. The website will send requests to and receive information from various APIs. The data received from the API will be used to create graphs and charts. The system will generate new webpages to display the graphs and charts so they can be viewed by the users. There are three types of users, Senior Account Managers, Account Managers, and Inn Owners. The Inn Owners are the clients of White Stone Marketing, they own high-end boutique Bed and Breakfast style inns. The inn owners should only be able to view the marketing reports. The Account Managers are employees of White Stone Marketing, they interact directly with the Inn Owners to discuss marketing strategies and budget. The Account Managers should be able to generate and view the marketing reports. The Senior Account Manager supervises and mentors the Account Managers as well as provides higher end services such as data analysis and elicitation of effective marketing strategies to the Inn Owners. The Senior Account Manager should be able to generate and view marketing reports as well as edit the profiles of the Account Managers and Inn Owners

Functional Requirements

User Requirements

Senior Account Managers
1. The Senior Managers must be able to edit Account Managers' profiles.
2. The Senior Managers must be able to edit Inn Owners' profiles.
3. Account Managers must be able to login to the Marketing Report Generator page.
4. Account Managers must be able to generate the reports.
    4.1 Senior Account Managers must be able to specify which Inn Owner the report is generated for.
    4.2 Senior Account Managers must be able to specify the date range the report is generated for.
    4.3 Senior Account Managers must be able to specify any combination of sources the report is generated from.
    4.4 Possible Sources: Google Analytics, MailChimp, Facebook, Cart Stack, Trip Tease, Think Reservations. Specific details regarding which sources to be provided by White Stone Marketing after 11/4/2019.

Account Mangers
5. Account Managers must be able to login to the Marketing Report Generator page.
6. Account Managers must be able to generate the reports.
    6.1 Account Managers must be able to specify which Inn Owner the report is generated for.
    6.2 Account Managers must be able to specify the date range the report is generated for.
    6.3 Account Managers must be able to specify any combination of sources the report is generated from.
    6.4 Possible Sources: Google Analytics, MailChimp, Facebook, Cart Stack, Trip Tease, Think Reservations. Specific details regarding which sources to be provided by White Stone Marketing after 11/4/2019.
7. Account managers must be able to access everything the Inn Owners can access.

Inn Owners
8. Inn Owners must be able to login to view the report page.
9. Inn Owners must NOT be able to view other Inn Owners' report page.
10. Inn Owners must be able to view all previously generated reports.

System Requirements

Assumptions
1. The database has been created.
2. Profile information for each Senior Account Manager has been added to the database.
3. The user has navigated to the website which hosts the MERG web application.

General System Requirements

Web Pages
1. The system should have the following pages.
    1.1 Senior Account Manager's page.
        1.1.1   Accessible to Senior Account Managers only.
    1.2 Account Manager's page.
        1.2.1   Accessible to Account Managers and Senior Account Managers
    1.3 Inn Owner's pages.
        1.3.1   Accessible to Inn Owners, Account Managers and Senior Account Managers.
        1.3.2   Each Inn Owner's page should not be accessible to other Inn Owners.
        1.3.3   Each Inn Owner should have a page with a unique URL. (ex. *www.merg.com/clientId/index.html)*
    1.4 Marketing report pages.
        1.4.1   Accessible to pertinent Inn Owners, Account Managers, and Senior Account Managers.
            1.4.1.1 Each marketing report page should have a unique URL. (ex. *www.merg.com clienId/mm_dd_yyy.html*)

Marketing Report
2. The system should generate marketing reports based upon metrics specified by either the Account Manager or Senior Account manager.
    2.1 The system should request data from sources.
    2.2 The system should generate a new file for each report generated.
    2.3 The system should store the file path (URL) for each marketing report.
    2.4 The system should write data received from sources to the file.

User Interactions

User Authentication
3. The system must authenticate each user.
    3.1 System should gather username and password.
    3.2 System should compare credentials provided by user to those stored in the database.
    3.3 System should retrieve user type from data base.
    3.4 System should redirect to user page based on user type.

