LSGI 5311
GIS ENGINEERING

Final Written Report of Internet GIS Website

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1. Web Design

1.1. Lessons learned from In-depth study report

After studying and analyzing Hong Kong's GeoInfoMap and comparing other similar types of websites from different countries, I think some features of GeoInfo Map (HK) should be improved:

- The area of the map should be larger, with more visual tension;
- The style of web pages should be more in line with the trend, like using more flat design;
- The picture should be more concise when first open it;
- More interaction design with users, such as floating windows, etc.

Most importantly, my GeoInfoMap should learn and maintain the following advantages of them:

- Keep green as the main color. Because it is a good fit for the theme of geographic information maps;
- Put map area on the right side of the page with text boxes on the left side. This is keeping with people's visual habits and usage habits;
- Not too much information when the web page is first opened;
- When the button is clicked, there will be some prompt information to let the user know more clearly what this is doing;
- Obtain basic functions：search /measure/ base map/share/go to your place/show level and coordinates.

1.2. Web Design

1.2.1 Layout

Based on the above analysis, I started to set up my own web page. These maps and logos are taken from the hk geoinfo map and are used as layout references.

Overall layout:

Obviously, the entire page is divided into three sections:

- Area 1: The head block for titles, logos, and other information.
- Area 2: Information block for some buttons and texts.
- Area 3: Map will be loaded on this area.

1.2.2 Functions

When first open the web page, it will display as the following picture:

When the tool bar is clicked, the three important tools will be shown:

Measure tool: this tool is able to measure coordinates of points, distance of polyline and area of polygon.

Drawing tool: this tool is able to draw line, polygon, and circle on the map.

Category: this tool is able to show users the classified data by different purposes, and show this locations on the map.
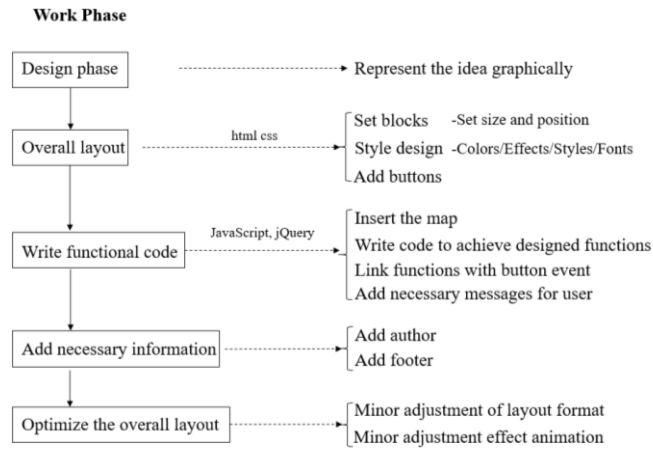
When you click on one of these tools, more information will be displayed.

2. Web Programming

2.1 Work process

My work flow chart is as following:

2.2 Introduction of the results

2.2.1 Overall layout

As I designed at the beginning, the interface of the web page is as follows:
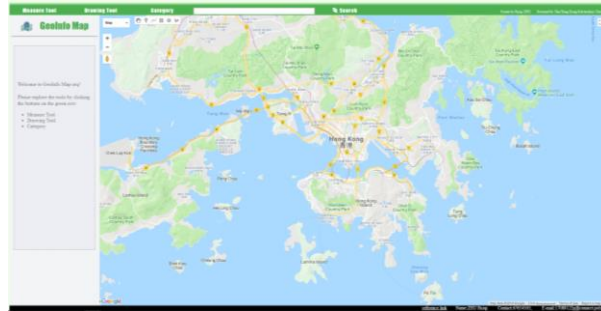
Interface of designed webpage

Interface of result webpage

Design concepts and functions have been achieved.

But in the final adjustment process, I found that the block with the logo on top occupies a large area and appears empty. Besides, recalling the web pages of other countries in the In-depth study (only Hong Kong and the United

States retained the top logo block), I decided to make some adjustments to this block, so we have the following version which I think is more concise and modern:

2.2.2 Functions

When you first open the web page, the guide information will display on the left info-box. And the four button on the top corresponds to four functions.

Measure tool: this tool is able to measure coordinates of points, distance of polyline and area of polygon.

Drawing tool: this tool is able to draw line, polygon, and circle on the map.

