

# Rest Services with Play Framework, Adding Security with JWT

Seoul

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CODE



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# Agenda

- Play Framework
- Web Services Restful
- JSONs
- JWT (Json Web Tokens)



# Agenda

- **Play Framework**
- Web Services Restful
- JSONs
- JWT (Json Web Tokens)





# Play Framework

- Makes it easy to build web applications with Java and Scala.
- Is based on a lightweight, stateless, web-friendly architecture.
- Built on Akka, provides predictable and minimal resources consumption (CPU, memory, threads) for highly-scalable applications.



## CloudWatch Monitoring Details

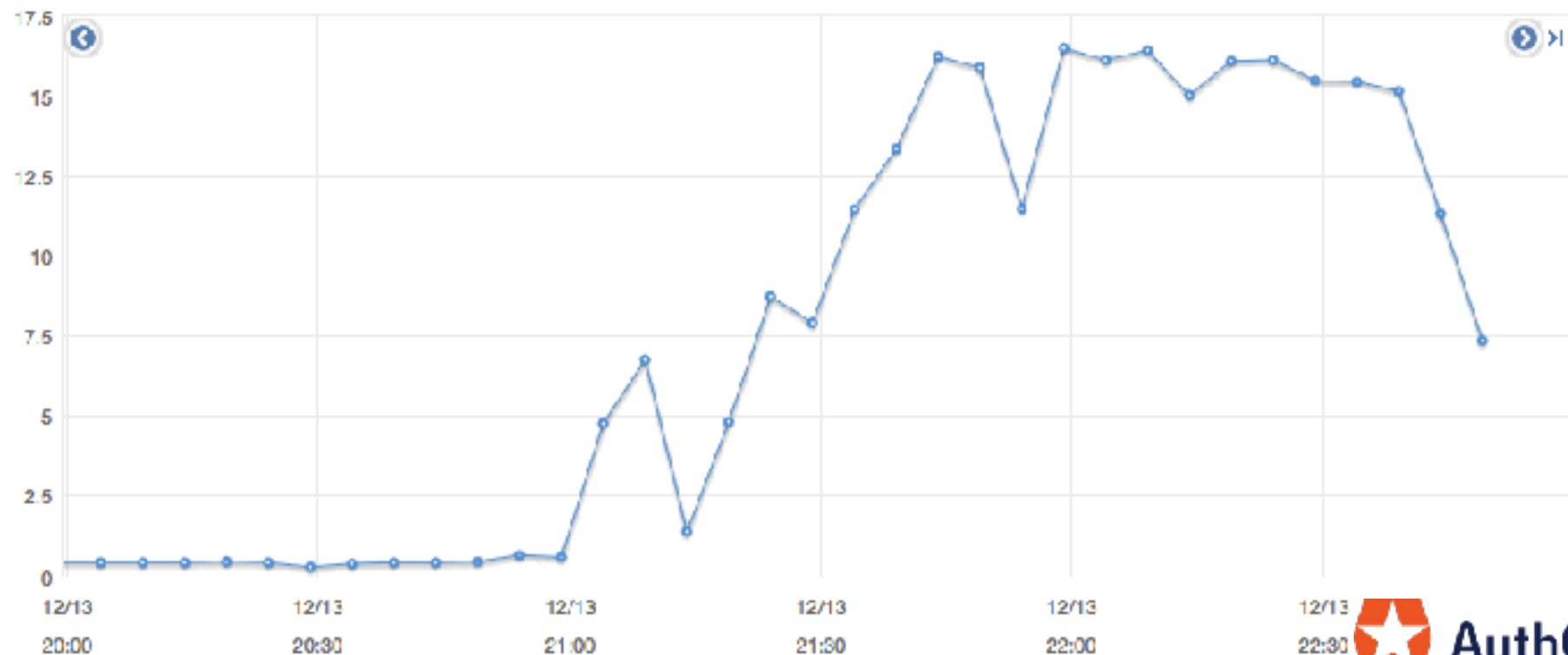


CPU Utilization (Percent)

Statistic: **Average** ▾

Time Range: **Last 3 Hours** ▾

Period: **5 Minutes** ▾



i-071a9b3079217b765



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# CloudWatch Monitoring Details

