

Learning API – Weather Man



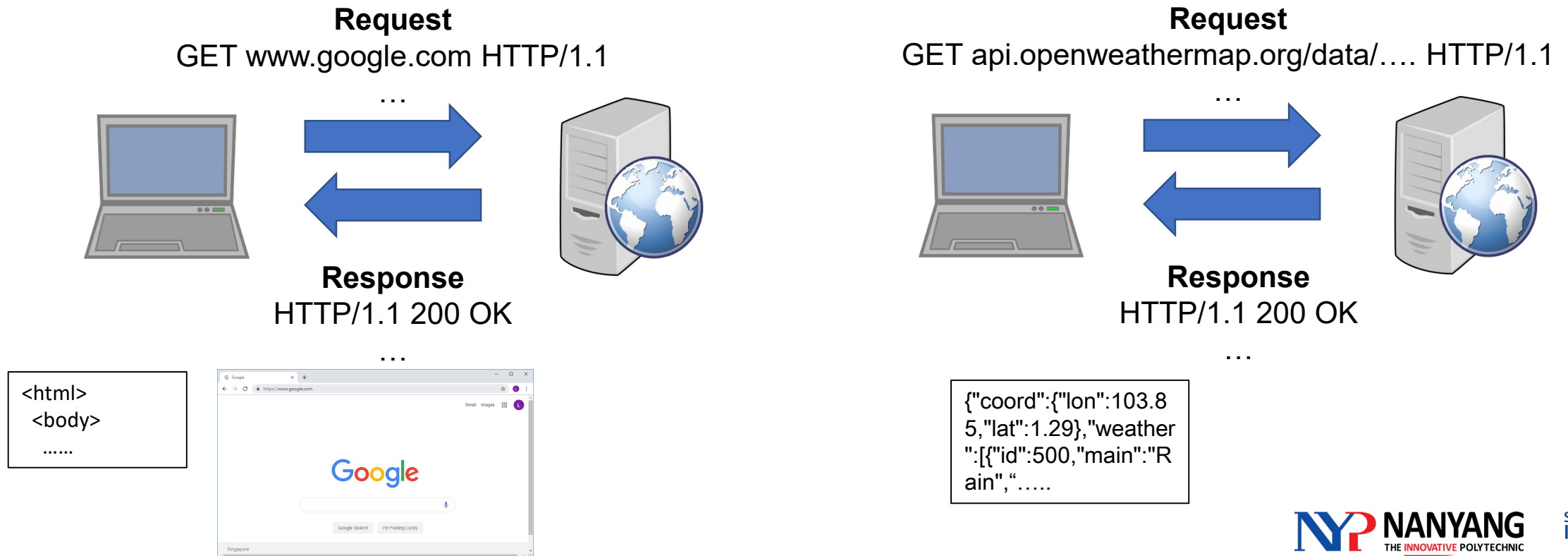
What will I learn?

- How do I have a Web enabled app?
- Using OpenWeatherMap API
- String Manipulation
- How do I start?
- Creating a Note Taker App

How do I have a Web enabled app?

