1/15/2019

LogSearch System

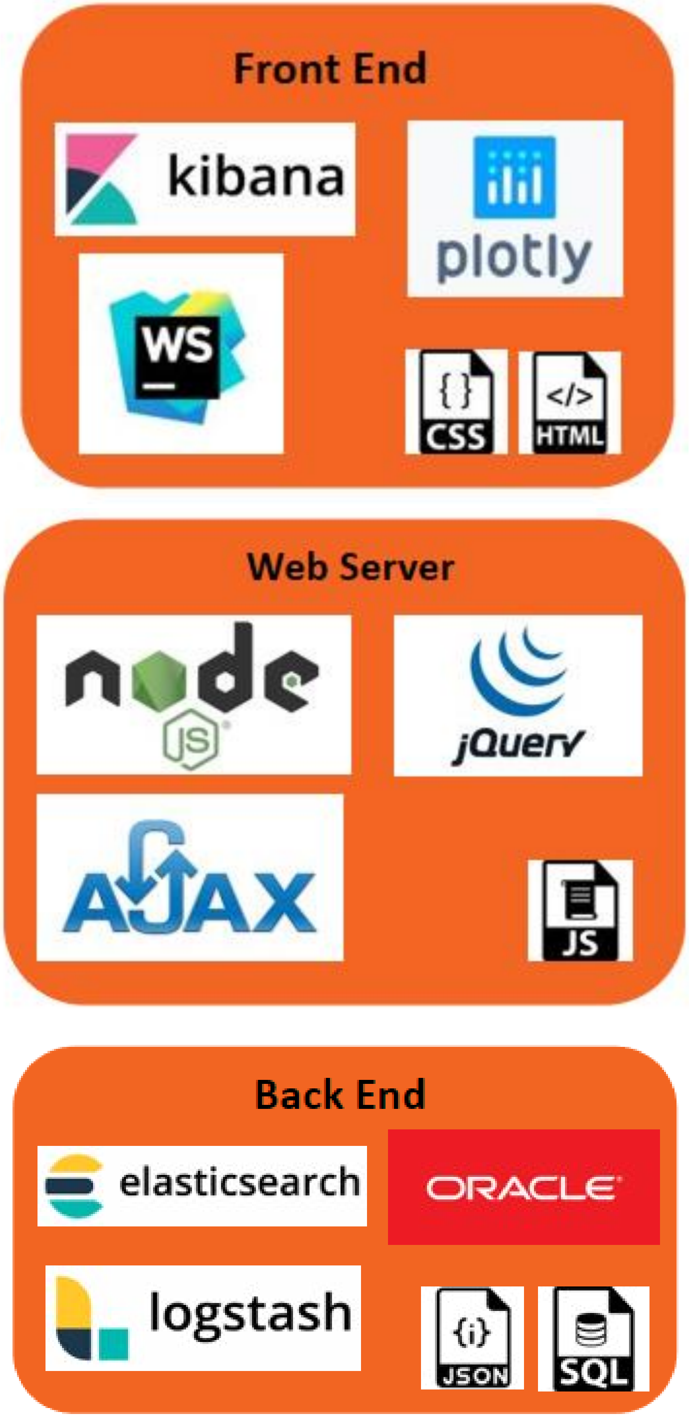
DOCUMENTATION

XIE, SHAE

Contents

Development Tools

Three parts of the whole system:



Program

This section introduces technical details and explains the code.

Back-End

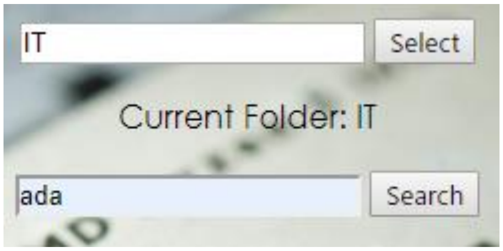
1. Elasticearch

The most operation in elasticsearch is query according to the given keywords.

File:/stage3_v3 /server_searchengine_v3.js

There are three different ways to search:

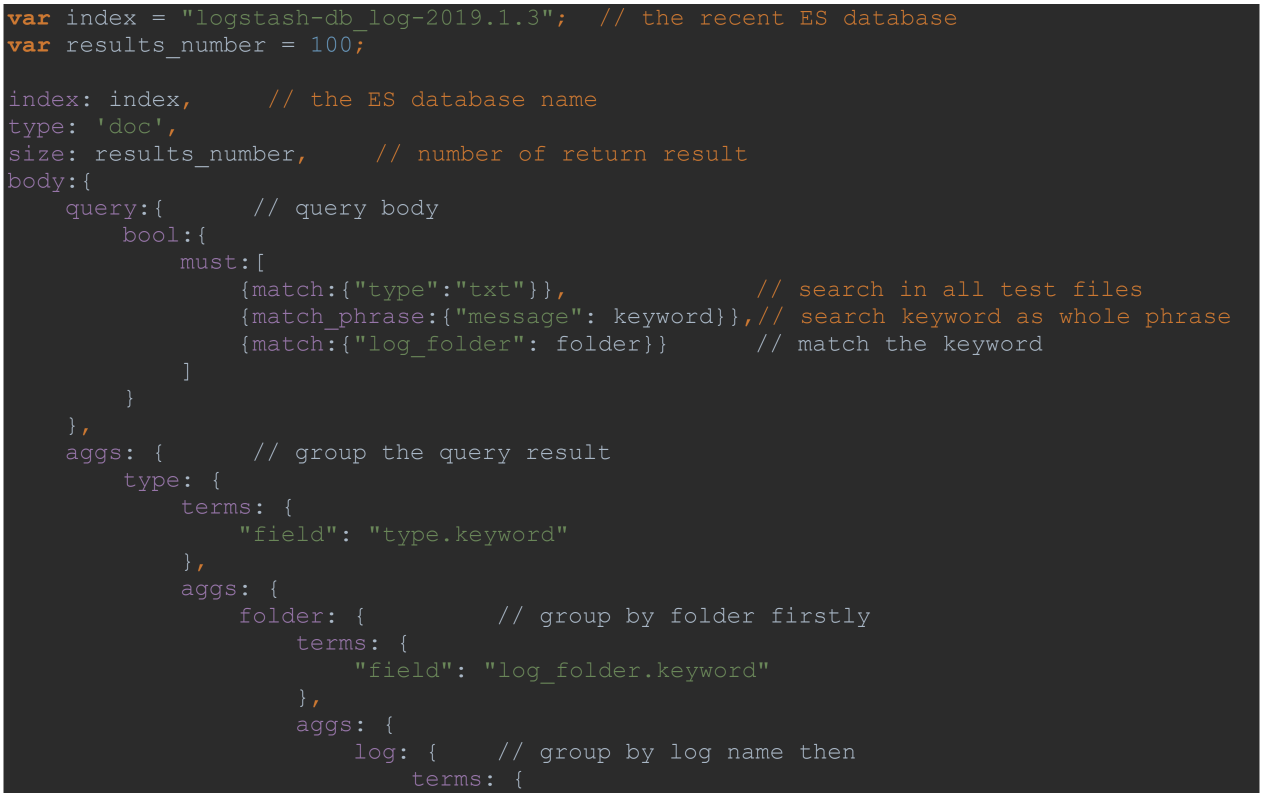
a. Target Folder : text files only



IT

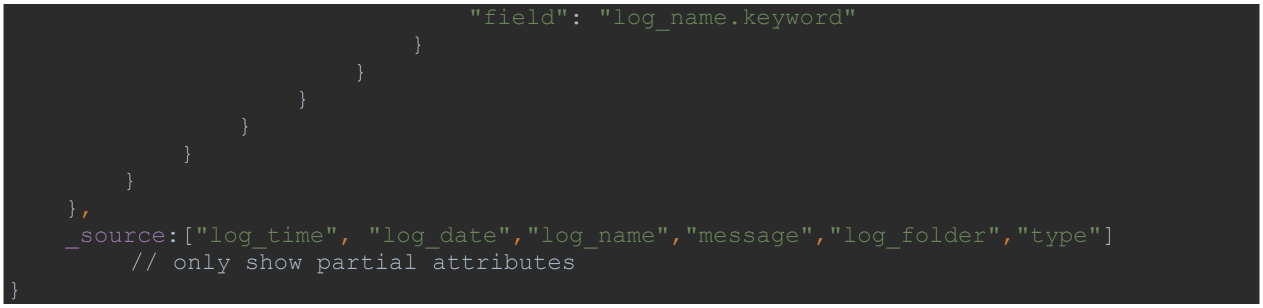
Current Folder: IT

ada



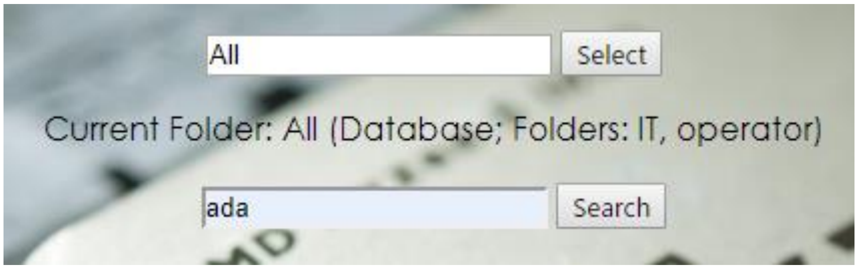
```
var index = "logstash-db_log-2019.1.3";  // the recent ES database
var results_number = 100;

index: index,      // the ES database name
type: 'doc',
size: results_number,     // number of return result
body:{
    query:{       // query body
        bool:{
            must:[
                {match:{"type":"txt"}},               // search in all test files
                {match_phrase:{"message": keyword}},// search keyword as whole phrase
                {match:{"log_folder": folder}}      // match the keyword
            ]
        }
    },
    aggs: {       // group the query result
        type: {
            terms: {
                "field": "type.keyword"
            },
            aggs: {
                folder: {          // group by folder firstly
                    terms: {
                        "field": "log_folder.keyword"
                    },
                    aggs: {
                        log: {     // group by log name then
                            terms: {
```



```
                                "field": "log_name.keyword"
                            }
                        }
                    }
                }
            }
        }
    },
    _source:["log_time", "log_date","log_name","message","log_folder","type"]
        // only show partial attributes
}
```

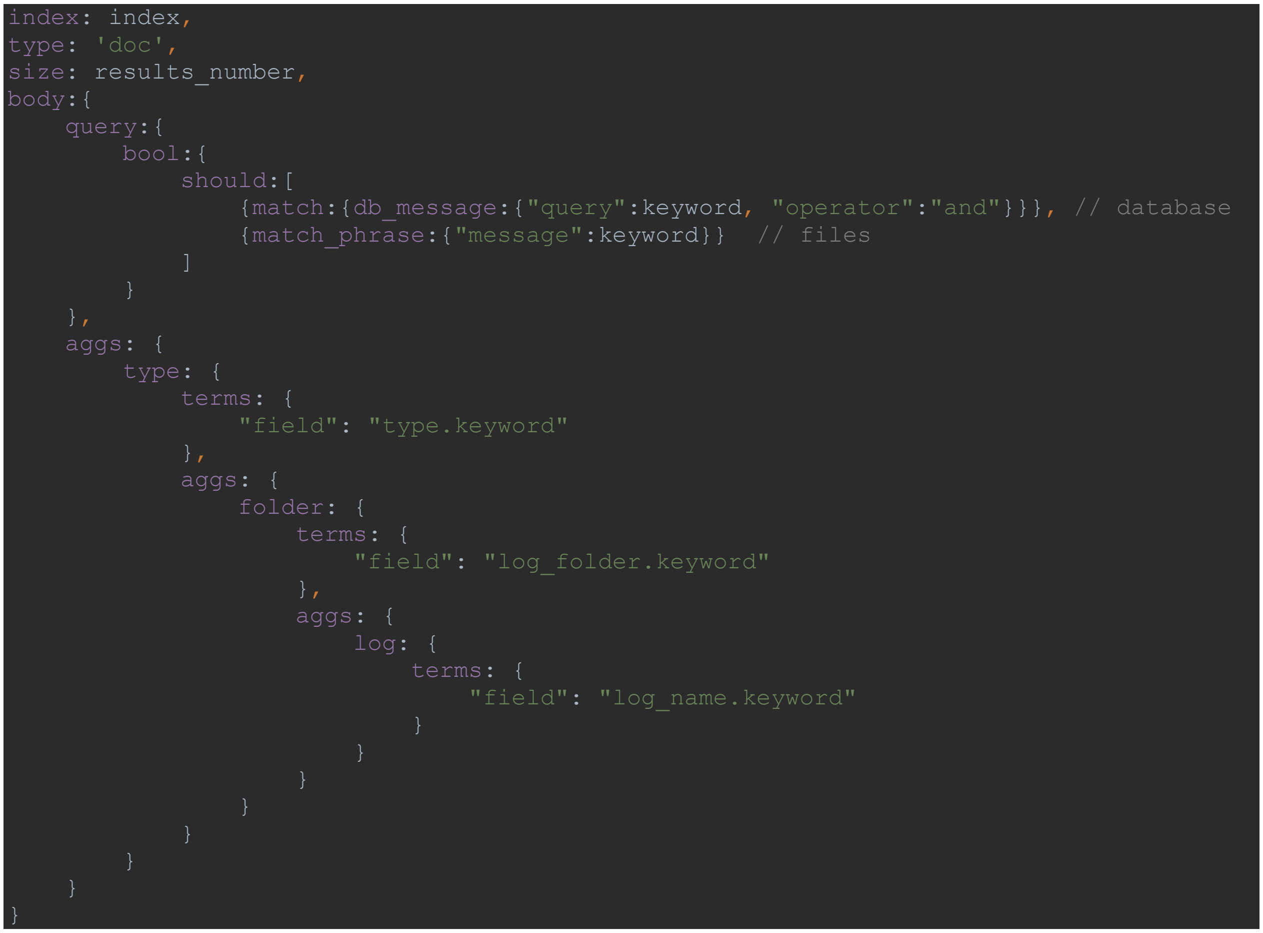
b. Search in both database and all files: all data