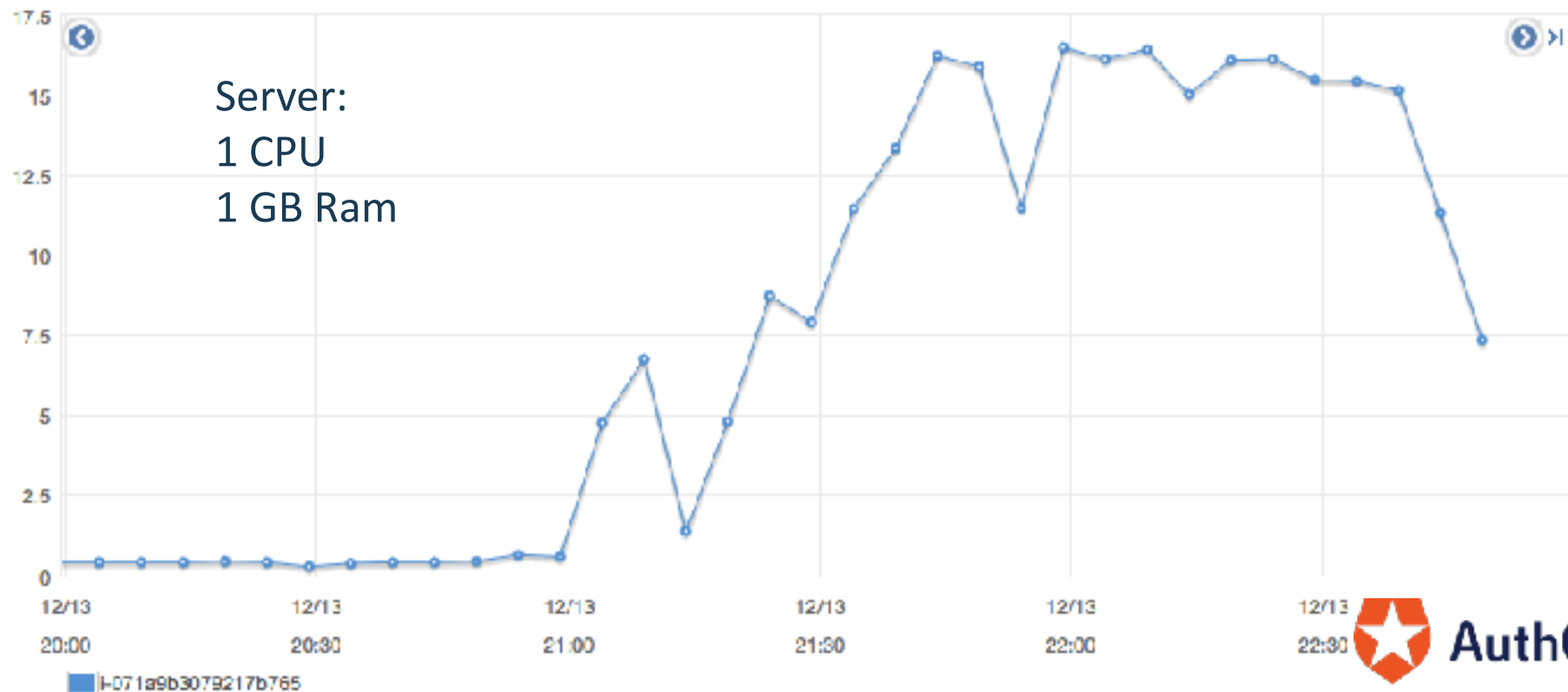


CPU Utilization (Percent)

Statistic: Average

Time Range: Last 3 Hours

Period: 5 Minutes

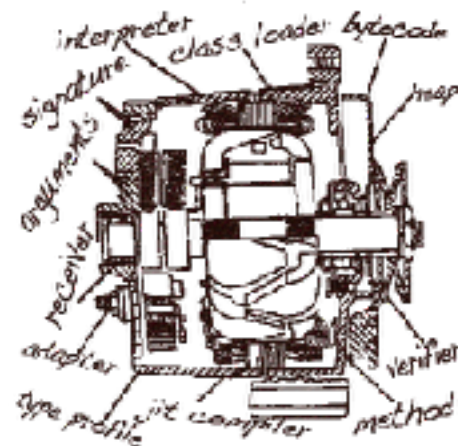


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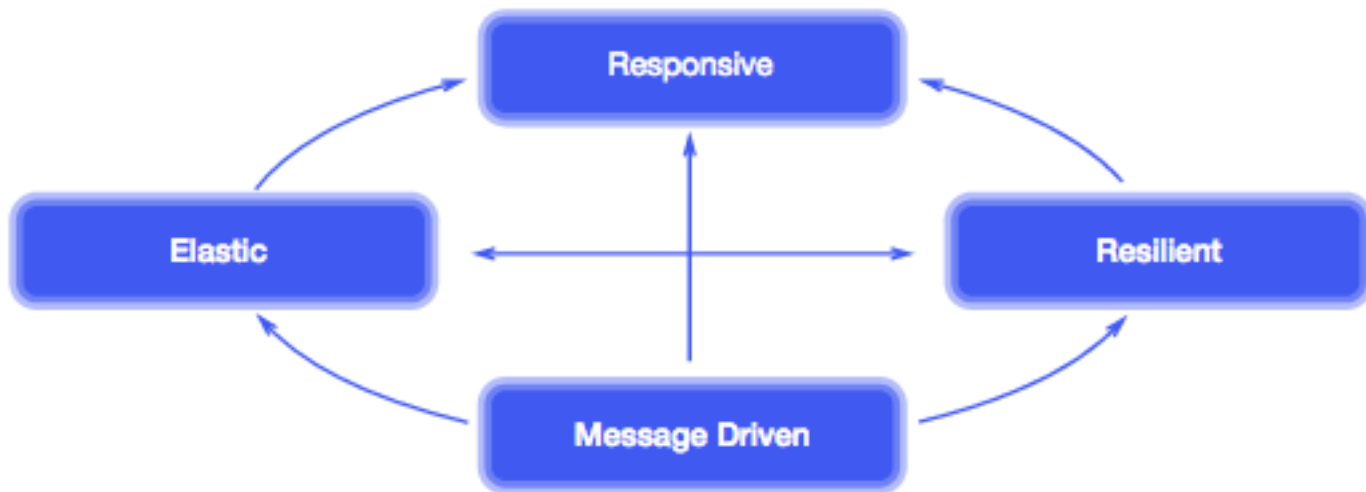




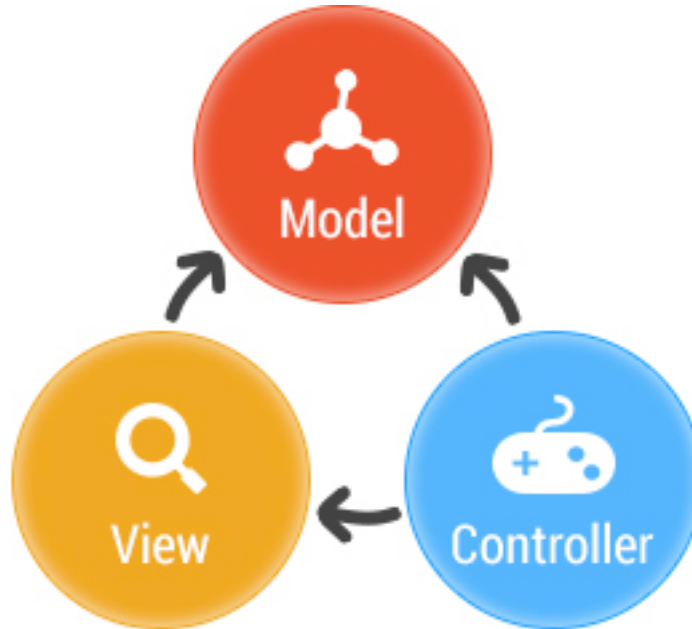
# Java or Scala



# Is Reactive



# MVC Architecture



# App Server



Since Version 2.6.x

**Fewer Configurations**



# JRebel Behavior

More code, Less deploys



# How start a Play project?

We need to use **SBT**

## Create

```
sbt new playframework/play-scala-seed.g8
```

```
sbt new playframework/play-java-seed.g8
```

## Deploy

```
sbt run
```



```
$ sbt new playframework/play-java-seed.g8
```

This template generates a Play Java project

```
name [play-java-seed]: OracleCodeSeul  
organization [com.example]: com.produactivity  
scala_version [2.12.2]:  
play_version [2.6.1]:
```