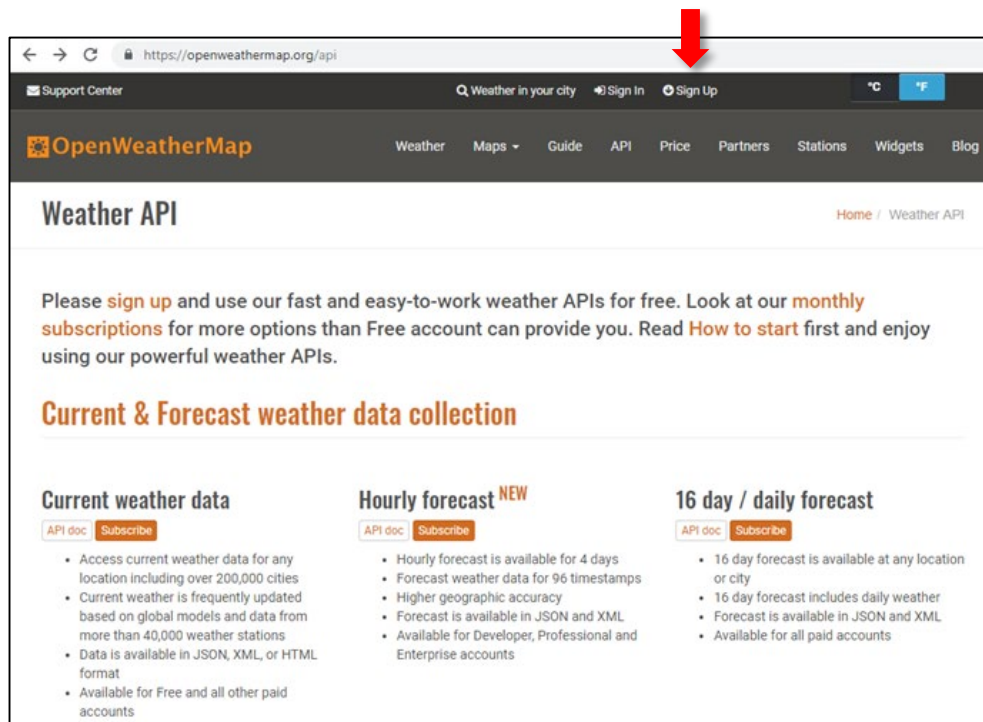
- Learn to use the Web component to communicate with an API.

Hyper Text Transfer Protocol (HTTP)



Using OpenWeatherMap API

- To use OpenWeatherMap API, you will need to register with www.openweathermap.org to get an API Key



Support Center Weather in your city Sign In Sign Up

OpenWeatherMap Weather Maps Guide API Price Partners Stations Widgets Blog

Weather API

Home / Weather API

Please **sign up** and use our fast and easy-to-work weather APIs for free. Look at our **monthly subscriptions** for more options than Free account can provide you. Read **How to start** first and enjoy using our powerful weather APIs.

Current & Forecast weather data collection

Current weather data

API doc [Subscribe](#)

- Access current weather data for any location including over 200,000 cities
- Current weather is frequently updated based on global models and data from more than 40,000 weather stations
- Data is available in JSON, XML, or HTML format
- Available for Free and all other paid accounts

Hourly forecast ^{NEW}

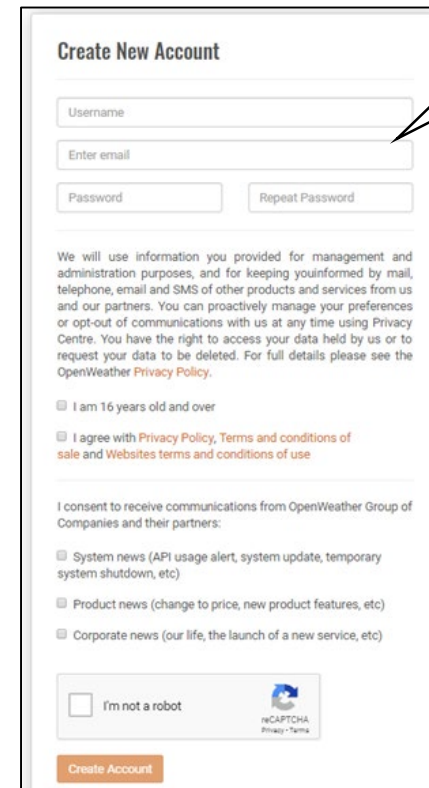
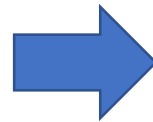
API doc [Subscribe](#)

- Hourly forecast is available for 4 days
- Forecast weather data for 96 timestamps
- Higher geographic accuracy
- Forecast is available in JSON and XML
- Available for Developer, Professional and Enterprise accounts

16 day / daily forecast

API doc [Subscribe](#)

- 16 day forecast is available at any location or city
- 16 day forecast includes daily weather
- Forecast is available in JSON and XML
- Available for all paid accounts



Create New Account

Username

Enter email

Password Repeat Password


We will use information you provided for management and administration purposes, and for keeping you informed by mail, telephone, email and SMS of other products and services from us and our partners. You can proactively manage your preferences or opt-out of communications with us at any time using Privacy Centre. You have the right to access your data held by us or to request your data to be deleted. For full details please see the [OpenWeather Privacy Policy](#).