All

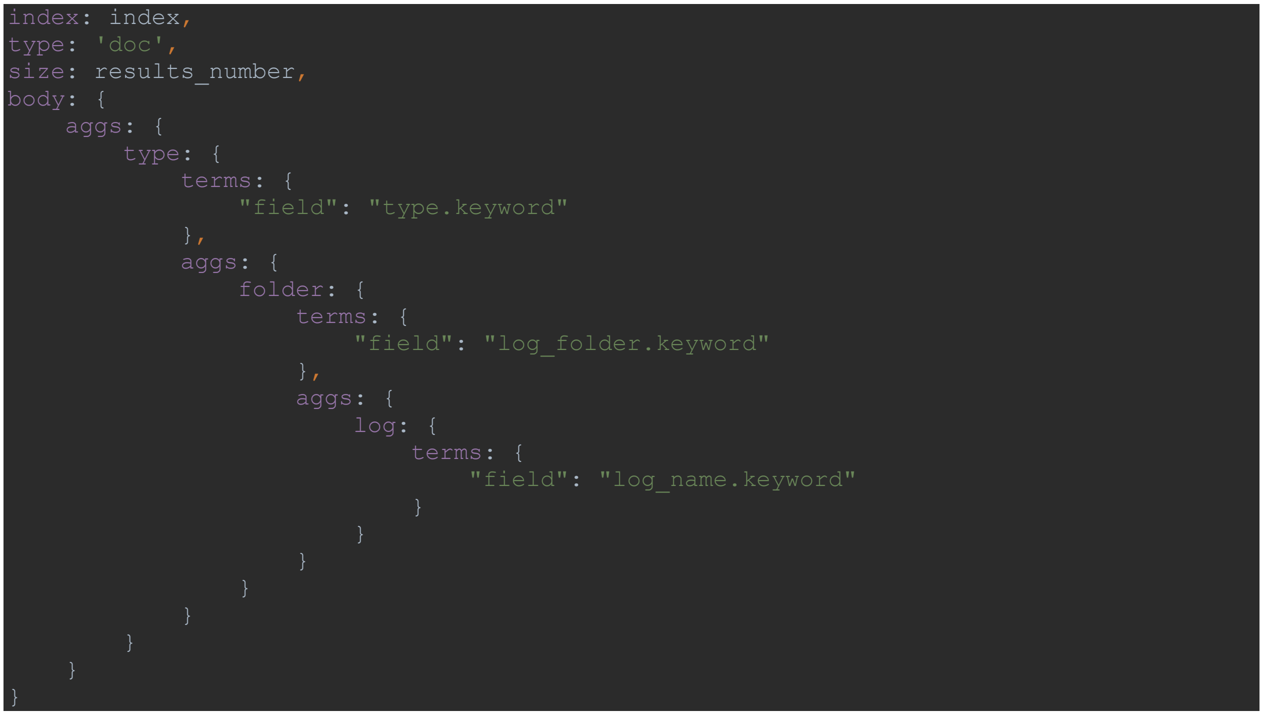
Current Folder: All (Database; Folders: IT, operator)

ada



```
index: index,
type: 'doc',
size: results_number,
body:{
    query:{
        bool:{
            should:[
                {match:{db_message:{"query":keyword, "operator":"and"}}}, // database
                {match_phrase:{"message":keyword}}  // files
            ]
        }
    },
    aggs: {
        type: {
            terms: {
                "field": "type.keyword"
            },
            aggs: {
                folder: {
                    terms: {
                        "field": "log_folder.keyword"
                    },
                    aggs: {
                        log: {
                            terms: {
                                "field": "log_name.keyword"
                            }
                        }
                    }
                }
            }
        }
    }
}
```

c. Show the overall data statics



```
index: index,
type: 'doc',
size: results_number,
body: {
    aggs: {
        type: {
            terms: {
                "field": "type.keyword"
            },
            aggs: {
                folder: {
                    terms: {
                        "field": "log_folder.keyword"
                    },
                    aggs: {
                        log: {
                            terms: {
                                "field": "log_name.keyword"
                            }
                        }
                    }
                }
            }
        }
    }
}
```

2. Logstash

Logstash is needed when import and update data, as well as connect to the conventional database and parse text file.

File: /conf/logstash/

a. Import and parse data from text files under folders

```
input {
    file{
        path => "C:/Mulong/logs/operator/480b5c800056afd8-(BRCM_PL_TNR-
B[illegible]RTMP36).txt"
        start_position => "beginning"
        codec => multiline{
            negate => true
            pattern => "(^|\[INFO\]\[)(\d+\-\w+\-\d+)\s(\d+\:\d+\:\d+)"
            what => "previous"
        }
```

Set file path

Define log segment

Differentiate from database

```
            add_field => {"type" => "txt"}
      }
   }

   filter {
      grok {
            break_on_match => false
            match => {"message"=>
                      "(^|\[INFO\]\[)(?<log_date>\d+\-\w+\-
\d+)\s(?<log_time>\d+\:\d+\:\d+\.?\d*)[\]\s\t]*(?<log_content>.*)"}
            match => {"path"=>"(?<log_folder>[^\/]*)\/(?<log_name>[^\/]*\.(log|txt))"}
      }
   }
```

Parse unique log format

b. Connect to database

```
input{
   jdbc{
            jdbc_driver_library => "c:\Mulong\jdbc\ojdbc8.jar"
            jdbc_driver_class => "Java::oracle.jdbc.driver.OracleDriver"
            jdbc_connection_string => "jdbc:oracle:thin:user/123@//server:1521/pin"
            jdbc_user => "user"
            jdbc_password => "123"
            statement_filepath => "C:\Mulong\git\github\Elasticsearch-nodejs-
UI\nodejs_project_AMD\sql\1.sql"
            type => "todo"
   }
   jdbc{
            jdbc_driver_library => "c:\Mulong\jdbc\ojdbc8.jar"
            jdbc_driver_class => "Java::oracle.jdbc.driver.OracleDriver"
            jdbc_connection_string => "jdbc:oracle:thin:user/123@//server:1521/pin"
            jdbc_user => "user"
            jdbc_password => "123"
            statement_filepath => "C:\Mulong\git\github\Elasticsearch-nodejs-
UI\nodejs_project_AMD\sql\2.sql"
            type => "userpreferences"
   }
```

Connect to the DB server

Content you wanna select

Table name

Adding when import new table

WebServer

1. Nodejs

Used to build the web server and excuse the search query according to input keyword, as well as send back the result to front-end.

File:/stage3_v3 /server_router_v3.js

Initial page

The first page sent when link to the system.

```
// *** router start ***
app.get('/', function (req, res) {
    res.sendfile(__dirname + '/public/index_v3.html');
});
```

a. Main server: trigger the search engine.

```
app.get('/getkeyword', function (req, res) {
    // get keyword from request
    var search = {
        'folder': req.query.folder,
        'keyword': req.query.keyword,
        'show_all': req.query.show_all
    };
    keycontent = search['keyword'];
    folder = search['folder'];
    console.log("\n\ninput folder: " + folder);
    console.log("Input keyword: " + keycontent);

    // trigger the search engine
    // search by given keywords
    es.elasticSearch(search, function (result) {
        var response = {};  // the final return response
        if(result){
            // return variables
            var disp = {};  // the table on website
            var draw_data = {};  // the data for drawing diagram
            // show all or show details
            if(search['show_all']){
                disp = ui.disp_overview(result, draw_data);
            }
            else{
                var overview = ui.disp_overview(result, draw_data);
                disp = ui.disp_detail(result, keycontent);

                disp['txt'] = overview['txt'] + disp['txt'];
                disp['db'] = overview['db'] + disp['db'];
            }

            // gather the results
            response['disp'] = disp;
            response['draw_data'] = draw_data;
            response['status'] = 1;
            res.setHeader('Content-Type', 'text/html');
            res.end(JSON.stringify(response));
        }
        else{
            response['disp'] = "<h3>No related result found by given keyword in target
folder: " + search['folder'] + '/' + search['keyword'] + "</h3>";
            response['status'] = -1;
            res.end(JSON.stringify(response));
        }
    });
});
```

b. Download file from local server

```
app.get('/download', function (req, res) {
    var file = __dirname + '\\logs\\' + req.query.file;
    console.log("Download " + file);
    res.set({
        'Content-Type': 'application/octet-stream',
        'Content-Disposition': 'attachment; filename=' + req.query.file
    });
    fs.createReadStream(file).pipe(res);
});
```

2. Ajax + JQuery

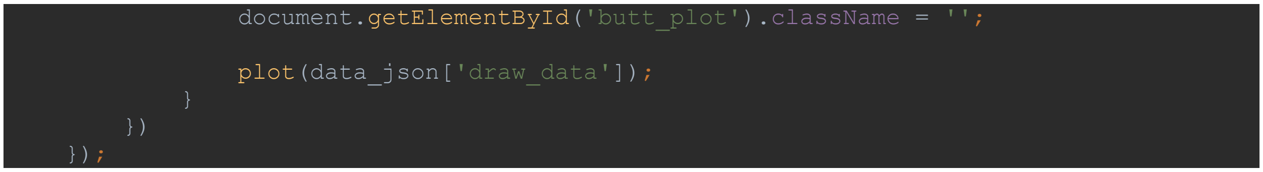
Use to transfer data and collect the return data from the server, as well as defining the on_click function.

File:/stage3_v3/public/index_v3.html

```
<script type="application/javascript">
    // ajax data transfer
    $('#show_all').click(function () {
        $.ajax({
            url: '/getkeyword',
            type: 'get',
            data: {
                show_all: "show_all"
            },
            success: function (data) {
                // parse the string data into Json
                var data_json = eval('(' + data + ')');
                // display result
                document.getElementById('folder_name').innerText = 'Current Folder:
All logs and database on server';
                document.getElementById('table_txt').innerHTML =
data_json['disp']['txt'];
                document.getElementById('table_db').innerHTML =
data_json['disp']['db'];

                // change display area
                document.getElementById('rt').style.display = 'block';
                document.getElementById('rt').style.backgroundColor = '#00B7FF';
                document.getElementById('nav_bar').style.display = 'block';
                document.getElementById('nav_data_source').style.display = 'block';
                document.getElementById('search_failed').style.display = 'none';
                document.getElementById('disp_table').style.display = 'block';
                document.getElementById('disp_plot').style.display = 'none';

                // change button status
                document.getElementById('butt_table').className = 'active';
```



```
                document.getElementById('butt_plot').className = '';

                plot(data_json['draw_data']);
            }
        })
    });
```

Front-End

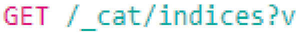
1. Kibana

Kibana is only a test tool in this project to check the correctness of the ES query statement.

Another important function of Kibana is to set the property of each data field (columns of each table in traditional database), it’s called mapping.

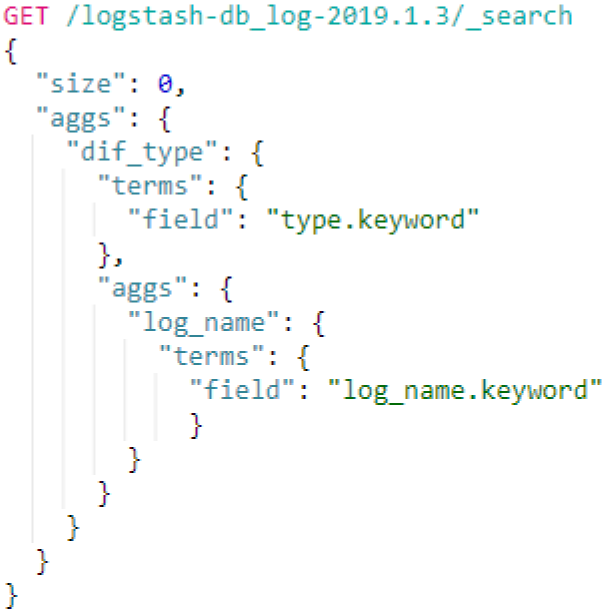
File: /conf/mapping

a. Query



```
GET /_cat/indices?v
```

Check all data in current ES database



```
GET /logstash-db_log-2019.1.3/_search
{
  "size": 0,
  "aggs": {
    "dif_type": {
      "terms": {
        "field": "type.keyword"
      },
      "aggs": {
        "log_name": {
          "terms": {
            "field": "log_name.keyword"
          }
        }
      }
    }
  }
}
```

Similar grammar as ES query

Kibana is a great place if you want to inspect your database and test your query statement.

b. Mapping *

This is highly important for importing data from traditional Oracle /MySQL database, otherwise the full-text (all filed) search may not be achieved.

Notes:

i. In the “settings”, the number_of_shards is always 5 to guarantee the performance.

ii. Logstash can help to reset property of columns in old traditional database automatically if no customized mapping is given, BUT you need to do that by yourself manually if you want to achieve full-text search.

