ENSET MOHAMMEDIA

GLSID 3

Project
Distributed Systems Based on MicroServices

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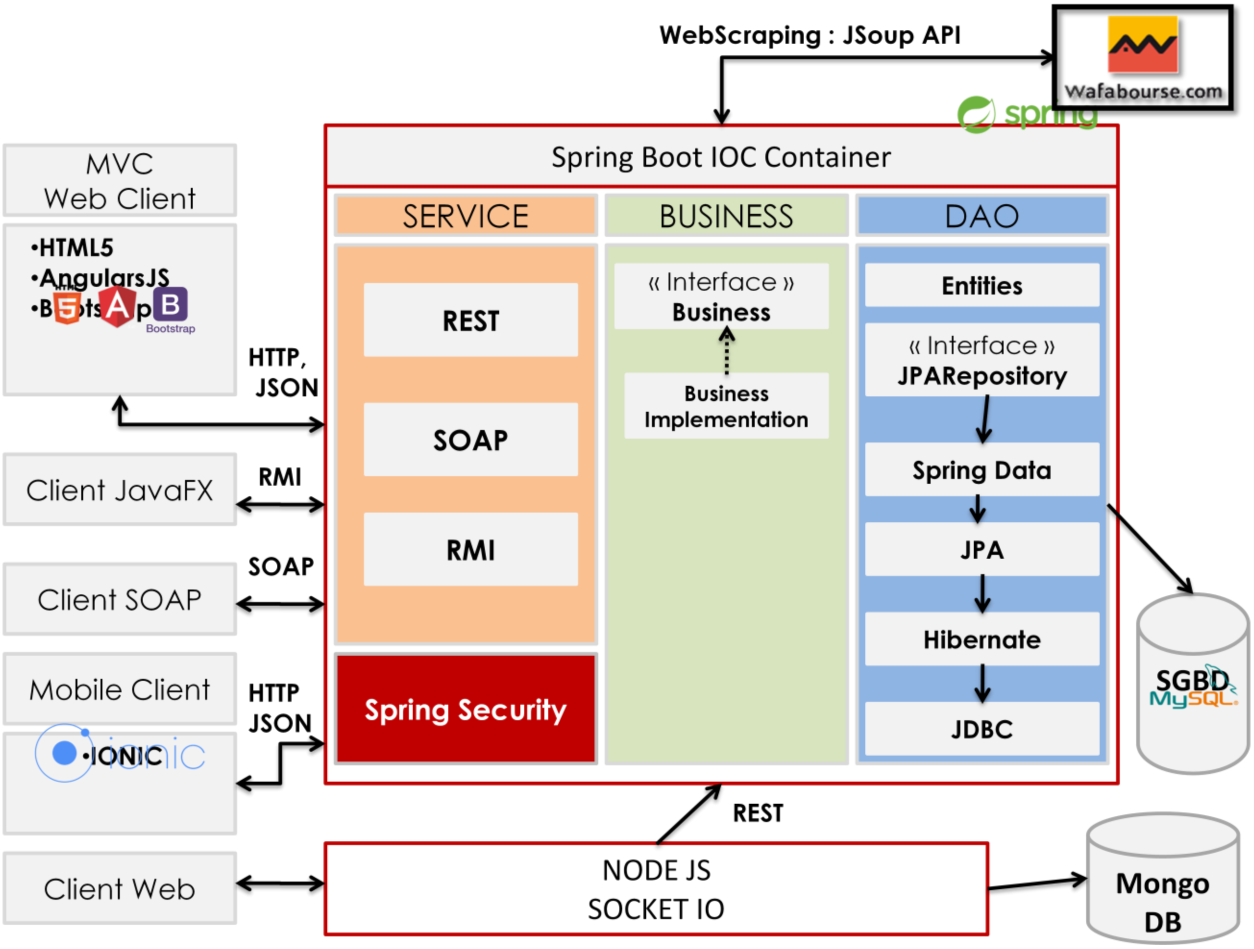
Enseignant : **M. Yousfi**

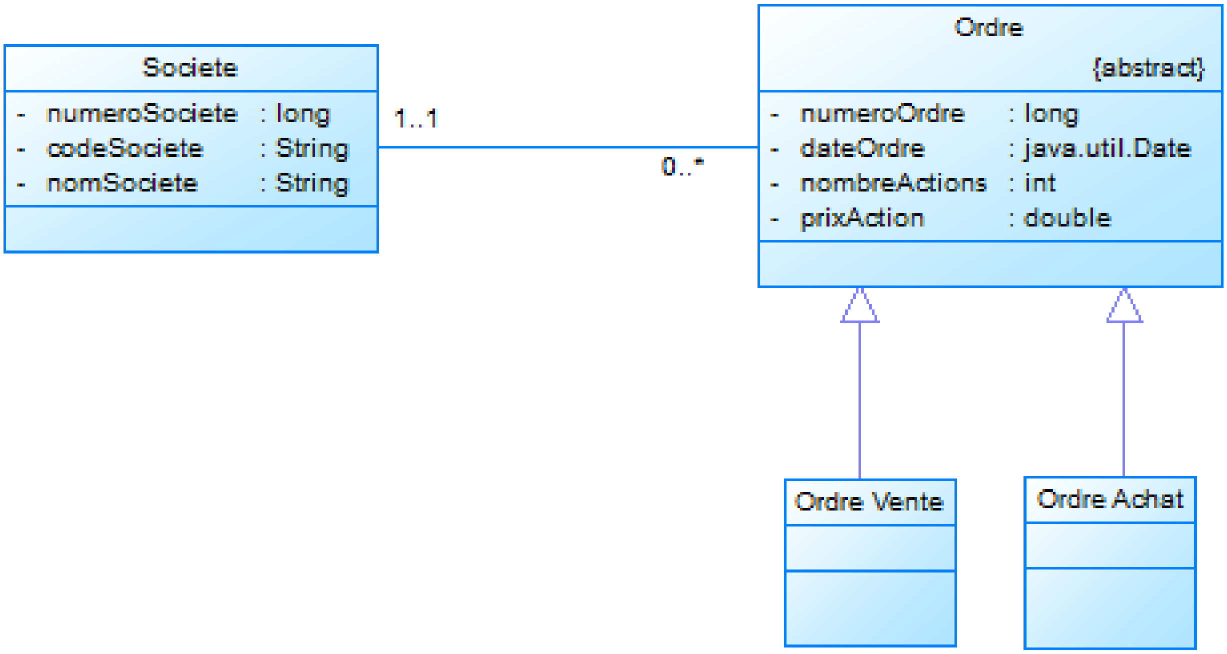
Année Universitaire **2016/2017**

Sommaire

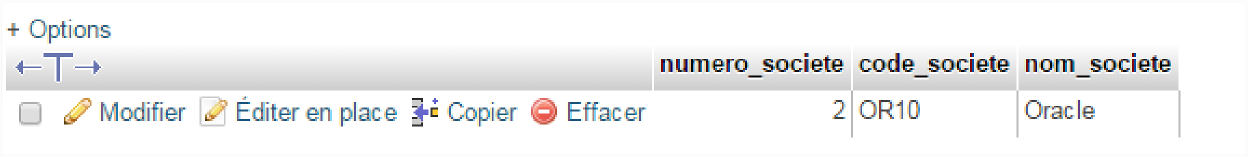
1- Architecture



2- Class Diagram

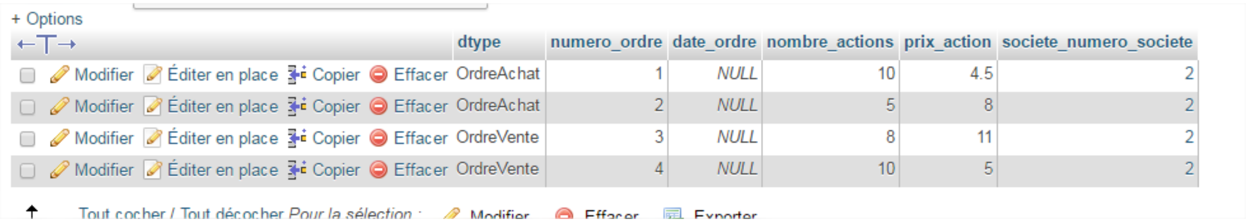


- Database representation example
  - Societies



←T→	numero_societe	code_societe	nom_societe
□ Modifier Éditer en place Copier Effacer	2	OR10	Oracle