I am 16 years old and over

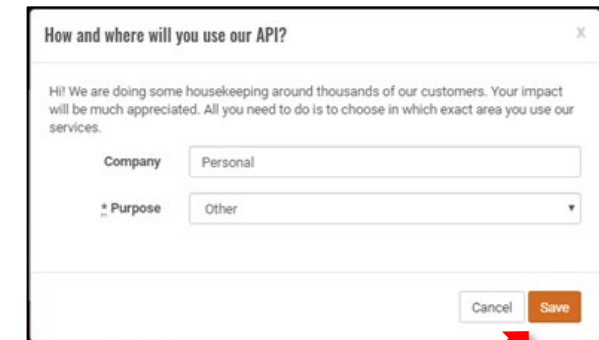
I agree with [Privacy Policy](#), [Terms and conditions of sale](#) and [Websites terms and conditions of use](#)

I consent to receive communications from OpenWeather Group of Companies and their partners:

- System news (API usage alert, system update, temporary system shutdown, etc)
- Product news (change to price, new product features, etc)
- Corporate news (our life, the launch of a new service, etc)

I'm not a robot 

[Create Account](#)



How and where will you use our API?

Hi! We are doing some housekeeping around thousands of our customers. Your impact will be much appreciated. All you need to do is to choose in which exact area you use our services.

Company

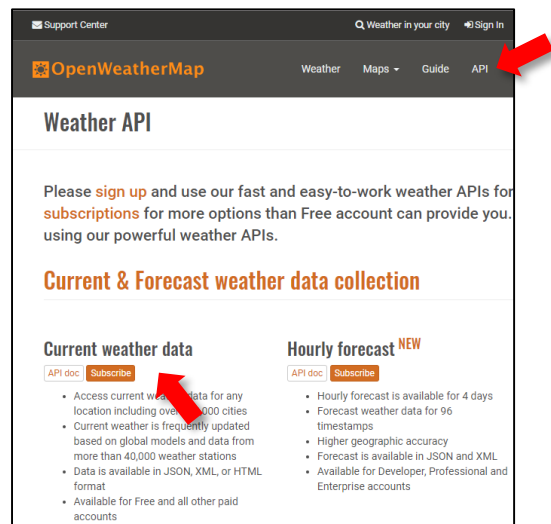
Purpose

[Cancel](#) [Save](#)

Enter required fields and click Create Account

Using OpenWeatherMap API

- Subscribe to Current weather data API



Support Center Weather in your city Sign In Sign Up

OpenWeatherMap Weather Maps Guide API

Weather API

Please **sign up** and use our fast and easy-to-work weather APIs for **subscriptions** for more options than Free account can provide you, using our powerful weather APIs.

Current & Forecast weather data collection

Current weather data

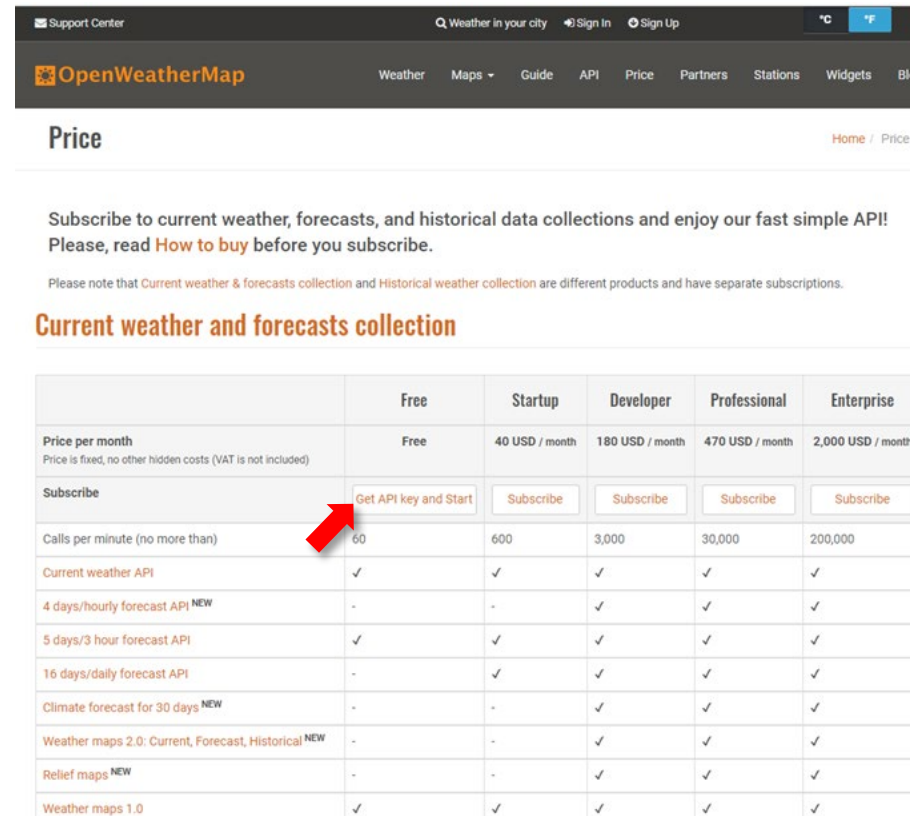
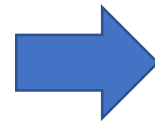
[API doc](#) [Subscribe](#)