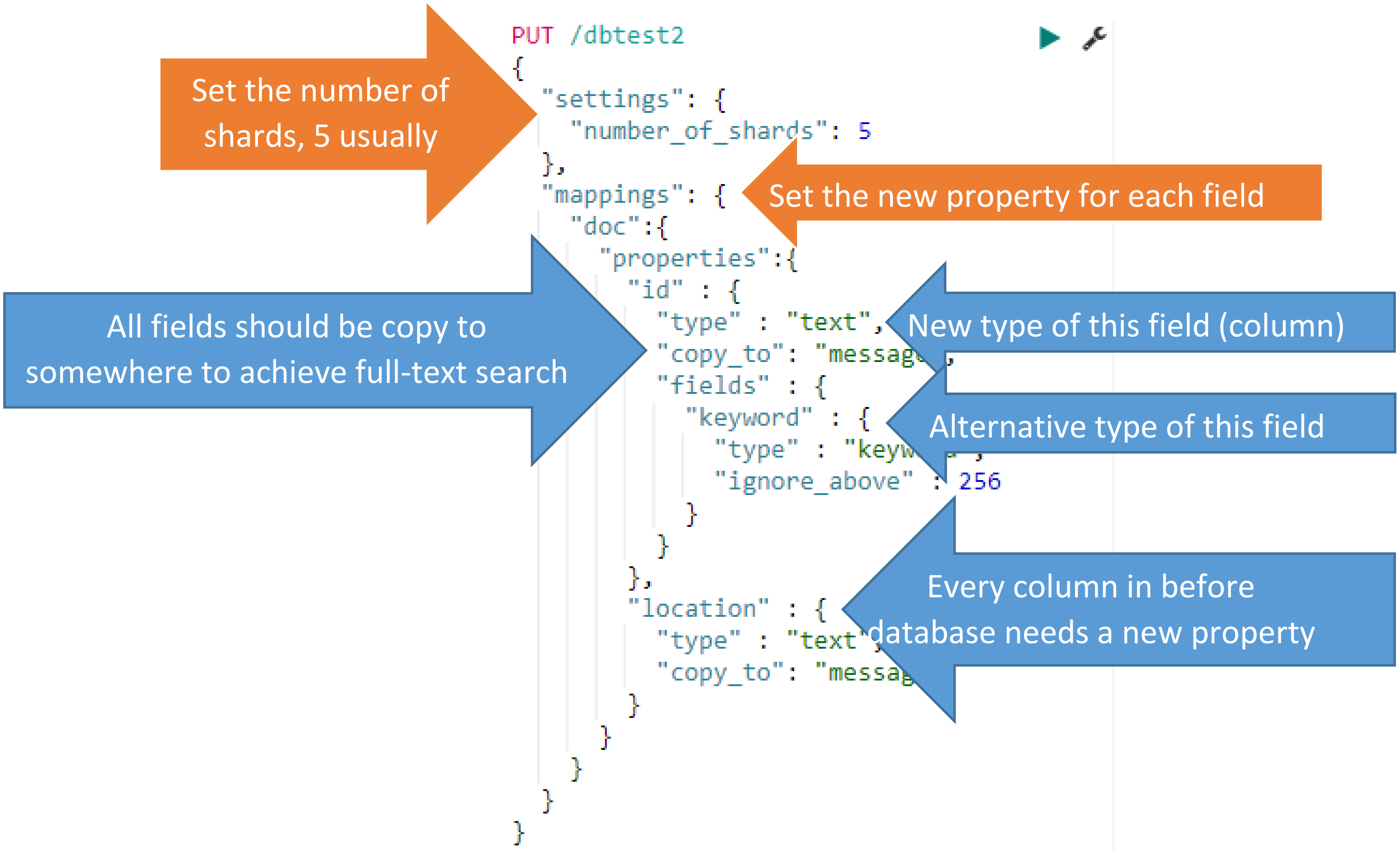
iii. To achieve full-text search, you need to add a “copy_to” attribute to each field. And copy all the fields to that single field.

iv. All the field that copy to the same filed required same type (usually text)

v. If you want to give multiple properties to one field, use “fields” setting

vi. “Keyword” type is required if you want to do aggregation in this field.

https://www.elastic.co/guide/en/elasticsearch/reference/current/copy-to.html



```
PUT /dbtest2
{
  "settings": {
    "number_of_shards": 5
  },
  "mappings": {
    "doc":{
      "properties":{
        "id" : {
          "type" : "text",
          "copy_to": "messag ,
          "fields" : {
            "keyword" : {
              "type" : "keyw
              "ignore_above" : 256
            }
          }
        },
        "location" : {
          "type" : "text"
          "copy_to": "messag
        }
      }
    }
  }
}
```

Set the number of shards, 5 usually

Set the new property for each field

All fields should be copy to somewhere to achieve full-text search

New type of this field (column)

Alternative type of this field

Every column in before database needs a new property

Example of create a new Index (Database in MySQL)

2. Plotly

Plotly is a convenient tool to visualize the result to see the trend and distribution. It is built on JavaScript and the code is embedded in script.

File:/stage3_v3 /public/index_v3.html

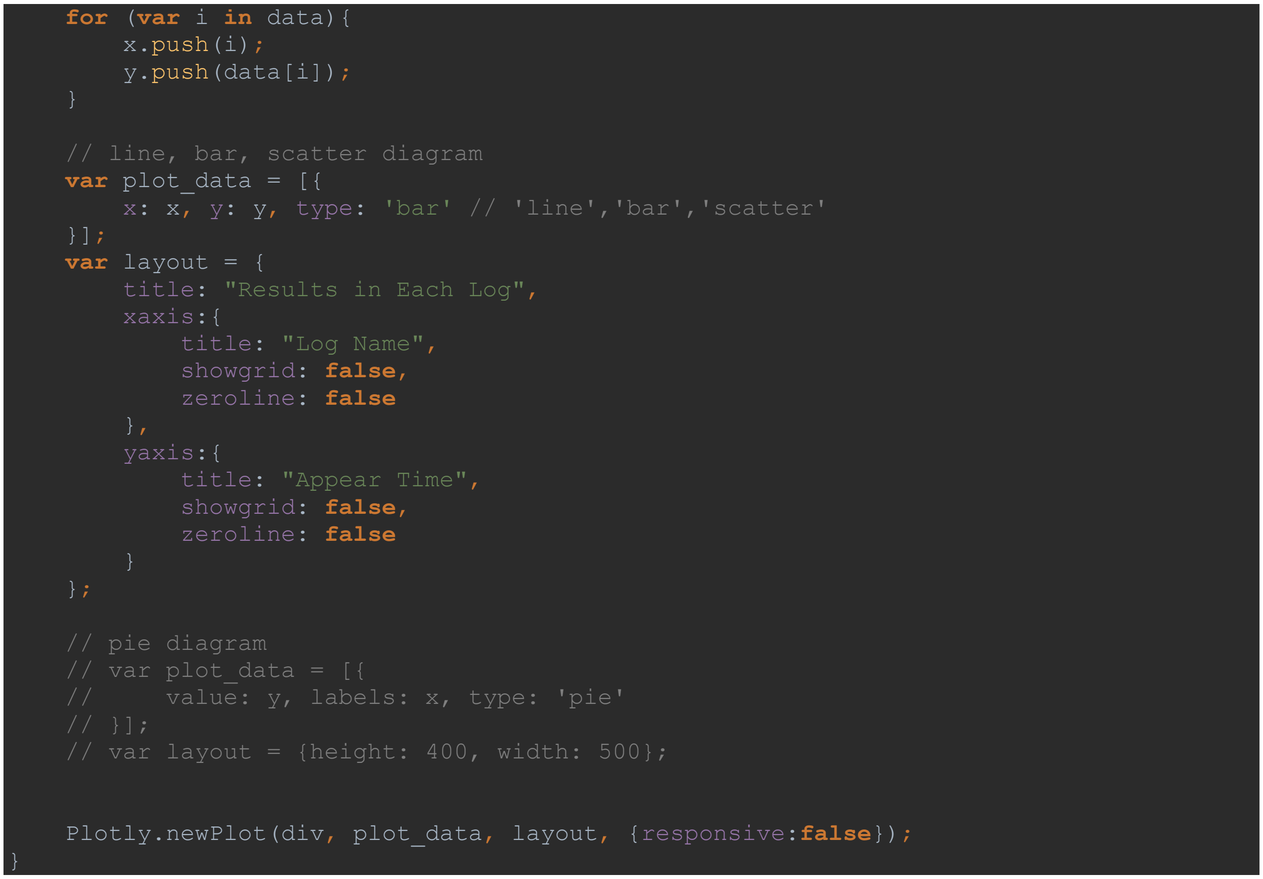
Note:

The source code package of plotly is needed before using.

```
<script src="public/plotly-latest.min.js"></script>
```

Import the source code

```
// draw the diagram
// data format sample: [“log1”:10, “log2”:10, “logn”:16]
function plot(data) {
    var div = document.getElementById('disp_plot');
    var x = [];
    var y = [];
```



```
    for (var i in data){
        x.push(i);
        y.push(data[i]);
    }

    // line, bar, scatter diagram
    var plot_data = [{
        x: x, y: y, type: 'bar' // 'line','bar','scatter'
    }];
    var layout = {
        title: "Results in Each Log",
        xaxis:{
            title: "Log Name",
            showgrid: false,
            zeroline: false
        },
        yaxis:{
            title: "Appear Time",
            showgrid: false,
            zeroline: false
        }
    };

    // pie diagram
    // var plot_data = [{
    //     value: y, labels: x, type: 'pie'
    // }];
    // var layout = {height: 400, width: 500};


    Plotly.newPlot(div, plot_data, layout, {responsive:false});
}
```

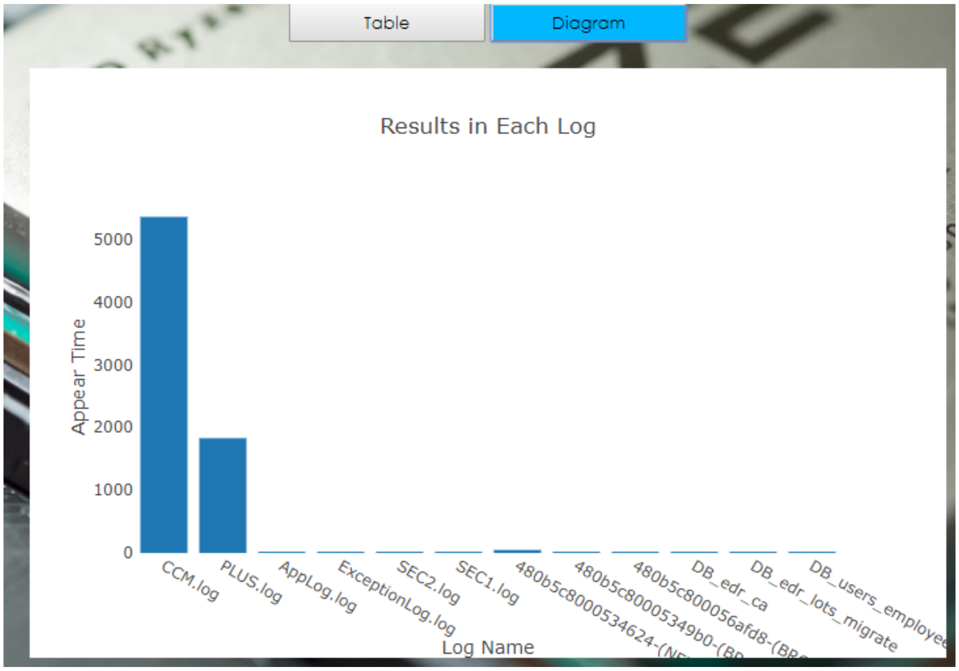


Diagram of result draw in Plotly.js

3. UI

Like the traditional web user-interface, JS + HTML + CSS is used in this system.

File:/stage3_v3 /public/index_v3.html,

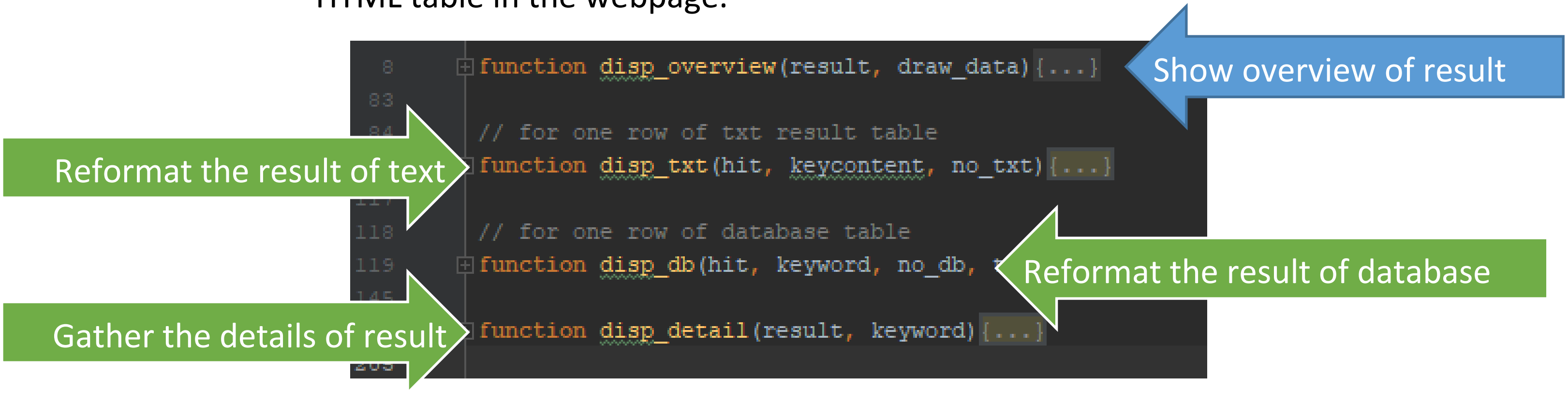
/stage3_v3/ui_v3.js

Note:

Use F12 in web browser to inspect the source code and the relative block.

a. ui.js

This part is for reformatting the search result and presenting on the HTML table in the webpage.



```
function disp_overview(result, draw_data){...}

// for one row of txt result table
function disp_txt(hit, keycontent, no_txt){...}

// for one row of database table
function disp_db(hit, keyword, no_db, t

function disp_detail(result, keyword){...}
```

