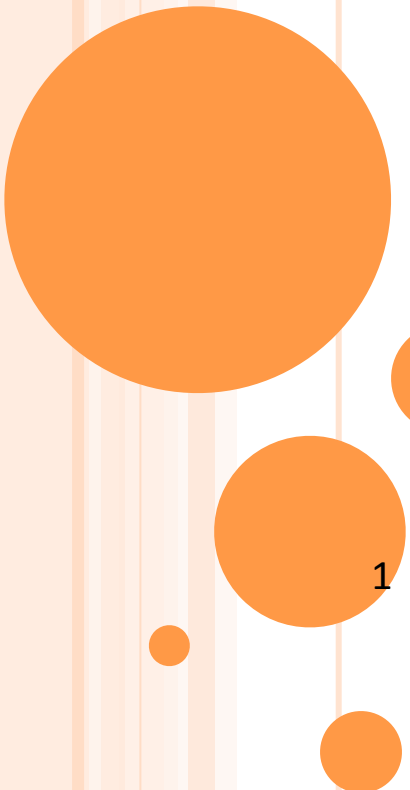




Google Map

Ronald Hsu 100062595 @ MIRLab

<http://about.me/hothero>

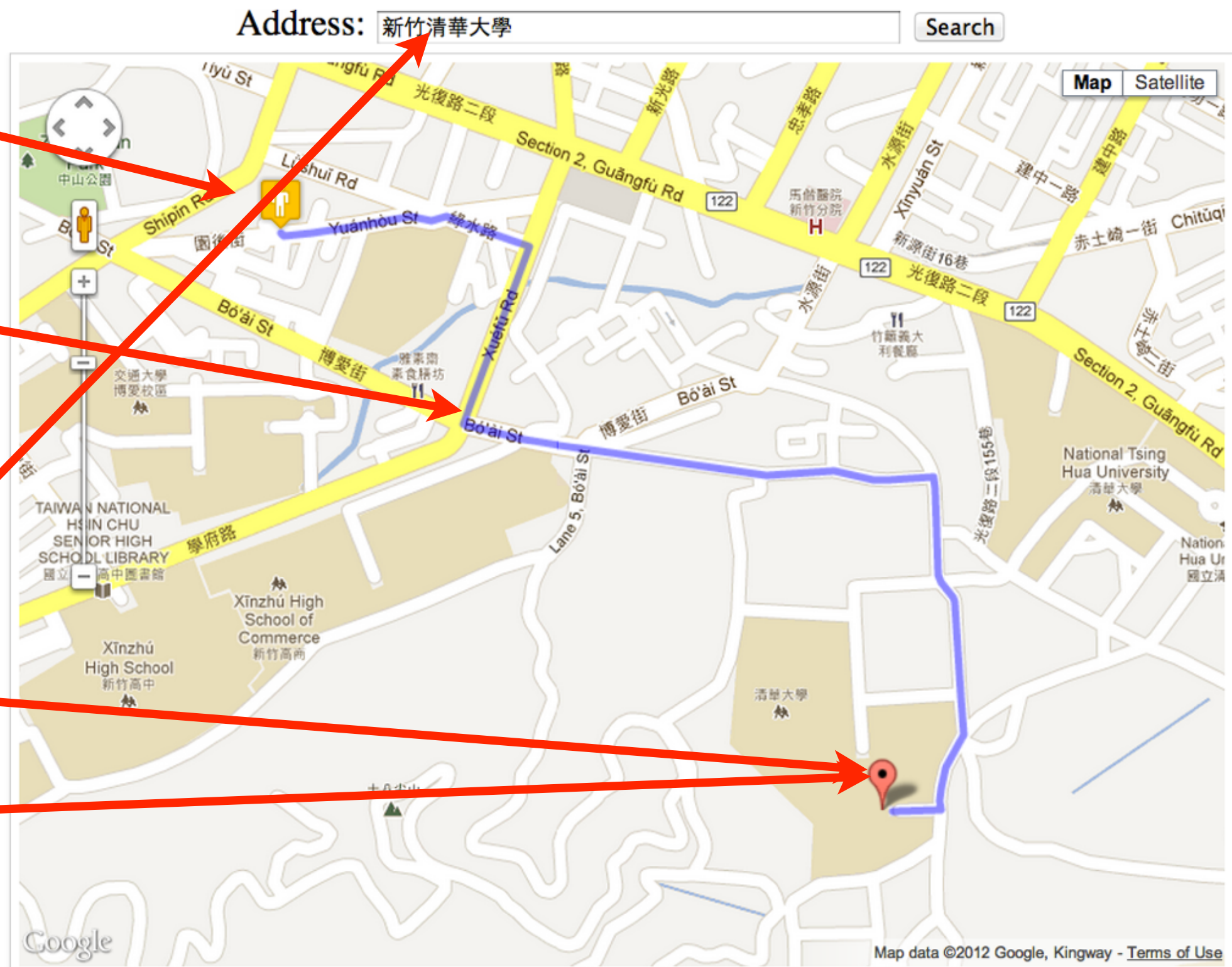
20120417

Outline

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

Google Map v3

- Client
- Location
- Direction
- s
- GeoCode
- r
- Marker
- Event



Get Started

CSS(Optional)

