

Google Map  
Ronald Hsu 100062595 @ MIRLab

<http://about.me/hothero>

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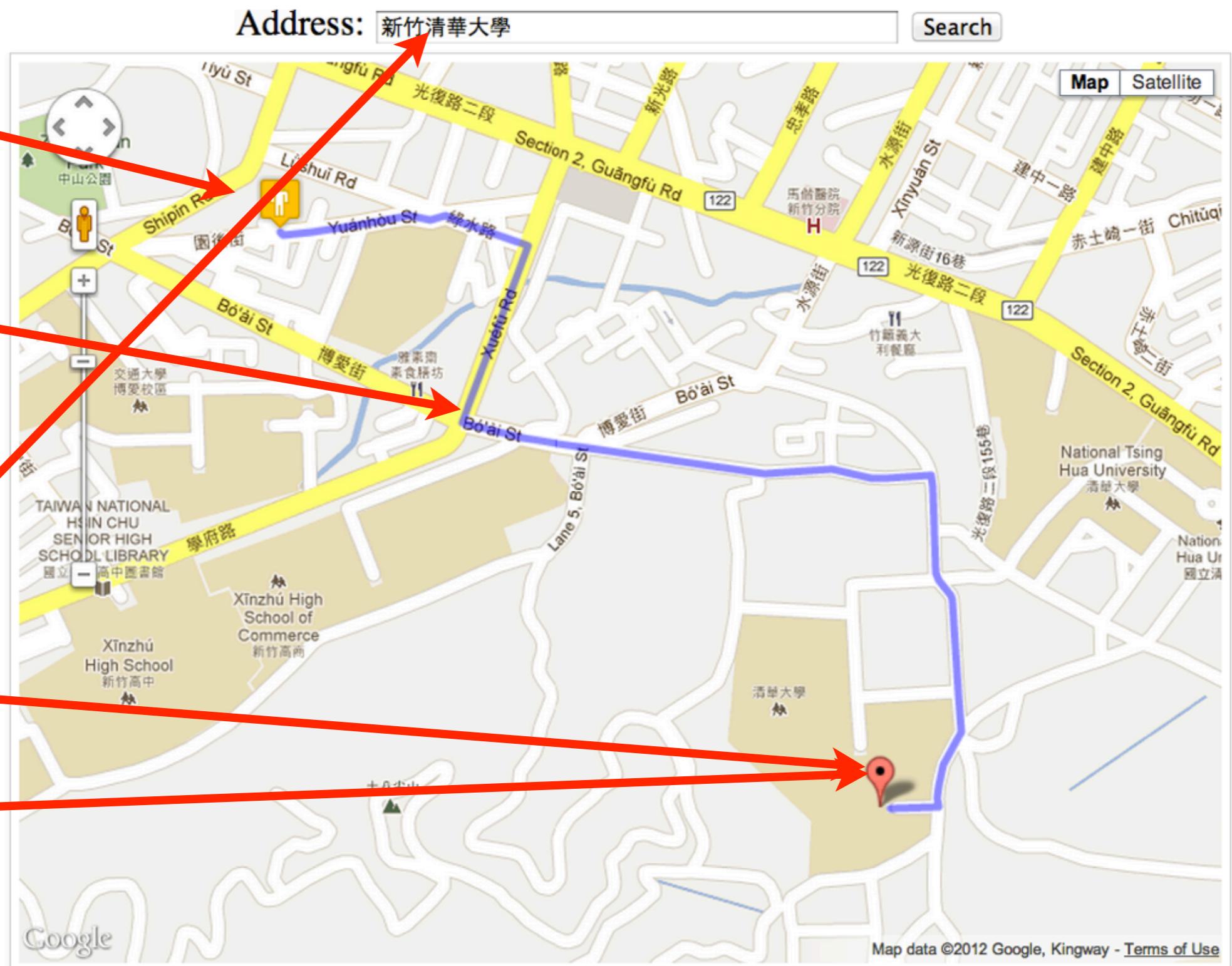
# Outline

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- Google Map
  - Closure
  - Functional programming
  - Assignment
  - Related Applications DEMO
- Javascript Encoder & Packer

# Google Map v3

- Client
  - Location
  - Direction
  - GeoCode
  - Marker
  - Event



# Get Started

CSS(Optional)

```
html, body, #map_canvas {  
    margin: 0;  
    padding: 0;  
    height: 100%;  
}
```

include external javascript

```
<script type="text/javascript"  
       src="http://maps.googleapis.com/maps/api/js?sensor=false"></script>
```