Senior Account Managers (SAM) Interactions
4. The system must authenticate SAM
5. The system should redirect SAM to Senior Account Manager's page.
6. The system should allow SAM to edit user profiles.

7. The system should allow SAM to display all account managers.
8. The system should allow SAM to display all Inn owners.
9. The system should allow SAM to specify metric for marketing reports.
    9.1   The system should allow SAM to specify which Inn Owner to generate a report for.
    9.2   The system should allow SAM to specify a Start date for the report.
    9.3   The system should allow SAM to specify an End date for the report.
    9.4   The system should allow SAM to specify sources for the report.
10. The system should allow SAM to indicate they would like the report to be generated.

Account Managers (AM) Interactions

11. The system must authenticate AM.
12. The system should redirect AM to Account Manager's page.
13. The system should allow AM to edit user profiles.
14. The system should allow AM to display all account managers.
15. The system should allow AM to display all Inn owners.
16. The system should allow AM to specify metric for marketing reports.
    16.1   The system should allow AM to specify which Inn Owner to generate a report for.
    16.2   The system should allow AM to specify a Start date for the report.
    16.3   The system should allow AM to specify an End date for the report.
    16.4   The system should allow AM to specify sources for the report.
17. The system should allow AM to indicate they would like the report to be generated.

Inn Owners (IO) Interactions:

18. The system must authenticate IO.
19. The system should redirect IO to Inn Owner's page.
20. The system should request the URLs for the marketing reports from the database.
21. The system should display URLs with labels so that IO can identify marketing report. (ex. Report for 10/1/2019 to 11/1/2019)
22. The system should allow IO to select a URL.
23. The system should redirect to specified URL.

Non-Functional Requirements

1. The system shall be accessible from the following browsers: Chrome, Firefox, Safari and Edge.
2. The System shall always be accessible by all users.
3. Passwords shall never be viewable at any point. (ex. Password box shows ********* rather than actual characters)
4. A video should be provided demonstrating the functionality of AM related features.
5. Usability
    5.1. The system must be faster and easier to use than existing system.
    5.2. Faster: White Stone's existing system takes roughly 45 min. MERG should allow SAM and AMs to generate the marketing reports in less than 5 min from the time they are authenticated to the time the report is generated. This is an arbitrary number provided by White Stone Marketing, longer times may be acceptable if necessary.
    5.3. Easier: The current system requires SAM and AM to have working knowledge of how to navigate the websites for each of the sources, screen capturing, image manipulation, and WordPress. MERG should allow the reports to be generated by SAM and AM after watching the demo video once.
    5.4. Usability tests will be designed and conducted by White Stone Marketing on both the existing system and MERG.