  - Orders

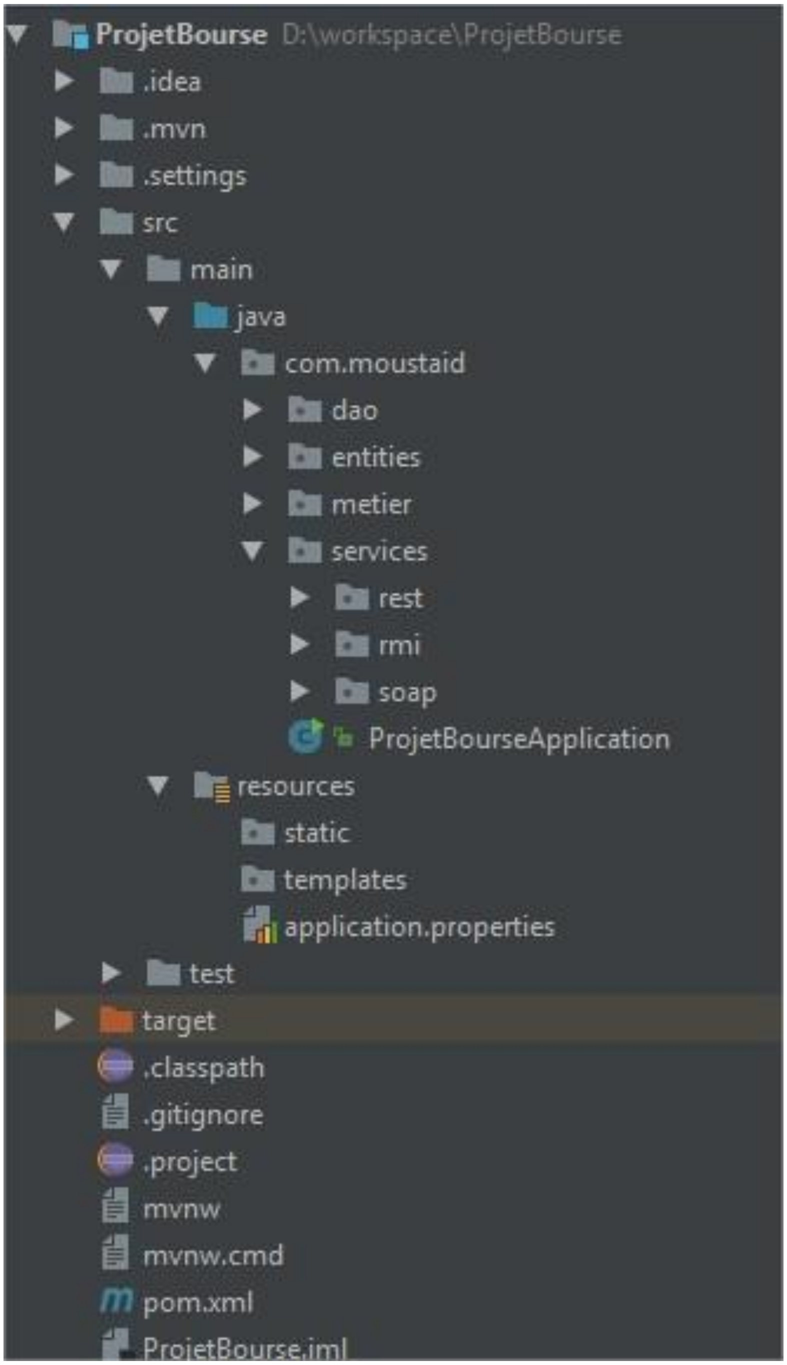


←T→	dtype	numero_ordre	date_ordre	nombre_actions	prix_action	societe_numero_societe
□ Modifier Éditer en place Copier Effacer	OrdreAchat	1	*NULL*	10	4.5	2
□ Modifier Éditer en place Copier Effacer	OrdreAchat	2	*NULL*	5	8	2
□ Modifier Éditer en place Copier Effacer	OrdreVente	3	*NULL*	8	11	2
□ Modifier Éditer en place Copier Effacer	OrdreVente	4	*NULL*	10	5	2

Tout cocher / Tout décocher *Pour la sélection :* Modifier Effacer Exporter

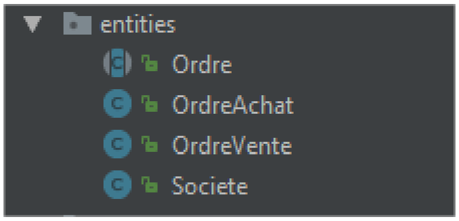
3- JEE [Server]

1. Structure



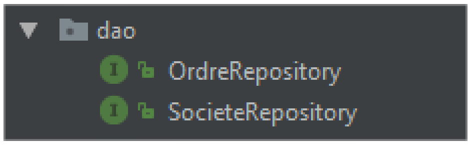
```
▼ ProjetBourse D:\workspace\ProjetBourse
    ▶ .idea
    ▶ .mvn
    ▶ .settings
    ▼ src
        ▼ main
            ▼ java
                ▼ com.moustaid
                    ▶ dao
                    ▶ entities
                    ▶ metier
                    ▼ services
                        ▶ rest
                        ▶ rmi
                        ▶ soap
                      ProjetBourseApplication
            ▼ resources
                  static
                  templates
                  application.properties
        ▶ test
    ▶ target
      .classpath
      .gitignore
      .project
      mvnw
      mvnw.cmd
      pom.xml
      ProjetBourse.iml
```

2. Entities



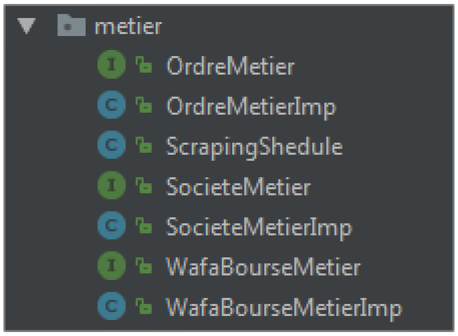
```
▼ entities
    Ordre
    OrdreAchat
    OrdreVente
    Societe
```

3. DAO Layer



```
▼ dao
    OrdreRepository
    SocieteRepository
```

4. Business Layer



```
▼ metier
    OrdreMetier
    OrdreMetierImp
    ScrapingShedule
    SocieteMetier
    SocieteMetierImp
    WafaBourseMetier
    WafaBourseMetierImp
```

- WafaBourse scraping interface

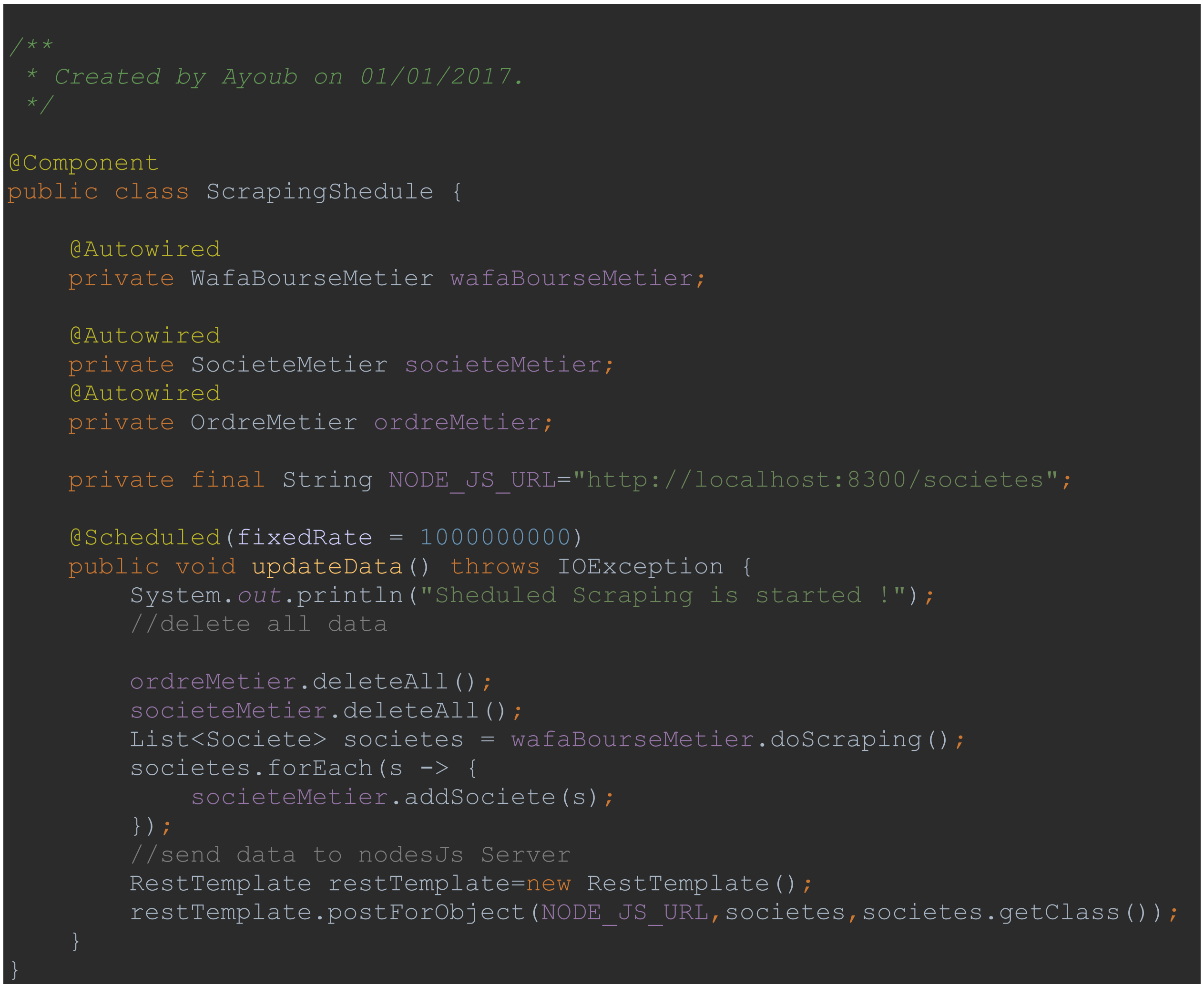
```
package com.moustaid.metier;

import java.io.IOException;
import java.util.List;

import com.moustaid.entities.Ordre;
import com.moustaid.entities.Societe;

public interface WafaBourseMetier {

   List<Societe> doScraping();


}
```