- Access current weather data for any location including over 1000 cities
- Current weather is frequently updated based on global models and data from more than 40,000 weather stations
- Data is available in JSON, XML, or HTML format
- Available for Free and all other paid accounts

Hourly forecast ^{NEW}

[API doc](#) [Subscribe](#)

- Hourly forecast is available for 4 days
- Forecast weather data for 96 timestamps
- Higher geographic accuracy
- Forecast is available in JSON and XML
- Available for Developer, Professional and Enterprise accounts



Support Center Weather in your city Sign In Sign Up

OpenWeatherMap Weather Maps Guide API Price Partners Stations Widgets Blog

Price

Home / Price

Subscribe to current weather, forecasts, and historical data collections and enjoy our fast simple API! Please, read [How to buy](#) before you subscribe.

Please note that [Current weather & forecasts collection](#) and [Historical weather collection](#) are different products and have separate subscriptions.

Current weather and forecasts collection

	Free	Startup	Developer	Professional	Enterprise
Price per month	Free	40 USD / month	180 USD / month	470 USD / month	2,000 USD / month
Price is fixed, no other hidden costs (VAT is not included)					
Subscribe	Get API key and start	Subscribe	Subscribe	Subscribe	Subscribe
Calls per minute (no more than)	60	600	3,000	30,000	200,000
Current weather API	✓	✓	✓	✓	✓
4 days/hourly forecast API ^{NEW}	-	-	✓	✓	✓
5 days/3 hour forecast API	✓	✓	✓	✓	✓
16 days/daily forecast API	-	✓	✓	✓	✓
Climate forecast for 30 days ^{NEW}	-	-	✓	✓	✓
Weather maps 2.0: Current, Forecast, Historical ^{NEW}	-	-	✓	✓	✓
Relief maps ^{NEW}	-	-	✓	✓	✓
Weather maps 1.0	✓	✓	✓	✓	✓

Using OpenWeatherMap API

- Record API key

The screenshot shows the OpenWeatherMap API management interface. The top navigation bar includes the OpenWeatherMap logo and links for Weather, Maps, API, Price, Partners, Stations, Widgets, News, and About. Below this, a secondary navigation bar contains links for New Products, Setup, API keys (highlighted with a red arrow), Services, Payments, Billing plans, Block logs, and History bulk, along with a Logout button. A light blue banner below the navigation bar states: "You can generate as many API keys as needed for your subscription. We accumulate the total load from all of them." The main content area is divided into two sections. On the left, under the heading "Key", there is a table with columns for "Key" and "Name". The "Key" column contains a redacted API key, and the "Name" column contains the word "Default". On the right, under the heading "Create key", there is a form with a label "* Name" and an input field, followed by a "Generate" button. A callout box with a black border and white background points to the redacted API key in the table, containing the text "Record your API Key".