Template applied in ./oraclecodeseul

```
$
```



```
$ cd oraclecodeseu1/
```

```
Oraclecodeseu1 $ sbt run
```

```

[info] loading project definition from /Users/mercedeswys/Documents/Presentaciones/2017/OracleCode/Mexico/play-java-starter-example/project
[info] Updating {file:/Users/mercedeswys/Documents/Presentaciones/2017/OracleCode/Mexico/play-java-starter-example/project/}play-java-starter-example-build...
[info] Resolving org.fusesource.jansi#jansi;1.4 ...
[info] downloading https://repo.scala-sbt.org/scalasbt/sbt-plugin-releases/com.typesafe.play/sbt-plugin/scala_2.10/sbt_0.13/2.6.8/jars/sbt-plugin.jar ...
[info] [SUCCESSFUL] com.typesafe.play#sbt-plugin;2.6.8!sbt-plugin.jar (3794ms)
[info] downloading https://repo.scala-sbt.org/scalasbt/sbt-plugin-releases/com.typesafe.sbt/sbt-play-enhancer/scala_2.10/sbt_0.13/1.1.8/jars/sbt-play-enhancer.jar ...
[info] [SUCCESSFUL] com.typesafe.sbt#sbt-play-enhancer;1.1.8!sbt-play-enhancer.jar (2435ms)
[info] downloading https://repo1.maven.org/maven2/com/typesafe/play/sbt/routes-compiler_2.10/2.6.8/sbt-routes-compiler_2.10-2.6.8.jar ...
[info] [SUCCESSFUL] com.typesafe.play#sbt-routes-compiler_2.10;2.6.8!sbt-routes-compiler_2.10.jar (951ms)
[info] downloading https://repo1.maven.org/maven2/com/typesafe/play/run-support_2.10/2.6.8/run-support_2.10-2.6.8.jar ...
[info] [SUCCESSFUL] com.typesafe.play#run-support_2.10;2.6.8!run-support_2.10.jar (441ms)
[info] downloading https://repo1.maven.org/maven2/com/typesafe/config/1.3.1/config-1.3.1.jar ...
[info] [SUCCESSFUL] com.typesafe#config;1.3.1!config.jar(bundle) (494ms)
[info] downloading https://repo.scala-sbt.org/scalasbt/sbt-plugin-releases/net.contentobjects.jnotify/jnotify/0.94-play-1/jars/jnotify.jar ...
[info] [SUCCESSFUL] net.contentobjects.jnotify#jnotify;0.94-play-1!jnotify.jar (8792ms)
[info] downloading https://repo.scala-sbt.org/scalasbt/sbt-plugin-releases/com.typesafe.sbt/sbt-twirl/scala_2.10/sbt_0.13/1.3.2/jars/sbt-twirl.jar ...
[info] [SUCCESSFUL] com.typesafe.sbt#sbt-twirl;1.3.2!sbt-twirl.jar (2285ms)
[info] downloading https://repo.scala-sbt.org/scalasbt/sbt-plugin-releases/com.typesafe.sbt/sbt-native-packager/scala_2.10/sbt_0.13/1.2.8/jars/sbt-native-packager.jar ...
[info] [SUCCESSFUL] com.typesafe.sbt#sbt-native-packager;1.2.8!sbt-native-packager.jar (4539ms)
[info] downloading https://repo.scala-sbt.org/scalasbt/sbt-plugin-releases/com.lightbend.sbt/sbt-javagent/scala_2.10/sbt_0.13/0.1.2/jars/sbt-javagent.jar ...
[info] [SUCCESSFUL] com.lightbend.sbt#sbt-javagent;0.1.2!sbt-javagent.jar (2552ms)
[info] downloading https://repo.scala-sbt.org/scalasbt/sbt-plugin-releases/com.typesafe.sbt/sbt-web/scala_2.10/sbt_0.13/1.4.1/jars/sbt-web.jar ...
[info] [SUCCESSFUL] com.typesafe.sbt#sbt-web;1.4.1!sbt-web.jar (2014ms)
[info] downloading https://repo.scala-sbt.org/scalasbt/sbt-plugin-releases/com.typesafe.sbt/sbt-js-engine/scala_2.10/sbt_0.13/1.2.1/jars/sbt-js-engine.jar ...
[info] [SUCCESSFUL] com.typesafe.sbt#sbt-js-engine;1.2.1!sbt-js-engine.jar (2513ms)
[info] downloading https://repo1.maven.org/maven2/com/typesafe/play/twirl-api_2.10/1.3.2/twirl-api_2.10-1.3.2.jar ...
[info] [SUCCESSFUL] com.typesafe.play#twirl-api_2.10;1.3.2!twirl-api_2.10.jar (1647ms)
[info] downloading https://repo1.maven.org/maven2/commons-io/commons-io/2.5/commons-io-2.5.jar ...
[info] [SUCCESSFUL] commons-io#commons-io;2.5!commons-io.jar (944ms)
[info] downloading https://repo1.maven.org/maven2/com/typesafe/play/build-link/2.6.8/build-link-2.6.8.jar ...
[info] [SUCCESSFUL] com.typesafe.play#build-link;2.6.8!build-link.jar (513ms)
[info] downloading https://repo1.maven.org/maven2/com/lightbend/play/play-file-watch_2.10/1.0.8/play-file-watch_2.10-1.0.8.jar ...
[info] [SUCCESSFUL] com.lightbend.play#play-file-watch_2.10;1.0.8!play-file-watch_2.10.jar (563ms)
[info] downloading https://repo1.maven.org/maven2/com/typesafe/play/play-exceptions/2.6.8/play-exceptions-2.6.8.jar ...
[info] [SUCCESSFUL] com.typesafe.play#play-exceptions;2.6.8!play-exceptions.jar (523ms)
[info] downloading https://repo1.maven.org/maven2/com/lightbend/play/jnotify/0.94-play-2/jnotify-0.94-play-2.jar ...
[info] [SUCCESSFUL] com.lightbend.play#jnotify;0.94-play-2!jnotify.jar (2244ms)
[info] downloading https://repo1.maven.org/maven2/com/github/pathikrit/better-files_2.10/2.14.6/better-files_2.10-2.14.6.jar ...
[info] [SUCCESSFUL] com.github.pathikrit#better-files_2.10;2.14.6!better-files_2.10.jar (1809ms)
[info] downloading https://repo1.maven.org/maven2/com/typesafe/play/twirl-compiler_2.10/1.3.2/twirl-compiler_2.10-1.3.2.jar ...
[info] [SUCCESSFUL] com.typesafe.play#twirl-compiler_2.10;1.3.2!twirl-compiler_2.10.jar (1818ms)
[info] downloading https://repo.scala-sbt.org/scalasbt/sbt-plugin-releases/org.scala-js/sbt-scalajs/scala_2.10/sbt_0.13/0.6.16/jars/sbt-scalajs.jar ...
[info] [SUCCESSFUL] org.scala-js#sbt-scalajs;0.6.16!sbt-scalajs.jar (5827ms)
[info] downloading https://repo1.maven.org/maven2/com/typesafe/play/twirl-parser_2.10/1.3.2/twirl-parser_2.10-1.3.2.jar ...