- WafaBourse scraping implementation

```java
package com.moustaid.metier;

import java.io.IOException;
import java.util.ArrayList;
import java.util.Date;
import java.util.Iterator;
import java.util.List;
import java.util.function.Supplier;

import com.moustaid.entities.OrdreAchat;
import com.moustaid.entities.OrdreVente;
import org.jsoup.Jsoup;
import org.jsoup.nodes.Document;
import org.jsoup.nodes.Element;
import org.jsoup.select.Elements;
import org.springframework.stereotype.Service;

import com.moustaid.entities.Ordre;
import com.moustaid.entities.Societe;
@Service
public class WafaBourseMetierImp implements WafaBourseMetier {
   private final String BOURSE_URL=
"https://www.wafabourse.com/marches/actions/r";
   @Override
   public List<Societe> doScraping() {
      Document doc = null;
      List<Societe> societes=new ArrayList<>();
      try {
         doc = Jsoup.connect(BOURSE_URL).get();
         Elements links = doc.select("td a[href]");
         for (Element link : links) {
            Document societeDoc = Jsoup.connect(link.absUrl("href")).get();
            Element infosSociete =
societeDoc.select("div[class=titre]").first();
            Societe societe = new
Societe(infosSociete.select("div[class=markettitleisin]").text(),
infosSociete.select("h1").text());
            //recuperation des ordres
            Element divOrdres =
societeDoc.select("div[class=orderBookDiv]").first();
            Element tableOrdreAchat =
divOrdres.select("table").stream().filter((e) ->
e.hasAttr("bid_qty")).findFirst().get().select("tbody").first();
            Element tableOrdreVente =
divOrdres.select("table").stream().filter((e) ->
e.hasAttr("ask_px")).findFirst().get().select("tbody").first();
            addOrdresToSociete(tableOrdreAchat, tableOrdreVente, societe);
            societes.add(societe);
         }
      } catch (IOException e) {
         System.out.println(e.getMessage());
      }
      return societes;
   }

   private void addOrdresToSociete(Element tableOrdreAchat, Element
tableOrdreVente, Societe societe) {
      List<Ordre> ordres=new ArrayList<>();
      ordres.addAll(getOrdres(tableOrdreAchat, OrdreAchat::new, () -> "bid",
societe));//Achat
      ordres.addAll(getOrdres(tableOrdreVente, OrdreVente::new, () -> "ask",
societe));//Vente
      societe.setOrders(ordres);
   }


   private List<Ordre> getOrdres(Element tableOrdre, Supplier<Ordre>
ordreSupplier, Supplier<String> tdClassSupplier, Societe societe) {
      Iterator<Element> rows = tableOrdre.select("tr")
            .stream()
            .filter(e -> !e.select("td").first().text().equals("-"))
            .iterator();
      Element row = null;
      List<Ordre> ordres=new ArrayList<>();
      while (rows.hasNext()) {
         row = rows.next();
         int nbrActions = Integer.parseInt(row.select("td[class=" +
tdClassSupplier.get() + "Volume]").text().replaceAll(" ", ""));
         double prixAction = Double.parseDouble(row.select("td[class=" +
tdClassSupplier.get() + "Price]").text().replace(",", ".").replaceAll(" ",
""));
         Ordre ordre = ordreSupplier.get();
         ordre.setDateOrdre(new Date());
         ordre.setNombreActions(nbrActions);
         ordre.setPrixAction(prixAction);
         ordre.setSociete(societe);
         ordres.add(ordre);
      }
      return ordres;
   }



}
```

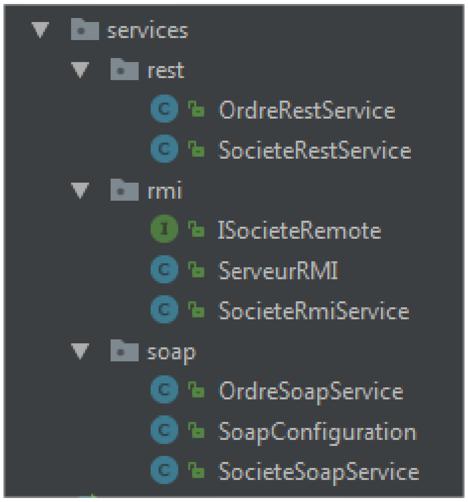
- Scrapping Sheduler

```
package com.moustaid.metier;

import com.moustaid.entities.Societe;
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.scheduling.annotation.Scheduled;
import org.springframework.stereotype.Component;
import org.springframework.web.client.RestTemplate;

import java.io.IOException;
import java.util.List;
```



```java
/**
 * Created by Ayoub on 01/01/2017.
 */

@Component
public class ScrapingShedule {

    @Autowired
    private WafaBourseMetier wafaBourseMetier;

    @Autowired
    private SocieteMetier societeMetier;
    @Autowired
    private OrdreMetier ordreMetier;

    private final String NODE_JS_URL="http://localhost:8300/societes";

    @Scheduled(fixedRate = 1000000000)
    public void updateData() throws IOException {
        System.out.println("Sheduled Scraping is started !");
        //delete all data

        ordreMetier.deleteAll();
        societeMetier.deleteAll();
        List<Societe> societes = wafaBourseMetier.doScraping();
        societes.forEach(s -> {
            societeMetier.addSociete(s);
        });
        //send data to nodesJs Server
        RestTemplate restTemplate=new RestTemplate();
        restTemplate.postForObject(NODE_JS_URL,societes,societes.getClass());
    }
}
```

5. Service Layer



```
services
    rest
        OrdreRestService
        SocieteRestService
    rmi
        ISocieteRemote
        ServeurRMI
        SocieteRmiService
    soap
        OrdreSoapService
        SoapConfiguration
        SocieteSoapService
```

a. Soap configuration

```
package com.moustaid.services.soap;

import org.springframework.context.annotation.Bean;
import org.springframework.context.annotation.Configuration;
import org.springframework.remoting.jaxws.SimpleJaxWsServiceExporter;

@Configuration
public class SoapConfiguration {

@Bean
public SimpleJaxWsServiceExporter getSoapServiceExporter(){
SimpleJaxWsServiceExporter serviceExporter = new
SimpleJaxWsServiceExporter();
serviceExporter.setBaseAddress("http://localhost:8585/bourse");
return serviceExporter;
    }
}
```