Using OpenWeatherMap API

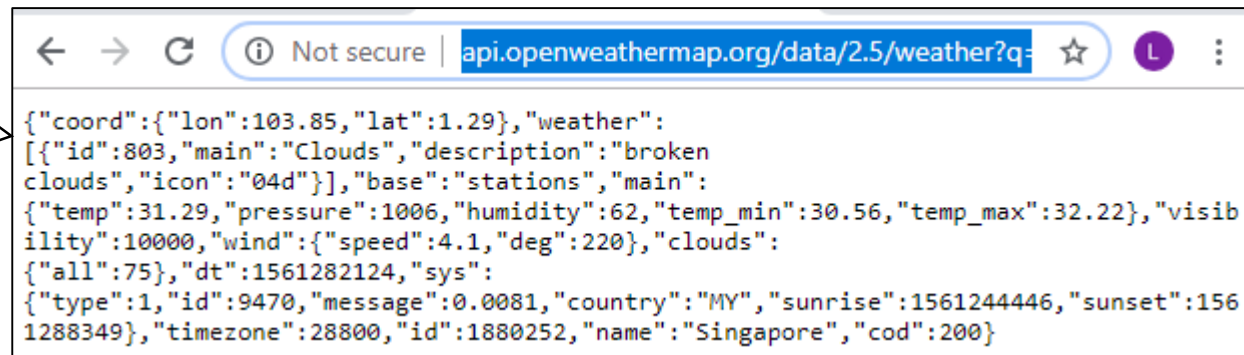
- Test API Key
- Open browser and enter (e.g. API Key is 12345)

Replace with your own API key

<http://api.openweathermap.org/data/2.5/weather?q=Singapore&APPID=12345&units=metric>

The result is in JSON (JavaScript Object Notation) format, a long string of characters .

JSON is a syntax for storing and exchanging data between programs.



```
← → ↻ ⓘ Not secure | api.openweathermap.org/data/2.5/weather?q= Singapore ☆ L ⋮
{"coord":{"lon":103.85,"lat":1.29},"weather":
[{"id":803,"main":"Clouds","description":"broken
clouds","icon":"04d"}],"base":"stations","main":
{"temp":31.29,"pressure":1006,"humidity":62,"temp_min":30.56,"temp_max":32.22},"visib
ility":10000,"wind":{"speed":4.1,"deg":220},"clouds":
{"all":75},"dt":1561282124,"sys":
{"type":1,"id":9470,"message":0.0081,"country":"MY","sunrise":1561244446,"sunset":156
1288349},"timezone":28800,"id":1880252,"name":"Singapore","cod":200}
```

String Manipulation

- Look at the string below. How can I get “Clouds” and “31.39” from it?

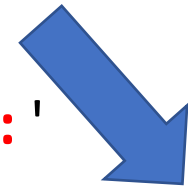
Hint: What are the characters before and after the values we are interested in?

```
{"coord":{"lon":103.85,"lat":1.29},"weather":[{"id":803,"main":"Clouds","description":"broken clouds","icon":"04d"}],"base":"stations","main":{"temp":31.39,"pressure":1007,"humidity":58,"temp_min":30.56,"temp_max":32},"visibility":10000,"wind":{"speed":2.6,"deg":220},"clouds":{"all":75},"dt":1561280162,"sys":{"type":1,"id":9480,"message":0.0089,"country":"MY","sunrise":1561244446,"sunset":1561288349},"timezone":28800,"id":1880252,"name":"Singapore","cod":200}
```


String Manipulation

```
{"coord":{"lon":103.85,"lat":1.29},"weather":[{"id":803,"main":"Clouds","description":"broken clouds","icon":"04d"}],"base":"stations","main":{"temp":31.39,"pressure":1007,"humidity":58,"temp_min":30.56,"temp_max":32},"visibility":10000,"wind":{"speed":2.6,"deg":220},"clouds":{"all":75,"dt":1561280162,"sys":{"type":1,"id":9480,"message":0.0089,"country":"MY","sunrise":1561244446,"sunset":1561288349},"timezone":28800,"id":1880252,"name":"Singapore","cod":200}}
```

Split using ':'



7

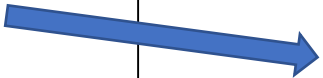
12

```
{"coord"
{"lon"
103.85,"lat"
1.29},"weather"
[{"id"
803,"main"
"Clouds","description"
"broken clouds","icon"
"04d"}],"base"
"stations","main"
{"temp"
31.39,"pressure"
1007,"humidity"
58,"temp_min"
...
```

1

"Clouds"
"description"