```



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```
[warn] Executing in batch mode.
[warn]   For better performance, hit [ENTER] to switch to interactive mode, or
[warn]   consider launching sbt without any commands, or explicitly passing 'shell'
[info] Loading project definition from /Users/mercedeswyss/Documents/Presentaciones/2017/OracleCode/Sydney/OracleCodeSydney/project
[info] Set current project to OracleCodeSydney (in build file:/Users/mercedeswyss/Documents/Presentaciones/2017/OracleCode/Sydney/OracleCodeSydney/)

--- (Running the application, auto-reloading is enabled) ---

[info] p.c.s.AkkaHttpServer - Listening for HTTP on /0:0:0:0:0:0:0:9000
(Server started, use Enter to stop and go back to the console...)

[info] Compiling 6 Scala sources and 3 Java sources to /Users/mercedeswyss/Documents/Presentaciones/2017/OracleCode/Sydney/OracleCodeSydney/target/scala-2.12/classes...
[info] play.filters.EnabledFilters - Enabled Filters (see <https://www.playframework.com/documentation/latest/Filters>):

  play.filters.csrf.CSRFFilter
  play.filters.headers.SecurityHeadersFilter
  play.filters.hosts.AllowedHostsFilter

[info] play.api.Play - Application started (Dev)
```



# Full Project Structure

```
├─ app
|   ├─ controllers
|   |   ├─ AsyncController.java
|   |   ├─ CountController.java
|   |   └─ HomeController.java
|   ├─ filters
|   |   └─ ExampleFilter.java
|   ├─ Filters.java
|   ├─ Module.java
|   ├─ services
|   |   ├─ ApplicationTimer.java
|   |   ├─ AtomicCounter.java
|   |   └─ Counter.java
|   └─ views
|       ├─ index.scala.html
|       └─ main.scala.html
├─ bin
|   ├─ activator
|   |   └─ activator.bat
|   └─ build.sbt
├─ conf
|   ├─ application.conf
|   ├─ logback.xml
|   └─ routes
├─ libexec
|   └─ activator-launch-1.3.10.jar
├─ LICENSE
├─ project
|   ├─ build.properties
|   └─ plugins.sbt
├─ public
|   ├─ images
|   |   └─ favicon.png
|   ├─ javascripts
|   |   └─ hello.js
|   └─ stylesheets
|       └─ main.css
├─ README
└─ test
    ├─ ApplicationTest.java
    └─ IntegrationTest.java
```

# Simple Project Structure

```
├─ controllers
|   └─ Application.java
├─ filters
├─ services
└─ views
    ├─ greet.scala.html
    ├─ index.scala.html
    └─ main.scala.html
```

## HomeController.java

```
1  package controllers;
2
3  import play.mvc.Controller;
4  import play.mvc.Result;
5
6  import views.html.index;
7
8  /** ...
12 public class HomeController extends Controller {
13
14     /** ...
20     public Result index() {
21         return ok(index.render("Hello Oracle Code 서울!!!"));
22     }
23
24 }
25
```

```
1  # Routes
2  # This file defines all application routes (Higher priority routes first)
3  # ~~~~
4
5  # An example controller showing a sample home page
6  GET    /                               controllers.HomeController.index
7
8  # An example of a WSResultf returning a simple String
9  GET    /test                          controllers.HomeController.test
10
11 # An example of a WSResultf returning a JSON using a HashMap
12 GET    /json                          controllers.HomeController.jsonTest
13
14 # An example of a WSResultf returning a JSON using an Object
15 GET    /jsonObj                       controllers.HomeController.jsonObjTest
16
17 # Map static resources from the /public folder to the /assets URL path
18 GET    /assets/*file                  controllers.Assets.versioned(path="/public", file: Asset)
19 |
```

main.scala.html x

```
1  |+| @*--
7  |  @(title: String)(content: Html)
8
9  |  <!DOCTYPE html>
10 |  <html lang="en">
11 |      <head>
12 |          @* Here's where we render the page title `String`. *@
13 |          <title>@title</title>
14 |          <link rel="stylesheet" media="screen" href="@routes.Assets.versioned("stylesheets/main.css")">
15 |          <link rel="shortcut icon" type="image/png" href="@routes.Assets.versioned("images/favicon.png")">
16 |      </head>
17 |      <body>
18 |          @* And here's where we render the `Html` object containing
19 |             * the page content. *@
20 |          @content
21 |
22 |          <script src="@routes.Assets.versioned("javascripts/main.js")" type="text/javascript"></script>
23 |      </body>
24 |  </html>
25
```



<> index.scala.html x