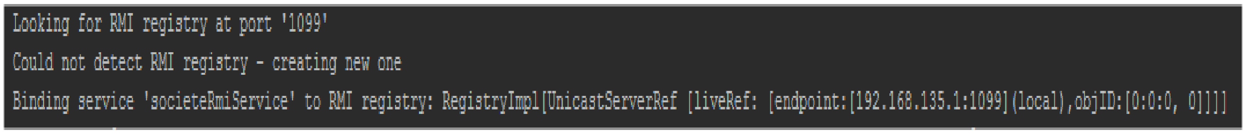
b. RMI Server Configuration

```
package com.moustaid.services.rmi;


import java.rmi.Naming;
import java.rmi.registry.LocateRegistry;
import java.rmi.registry.Registry;
import java.rmi.server.UnicastRemoteObject;
import java.util.logging.Level;
import java.util.logging.Logger;

import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.context.ApplicationContext;
import org.springframework.context.annotation.Bean;
import org.springframework.context.annotation.Configuration;
import org.springframework.remoting.rmi.RmiServiceExporter;
import org.springframework.stereotype.Component;

@Configuration
public class ServeurRMI {

    @Bean
    public RmiServiceExporter getRmiSocieteServiceExporter(ApplicationContext
context) {

        RmiServiceExporter exporter = new RmiServiceExporter();
        exporter.setService(context.getBean(SocieteRmiService.class));
        exporter.setRegistryPort(1099);
        exporter.setServiceName("societeRmiService");
        exporter.setServiceInterface(ISocieteRemote.class);
        System.out.println("societes service exporter : "+exporter);
```

```
        return exporter;
    }


}
```

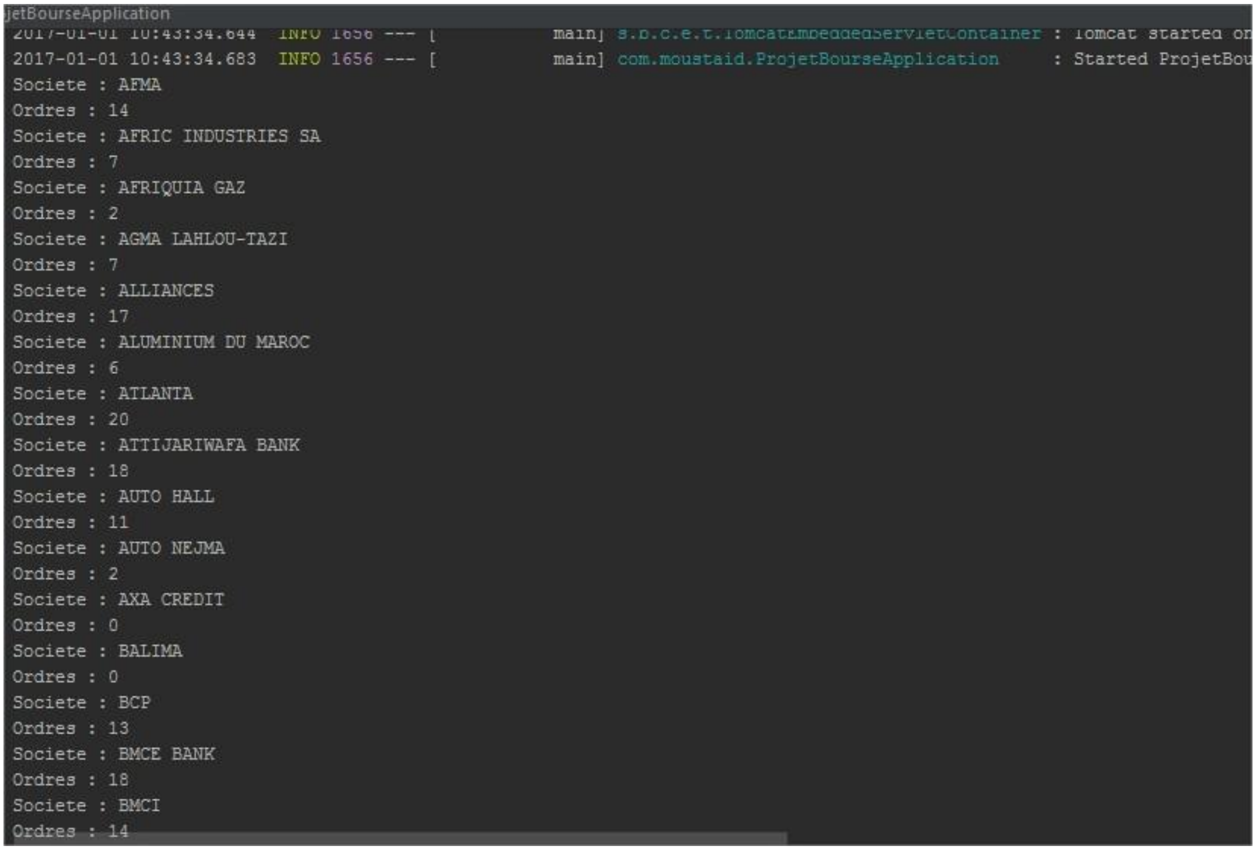
6. Tests

- Rmi Server test



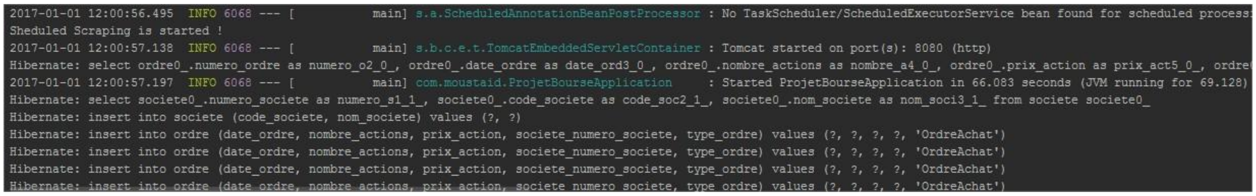
```
Looking for RMI registry at port '1099'
Could not detect RMI registry - creating new one
Binding service 'societeRmiService' to RMI registry: RegistryImpl[UnicastServerRef [liveRef: [endpoint:[192.168.135.1:1099](local),objID:[0:0:0, 0]]]]
```

- WafaBourse Scraping test



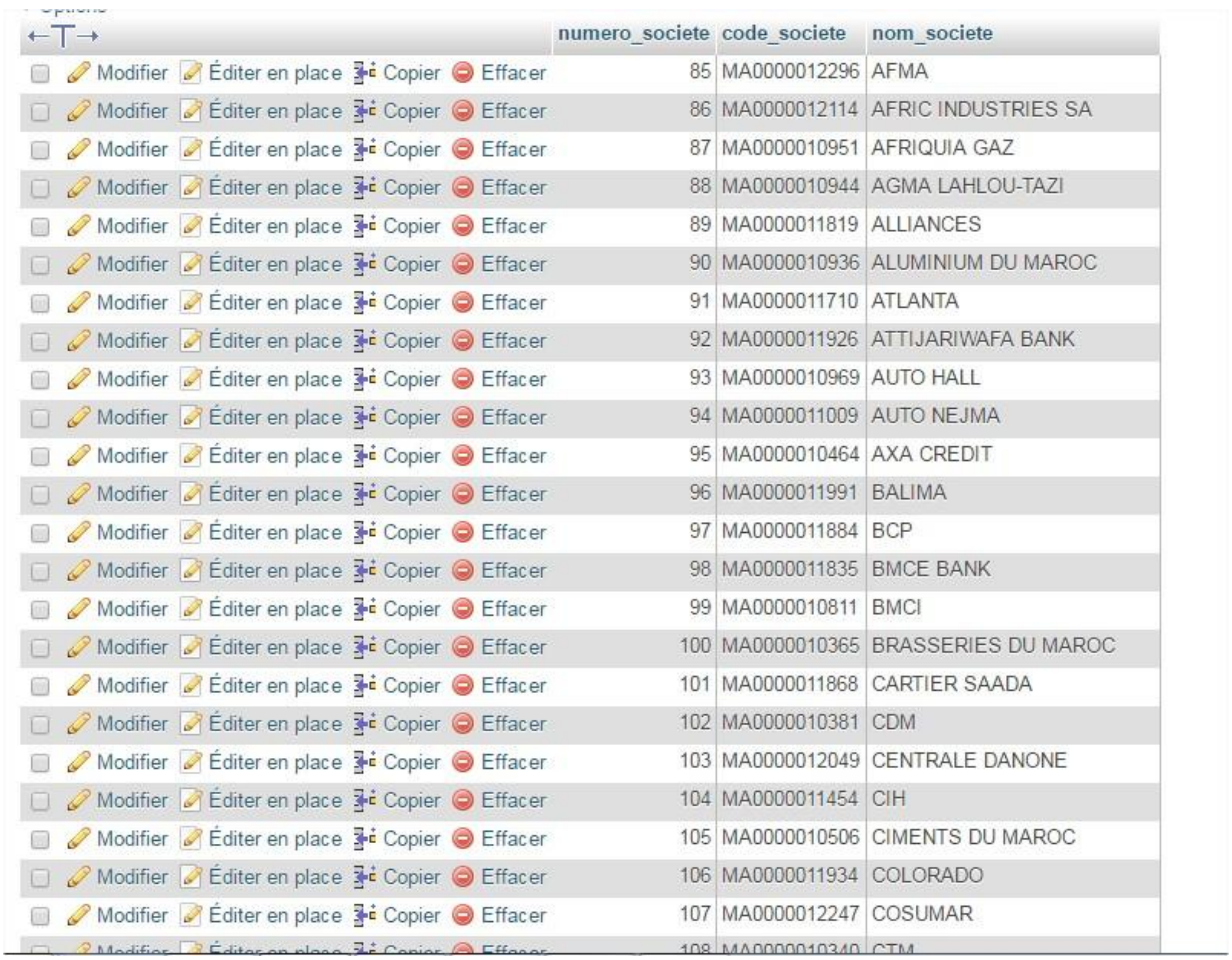
```
2017-01-01 10:43:34.644  INFO 1656 --- [           main] s.b.c.e.t.TomcatEmbeddedServletContainer : Tomcat started on
2017-01-01 10:43:34.683  INFO 1656 --- [           main] com.moustaid.ProjetBourseApplication     : Started ProjetBou
Societe : AFMA
Ordres : 14
Societe : AFRIC INDUSTRIES SA
Ordres : 7
Societe : AFRIQUIA GAZ
Ordres : 2
Societe : AGMA LAHLOU-TAZI
Ordres : 7
Societe : ALLIANCES
Ordres : 17
Societe : ALUMINIUM DU MAROC
Ordres : 6
Societe : ATLANTA
Ordres : 20
Societe : ATTIJARIWAFA BANK
Ordres : 18
Societe : AUTO HALL
Ordres : 11
Societe : AUTO NEJMA
Ordres : 2
Societe : AXA CREDIT
Ordres : 0
Societe : BALIMA
Ordres : 0
Societe : BCP
Ordres : 13
Societe : BMCE BANK
Ordres : 18
Societe : BMCI
Ordres : 14
```