Split using ','



1

31.39
"pressure"

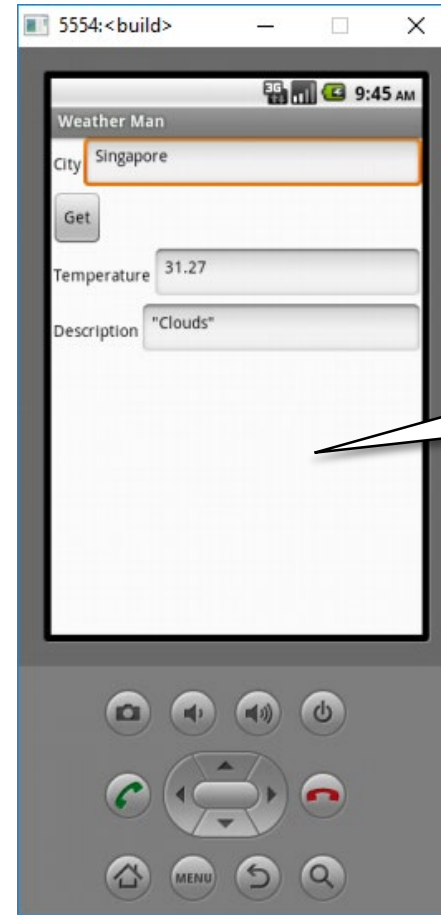
How do I start?

Refer to Introduction
to AI2s

START
HERE

- Create and Run your App in 4 Simple Steps.
 - 1. You'll need a google account. Create if you don't have one.
 - 2. Using Chrome browser, log into App Inventor using Google account.
 - 3. Create App.
 - a. Design how your app looks using App Inventor Designer.
 - b. Instruct how your App should work by simply selecting and dragging standard block codes using App Inventor Blocks Editor.
 - 4. Load and Test your App using App Inventor Emulator on your computer or App Inventor Companion App on your phone
- <http://appinventor.mit.edu/explore/get-started?>

Weather Man



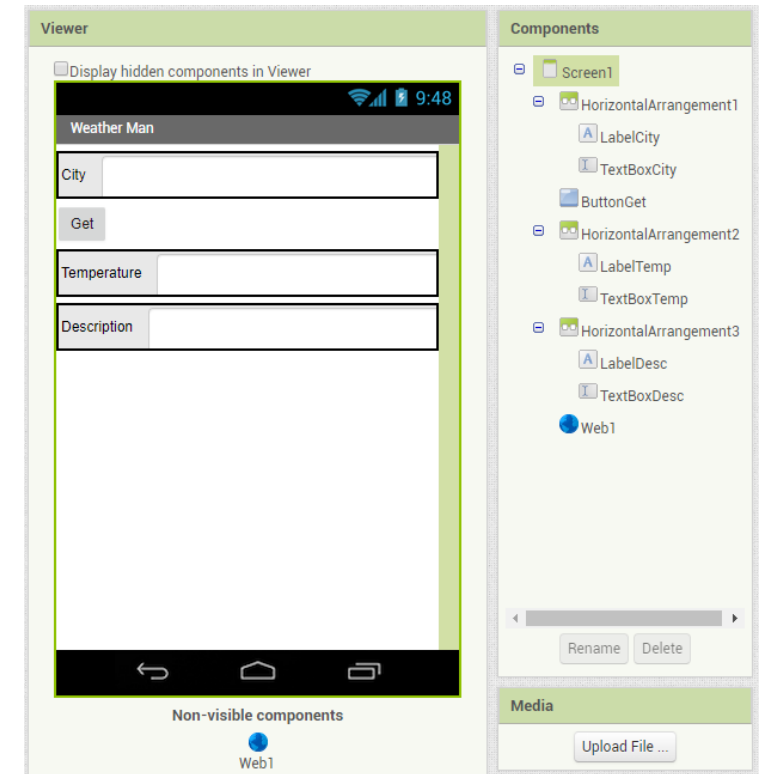
What's the weather in Singapore?