```
1  @*
2  * This template takes a single argument, a String containing a
3  * message to display.
4  *@
5  @(message: String)
6
7  @*
8  * Call the `main` template with two arguments. The first
9  * argument is a `String` with the title of the page, the second
10 * argument is an `Html` object containing the body of the page.
11 *@
12 @main("OracleCode") {
13
14     <h1>@message</h1>
15
16 }
17
```

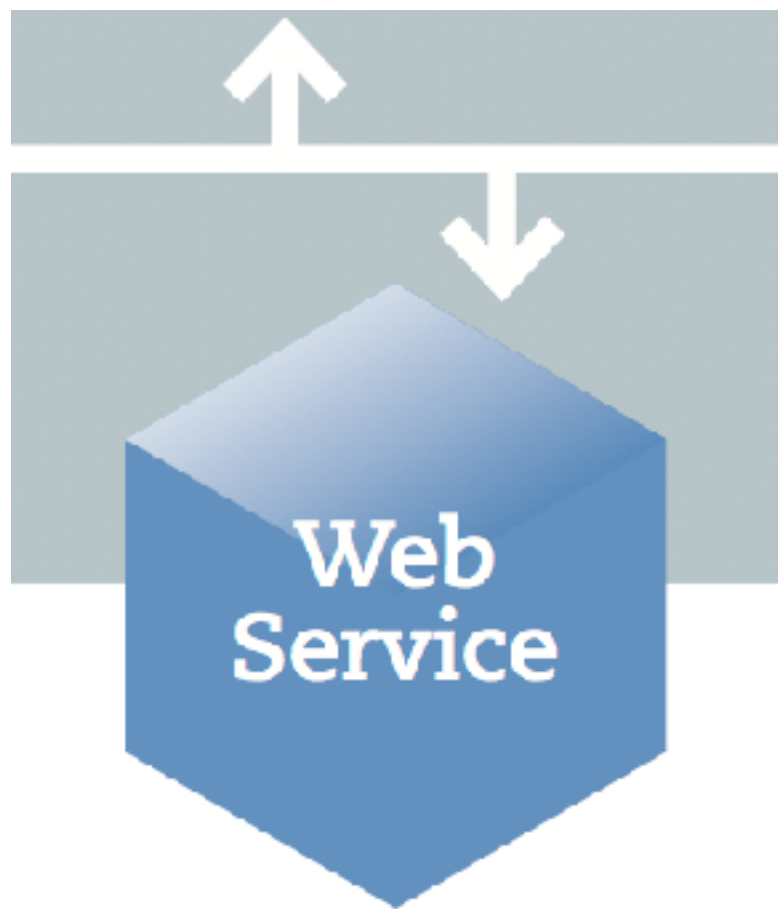
# HomeController.java

```
1  package controllers;
2
3  import play.mvc.Controller;
4  import play.mvc.Result;
5
6  import views.html.index;
7
8  /** ...
12 public class HomeController extends Controller {
13
14  /** ...
20     public Result index() {
21         return ok(index.render("Hello Oracle Code 서울!!!"));
22     }
23
24 }
25
```

# Agenda

- Play Framework
- **Web Services Restful**
- JSONs
- JWT (Json Web Tokens)

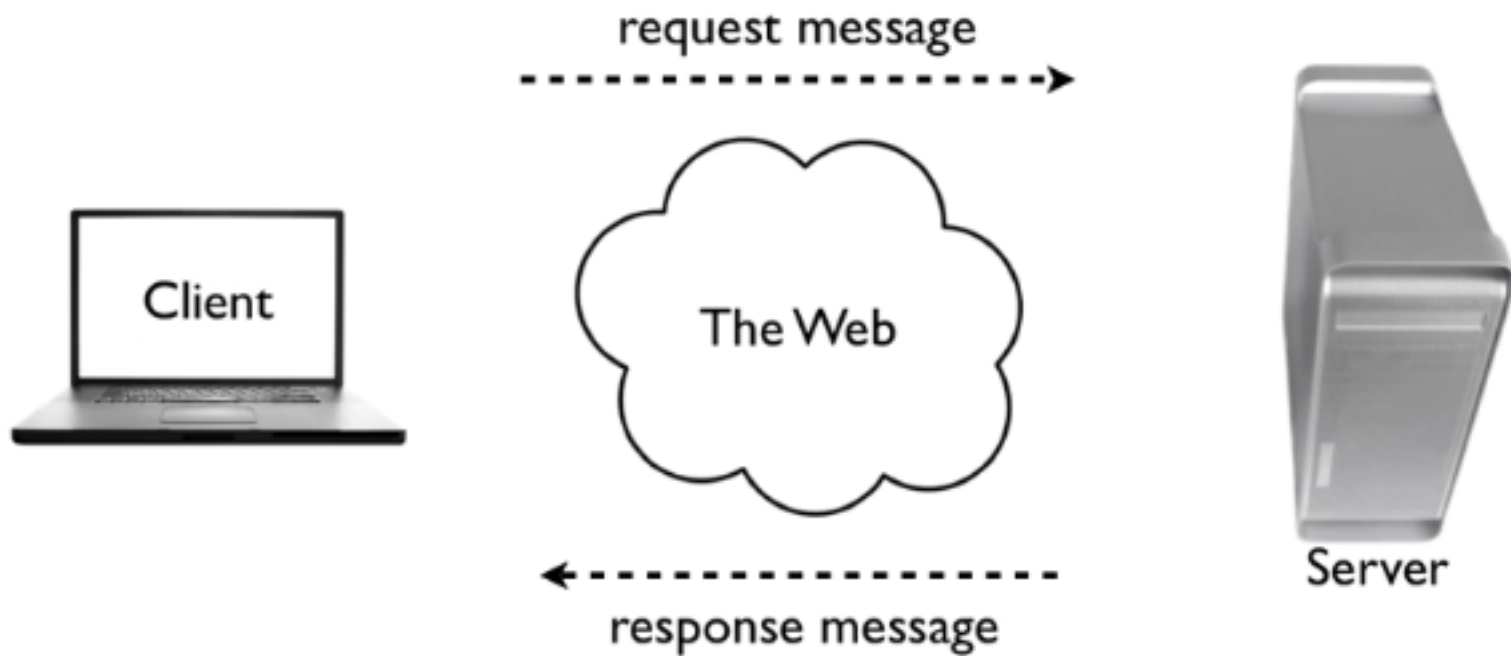




# Web Services

- HyperText Transfer Protocol (HTTP)
- Allows communication between a client and a server
- Provide a standard means of interoperating between different software apps
- Characterized for interoperability and extensibility
- Based on **XML**





# SOAP

- Simple Object Access Protocol
- XML-based
- Use WSDL as specification description  
(Web Services Description Language)
- Need to follow a communication protocol