- WafaBourse Scraping Sheduler test



```
2017-01-01 12:00:56.495  INFO 6068 --- [           main] s.a.ScheduledAnnotationBeanPostProcessor : No TaskScheduler/ScheduledExecutorService bean found for scheduled process
Sheduled Scraping is started !
2017-01-01 12:00:57.138  INFO 6068 --- [           main] s.b.c.e.t.TomcatEmbeddedServletContainer : Tomcat started on port(s): 8080 (http)
Hibernate: select ordre0_.numero_ordre as numero_o2_0_, ordre0_.date_ordre as date_ord3_0_, ordre0_.nombre_actions as nombre_a4_0_, ordre0_.prix_action as prix_act5_0_, ordre
2017-01-01 12:00:57.197  INFO 6068 --- [           main] com.moustaid.ProjetBourseApplication     : Started ProjetBourseApplication in 66.083 seconds (JVM running for 69.128)
Hibernate: select societe0_.numero_societe as numero_s1_1_, societe0_.code_societe as code_soc2_1_, societe0_.nom_societe as nom_soci3_1_ from societe societe0_
Hibernate: insert into societe (code_societe, nom_societe) values (?, ?)
Hibernate: insert into ordre (date_ordre, nombre_actions, prix_action, societe_numero_societe, type_ordre) values (?, ?, ?, ?, 'OrdreAchat')
Hibernate: insert into ordre (date_ordre, nombre_actions, prix_action, societe_numero_societe, type_ordre) values (?, ?, ?, ?, 'OrdreAchat')
Hibernate: insert into ordre (date_ordre, nombre_actions, prix_action, societe_numero_societe, type_ordre) values (?, ?, ?, ?, 'OrdreAchat')
Hibernate: insert into ordre (date_ordre, nombre_actions, prix_action, societe_numero_societe, type_ordre) values (?, ?, ?, ?, 'OrdreAchat')
```

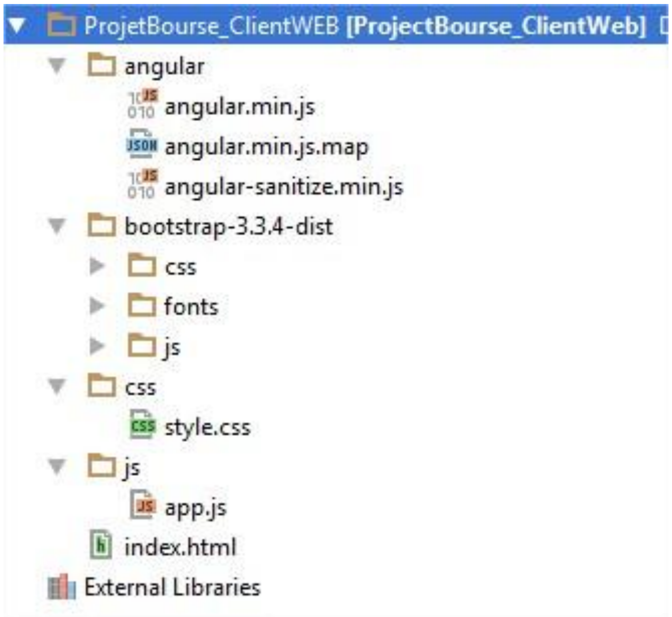
- Database Scraping Data verifying



					numero_societe	code_societe	nom_societe
□	Modifier	Éditer en place	Copier	Effacer	85	MA0000012296	AFMA
□	Modifier	Éditer en place	Copier	Effacer	86	MA0000012114	AFRIC INDUSTRIES SA
□	Modifier	Éditer en place	Copier	Effacer	87	MA0000010951	AFRIQUIA GAZ
□	Modifier	Éditer en place	Copier	Effacer	88	MA0000010944	AGMA LAHLOU-TAZI
□	Modifier	Éditer en place	Copier	Effacer	89	MA0000011819	ALLIANCES
□	Modifier	Éditer en place	Copier	Effacer	90	MA0000010936	ALUMINIUM DU MAROC
□	Modifier	Éditer en place	Copier	Effacer	91	MA0000011710	ATLANTA
□	Modifier	Éditer en place	Copier	Effacer	92	MA0000011926	ATTIJARIWAFA BANK
□	Modifier	Éditer en place	Copier	Effacer	93	MA0000010969	AUTO HALL
□	Modifier	Éditer en place	Copier	Effacer	94	MA0000011009	AUTO NEJMA
□	Modifier	Éditer en place	Copier	Effacer	95	MA0000010464	AXA CREDIT
□	Modifier	Éditer en place	Copier	Effacer	96	MA0000011991	BALIMA
□	Modifier	Éditer en place	Copier	Effacer	97	MA0000011884	BCP
□	Modifier	Éditer en place	Copier	Effacer	98	MA0000011835	BMCE BANK
□	Modifier	Éditer en place	Copier	Effacer	99	MA0000010811	BMCI
□	Modifier	Éditer en place	Copier	Effacer	100	MA0000010365	BRASSERIES DU MAROC
□	Modifier	Éditer en place	Copier	Effacer	101	MA0000011868	CARTIER SAADA
□	Modifier	Éditer en place	Copier	Effacer	102	MA0000010381	CDM
□	Modifier	Éditer en place	Copier	Effacer	103	MA0000012049	CENTRALE DANONE
□	Modifier	Éditer en place	Copier	Effacer	104	MA0000011454	CIH
□	Modifier	Éditer en place	Copier	Effacer	105	MA0000010506	CIMENTS DU MAROC
□	Modifier	Éditer en place	Copier	Effacer	106	MA0000011934	COLORADO
□	Modifier	Éditer en place	Copier	Effacer	107	MA0000012247	COSUMAR
□	Modifier	Éditer en place	Copier	Effacer	108	MA0000010340	CTM