Reference:

<http://explore.appinventor.mit.edu/content/stockquotes>

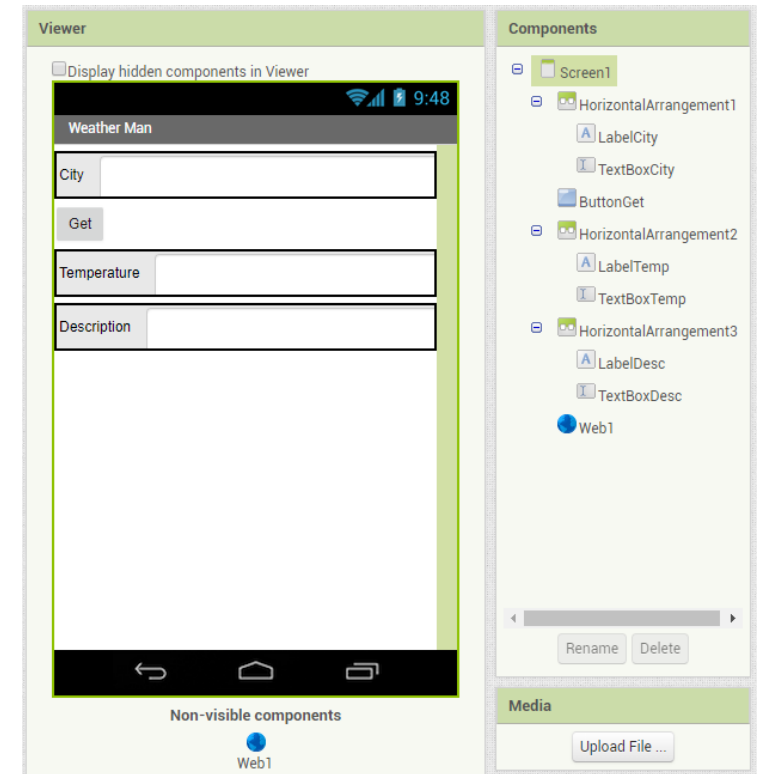
App Inventor Designer

Component	Name	Properties
HorizontalArrangement	HorizontalArrangement1	AlignVertical: Center Width: Fill parent
Label	LabelCity	Text: City
TextBox	TextBoxCity	Width: Fill parent Hint: Enter City Text: <Empty>
Button	ButtonGet	Text: get
HorizontalArrangement	HorizontalArrangement2	AlignVertical: Center Width: Fill parent
Label	LabelTemp	Text: Temperature
TextBox	TextBoxTemp	Width: Fill parent Hint: <Empty> Text: <Empty>



App Inventor Designer

Component	Name	Properties
HorizontalArrangement	HorizontalArrangement3	AlignVertical: Center Width: Fill parent
Label	LabelDesc	Text: Description
TextBox	TextBoxDesc	Width: Fill parent Hint: <Empty> Text: <Empty>
Web	Web1	



App Inventor Block Editor 1

```
initialize global tempFeed to ""
initialize global tempString to ""
initialize global descString to ""
```

```
when ButtonGet.Click
do
  set Web1.Url to join (
    " http://api.openweathermap.org/data/2.5/weather?q="
    TextBoxCity.Text
    "&units=metric "
    "&APPID="
  )
  call Web1.Get
```

Join string to form
<http://api.openweathermap.org/data/2.5/weather?q=Singapore&APPID=12345&units=metric>

Set Url of Web1 as the joined string.

When ButtonGet is clicked, use Web1 to get results from api.openweather.org

Use HTTP protocol to send to api web server

App Inventor Block Editor 2

When Web1 gets the required text

```
when Web1 GotText
  url responseCode responseType responseContent
do
  if responseCode = 200
  then
    set global tempFeed to select list item list split text get responseContent
                          index 12 at ":"
    set global tempString to select list item list split text get global tempFeed
                             index 1 at ","
    set global tempFeed to select list item list split text get responseContent
                              index 7 at ":"
    set global descString to select list item list split text get global tempFeed
                               index 1 at ","
    set TextBoxTemp . Text to get global tempString
    set TextBoxDesc . Text to get global descString
  else
    set TextBoxTemp . Text to "?"
    set TextBoxDesc . Text to "?"
```

Only manipulate responseContent if the responseCode is 200 (Status = OK)

Refer to previous Slides on Split Text and Index Chosen

Show Temperature and weather description

If responseCode is not OK, e.g. 404, fill fields with ?