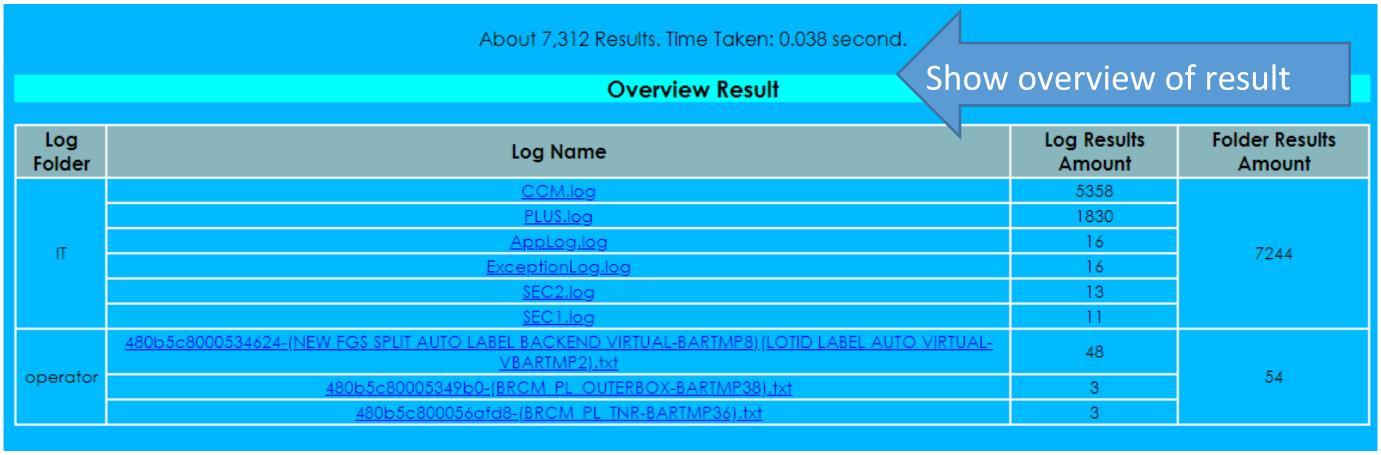
Show overview of result

Reformat the result of text

Reformat the result of database

Gather the details of result

The structure of the ui.js

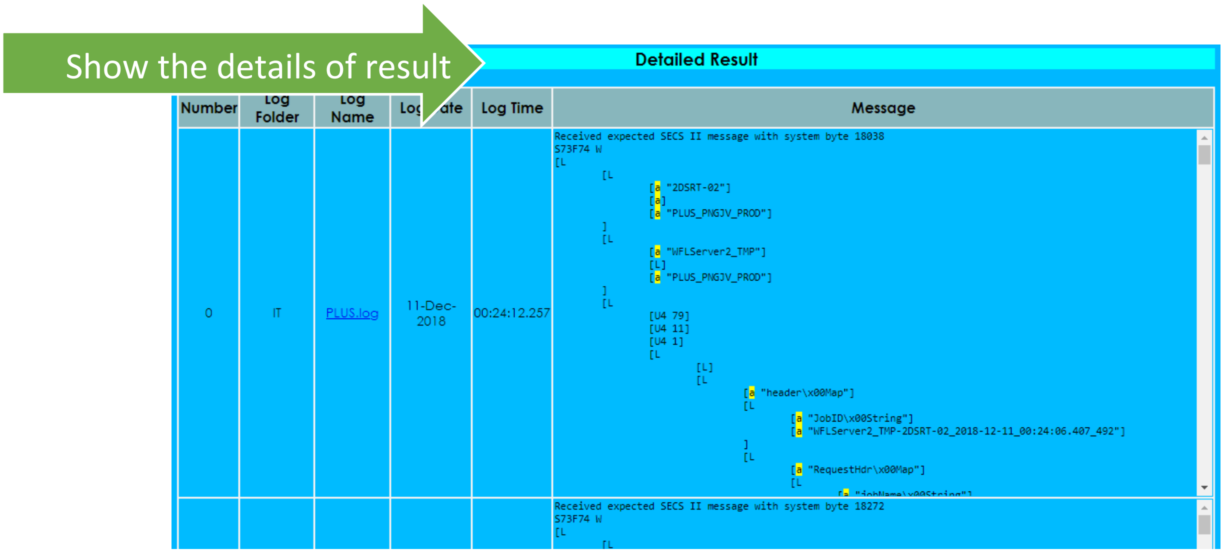


About 7,312 Results. Time Taken: 0.038 second.

Show overview of result

Overview Result

Log Folder	Log Name	Log Results Amount	Folder Results Amount
IT	CCM.log	5358	7244
	PLUS.log	1830	
	AppLog.log	16	
	ExceptionLog.log	16	
	SEC2.log	13	
	SEC1.log	11	
operator	480b5c8000534624-(NEW FGS SPLIT AUTO LABEL BACKEND VIRTUAL-BARTMP8).(LOTID LABEL AUTO VIRTUAL-VBARTMP2).txt	48	54
	480b5c80005349b0-(BRCM PL OUTERBOX-BARTMP38).txt	3	
	480b5c800056afd8-(BRCM PL TNR-BARTMP36).txt	3	



Show the details of result

Detailed Result

Number	Log Folder	Log Name	Log Date	Log Time	Message
0	IT	PLUS.log	11-Dec-2018	00:24:12.257	Received expected SECS II message with system byte 18038 S73F74 W [L [L [a "2DSRT-02"] [a] [a "PLUS_PNGJV_PROD"]] [L [a "WFLServer2_TMP"] [L] [a "PLUS_PNGJV_PROD"]] [L [U4 79] [U4 11] [U4 1] [L [L] [L [a "header\x00Map"] [L [a "JobID\x00String"] [a "WFLServer2_TMP-2DSRT-02_2018-12-11_00:24:06.407_492"]] [L [a "RequestHdr\x00Map"] [L [a "jobName\x00String"]
					Received expected SECS II message with system byte 18272 S73F74 W [L [L

b. index.html

The HTML part is for building blocks on webpage, nothing needs special illustration.

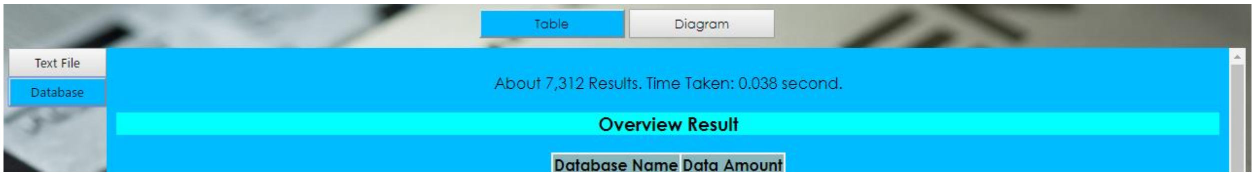
But there are some dynamic logic needs to be noticed.

The most important line of code is the form of

```
document.getElementById('input_keyword').style.display = 'block';
```

"'.style.display' = 'block'" means change the display status and make this element visible. If "'.style.display' = 'none", then this element is hidden.

Therefore, the dynamic logic part is mainly about change the display status so that change the subpage of presentation



About 7,312 Results. Time Taken: 0.038 second.

Overview Result

Database Name	Data Amount

Four buttons for four subpages

For instance, once the "butt_tab" element is clicked, the "nav_data_source" element is not hidden, and this button will change its own color to mark its status.

```
butt_tab.onclick = function () {
    // display area
    table.style.display = 'block';
    plot.style.display = 'none';
    document.getElementById('nav_data_source').style.display = 'block';
    // change button status
    butt_plot.className = '';
    this.className = 'active';

    document.getElementById('rt').style.backgroundColor = '#00BBFF';
};
```

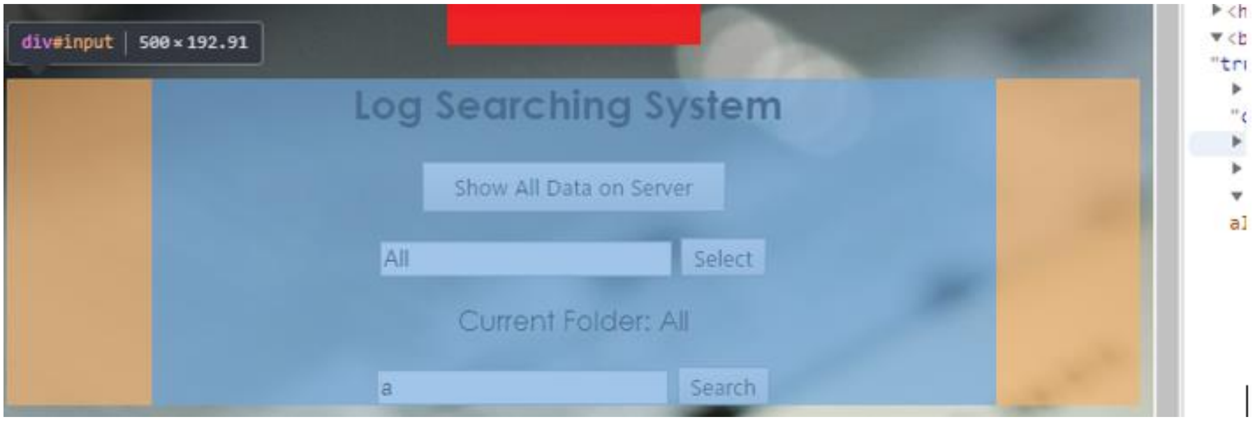
c. CSS

Like the normal usage, the CSS is for setting style of the webpage elements.

There are several places need to be noticed:

```
button{
    font-family: "Yu Gothic UI";
    overflow: hidden;
}
button.active{ // change the button that class name is “active”
    background-color: #00B7FF;
}
button:hover{
    background-color: #00B7FF;
}
button:active { // set the response of mouse event
    background-color: #00B7FF;
    transform: translateY(2px);
}
```

Press F12 in web browser to inspect the element when you want to change the style of some elements.



The element id is “input”

Study Guide

For the sake of time, the future developer taking this project is suggested to flow this learning map drawn on the previous experience and errors.

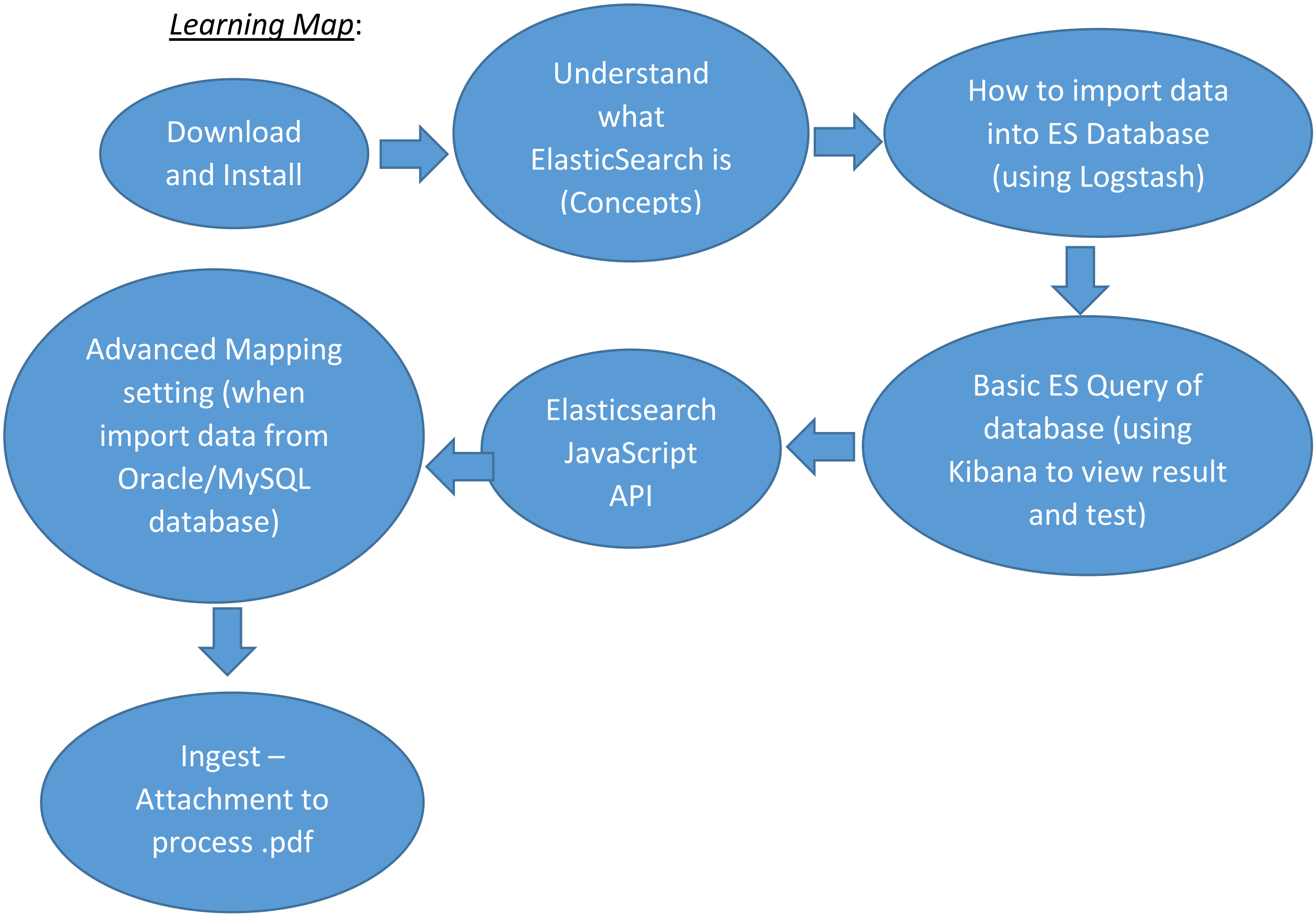
Back-End

The back-end of this system is mainly the search engine and data pre-processing system.

1. ### Elasticsearch

   As the core of this system, the fundamental or even advanced knowledge is required at the first beginning in order to understand the basic requirement of this project.