```
<?xml version="1.0" encoding="utf-8"?>
<soap12:Envelope
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:soap12="http://www.w3.org/2003/05/soap-envelope">
  <soap12:Body>
    <GetWeather xmlns="http://www.webserviceX.NET">
      <CityName>string</CityName>
      <CountryName>string</CountryName>
    </GetWeather>
  </soap12:Body>
</soap12:Envelope>
```



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```

XDeclaration
    <?xml version="1.0" encoding="utf-8" standalone="yes"?>
XComment
    <!--Creating an XML Tree using LINQ to XML-->
    <Students>
        <Student Id="101">
            <Name>Mark</Name>
            <Gender>Male</Gender>
            <TotalMarks>800</TotalMarks> XElement
        </Student> XAttribute
        <Student Id="102">
            <Name>Rosy</Name>
            <Gender>Female</Gender>
            <TotalMarks>900</TotalMarks>
        </Student>
        <Student Id="103"> XElement
            <Name>Pam</Name>
            <Gender>Female</Gender>
            <TotalMarks>850</TotalMarks>
        </Student>
        <Student Id="103">
            <Name>John</Name>
            <Gender>Male</Gender>
            <TotalMarks>950</TotalMarks>
        </Student>
    </Students>

```

# Restful

- Software Architecture based on HTTP methods (Get, Post, Put, Delete, etc)
- Typically use JSON, but can use XML, Text



```
{  
  "CityName": "string",  
  "CountryName": "string"  
}
```

# SOAP vs REST

## SOAP



## REST



\*REST are mostly used in industry

```
<?xml version="1.0" encoding="utf-8"?>
<soap12:Envelope
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:soap12="http://www.w3.org/2003/05/soap-envelope">
  <soap12:Body>
    <GetWeather xmlns="http://www.webserviceX.NET">
      <CityName>string</CityName>
      <CountryName>string</CountryName>
    </GetWeather>
  </soap12:Body>
</soap12:Envelope>
```

```
{
  "CityName": "string",
  "CountryName": "string"
}
```

```
<?xml version="1.0" encoding="utf-8"?>
<soap12:Envelope
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:soap12="http://www.w3.org/2003/05/soap-envelope">
  <soap12:Body>
    <GetWeather xmlns="http://www.webserviceX.NET">
      <CityName>string</CityName>
      <CountryName>string</CountryName>
    </GetWeather>
  </soap12:Body>
</soap12:Envelope>
```

415  
bytes

```
{
  "CityName": "string",
  "CountryName": "string"
}
```

```
<?xml version="1.0" encoding="utf-8"?>
<soap12:Envelope
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:soap12="http://www.w3.org/2003/05/soap-envelope">
  <soap12:Body>
    <GetWeather xmlns="http://www.webserviceX.NET">
      <CityName>string</CityName>
      <CountryName>string</CountryName>
    </GetWeather>
  </soap12:Body>
</soap12:Envelope>
```

415  
bytes

57  
bytes

```
{
  "CityName": "string",
  "CountryName": "string"
}
```

# Difference

- If we are sending a xml of 415 bytes, we are sending 358 bytes more
- If we are sending a json of 415 bytes, we are sending 358 bytes less
- There is 86% of more or less information





# HomeController.java

```
1  package controllers;
2
3  import play.mvc.Controller;
4  import play.mvc.Result;
5
6  import views.html.index;
7
8  /** ...
12 public class HomeController extends Controller {
13
14  /** ...
20     public Result index() {
21         return ok(index.render("Hello Oracle Code 서울!!!"));
22     }
23
24 }
25
```

## HomeController.java

```
1  package controllers;
2
3  import play.mvc.Controller;
4  import play.mvc.Result;
5
6  import views.html.index;
7
8  /** ...
12 public class HomeController extends Controller {
13
14  /** ...
20  public Result index() {
21      return ok(index.render("Hello Oracle Code 서울!!!"));
22  }
23
24  }
25
```

# HomeController.java x

```
1  package controllers;
2  import play.mvc.Controller;
3  import play.mvc.Result;
4
5  import views.html.index;
6
7  /** ...
11 public class HomeController extends Controller {
12
13     /** ...
19     public Result index() {
20         return ok("Hello Oracle Code 서울!!! This is a plane text response");
21     }
22
23 }
24
```

# Agenda

- Play Framework
- Web Services Restful
- **JSONs**
- JWT (Json Web Tokens)