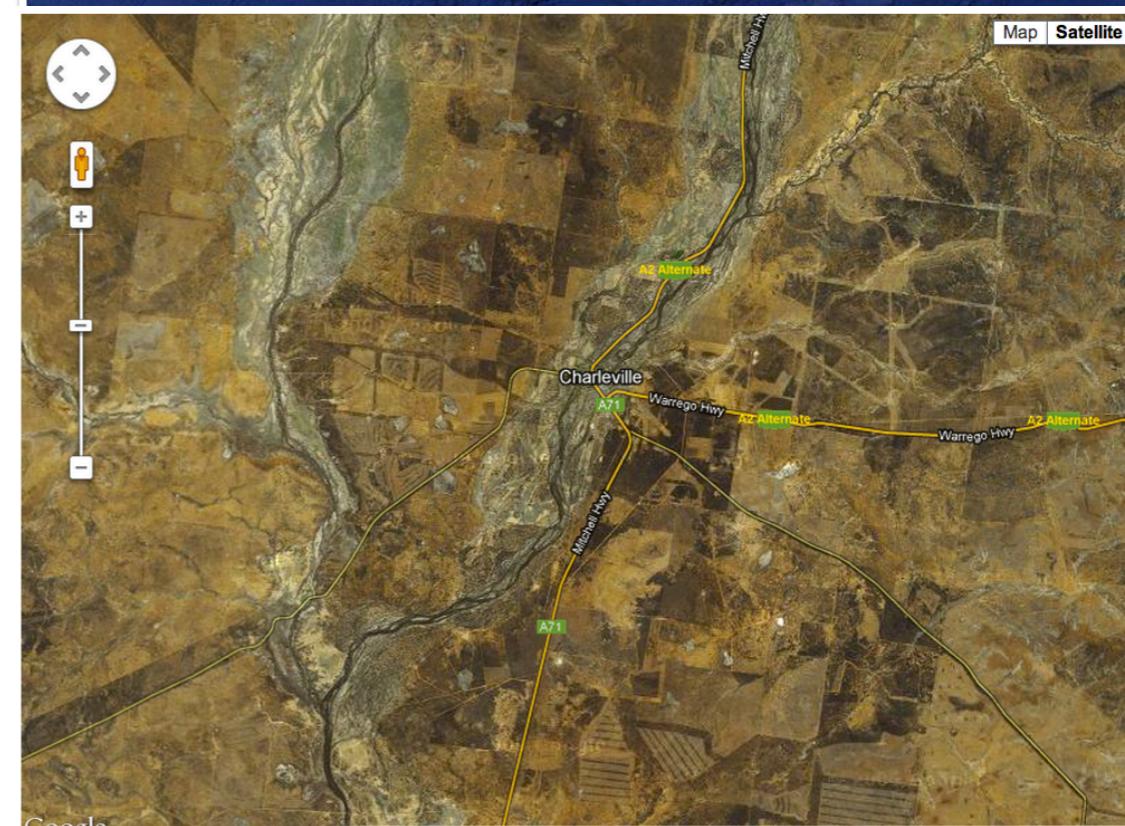
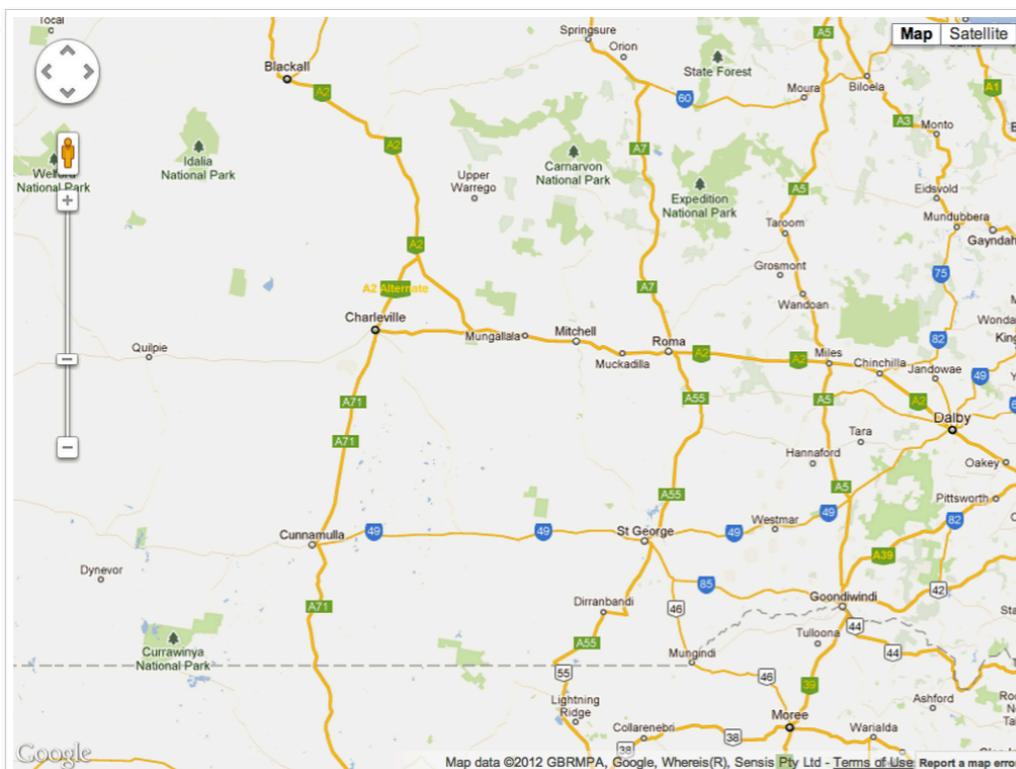
```
function initialize() {  
    var myOptions = {  
        center: new google.maps.LatLng(-34.397, 150.644),  
        zoom: 8,  
        mapTypeId: google.maps.MapTypeId.ROADMAP  
    };  
    var map = new google.maps.Map(document.getElementById("map_canvas"),  
        myOptions);
```

