Abstract

In a city where several events occur every day, it may be hard for people to keep track of what events that are going on and where they are located. This report introduces a web based guide to serve as an interactive source to such information, in contrast to many existing plain text, paper guides. A system was implemented in HTML assisted by PHP and JavaScript together with a SQL database. The final product shows that this online approach works well for this type of service.

1 Introduction

In a big city there are always several events occurring. A problem for people is to be aware of what events that are going on and where they are located. This problem leads to that people do not get the chance to see that concert or go to that trade fair that they would like. The main idea of this application is to help the people to be aware of what is going on in the city.

Our solution to this problem is to build a web based application where the users can check what is going on in the city right now and what will happen in the future. The application lets the user select one (or many) days from a calendar and then presents all the events for these day/days on a city map. In this way the user can easily select days of interest and then get all the events that occur. Because the events are presented on a city map the user also sees the location of the event. This feature will help people that are not too familiar with the city.

Since there can be many events occurring on a certain date the application will offer the user the possibility to only show events from a certain category. Different categories are for instance Sport Events, Concerts, and Trade Fairs. The application will also offer the possibility to get more information about a specific event, for instance the user perhaps wants to know more about where to get tickets to a concert or the open hours of a trade fair.

The application should also have an easy interface for the administrator to update the database with new events and other type of information. The system only concentrates on one city in the beginning but the possibility to easily extend it to other cities should also exist.

2 Approach

First, the aimed features of the service and the requirements for supporting these were established. Based on this, an initial database design was made and presented as an Extended Entity-Relationship (EER) diagram, which was then translated into a relational schema. Since it would cause extra workload to revise this at a later stage in the project, the database design was considered thoroughly. PostgreSQL was the database of choice for implementation, since it was considered reliable and easy to use.

For the implementation of the web interface, PHP was chosen together with JavaScripts since they seemed to provide many features of interest and since they are widely used for web applications. None in the project group had any experience of programming in these languages. Therefore the design for the system was not made until after some time was spent getting familiar with the language. Guided by the design, features were implemented continuously and testing of these was made as they were developed.
3 Result

The application is a web based application which may be visited (at the moment only fully functional in IE) at www.cs.umu.se/~c01jbn/guiden/guiden.php. When the user navigates to the site a map over the city and a calendar is shown. At the beginning places on the map that houses an event on the current day is shown as circles on the map. If the user wants to search for events on other dates he/she simply chooses the dates of interest in the calendar and then presses the “Visa evenemang” button. The map is then updated and the places that houses an event on the selected day/days is shown. Also the events for the dates that the user has chosen are shown in a window. These events are sorted by dates having the event that is going to take place nearest in the future at the top. If the user wants more information about the place that houses the event the user can click on the marker for the place on the map. A popup dialog will then open where information about the place is shown; the information can be anything from the open hours, address of the place or the URL to the place’s homepage.

![Figure 1. The page in user mode](image)

If the user wants to see all the places in the city he/she could click the “Visa alla” button that is located below the map. The map then shows all the places even if they do not have an event assigned to them. This function could be useful if there is a user who wants to see the places that exist in a city and perhaps get the telephone number or check the address.

This application could also be used as an online map of the city. Even if this functionality was not planned for, the application is also useful only as an online map where the user can zoom in and out and retrieve the names of streets and places.

For an application like this, which is very dependent upon an up to date database, it is important that it is easy to maintain and update the database with new events. To provide an easy way of doing this, we built an interface where the administrator could add new places and events. When an administrator has logged in he/she can choose to either add a new place or add an event to an existing place.
To add a new place the administrator clicks on the button “Editering på”. Now the administrator could click on the map where he/she would like to add the new place. The administrator could click the button “Editering av” to turn the insert place function of. After a location for the place is selected the administrator enters information about the place. There are five fields that the administrator could use to enter information, all fields are optional. First field is called name, here the name that should be shown on the map is added. Next is the field called location, in this field the address to the place should be written. Third field is called info. In this field information about the place should be entered, this info could for example be what type of place this is, if it for example is a restaurant, the restaurants specialities could be entered. The fourth field is called picture, in this field a URL to a picture should be entered, this is used to show a picture of the place when the user acquires more information about it. Last field is called web page, here the URL to the web site of the place could be added. All the information that the administrator added is shown when the user clicks on a place in the map. After the administrator finished entering the information he/she clicks on the submit button to update the database.