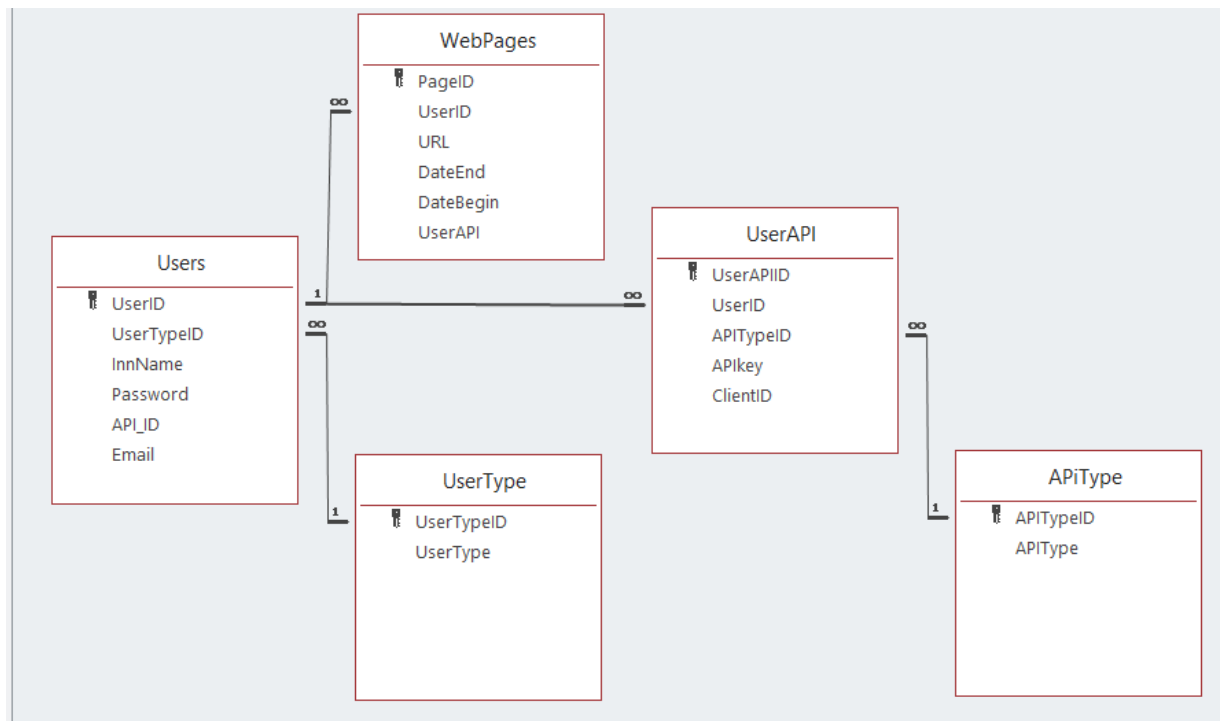E/R Diagram for Reports Generator

Figure 2. Entity Relationship Diagram for the MERG application database

Users (UserID, UserTypeID, InnName, Password, API_ID, Email)
WebPages (PageID, UserID, URL, DateEnd, DateBegin, UserAPI)
UserAPI (UserAPIID, UserID, APITypeID, APIkey, ClientID)
UserType (UserTypeID, UserType)
APiType (APITypeID, APIType)

Figure 2 shows the entity relationship diagram (ERD) which represents the relational database utilized by the MERG application. There is a total of 5 tables. These tables include Users, Webpages, UserType, UserAPI, and APiType. Directly below the ERD is the relational notation for the database. It shows the entities (table names) along with their attributes. If an attribute is underlined, it is a primary key. If an attribute has a dotted underline, it is a foreign key. From the table "Users" the primary key is set to be the UserID attribute. The foreign key in UserTypeID, is pointed to from the UserTypeID primary key within the "UserType" table. Within the "Webpages" table, the primary key is set to PageID, and the foreign key is UserID which is pointed to from UserID in the "Users" table. Within the "UserAPI" table, the primary key is set to UserAPIID, there are two 2 foreign keys within this table. The first foreign key is UserID, which is pointed to from the "Users" table. The second foreign key in the "UserAPI" table is TypeID, and it is pointed to from the "APiType" table's primary key which is APITypeID. Every table is connected to at least one other table, whether it is being pointed to or it is pointing at another table.

For the "Users" table, the attribute field types are as follows: UserID, UserTypeID, and API_ID are all (integer, required, not nullable). Attributes InnName and Email are (VARCHAR 255) and InnName can be nullable. Last for this table is Password which will be (hash, required, not nullable, min of 8 characters).

For the table "Webpages" attributes PageID and UserID will both be (integer, required, not nullable). Attributes DateEnd and DateBegin will be (date, nullable). Attribute URL and UserAPI will be (VARCHAR 255, required).

For the "UserAPI" table, attributes UserAPIID, UserID, APITypeID, APIkey, and ClientID will all be (integer, required, not nullable).

For the table "UserType", UserTypeID will be (integer, required, not nullable) and the attribute UserType will be (CHAR with max of 3, required, not nullable).

For the "APiType" table, APITypeId will be (integer, required, not nullable) and APIType will be (VARCHAR 9, required, not nullable).