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

include external javascript

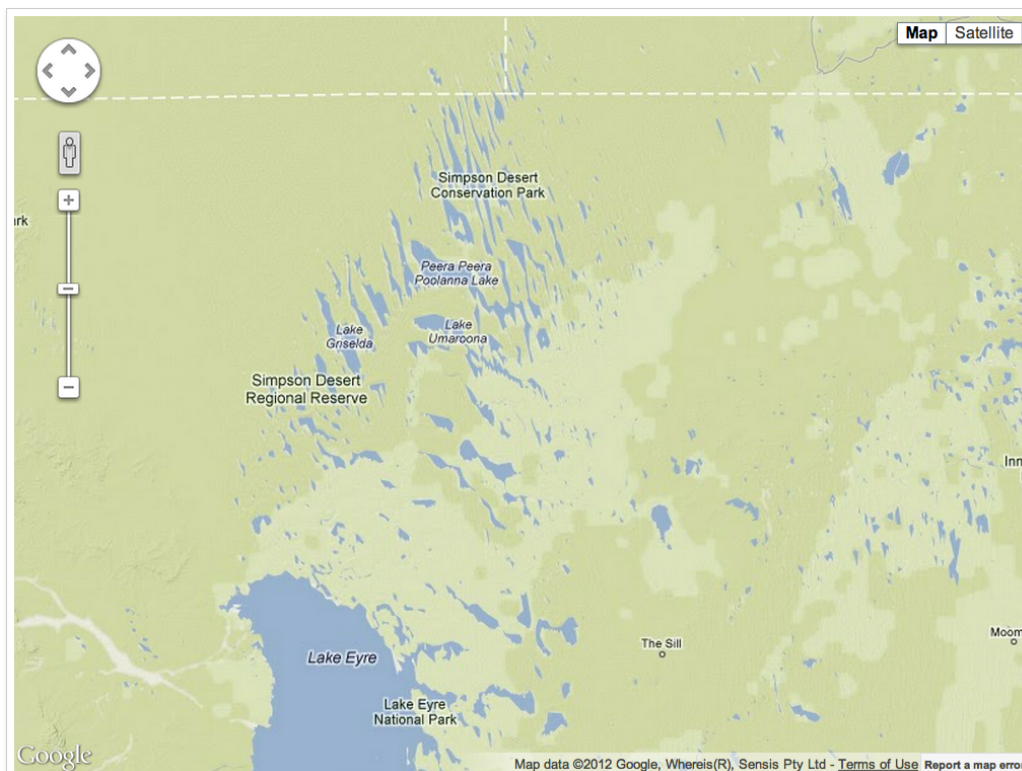
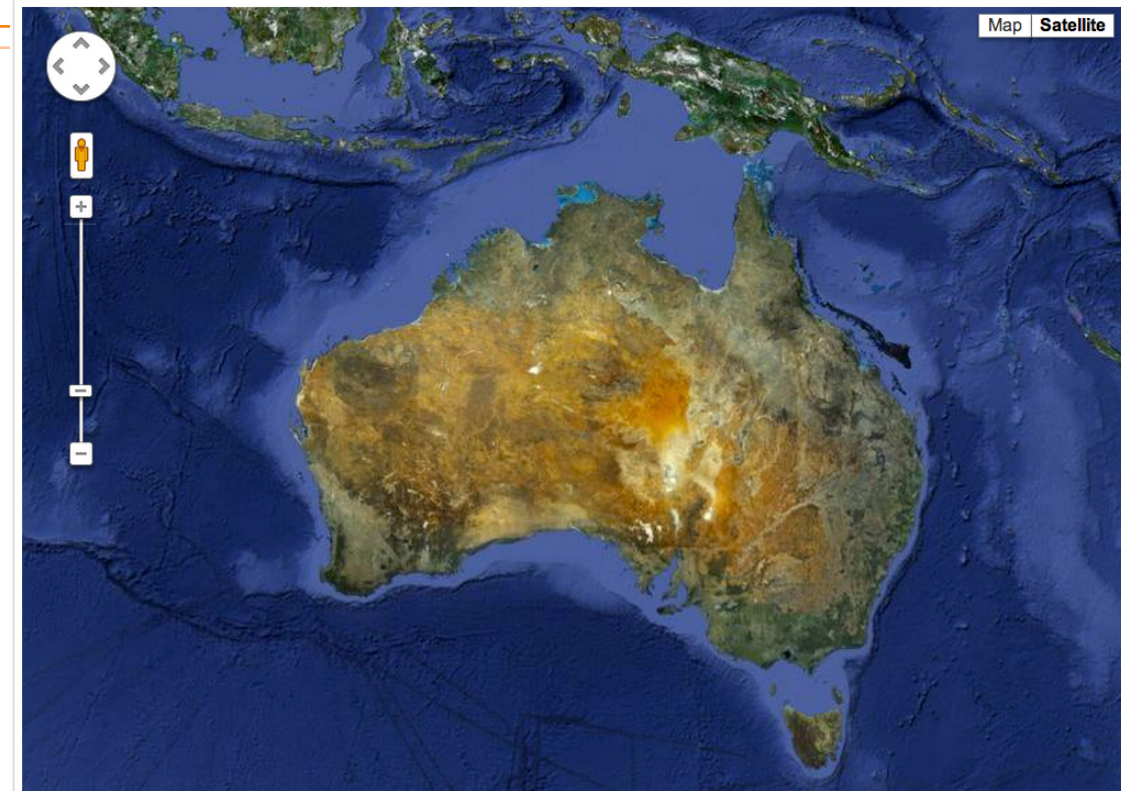
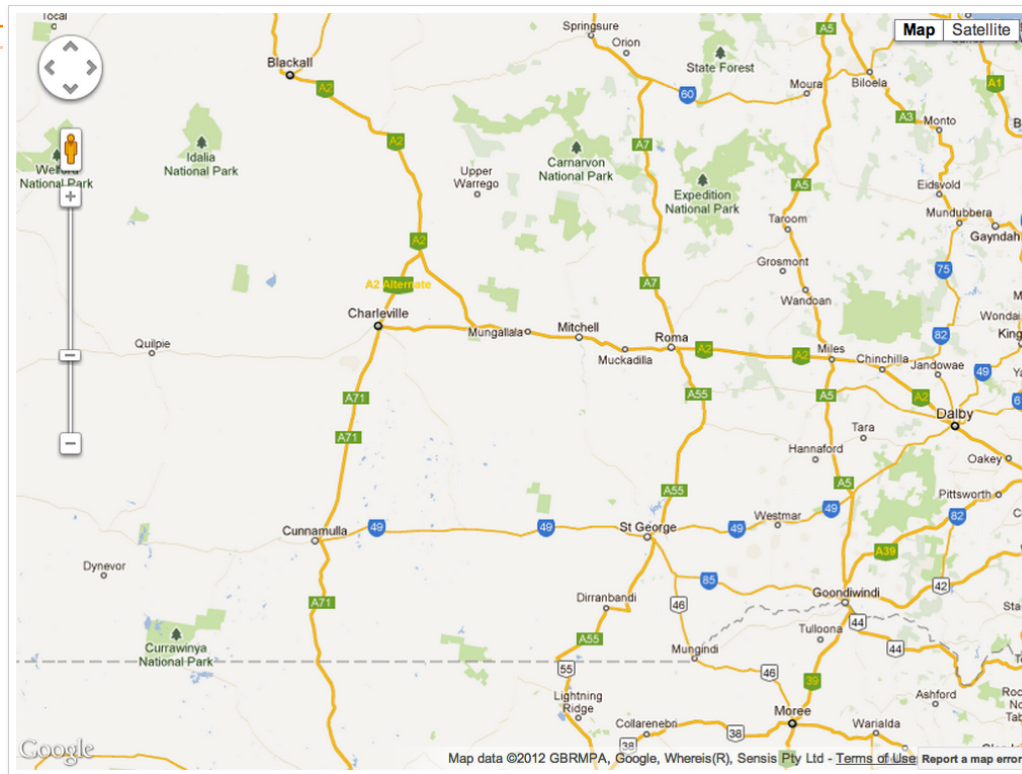
```
<script type="text/javascript"
  src="http://maps.googleapis.com/maps/api/js?sensor=false"></script>
```

```
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

- 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

JS Advanced Concept

○ 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>

Closure & Functional Programming

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

Call by
reference

Closure

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

Functional
Programming

○ <http://jsfiddle.net> 、 <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));
```