   Learning Map:


Download and Install
Understand what ElasticSearch is (Concepts)
How to import data into ES Database (using Logstash)
Basic ES Query of database (using Kibana to view result and test)
Elasticsearch JavaScript API
Advanced Mapping setting (when import data from Oracle/MySQL database)
Ingest – Attachment to process .pdf

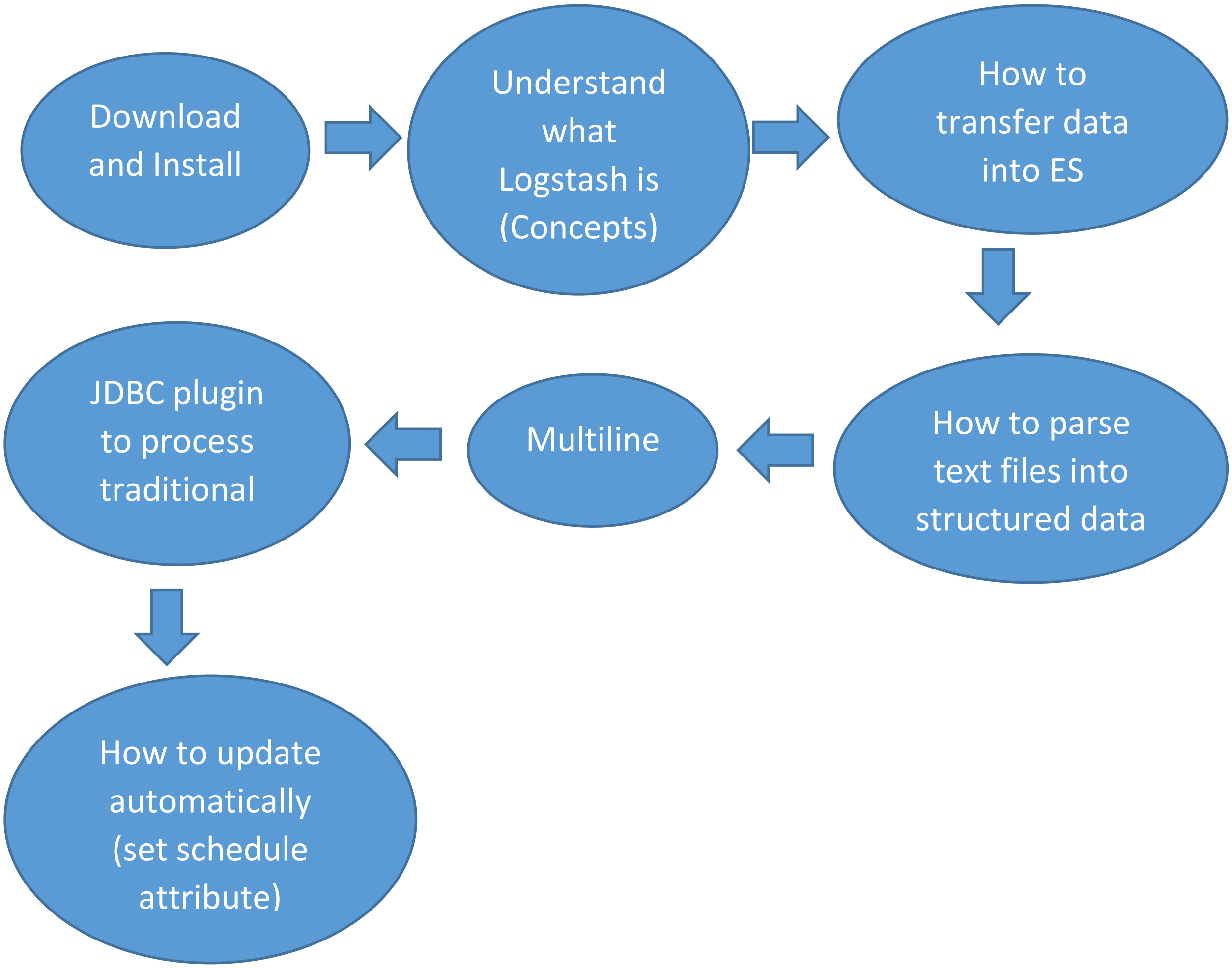
Reference:

Official Website:
https://www.elastic.co/guide/cn/index.html
https://www.elastic.co/guide/index.html *(English)*
Overall Introduce:
https://blog.csdn.net/yezonggang/article/details/80064394
Download and Installation:
https://blog.csdn.net/weidong22/article/details/79062851
Query (use combine with Kibana):
https://www.elastic.co/guide/en/elasticsearch/client/javascript-api/current/quick-start.html *(English)*
https://blog.csdn.net/tototuzuoquan/article/details/78303095
https://www.elastic.co/guide/en/elasticsearch/reference/current/query-dsl-multi-match-query.html
https://www.elastic.co/guide/en/elasticsearch/reference/current/query-dsl-match-query-phrase-prefix.html *(English)*
http://n3xtchen.github.io/n3xtchen/elasticsearch/2017/07/05/elasticsearch-23-useful-query-example *(Recommend)*
Blog Series (Recommend):
http://www.cnblogs.com/ginb/p/6637236.html
http://www.cnblogs.com/ginb/p/elasticsearch.html
http://www.cnblogs.com/ginb/p/6993299.html
http://www.cnblogs.com/ginb/p/7000427.html
JavaScript API:
https://www.elastic.co/guide/en/elasticsearch/client/javascript-api/current/quick-start.html *(English)*
Mapping:
https://my.oschina.net/davidzhang/blog/811511
https://stackoverflow.com/questions/37861279/how-to-index-a-pdf-file-in-elasticsearch-5-0-0-with-ingest-attachment-plugin?rq=1

2. Logstash

Logstash is the tool to import and update data in Elasticseach's database. It has the ability to parse unstructured files such as .log, .txt using regular expression. As well as transfer the data in existing Oracle/MySQL database into the Elasticsearch Database directly.

Learning Map:


Download and Install
Understand what Logstash is (Concepts)
How to transfer data into ES
How to parse text files into structured data
Multiline
JDBC plugin to process traditional
How to update automatically (set schedule attribute)

Reference:

Official Website:
https://www.elastic.co/products/logstash
https://www.elastic.co/guide/en/logstash/current/getting-started-with-logstash.html (Series of Install, Guide) *(English)*
Basic Using:
https://www.cnblogs.com/yincheng/p/logstash.html

Parse Test Files:
https://www.elastic.co/guide/en/logstash/6.5/advanced-pipeline.html
(English)
http://trumandu.github.io/2016/10/24/logstash%E4%BD%BF%E7%94%A8%E6%95%99%E7%A8%8B/
Connect to ES:
https://blog.csdn.net/wangnan9279/article/details/79287820
Connect to Oracle Database (JDBC):
https://blog.csdn.net/wjacketcn/article/details/50960843
https://blog.csdn.net/laoyang360/article/details/75452953

https://discuss.elastic.co/t/logstash-jdbc-input-oracle-settings/26996
(English)

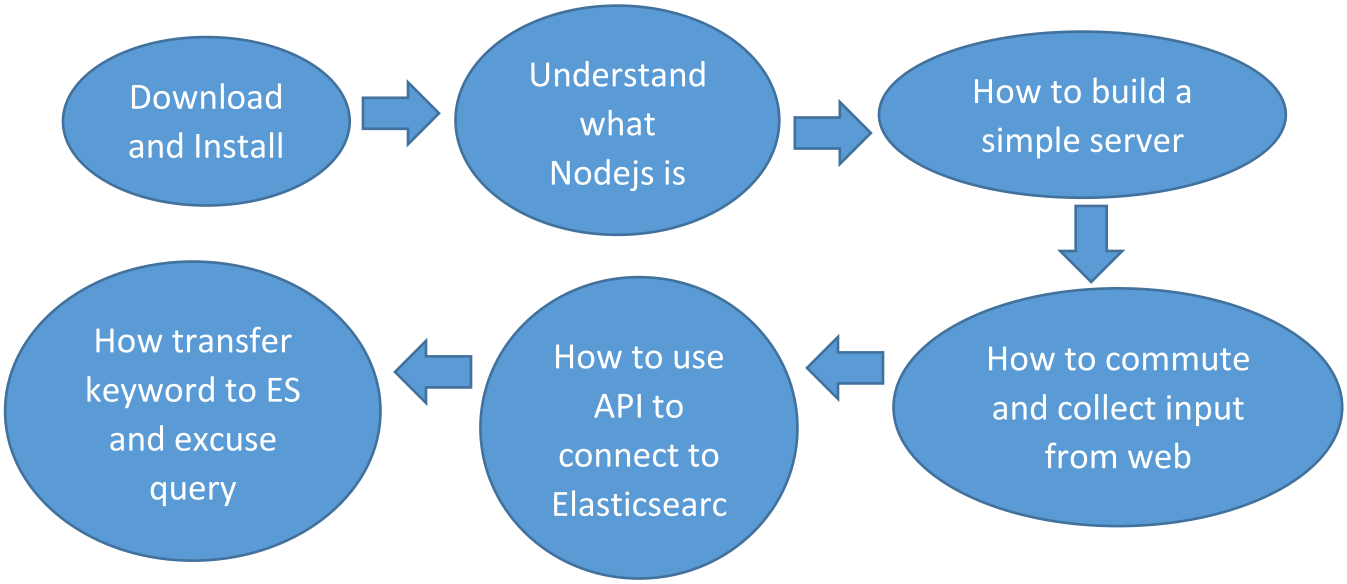
WebServer

The Webserver Part is responsible for transferring the keywords user inputs and return the result that the elasticsearch engine generates back to the front-end.

1. Nodejs

Nodejs is a powerful tool built on JavaScript, it's easy to operate and expand with other API such as Elasticsearch.

__Learning Map__:



Download and Install

Understand what Nodejs is

How to build a simple server

How to commute and collect input from web

How to use API to connect to Elasticsearc

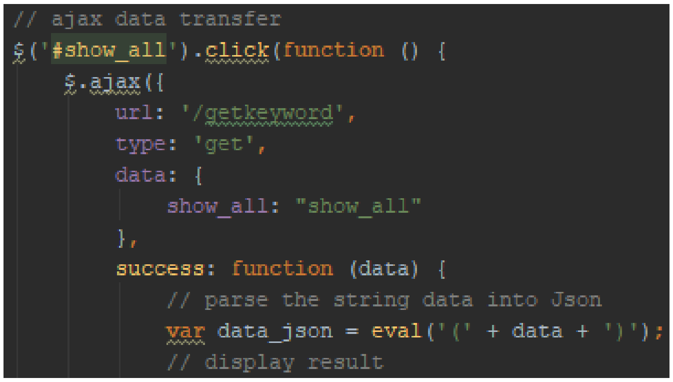
How transfer keyword to ES and excuse query

Reference:

Official Website + Download:
https://nodejs.org/en/ *(English)*
Introduce:
https://codeburst.io/the-only-nodejs-introduction-youll-ever-need-d969a47ef219 *(English)*
Tutorial Series (Recommend):
https://www.w3schools.com/nodejs/ *(English)*
Connect to ES:
https://www.oschina.net/translate/search-engine-node-elasticsearch
Asynchronization (Advanced):
https://www.jb51.net/article/63070.htm
https://m.jb51.net/article/84148.htm

2. Ajax

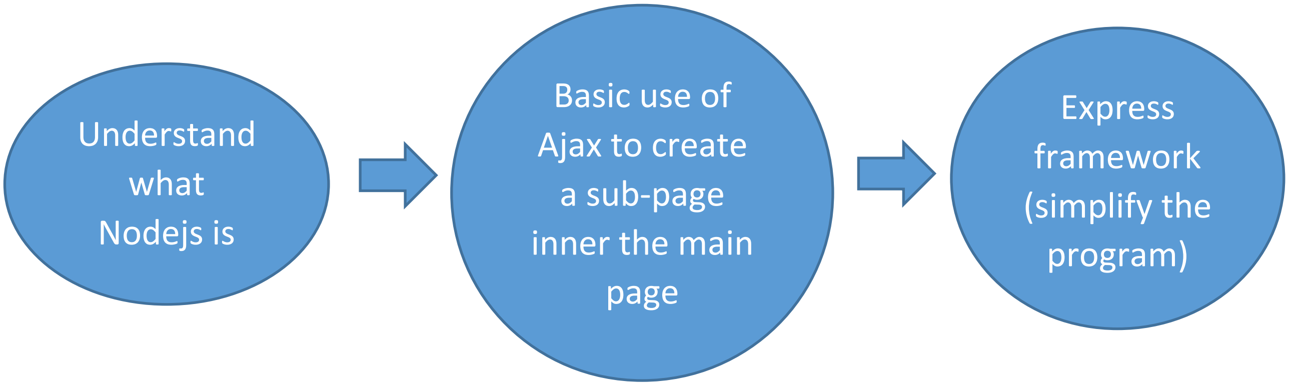
Ajax is a popular tool used when building webpage, here we also use it as the tool to transfer data between the web server and the front end.



```
// ajax data transfer
$('#show_all').click(function () {
    $.ajax({
        url: '/getkeyword',
        type: 'get',
        data: {
            show_all: "show_all"
        },
        success: function (data) {
            // parse the string data into Json
            var data_json = eval('(' + data + ')');
            // display result
```

Transfer data by Ajax combined with JQuery

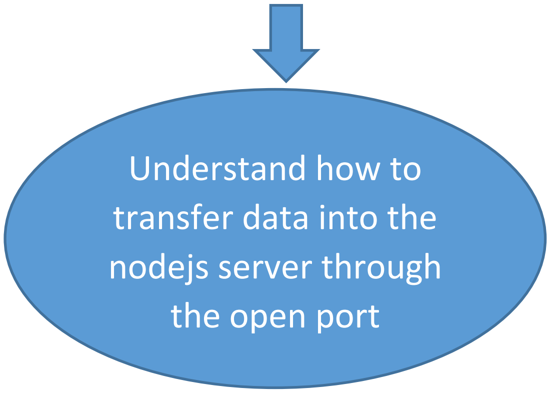
Learning Map:



Understand what Nodejs is

Basic use of Ajax to create a sub-page inner the main page

Express framework (simplify the program)


Understand how to transfer data into the nodejs server through the open port

Reference:

Introduce:
https://www.w3schools.com/xml/ajax_intro.asp
Tutorial Series (Recommend):
https://www.w3schools.com/xml/ajax_intro.asp *(English)*
http://www.runoob.com/ajax/ajax-tutorial.html
Data Transmission:
https://www.jb51.net/article/57874.htm *(Recommend)*

3. JQuery

JQuery is a simple alternative of JavaScript, but it has lots of special functions and unique language format. It is used in this system to combine with Ajax.
It's not as important as other modules in this system, thus no detailed study of this section in this doc.

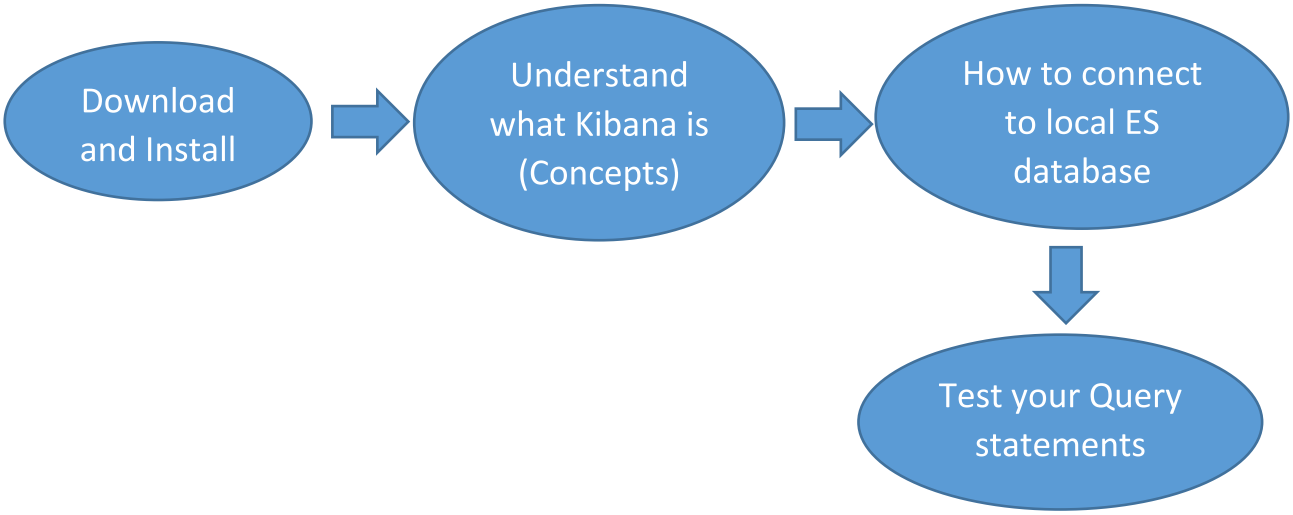
Front-End

The work of front-end is to reformat and present the search result that transferred by the server and generated by the back-end engine, as well as collect the keywords inputted by user.