# google.maps.LatLng

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- `LatLng = new google.maps.LatLng(latitude, longitude); // initialization`
- Some methods
  - `equals(other:LatLng) // comparison function`
  - `lat()`
  - `lng()`
  - `toString(): "(-34.397, 150.644)"`
  - `toUrlValue(precision?:number): "-34.397,150.644"`
- DEMO: <http://goo.gl/iE7YY>

# MapType



# Client Location

- Add another external javascript library or use another sample from “Code Samples”

- `src="http://www.google.com/jsapi"`

- Get client location from google.loader and center map to there.

```
client = new google.maps.LatLng(google.loader.ClientLocation.latitude, google.loader.ClientLocation.longitude);
map.panTo(client);
map.setZoom(15);
```

- DEMO: <http://goo.gl/NIVU>

# google.maps.Marker

```
var userMarker = new google.maps.Marker({  
    map: map,  
    position: client,  
    icon: "images/male.png"  
});
```

MarkerOptions  
wrapped by braces {}

## ○ Some properties

- animation
- icon
- map
- position
- title
- zIndex

## ○ DEMO: <http://goo.gl/3PRpO>

# Event

```
google.maps.event.addListener(map, 'click', function(e) {  
    userMarker.setPosition(e.latLng); // by closure  
});
```

## ○ Concept:

- Closure
- Functional Programming

## ○ Sample: place a marker on client location

- [http://mirlab.org/users/ronald.hsu/  
web\\_course\\_demo/clientMarker.html](http://mirlab.org/users/ronald.hsu/web_course_demo/clientMarker.html)

# JS Advanced Concept

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## ○ Closure

- Wikipedia: In computer science, a closure (also lexical closure or function closure) is a function together with a referencing environment for the non-local variables of that function. [1] A closure allows a function to access variables outside its immediate lexical scope.