Call by function

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

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

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);});
```

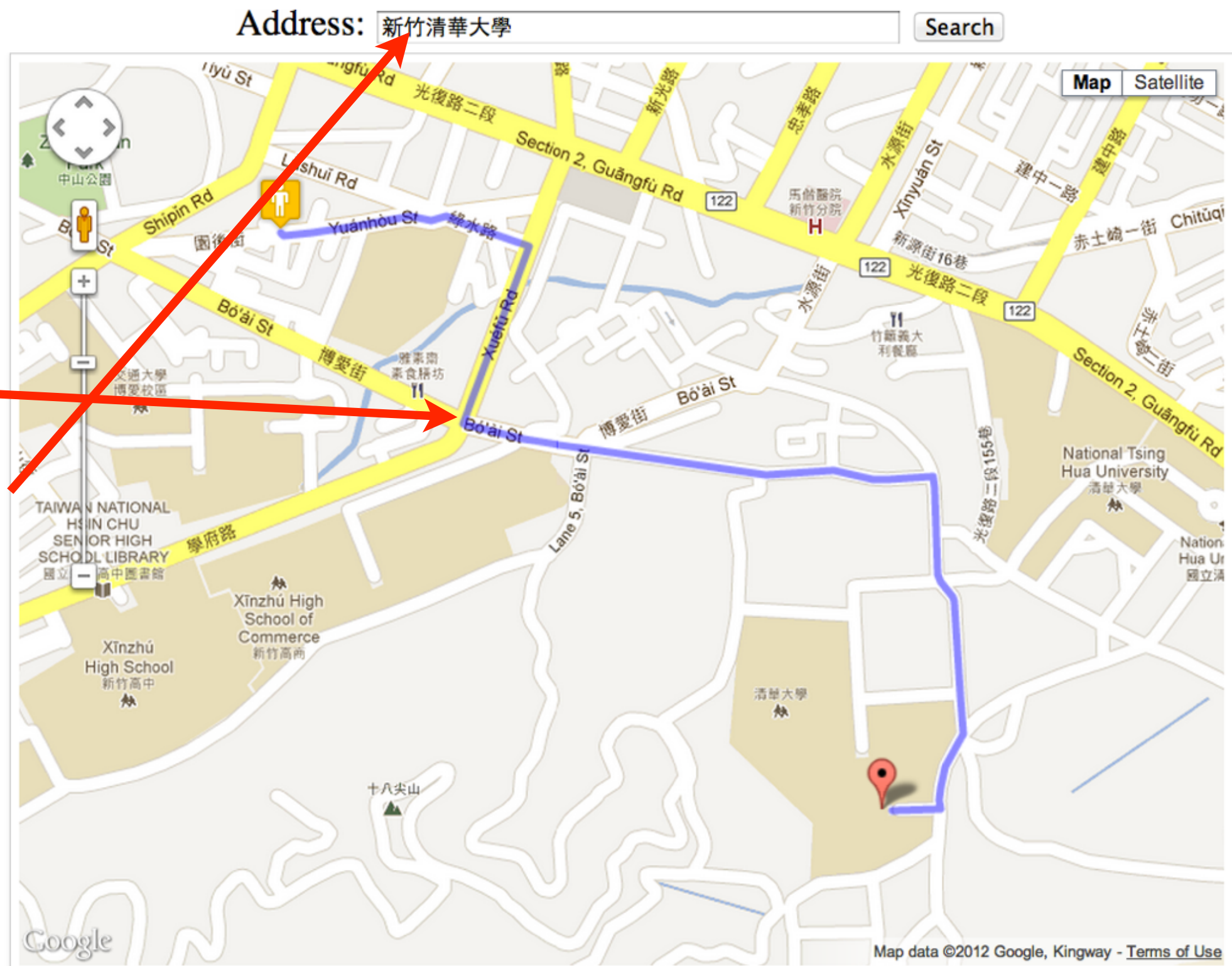
Anonymous
Function

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.addDomListener(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

- 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"] = "均鎂糕餅公司";
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

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

Javascript encoder

- <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

○ Q & A