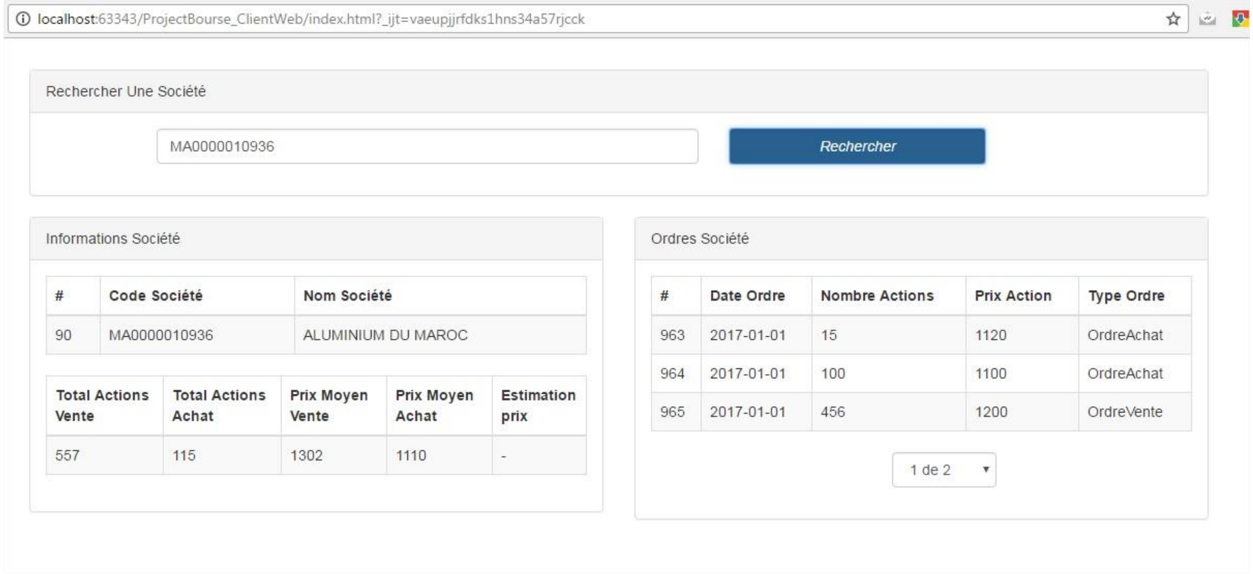
4- AngularJS [MVC Web Client]

1. Structure



```
ProjetBourse_ClientWEB [ProjectBourse_ClientWeb]
    angular
        angular.min.js
        angular.min.js.map
        angular-sanitize.min.js
    bootstrap-3.3.4-dist
        css
        fonts
        js
    css
        style.css
    js
        app.js
    index.html
External Libraries
```

2. Application



localhost:63343/ProjectBourse_ClientWeb/index.html?_ijt=vaeupjjrfdks1hns34a57rjcck

Rechercher Une Société

MA0000010936

Informations Société

#	Code Société	Nom Société
90	MA0000010936	ALUMINIUM DU MAROC

Total Actions Vente	Total Actions Achat	Prix Moyen Vente	Prix Moyen Achat	Estimation prix
557	115	1302	1110	-

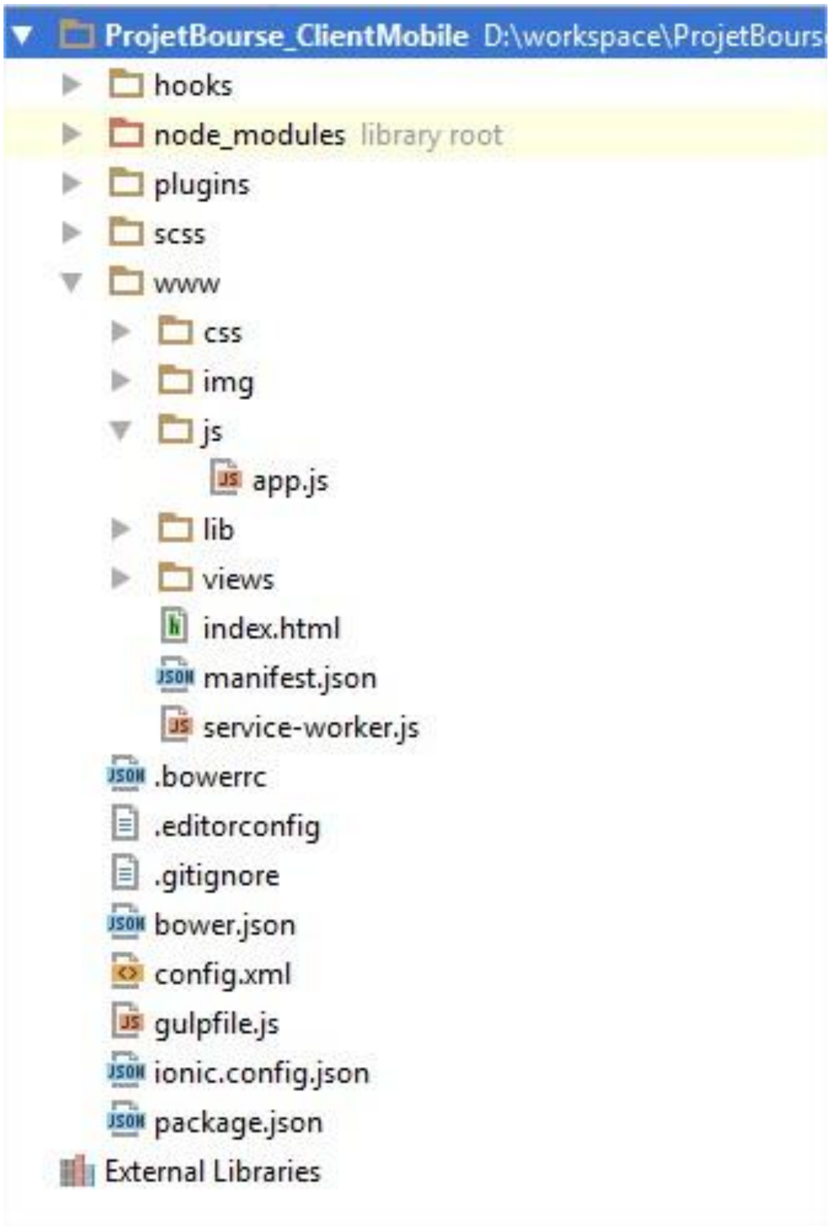
Ordres Société

#	Date Ordre	Nombre Actions	Prix Action	Type Ordre
963	2017-01-01	15	1120	OrdreAchat
964	2017-01-01	100	1100	OrdreAchat
965	2017-01-01	456	1200	OrdreVente

1 de 2

5- IONIC [Mobile Client]

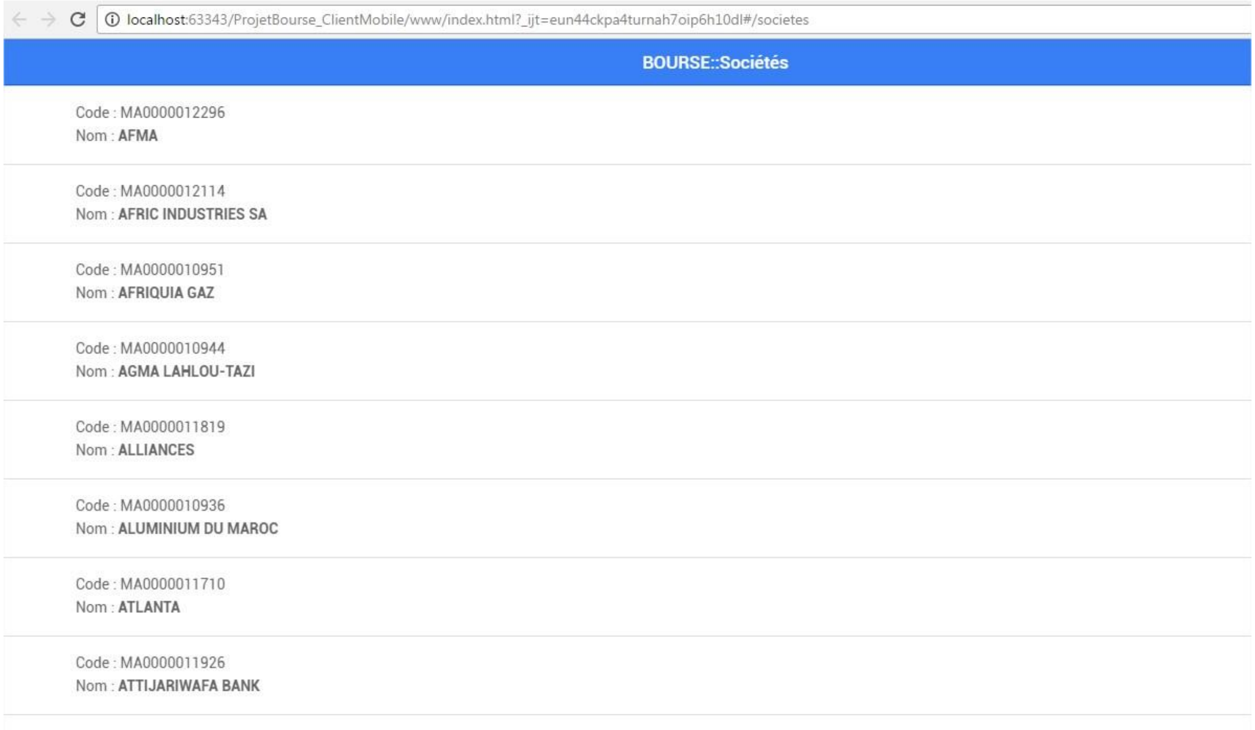
Structure



```
▼ ProjetBourse_ClientMobile D:\workspace\ProjetBours
    ▶ hooks
    ▶ node_modules library root
    ▶ plugins
    ▶ scss
    ▼ www
        ▶ css
        ▶ img
        ▼ js
              app.js
        ▶ lib
        ▶ views
          index.html
          manifest.json
          service-worker.js
      .bowerrc
      .editorconfig
      .gitignore
      bower.json
      config.xml
      gulpfile.js
      ionic.config.json
      package.json
  External Libraries
```