1. Kibana

Kibana is part of the ELK (Elasticsearch – Logstash – Kibana) application stack. It is a tool to visualize the result, but it is replaced by our own webpage and only serve as the query – testing tool to inspect the elasticsearch database.

Learning Map:


Download and Install
Understand what Kibana is (Concepts)
How to connect to local ES database
Test your Query statements

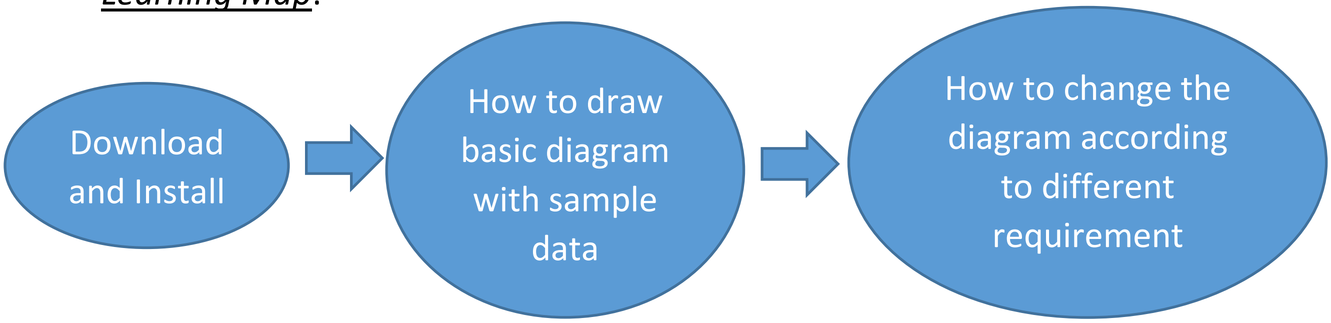
Reference:

Official Website:
https://www.elastic.co/guide/cn/kibana/current/index.html
https://www.elastic.co/guide/en/kibana/current/index.html *(English)*
Download:
https://www.elastic.co/downloads/kibana
Connect with ES:
https://www.elastic.co/guide/cn/kibana/current/connect-to-elasticsearch.html
Tutorial:
https://www.elastic.co/guide/en/kibana/current/index.html *(English)*

2. Plotly

Plotly is a powerful and flexible graphic plugin built for JavaScript. It is used for visualization in this system.

Learning Map:


Download and Install
How to draw basic diagram with sample data
How to change the diagram according to different requirement

Reference:

Official Website, Download, Tutorial:

https://plot.ly/javascript/

Program Language

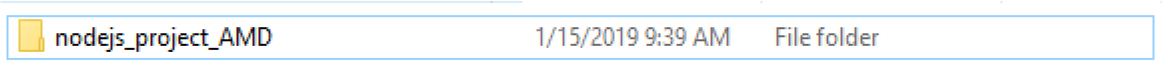
I believe a qualified software engineer is capable of handling any unfamiliar program language in very short term in grammar–level. Language is too easy to worry that much for a brilliant programmer. Therefore, this documentation dose not contain detailed guide of any program language, the reader could find various tutorials of basic language grammar knowledge in Google.

Configuration

This section is about how to active the whole system and some daily routine.

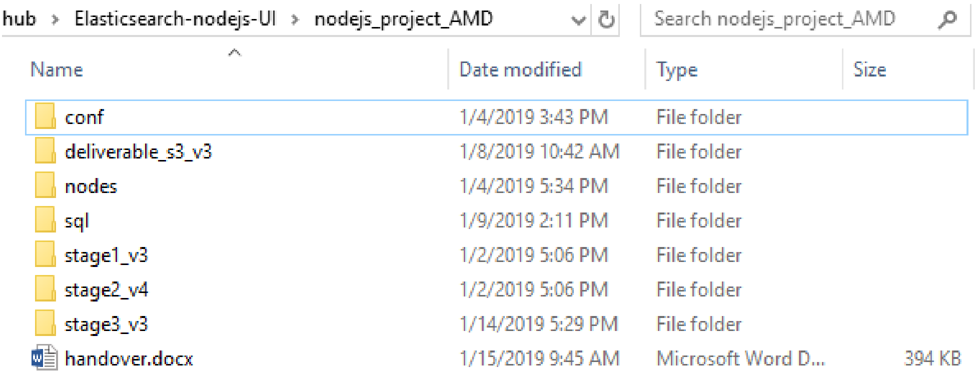
File Structure

The directory structure of the program is shown below.



nodejs_project_AMD	1/15/2019 9:39 AM	File folder

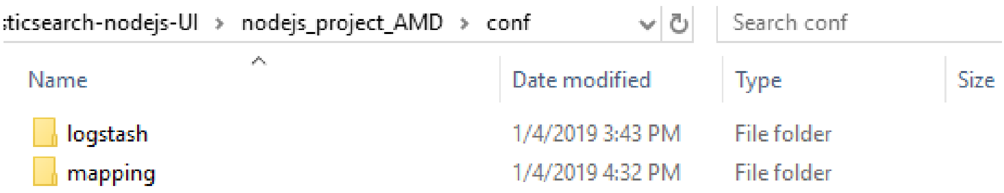
Root directory



hub › Elasticsearch-nodejs-UI › nodejs_project_AMD

Name	Date modified	Type	Size
conf	1/4/2019 3:43 PM	File folder	
deliverable_s3_v3	1/8/2019 10:42 AM	File folder	
nodes	1/4/2019 5:34 PM	File folder	
sql	1/9/2019 2:11 PM	File folder	
stage1_v3	1/2/2019 5:06 PM	File folder	
stage2_v4	1/2/2019 5:06 PM	File folder	
stage3_v3	1/14/2019 5:29 PM	File folder	
handover.docx	1/15/2019 9:45 AM	Microsoft Word D...	394 KB

Secondary directory



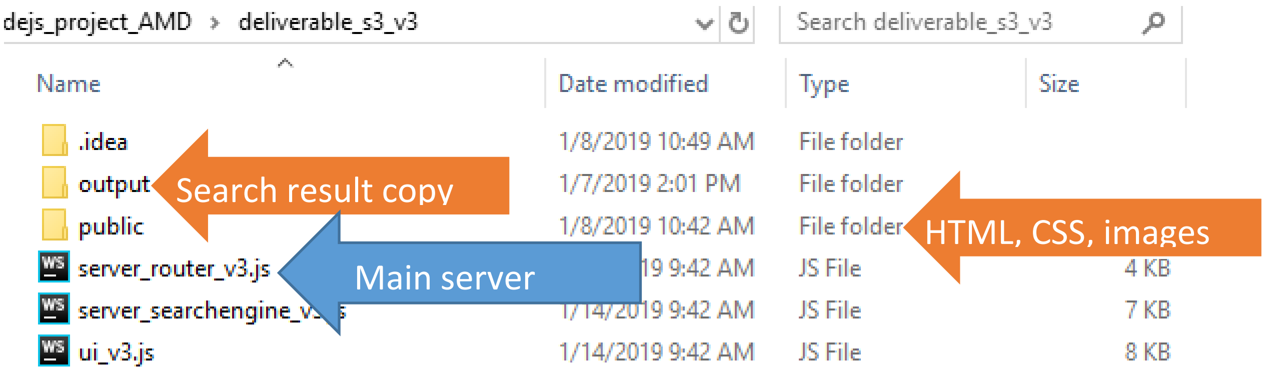
:ticsearch-nodejs-UI › nodejs_project_AMD › conf

Search conf

Name	Date modified	Type	Size
logstash	1/4/2019 3:43 PM	File folder	
mapping	1/4/2019 4:32 PM	File folder	

/conf:

Contains the logstash configuration files needed when update data and mapping setting using in Kibana to set property of data fields (columns)



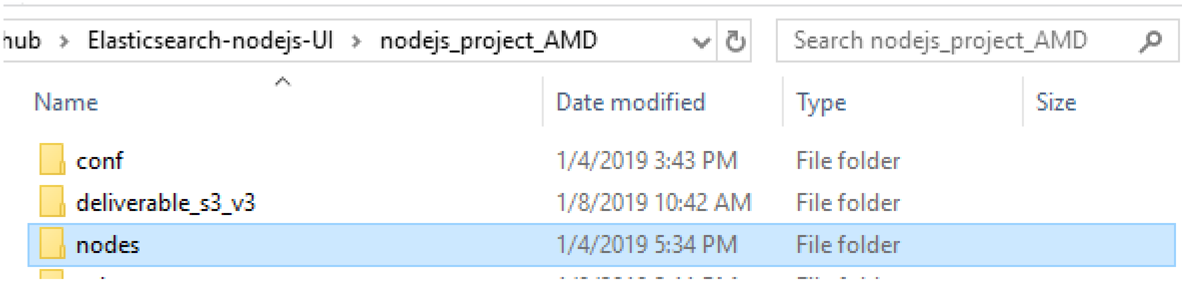
dejs_project_AMD › deliverable_s3_v3

Search deliverable_s3_v3

Name	Date modified	Type	Size
.idea	1/8/2019 10:49 AM	File folder	
output	1/7/2019 2:01 PM	File folder	
public	1/8/2019 10:42 AM	File folder	
server_router_v3.js	19 9:42 AM	JS File	4 KB
server_searchengine_v	1/14/2019 9:42 AM	JS File	7 KB
ui_v3.js	1/14/2019 9:42 AM	JS File	8 KB

/deliverable:

The latest version of the system, could be treated as the useable version for daily use, but development should not in here



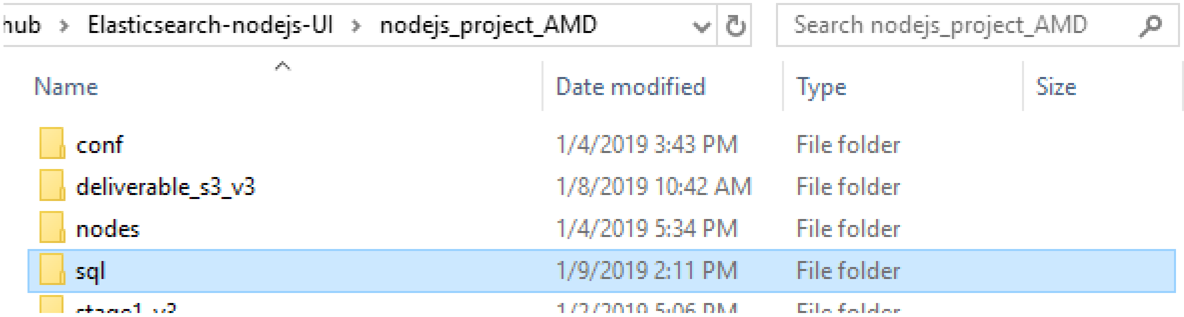
hub › Elasticsearch-nodejs-UI › nodejs_project_AMD

Search nodejs_project_AMD

Name	Date modified	Type	Size
conf	1/4/2019 3:43 PM	File folder	
deliverable_s3_v3	1/8/2019 10:42 AM	File folder	
nodes	1/4/2019 5:34 PM	File folder	

/nodes:

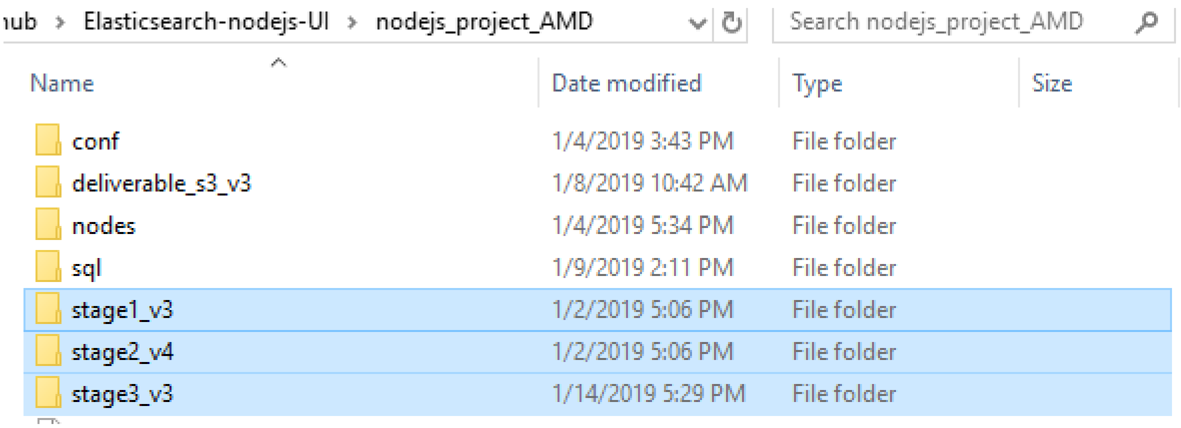
Elasticsearch database copy


hub › Elasticsearch-nodejs-UI › nodejs_project_AMD
Search nodejs_project_AMD

Name	Date modified	Type	Size
conf	1/4/2019 3:43 PM	File folder	
deliverable_s3_v3	1/8/2019 10:42 AM	File folder	
nodes	1/4/2019 5:34 PM	File folder	
sql	1/9/2019 2:11 PM	File folder	
stage1_v3	1/2/2019 5:06 PM	File folder	

/sql:

SQL statement, used when transfer data from Oracle/MySQL


hub › Elasticsearch-nodejs-UI › nodejs_project_AMD
Search nodejs_project_AMD

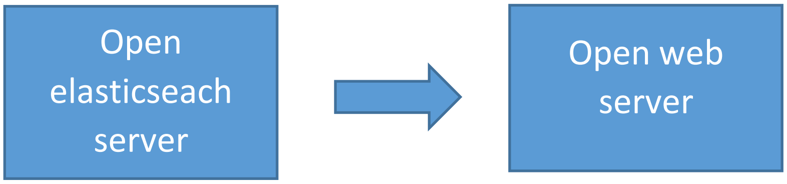
Name	Date modified	Type	Size
conf	1/4/2019 3:43 PM	File folder	
deliverable_s3_v3	1/8/2019 10:42 AM	File folder	
nodes	1/4/2019 5:34 PM	File folder	
sql	1/9/2019 2:11 PM	File folder	
stage1_v3	1/2/2019 5:06 PM	File folder	
stage2_v4	1/2/2019 5:06 PM	File folder	
stage3_v3	1/14/2019 5:29 PM	File folder	

/stage*_v*:

History versions, development and system update should perform here

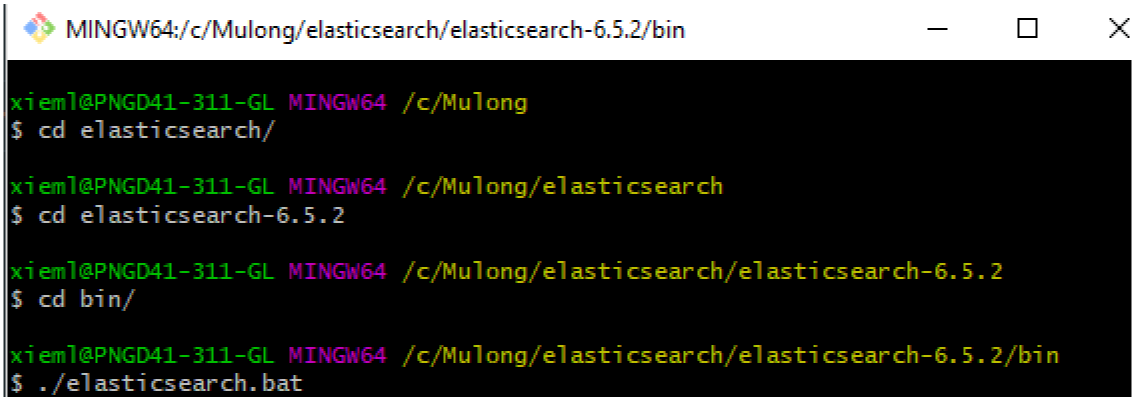
Deploy

When all current development is done, life becomes easy. To run the system, there are only two servers need to be active.



Open ES Server

After importing data, excuse the '.bat' to active the server before doing anything.



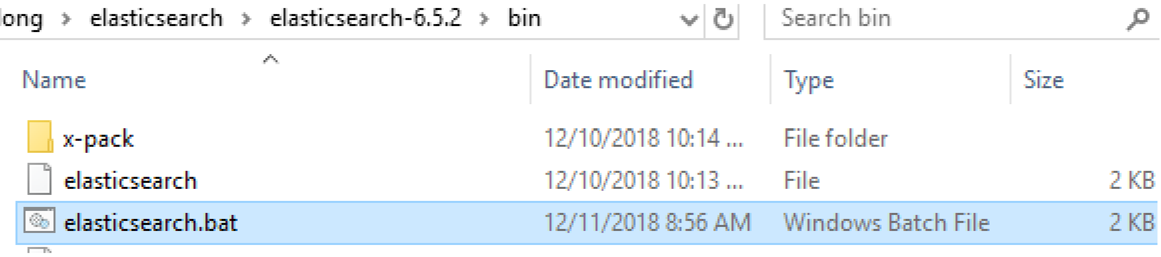
```
xieml@PNGD41-311-GL MINGW64 /c/Mulong
$ cd elasticsearch/

xieml@PNGD41-311-GL MINGW64 /c/Mulong/elasticsearch
$ cd elasticsearch-6.5.2

xieml@PNGD41-311-GL MINGW64 /c/Mulong/elasticsearch/elasticsearch-6.5.2
$ cd bin/

xieml@PNGD41-311-GL MINGW64 /c/Mulong/elasticsearch/elasticsearch-6.5.2/bin
$ ./elasticsearch.bat
```

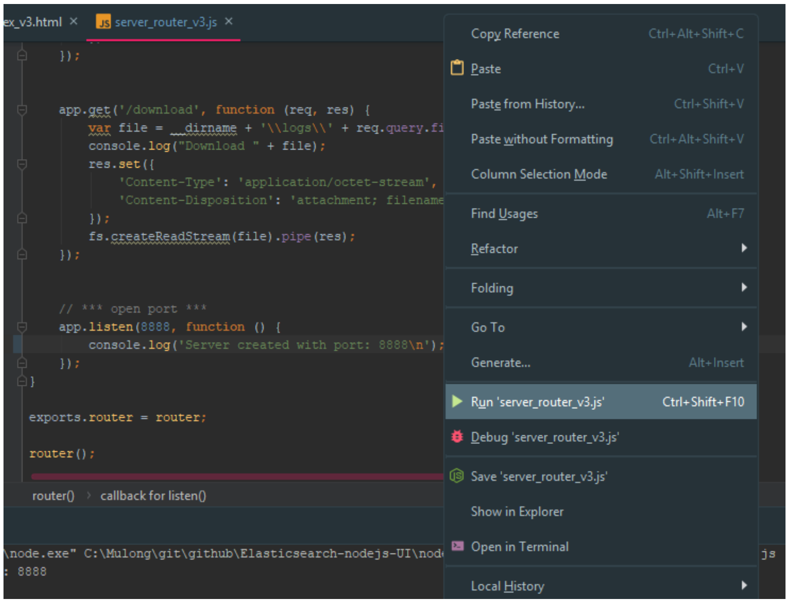
Or go to *elasticsearch/bin* and click the ".bat" file.



Name	Date modified	Type	Size
x-pack	12/10/2018 10:14 ...	File folder	
elasticsearch	12/10/2018 10:13 ...	File	2 KB
elasticsearch.bat	12/11/2018 8:56 AM	Windows Batch File	2 KB

Open Web Server

Open the main server "server_router", and run it as running a normal node.js program.



```
    });


    app.get('/download', function (req, res) {
        var file = __dirname + '\\logs\\' + req.query.fi
        console.log("Download " + file);
        res.set({
            'Content-Type': 'application/octet-stream',
            'Content-Disposition': 'attachment; filename
        });
        fs.createReadStream(file).pipe(res);
    });


    // *** open port ***
    app.listen(8888, function () {
        console.log('Server created with port: 8888\n');
    });
}

exports.router = router;

router();
```

```
\node.exe" C:\Mulong\git\github\Elasticsearch-nodejs-UI\nod
: 8888
```

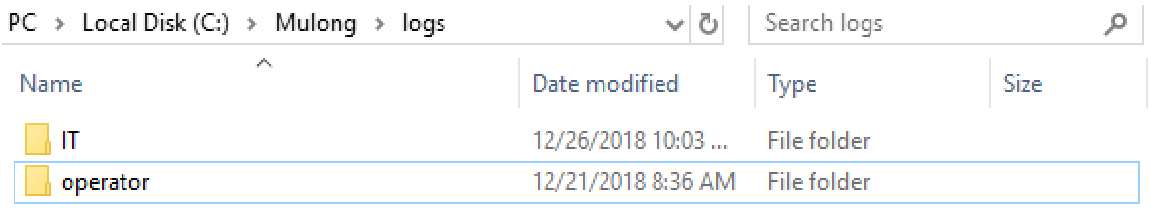
Copy Reference Ctrl+Alt+Shift+C
Paste Ctrl+V
Paste from History... Ctrl+Shift+V
Paste without Formatting Ctrl+Alt+Shift+V
Column Selection Mode Alt+Shift+Insert
Find Usages Alt+F7
Refactor
Folding
Go To
Generate... Alt+Insert
Run 'server_router_v3.js' Ctrl+Shift+F10
Debug 'server_router_v3.js'
Save 'server_router_v3.js'
Show in Explorer
Open in Terminal
Local History

Data Update

Use Logstash to update the ES database.

Update Text Files

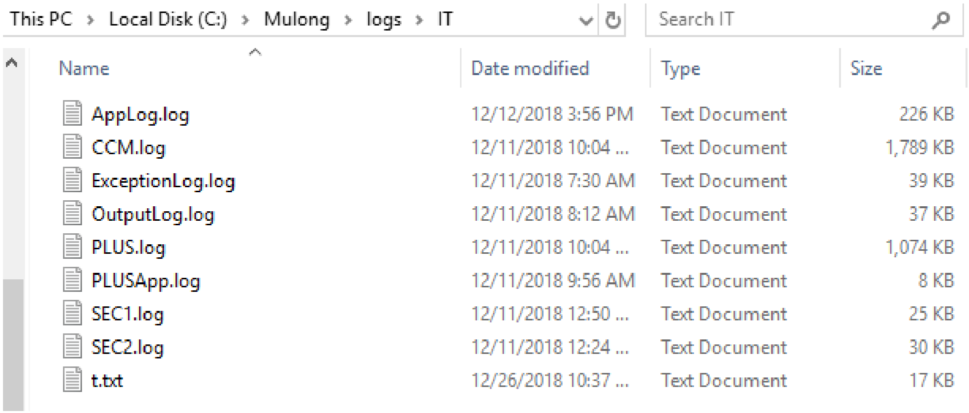
1. Put new text file under any directory



PC › Local Disk (C:) › Mulong › logs

Name	Date modified	Type	Size
IT	12/26/2018 10:03 ...	File folder	
operator	12/21/2018 8:36 AM	File folder	

The current folders

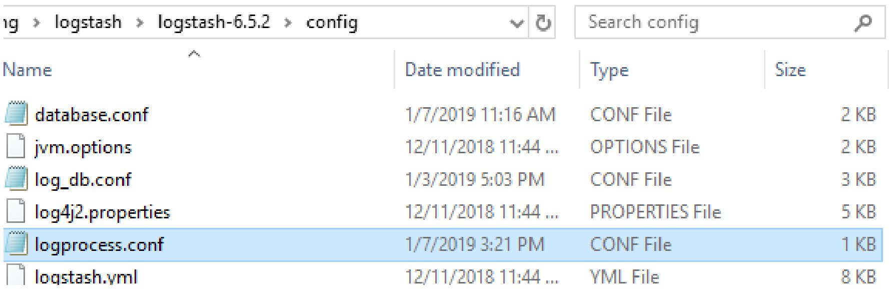


This PC › Local Disk (C:) › Mulong › logs › IT

Name	Date modified	Type	Size
AppLog.log	12/12/2018 3:56 PM	Text Document	226 KB
CCM.log	12/11/2018 10:04 ...	Text Document	1,789 KB
ExceptionLog.log	12/11/2018 7:30 AM	Text Document	39 KB
OutputLog.log	12/11/2018 8:12 AM	Text Document	37 KB
PLUS.log	12/11/2018 10:04 ...	Text Document	1,074 KB
PLUSApp.log	12/11/2018 9:56 AM	Text Document	8 KB
SEC1.log	12/11/2018 12:50 ...	Text Document	25 KB
SEC2.log	12/11/2018 12:24 ...	Text Document	30 KB
t.txt	12/26/2018 10:37 ...	Text Document	17 KB

Put new file here

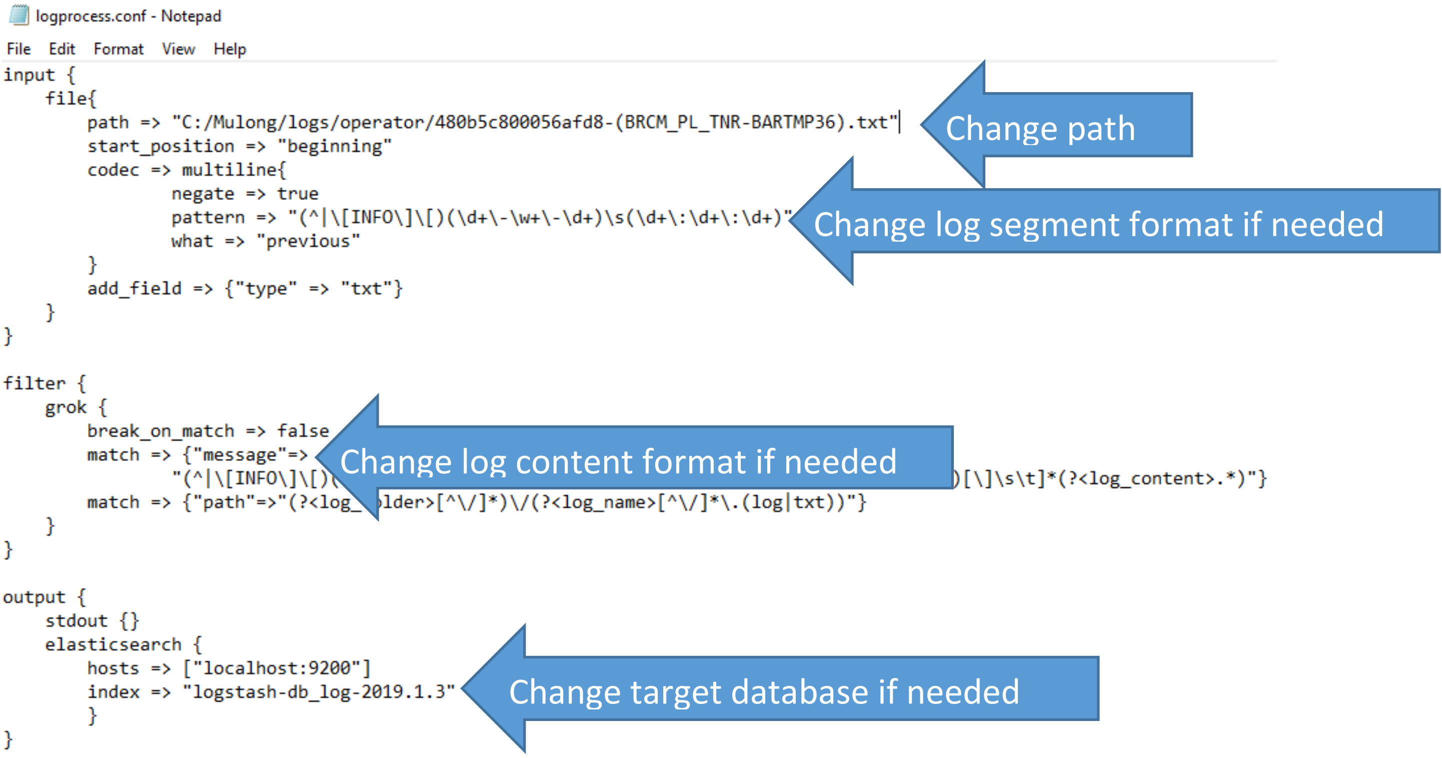
2. Open *logstash/config/logprocess.conf*