Category: this tool is able to show users the classified data by different purposes, and show this locations on the map.
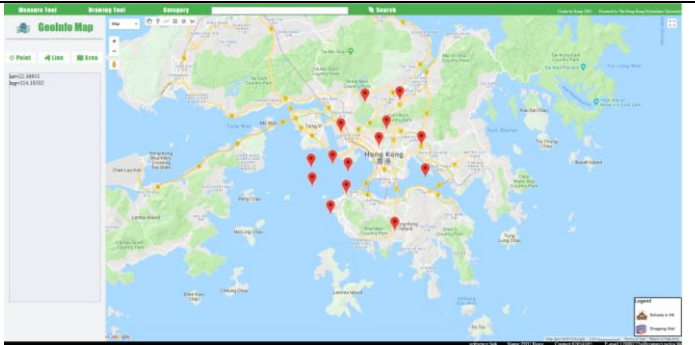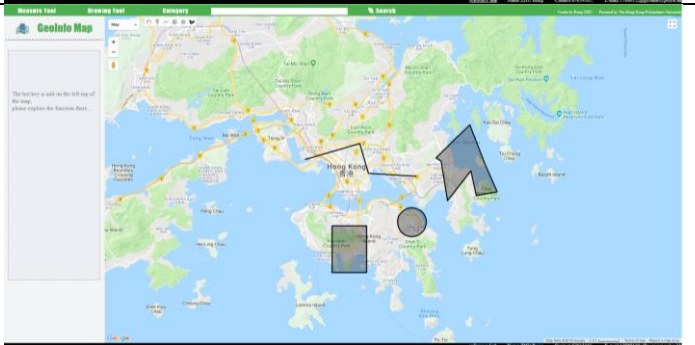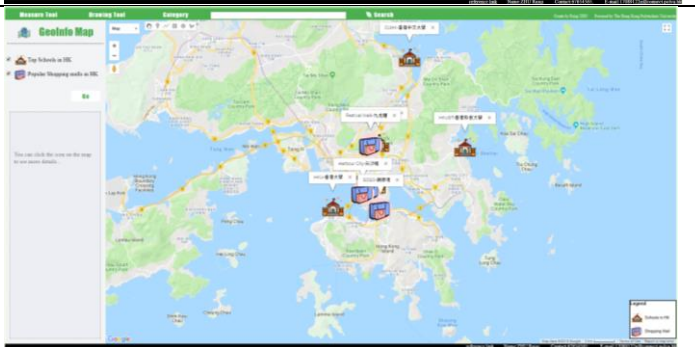
Search: this tool is able to search a place on the map.

Response when the button is clicked:

Measure tool clicked	Drawing tool clicked	Category clicked

- The corresponding tool will appear
- Corresponding information appears in the gray box

Results when the button is clicked:

Measure tool clicked	
Drawing tool clicked	
Category clicked	

3. Questions and discussions

3.1 Solved problems

In the process of compiling webpages, to writing out the results from nothing, I encountered a lot of problems.

At the beginning, I didn't know where to start. Fortunately, the teacher arranged us to write in-depth study, and I found a lot of references and directions in the process.

When I started designing layouts, I wrote very original web pages without any sense of beauty or design. So I began to read the w3school tutorial patiently, and learned a lot of useful knowledge and use it in my web page. For example, how to define an arbitrary color, how to define a non-default button, and how to change the position of the image. Most importantly, I also learned to use the id or class to set the style of a group of elements.

When I started to write some features of the map, the problems encountered were even more difficult to solve. Sometimes the function that is called cannot run, and sometimes the logic behind a simple function is not simple. For example, I have a deeper understanding of function values, global variables, and local variables.

Besides, when I learned to debug my program using Google's browser console, everything became a lot easier, which is also a big gain for me.

3.2 Unsolved problems

- Is there is any tools for visualizing layout settings like python UI design drag-and-drop boxes? Although css is very powerful, it is still difficult and inconvenient to use code layout.
- Why can't change the style of the cursor on the map? document.getElementById("tophead").style.cursor = "crosshair"; work successfully.

  document.getElementById("map").style.cursor = "crosshair"; did't work

  <div id="map"></div> This is the place to put the google map.

- jQuery's fadein effect cannot be displayed? Code show as below；$("#info").fadeIn("slow"); (There is no error in debugging)
- How to manage these variables/images as the program becomes more and more complicated?

3.3 What I have learned
Knowledge and skills

- Learned more html and css knowledge and use them more skilled.
- Deeply appreciate the benefits of css, it is very convenient and clear to modify.
- More proficient in the effect of picture fonts, and the effect of my imagination can be realized.
- Jquery is very convenient and easy to use.
- Better use of JavaScript
- Have a deeper understanding of web gis
- Learn to use the console debugger
- Learn a lot W3school tutorial which is useful and helpful

Methodology

- Before you start your project, you need to understand the project-related information and learn first. This is more conducive to your completion of your project. The prerequisite for creation is imitation.
- Using W3school/google to solve problems
- It is important to design well at the beginning, and there are ways to implement it as planned. The design was not good at first, it was more difficult to modify it, and it was easy to lose your own style.

4. Improvement and further development

4.1 Improvement

In the webpage I write, there are many places that need improvement. I divided it into two categories. One is the function that hasn't yet been implemented in my webpage, and the other is where my webpage can be more perfect.

Unrealized functions

- Measure tool: this tool is able to measure coordinates of points only, not distance of polyline and area of polygon
- Search function has not yet been implemented
- Can't show which level it is on the map yet when rooming in and out

Better functions

- Be able to change the properties of the drawing tool, such as color, width
- Save drawing results
- Make message box on the left of web page closable
- Classified data can be stored in a database and called directly from the database
- Promote client-side function and add user information to the database
- Feedback
- Be able to handle more complex data

4.2 Further development plan

Although the project is over, learning is not over. In the following month, the improvements mentioned in 4.1 is going to be achieved. Get more knowledge in this process and think about more improvements.

I will continue to develop more features and make it more powerful. If it is possible, I hope the GeoInfo Map can make some improvements on the website because it is powerful but not beautiful. I hope it can attract more people to use it.

My goal is to create whatever I design in my mind. I hope I can get closer to my goal through continuous efforts.