2. Application

- Societies interface



localhost:63343/ProjetBourse_ClientMobile/www/index.html?_ijt=eun44ckpa4turnah7oip6h10dl#/societes

BOURSE::Sociétés

Code : MA0000012296
Nom : **AFMA**

Code : MA0000012114
Nom : **AFRIC INDUSTRIES SA**

Code : MA0000010951
Nom : **AFRIQUIA GAZ**

Code : MA0000010944
Nom : **AGMA LAHLOU-TAZI**

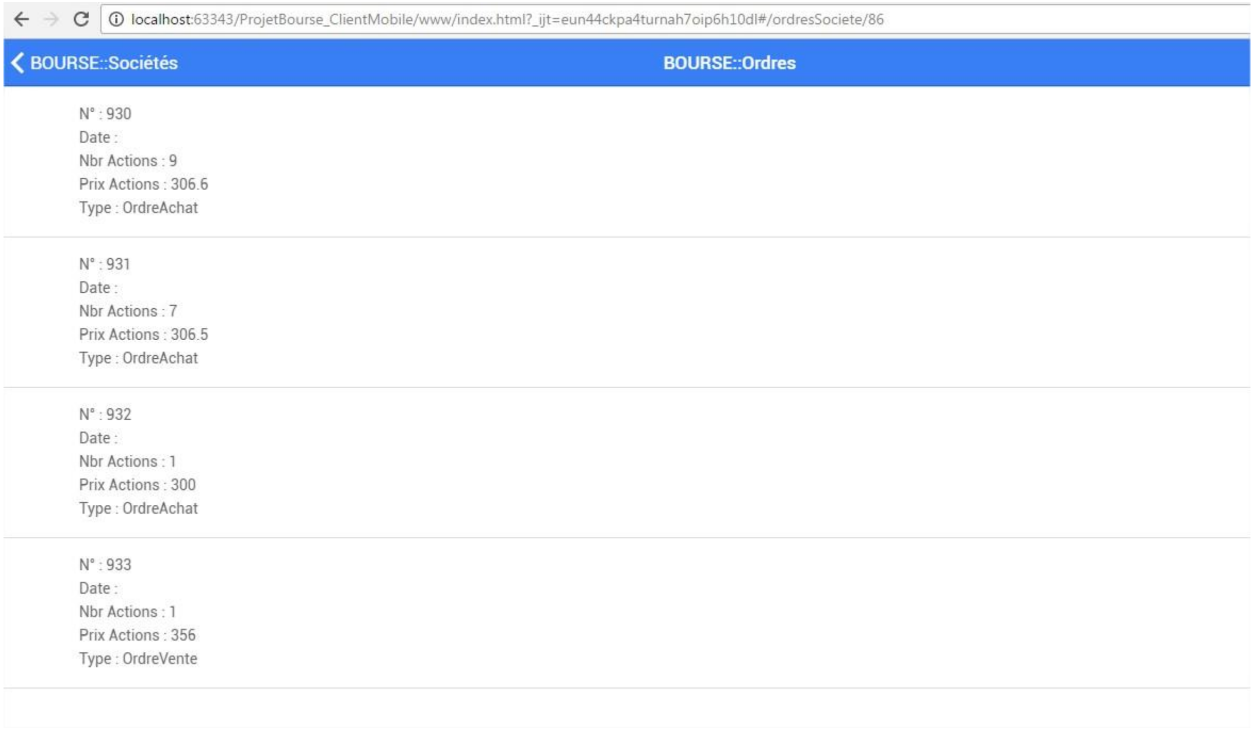
Code : MA0000011819
Nom : **ALLIANCES**

Code : MA0000010936
Nom : **ALUMINIUM DU MAROC**

Code : MA0000011710
Nom : **ATLANTA**

Code : MA0000011926
Nom : **ATTIJARIWAFA BANK**

- Orders Interface



localhost:63343/ProjetBourse_ClientMobile/www/index.html?_ijt=eun44ckpa4turnah7oip6h10dl#/ordresSociete/86

BOURSE::Ordres

N° : 930
Date :
Nbr Actions : 9
Prix Actions : 306.6
Type : OrdreAchat

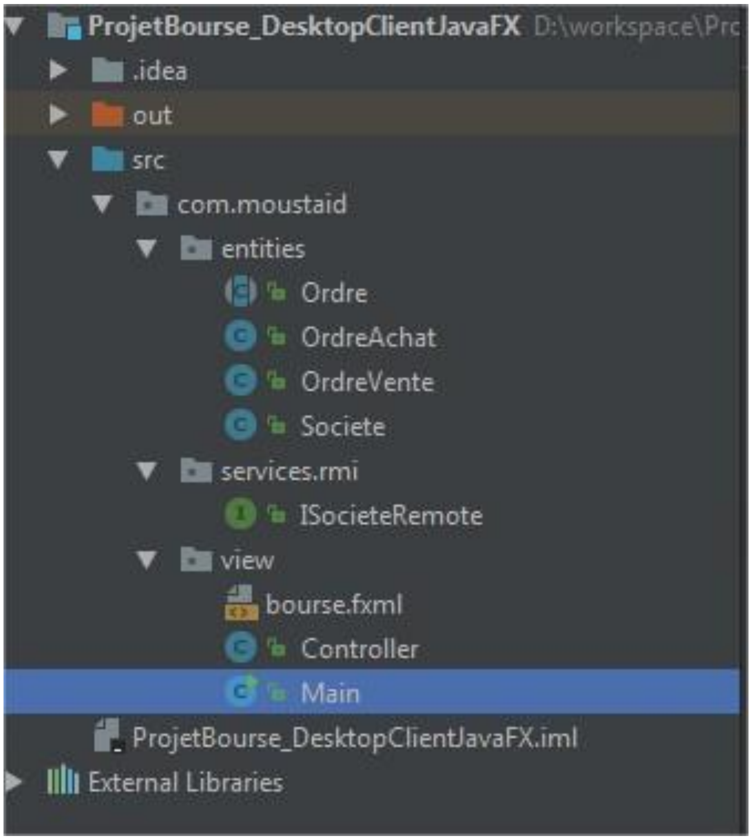
N° : 931
Date :
Nbr Actions : 7
Prix Actions : 306.5
Type : OrdreAchat

N° : 932
Date :
Nbr Actions : 1
Prix Actions : 300
Type : OrdreAchat

N° : 933
Date :
Nbr Actions : 1
Prix Actions : 356
Type : OrdreVente

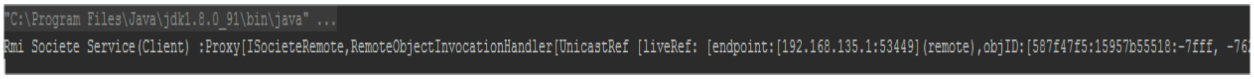
5- Java FX [Desktop Client (RMI)]

1. Structure



```
▼ ProjetBourse_DesktopClientJavaFX D:\workspace\Prc
    ▶ .idea
    ▶ out
    ▼ src
        ▼ com.moustaid
            ▼ entities
                Ordre
                OrdreAchat
                OrdreVente
                Societe
            ▼ services.rmi
                ISocieteRemote
            ▼ view
                bourse.fxml
                Controller
                Main
      ProjetBourse_DesktopClientJavaFX.iml
▶ External Libraries
```

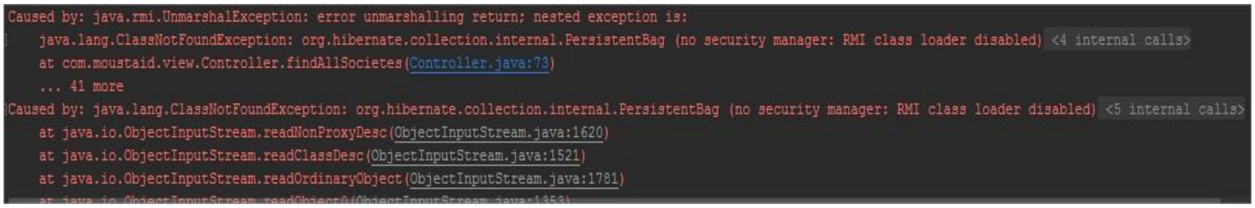
2. Rmi Test



```
"C:\Program Files\Java\jdk1.8.0_91\bin\java" ...
Rmi Societe Service(Client) :Proxy[ISocieteRemote,RemoteObjectInvocationHandler[UnicastRef [liveRef: [endpoint:[192.168.135.1:53449](remote),objID:[587f47f5:15957b55518:-7fff, -76
```