{JSON}

# JSON

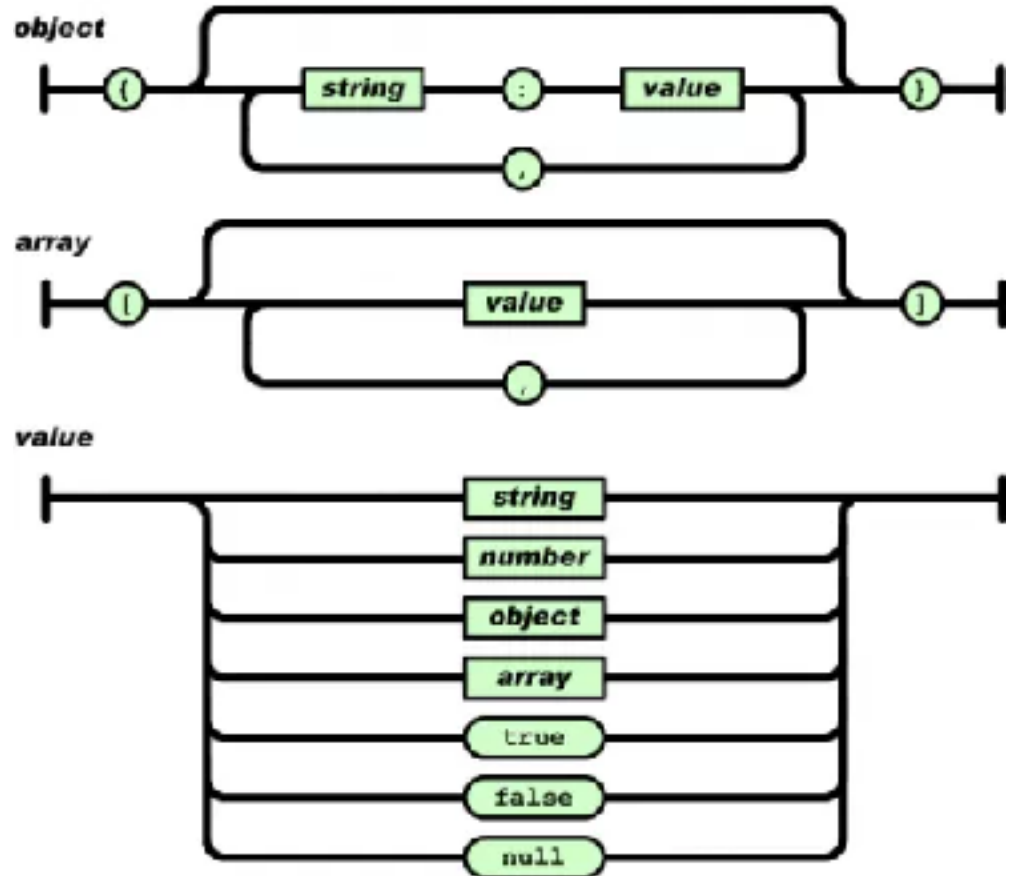
- JavaScript Object Notation
- Is a lightweight data-interchange format
- Self-describing
- Human-reading
- **Is a Protocol**



# JSON Example

```
{  
  "Rail Booking": {  
    "reservation": {  
      "ref_no": 1234567,  
      "time_stamp": "2016-06-24T14:26:59.125",  
      "confirmed": true  
    },  
    "train": {  
      "date": "07/04/2016",  
      "time": "09:30",  
      "from": "New York",  
      "to": "Chicago",  
      "seat": "57B"  
    },  
    "passenger": {  
      "name": "John Smith"  
    },  
    "price": 1234.25,  
    "comments": ["Lunch & dinner incl.", "\*Have a nice day!\*"]  
  }  
}
```

# JSON Scheme





```
1  package controllers;
2
3  import com.oraclecode.seul.Event;
4
5  import java.util.Date;
6  import java.util.Map;
7  import java.util.HashMap;
8
9  import com.fasterxml.jackson.databind.JsonNode;
10
11 import play.libs.Json;
12 import play.mvc.Controller;
13 import play.mvc.Result;
14
15 import views.html.index;
16
17 // #40 --
21 public class HomeController extends Controller {
22
23     public Result jsonTest(){
24         Map<String, Object> result = new HashMap<>();
25         result.put("eventName", "Oracle Code 서울");
26         result.put("eventWhen", new Date());
27         result.put("eventWhere", "Conrad");
28
29         return ok(Json.toJson(result));
30     }
31 }
```



Event.java x

```
1 package com.oraclecode.sydney;
2
3 import java.util.Date;
4
5 public class Event {
6
7     private String name;
8
9     private String where;
10
11     private Date when;
12
13     * public String getName(){--
14         }
15
16
17     public void setName(String name){--
18         }
19
20
21     * public String getWhere(){--
22         }
23
24
25     * public void setWhere(String where){--
26         }
27
28
29     public Date getWhen(){--
30         }
31
32
33     * public void setWhen(Date when){--
34         }
35
36
37 }
```







## Event.java x

```
1 package com.oraclecode.sydney;
2
3 import java.util.Date;
4
5 public class Event {
6
7     private String name;
8
9     private String where;
10
11     private Date when;
12
13     * public String getName(){--
14     }
15
16     public void setName(String name){--
17     }
18
19     public String getWhere(){--
20     }
21
22     public void setWhere(String where){--
23     }
24
25     public Date getWhen(){--
26     }
27
28     public void setWhen(Date when){--
29     }
30
31 }
32
33 * public void setWhen(Date when){--
34     }
35
36
37 }
```

## HomeController.java x

```
1 package controllers;
2
3 import com.oraclecode.seul.Event;
4
5 import java.util.Date;
6 import java.util.Map;
7 import java.util.HashMap;
8
9 import com.fasterxml.jackson.databind.JsonNode;
10
11 import play.libs.Json;
12 import play.mvc.Controller;
13 import play.mvc.Result;
14
15 import views.html.index;
16
17 /**
21 public class HomeController extends Controller {
22
23     public Result jsonObjTest(){
24         Event event = new Event();
25         event.setName("Oracle Code 서울");
26         event.setWhen(new Date());
27         event.setWhere("Conrad");
28
29         return ok(Json.toJson(event));
30     }
31 }
```