ıg › logstash › logstash-6.5.2 › config

Name	Date modified	Type	Size
database.conf	1/7/2019 11:16 AM	CONF File	2 KB
jvm.options	12/11/2018 11:44 ...	OPTIONS File	2 KB
log_db.conf	1/3/2019 5:03 PM	CONF File	3 KB
log4j2.properties	12/11/2018 11:44 ...	PROPERTIES File	5 KB
logprocess.conf	1/7/2019 3:21 PM	CONF File	1 KB
logstash.yml	12/11/2018 11:44 ...	YML File	8 KB

3. Change few lines of configuration



logprocess.conf - Notepad

```
input {
    file{
        path => "C:/Mulong/logs/operator/480b5c800056afd8-(BRCM_PL_TNR-BARTMP36).txt"
        start_position => "beginning"
        codec => multiline{
                negate => true
                pattern => "(^|\[INFO\]\[)(\d+\-\w+\-\d+)\s(\d+\:\d+\:\d+)"
                what => "previous"
        }
        add_field => {"type" => "txt"}
    }
}

filter {
    grok {
        break_on_match => false
        match => {"message"=>
                "(^|\[INFO\]\[)(                                              )[\]\s\t]*(?<log_content>.*)"}
        match => {"path"=>"(?<log_  lder>[^\/]*)\/(?<log_name>[^\/]*\.(log|txt))"}
    }
}

output {
    stdout {}
    elasticsearch {
        hosts => ["localhost:9200"]
        index => "logstash-db_log-2019.1.3"
        }
}
```

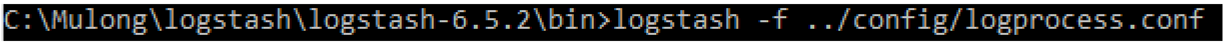
Change path

Change log segment format if needed

Change log content format if needed

Change target database if needed

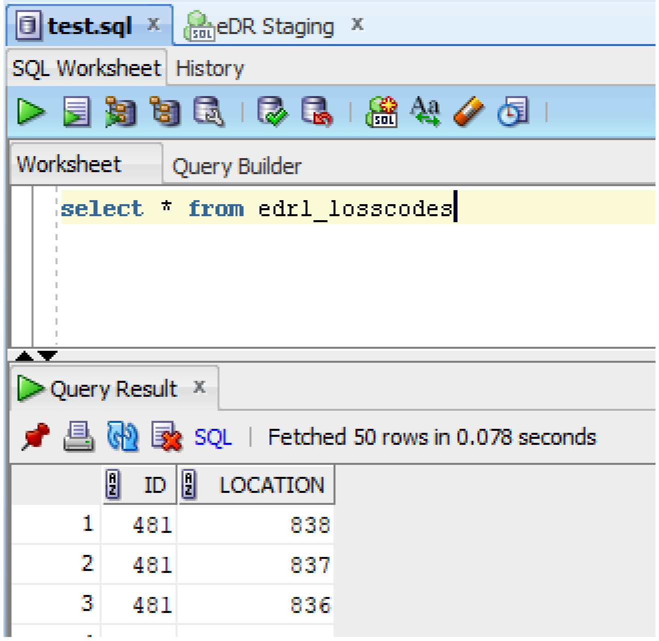
4. Excuse the new configuration.



```
C:\Mulong\logstash\logstash-6.5.2\bin>logstash -f ../config/logprocess.conf
```

Update Database

1. Write SQL statement to select the whole table or any part you want.

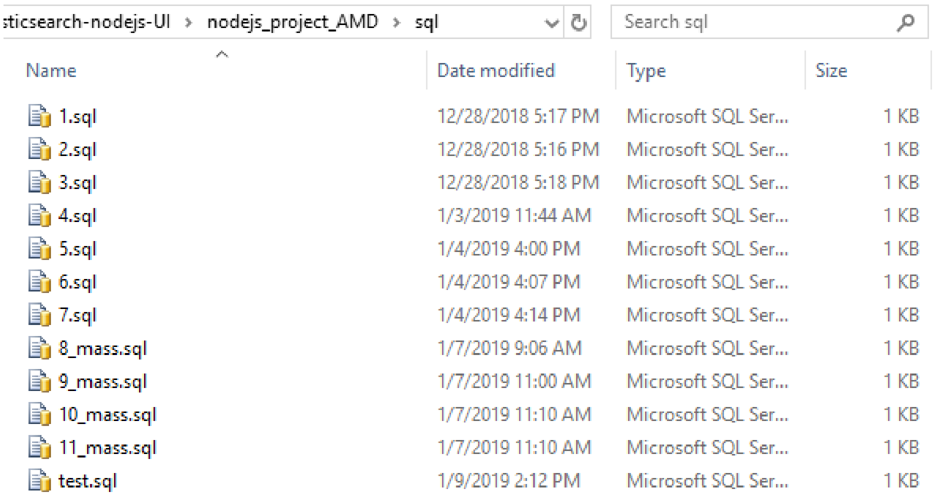


```
select * from edrl_losscodes
```

Fetched 50 rows in 0.078 seconds

	ID	LOCATION
1	481	838
2	481	837
3	481	836

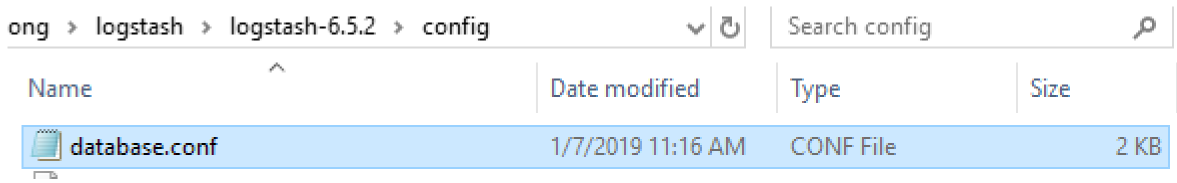
And save it under *__/sql__*



sticsearch-nodejs-UI › nodejs_project_AMD › sql

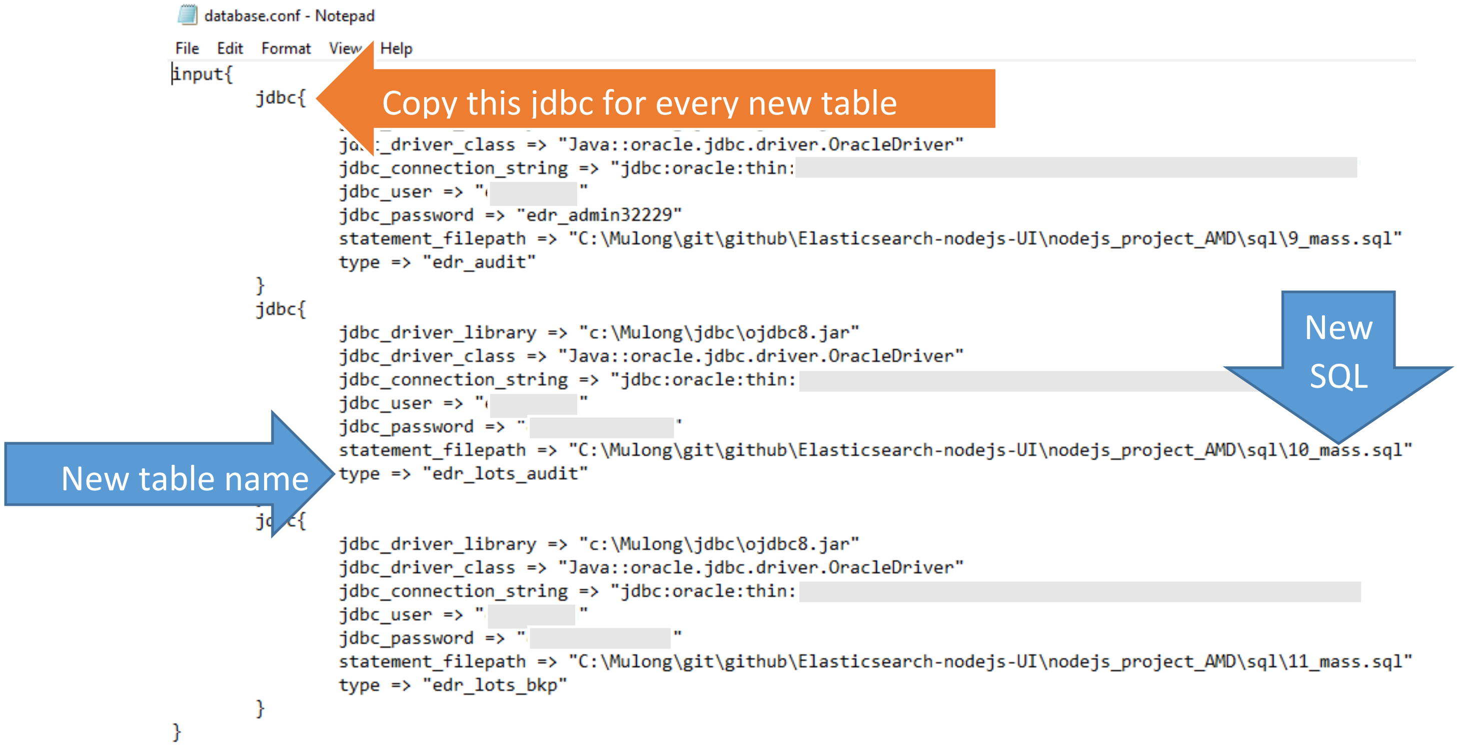
Name	Date modified	Type	Size
1.sql	12/28/2018 5:17 PM	Microsoft SQL Ser...	1 KB
2.sql	12/28/2018 5:16 PM	Microsoft SQL Ser...	1 KB
3.sql	12/28/2018 5:18 PM	Microsoft SQL Ser...	1 KB
4.sql	1/3/2019 11:44 AM	Microsoft SQL Ser...	1 KB
5.sql	1/4/2019 4:00 PM	Microsoft SQL Ser...	1 KB
6.sql	1/4/2019 4:07 PM	Microsoft SQL Ser...	1 KB
7.sql	1/4/2019 4:14 PM	Microsoft SQL Ser...	1 KB
8_mass.sql	1/7/2019 9:06 AM	Microsoft SQL Ser...	1 KB
9_mass.sql	1/7/2019 11:00 AM	Microsoft SQL Ser...	1 KB
10_mass.sql	1/7/2019 11:10 AM	Microsoft SQL Ser...	1 KB
11_mass.sql	1/7/2019 11:10 AM	Microsoft SQL Ser...	1 KB
test.sql	1/9/2019 2:12 PM	Microsoft SQL Ser...	1 KB

2. Change the config file.



ong › logstash › logstash-6.5.2 › config

Name	Date modified	Type	Size
database.conf	1/7/2019 11:16 AM	CONF File	2 KB



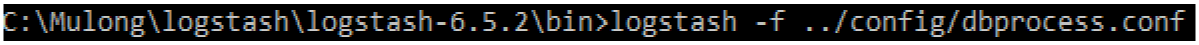
```
input{
        jdbc{
                jd:_driver_class => "Java::oracle.jdbc.driver.OracleDriver"
                jdbc_connection_string => "jdbc:oracle:thin:[redacted]
                jdbc_user => "[redacted]"
                jdbc_password => "edr_admin32229"
                statement_filepath => "C:\Mulong\git\github\Elasticsearch-nodejs-UI\nodejs_project_AMD\sql\9_mass.sql"
                type => "edr_audit"
        }
        jdbc{

                jdbc_driver_library => "c:\Mulong\jdbc\ojdbc8.jar"
                jdbc_driver_class => "Java::oracle.jdbc.driver.OracleDriver"
                jdbc_connection_string => "jdbc:oracle:thin:[redacted]
                jdbc_user => "[redacted]"
                jdbc_password => "[redacted]"
                statement_filepath => "C:\Mulong\git\github\Elasticsearch-nodejs-UI\nodejs_project_AMD\sql\10_mass.sql"
                type => "edr_lots_audit"

        jc{

                jdbc_driver_library => "c:\Mulong\jdbc\ojdbc8.jar"
                jdbc_driver_class => "Java::oracle.jdbc.driver.OracleDriver"
                jdbc_connection_string => "jdbc:oracle:thin:[redacted]
                jdbc_user => "[redacted]"
                jdbc_password => "[redacted]"
                statement_filepath => "C:\Mulong\git\github\Elasticsearch-nodejs-UI\nodejs_project_AMD\sql\11_mass.sql"
                type => "edr_lots_bkp"
        }
}
```

3. Excuse the new configuration.



```
C:\Mulong\logstash\logstash-6.5.2\bin>logstash -f ../config/dbprocess.conf
```

Future Challenge

For the reason of time, this system is still not perfect and has zone to improve and expand.

The challenges here are all advanced topics, the future solver is required insight and comprehension of previous knowledge before going ahead.

PDF Functionality

A new requirement is searching in .pdf file, but based on current knowledge, it is inevitable to convert the pdf files one by one before importing into ES database.

The future developer is suggested to use some other languages to write a script to achieve conversion and then pipeline to ES.

More Diagrams

The visualization functionality is now a simple demo, the future taker might can draw various diagrams to meet different needs.

The future developer is suggested to not only learn how to draw different diagram, also need to know how to expand the user interface to present those graphs in a user-friendly way.

Search Accuracy

The system is still now using testing data sample, but for the sake of time, all the fields of database is reset as “text”, which may bring some unwanted results.

The future developer is suggested to learn to master “match_phrase”, “term”, “query_string” and other advanced query methods.

It is very import to consider carefully what type or multiple-types should be assigned to different data filed when setting a new mapping.

Database Presentation

A non-important drawback of this system is that only limited result could be presented on webpage.

The future developer is suggested to add “show more” functionality.