## ○ Functional Programming

- Extended Reading: [http://www.slideshare.net/  
ihower/fp-osdc2012v2](http://www.slideshare.net/ihower/fp-osdc2012v2)

# Closure & Functional Programming

```
var x = 1;  
function say() { alert(x); }  
x = 3;  
say();
```

Call by  
reference

```
function makeFunc(c) {  
    var x = c;  
    return function() { alert(x); }  
}  
x = 3;  
var say1 = makeFunc(1);  
say1();  
var say2 = makeFunc(2);  
say2();
```

Closure

Functional  
Programming

○ <http://jsfiddle.net> 丶 <http://jsbin.com/>

# Closure(Cont.)

<http://goo.gl/XttHA>

## JavaScript

```
var i = 0;
var fs = [];
function run_fs() {
    for (var j = 0, f = fs[j]; f; f = fs[++j]) {
        f();
    }
}

document.write('Pure anonymous function<br>');
for (i = 0; i < 3; ++i) {
    fs[i] = function(){document.write(i+"<br>");}
}
run_fs();

document.write('Closure<br>');
for (i = 0; i < 3; ++i) {
    fs[i] = (function(i) {
        //closure.
        return function(){document.write(i+"<br>");}
    })(i);
}
run_fs();
```

Call by reference

# Functional Programming(Cont.)

```
function pyth(x,y) {
  return sqrt(x*x+y*y);
}
```

```
function sqrt(x) {
  return x*x;
}
```

```
function alertFunc(f) {
  alert(f);
}
```

```
alertFunc(pyth(2,3));
```

```
function multiplier(x, y){
  return x*y;
}
```

```
alert(multiplier(2, 3));
m = multiplier;
alert(m(2, 3));
```

Call by function

Rename  
this function

# Functional Programming(Cont.)

```

function factorial1(n, k) {
  (function(b){
    if(b) {
      k(1);
    } else {
      (function(nm1){
        factorial1(nm1, function(fnm1){k(n*fnm1);});
      })(n-1);
    }
  })(n==0);
}
factorial1(5, function(x){alert(x);});
  