## HomeController.java

```
1  package controllers;
2
3  import com.oraclecode.seul.Event;
4
5  import java.util.Date;
6  import java.util.Map;
7  import java.util.HashMap;
8
9  import com.fasterxml.jackson.databind.JsonNode;
10
11 import play.libs.Json;
12 import play.mvc.Controller;
13 import play.mvc.Result;
14
15 import views.html.index;
16
17  /   
21 public class HomeController extends Controller {
22
23     public Result catchJson(){
24         JsonNode jsonNode = request().body().asJson();
25         Event event = Json.fromJson(jsonNode, Event.class);
26
27         return ok(Json.toJson(event));
28     }
29 }
```



Auth0

# Agenda

- Play Framework
- Web Services Restful
- JSONs
- **JWT (Json Web Tokens)**

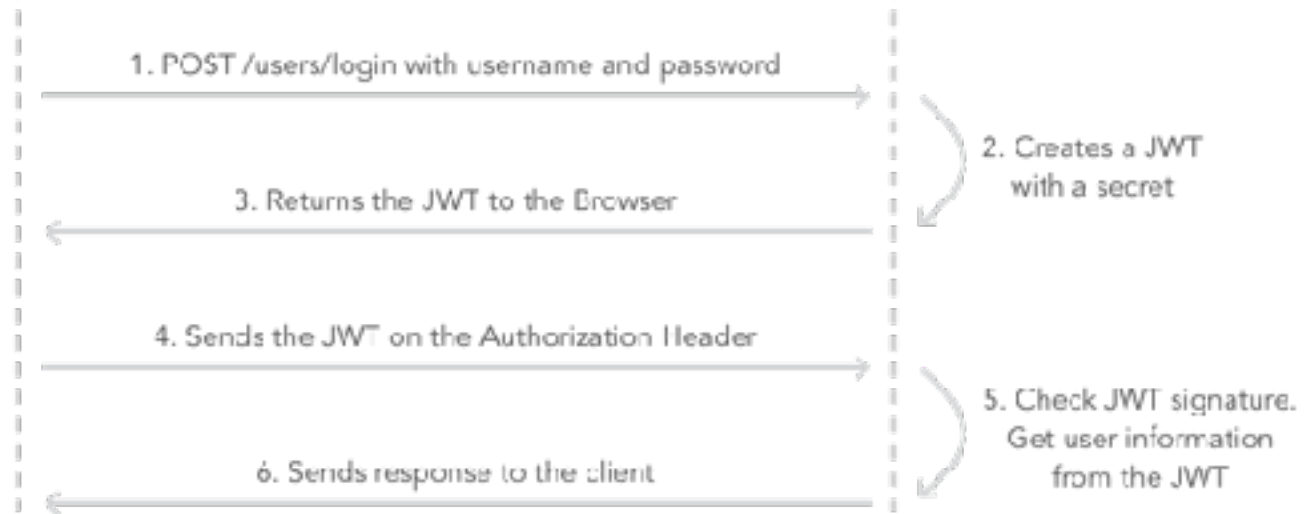
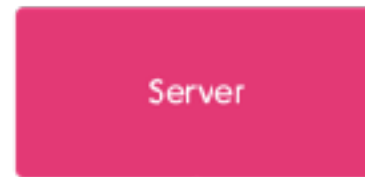


JWT

# JWT

Is an open standard (RFC 7519) that defines a compact and self-contained way for securely transmitting information between parties as a JSON object.







# JWT Structure

## Header

## Claims

eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJleHAiOiJlE0MTY0NzE5MzQsInVzZXIjbmFtZSI6InVzZXIiLCJzY29wZSI6WyJyZWFKIiwid3JpdGUiXSwiYXV0aG9yaXRpZXMiOiIsIuk9MRV9BRE1JTtiIsIlJPTEVfVVNFUiJdLCJqdGkiOiI5YmM5MmE0NC0wYjFhLTRjNWUtYmU3MC1kYTUyMDc1YjIhODQiLCJjbGllbnRfaWQiOiJteS1jbGllbnQtd2l0aC1zZWNYZXQifQ.AZCTD\_fiCcnrQR5X7rJBQ5r0-2Qedc5\_3qJJf-ZCvVY

### Signature



## Auth0

# JWT Structure



JSON WEB TOKEN

Debugger

Libraries

Ask

Vote

467

Follow @auth0

1,881 followers

ENCODED

PASTE A TOKEN HERE

DECODED

EDIT THE PAYLOAD AND SECRET (ONLY HS256 SUPPORTED)

```
eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.  
eyJhdWQiOiJ1Nm5uQXhHVmпиQmQ4ZkRYamo1N  
TRZS0dBRzVidVZycCI6InNjb3BlcyI6eyJ0b2  
t1bnMiOnsiYWNoYW9ucyI6WyJibGFja2xpc3Q  
iXX19LCJpYXQiOiJlE0MjUzMzYwMjc5Imp0aSI6  
IjA2MTI4ZDg5ZmRhOWEwYjAzN2JhZDkxZTJiM  
WlxN2RkIn0.YQzd4Y1weIRqDyR0FupXXmnp3k  
3AzCmUALPKHNfn-xs
```

```
{  
  "alg": "HS256",  
  "typ": "JWT"  
}
```

```
{  
  "aud": "u6nnAxGV;bBd8etXjj554YKGAGSHuVrp",  
  "scopes": {  
    "tokens": {  
      "actions": [  
        "blacklist"  
      ]  
    }  
  },  
  "iat": 1425336027,  
  "jti": "06128d89/da9a0b037bad91e2b1b17dd"  
}
```



# JWT Structure

```
eyJhbGciOiJIUzUxMiJ9.eyJqc29uIjoie1wic3VjY2Vzc2Z1bFwiOmZhbHN1LFwic2lnbk91dFwiOnRydWV9In0.Nek1wZdeC3UcCi yg3qDSCk17zwX1gKxnBs1CByWX9CMlxJku46tfnBbBfuH4E2JVRMz2yCgeHAVKFBYnCt_QQ
```

HEADER: ALGORITHM & TOKEN TYPE

```
{  
  "alg": "HS512"  
}
```

PAYLOAD: DATA

```
{  
  "json": "(\\\"successful\\\":false,\\\"signIn\\\":true)"  
}
```

To End  
Let's See the Magic Live

México

ORACLE  
CODE