To add a new event the administrator first chooses the place where the event will occur. This is used by selecting a place from a drop down list, only a place that actually exists is shown in the drop down list. After this, the type of category that the event belongs to is chosen. This is also done by selecting an element from a drop down list, again only valid categories is shown in the list. Next the start date and end date of the event is chosen; because of the use of start and end dates, the administrator can register a trade fair that has duration of a week directly instead of creating an event for every day that the trade fair is going on. Next field lets the administrator enter information about an event. Here open hours, age limit of the night club etc could be entered. In the last field a URL to the event can be added. After the
administrator filled in the information and clicked the submit button, the event is created and exists in the database.

4 System description
In this section the system and database used will be described. First a detailed description of the database and its tables is given and then a description of the different parts of the system follows.

4.1 Description of the database

Figure 3. ER schema of the database.

Figure 3 shows the ER schema of the database. Below every instance of the schema is described.

Central to the schema is the instance called Place; a place can be seen as a building or some other kind of physical place. The place can house many different events, and the place must be placed on one and only one map. The instance Event represents a virtual event; an event is located at one and only one Place. An Event can be of one Category and several events can belong to the same Category. The Map instance represents a map; the map can have many Places that are placed on the map. Category represents the category that a certain event belongs to and finally, Admin represents the users that are the administrators of the system. These users have the right to alter the tables of the database.

4.2 Description of the system
The system consists of a set of PHP and JavaScript files. PHP runs on the server-side of the system and handles the communication with the database and the appearance of the map as well as some session variables. It returns HTML code to the browser to be displayed to the user. JavaScripts are being used to provide interactivity to the HTML pages.

The zoom feature of the map works in such a way that based on the coordinates where the user wants to zoom, a piece of the map is cut out and shown and the coordinates are recalculated to correspond to the partial map being shown. A session variable keeps track of whether the site is in admin mode or not and hence if the insert place and event forms or the info area and the calendar shall be available.

In user mode, when the user clicks the “Visa evenemang” button, the system fetches the dates selected in the calendar script and queries the database to retrieve the events happening during
these dates. The events are listed on the screen and the places where they take place are visualized on the map by copying pictures onto the map. Image maps are being used on the same coordinates as the places to define areas which through a JavaScript will sense when a user clicks on a place.

In admin mode, a JavaScript is used for the date selections to make sure that the correct number of dates is available for each month and the process of going in and out of edit mode is also handled by JavaScript.

5 Discussion

We believe that this application can be useful for both people who live in the city and people who are going to visit the city. For people who live in the city it is a good feature to be able to check what is going on at all the different places or just enter the application, search for the place where he/she wants to go and retrieve the address of that place. It also helps the people that want to visit a city and want to know when they should make their trip. They can then enter the application and check what happens in the city on different days and then decide when they should make the trip.

There are some improvements that could make the application more useful. One such improvement is that it should be able for users to create user groups. These groups then share the same view of the map. Users in a user group could then add events that the other users that belong to that group could see. For instance one user perhaps wants to inform his/her friends that there is a party coming up this weekend and where the party is going to be held.

Another useful functionality that was planned for but not implemented is the possibility for users to show all restaurants or cinemas that exists in the city. This function is useful if the user has decided that he/she wants to go out and eat, but they don’t know what restaurants the city offers or where they are located. The user should have the possibility to show all cinemas or restaurants and perhaps sort the restaurants by their specialties.

Another improvement is to make it easy to add other cities and the corresponding maps to the application. Today only the city of Umeå is supported.