```

Anonymous Function

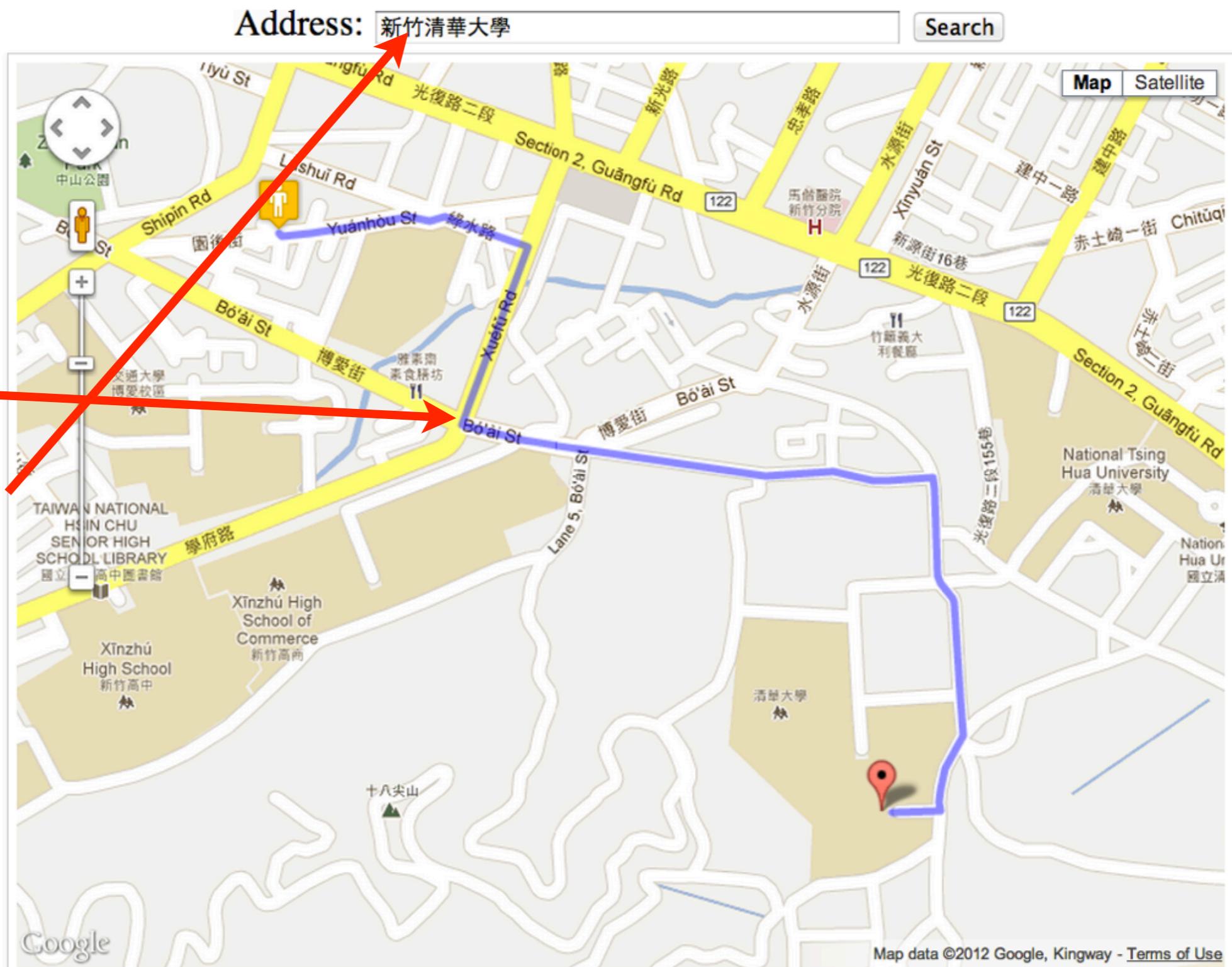
Callback function

- More: Node.js ↗ Meteor(Server-side)

# Google Map v3(Cont.)

- # Directions

# GeoCoder



# DOMListener & GeoCoder

## ○ My version:

```
/* === for searching address feature by closure === */
var geocoder = new google.maps.Geocoder();
var address_field = document.getElementById("address_txt");
google.maps.event.addListener(document.getElementById("search_btn"), 'click', function(){
  var address = address_field.value;

  if (geocoder) {
    geocoder.geocode({'address':address, 'language':'tw'}, function(results, status){
      if (status == google.maps.GeocoderStatus.OK) {
        map.panTo(results[0].geometry.location);
        //placeMarker(results[0].geometry.location, results[0].address_components[0].long_name,
        //].formatted_address, 0);
      } else {
        alert("Geocode was not successful for the following reason: " + status);
      }
    });
  }
});
```

## ○ DEMO: <http://goo.gl/v8AtJ>

# Direction / Route

```
function calcRoute(start, end) {  
    /*var start = document.getElementById("start").value;  
    var end = document.getElementById("end").value;*/  
    var request = {  
        origin:start,  
        destination:end,  
        travelMode: google.maps.TravelMode.DRIVING  
    };  
    directionsService.route(request, function(result, status) {  
        if (status == google.maps.DirectionsStatus.OK) {  
            directionsDisplay.setDirections(result);  
        }  
    });  
}
```

BICYCLING, WALKING

For showing (or polyline)

- DEMO: <http://goo.gl/zfvkk>

# MarkerCluster

```
var markers = [];// for marker cluster

for (var index in ipeen_hsinchu)
{
    var shop = ipeen_hsinchu[index];
    /*alert(shop["lat"] + ", " + shop["lng"]);
    break;*/
    var marker = placeShopRoute(userMarker, shop, map);
    markers.push(marker);
}

/* setting marker cluster */
markerClusterer = new MarkerClusterer(map, markers);
```

- DEMO: <http://goo.gl/8iWs>

# Reference Usage (Other parts of GMap)

- <https://developers.google.com/maps/>
- Developer's Guide
  - Services
  - Libraries
- API Reference
- Code Samples & More Resources(Advanced)
- Another alternative: an open source project  
“OpenStreetMap”

# Assignment

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○[http://mirlab.org/users/ronald.hsu/  
web course demo/homework.html](http://mirlab.org/users/ronald.hsu/web_course_demo/homework.html)

# Dictionary / Hash Table

1

```
var ipeen_hsinchu = {};  
ipeen_hsinchu[0] = {};  
ipeen_hsinchu[0]["name"] = "均鎌糕餅公司";  
ipeen_hsinchu[0]["address"] = "新竹縣竹北市文平路302號";
```

2

```
var a = {};  
a[0] = {"name": "test",  
"number": 3};  
alert(a[0].number);
```

# DEMO

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- Joytrip
- Spotmap
- Anyweather
  - <http://anyweather.hothero.org/>

# Javascript encoder

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- <http://dean.edwards.name/packer/> ↴ <http://javascriptcompressor.com/>
  - Practically
- <http://utf-8.jp/public/aaencode.html>
  - For fun
- More: <http://goo.gl/JKvqC>
- Keyword: Obfuscator, obfuscation, compiler, encoder, ... etc.

# Thanks for your listening

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○Q & A