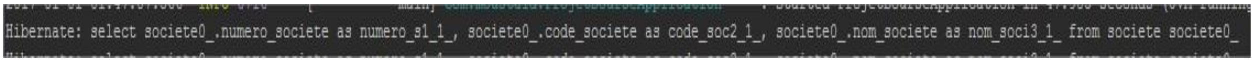
3. Application

- Rmi exception about Security Manager when trying to retrieve data from Rmi Server



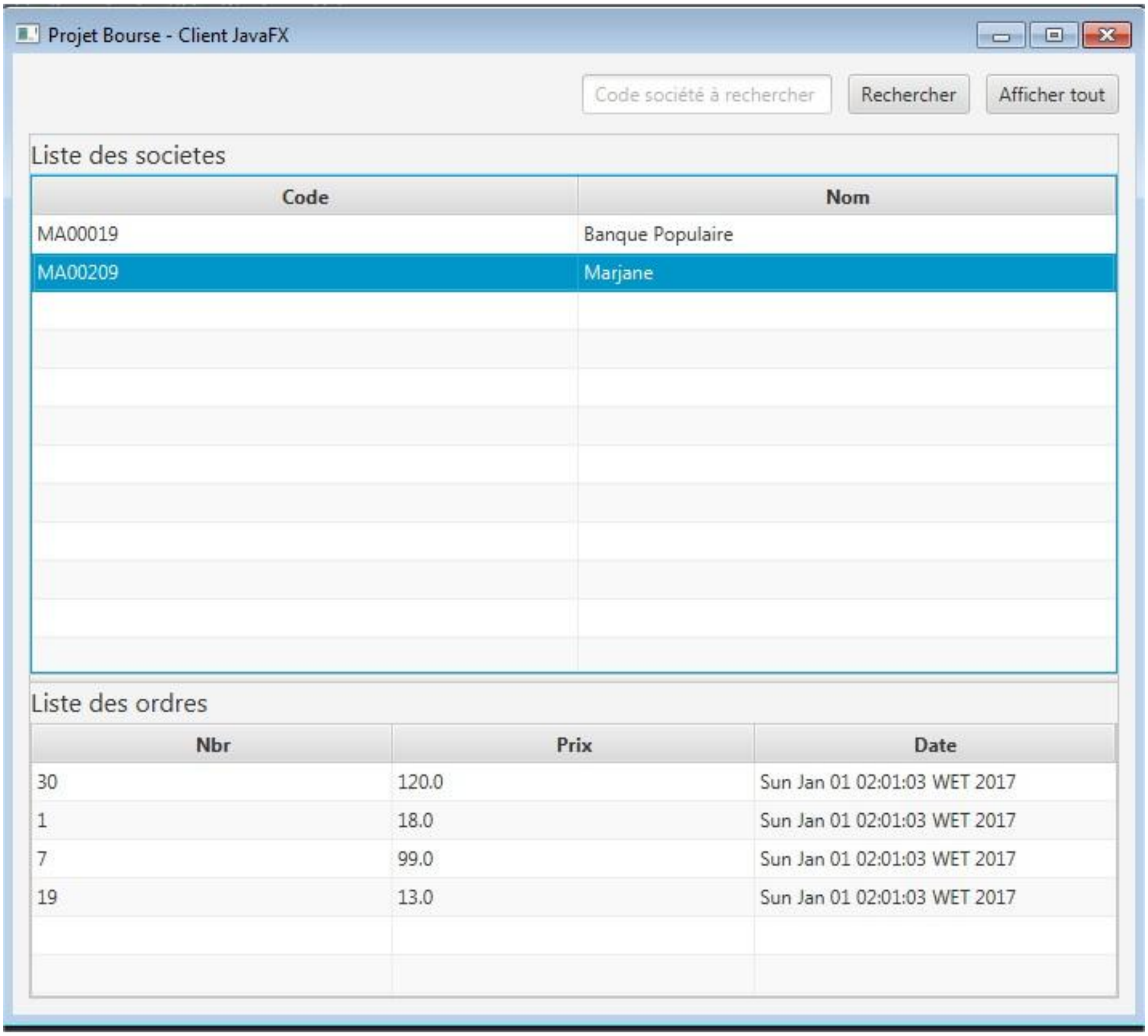
```
Caused by: java.rmi.UnmarshalException: error unmarshalling return; nested exception is:
    java.lang.ClassNotFoundException: org.hibernate.collection.internal.PersistentBag (no security manager: RMI class loader disabled) <4 internal calls>
    at com.moustaid.view.Controller.findAllSocietes(Controller.java:73)
    ... 41 more
Caused by: java.lang.ClassNotFoundException: org.hibernate.collection.internal.PersistentBag (no security manager: RMI class loader disabled) <5 internal calls>
    at java.io.ObjectInputStream.readNonProxyDesc(ObjectInputStream.java:1620)
    at java.io.ObjectInputStream.readClassDesc(ObjectInputStream.java:1521)
    at java.io.ObjectInputStream.readOrdinaryObject(ObjectInputStream.java:1781)
    at java.io.ObjectInputStream.readObject0(ObjectInputStream.java:1353)
```

- Server success response when we send request from client



```
Hibernate: select societe0_.numero_societe as numero_s1_1_, societe0_.code_societe as code_soc2_1_, societe0_.nom_societe as nom_soci3_1_ from societe societe0_
```

- Interface (Test with random data inserted in main)



Liste des societes

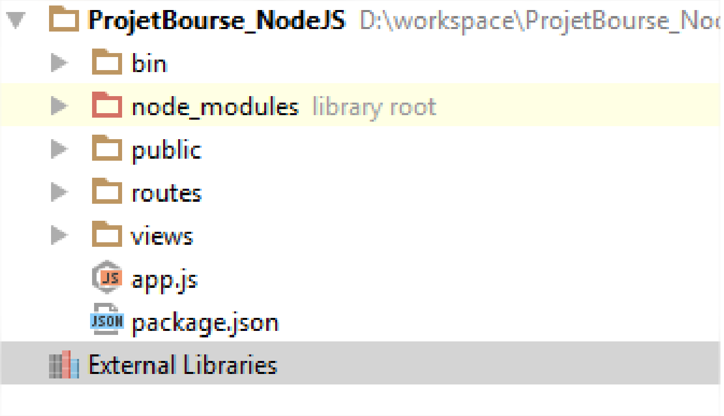
Code	Nom
MA00019	Banque Populaire
MA00209	Marjane

Liste des ordres

Nbr	Prix	Date
30	120.0	Sun Jan 01 02:01:03 WET 2017
1	18.0	Sun Jan 01 02:01:03 WET 2017
7	99.0	Sun Jan 01 02:01:03 WET 2017
19	13.0	Sun Jan 01 02:01:03 WET 2017

6- NodeJS/Socket IO [Server]

1. Structure



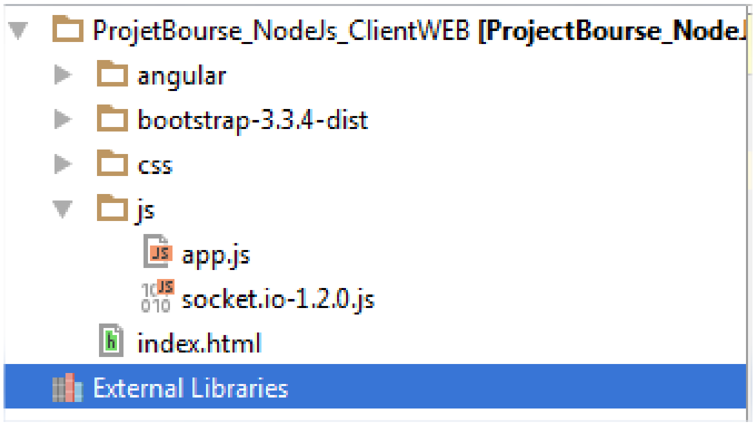
ProjetBourse_NodeJS D:\workspace\ProjetBourse_No
bin
node_modules library root
public
routes
views
app.js
package.json
External Libraries

2-Server Node JS

```
var express = require('express');
var cors = require('cors');
var app = express();
var server=require('http').createServer(app);
var io=require('socket.io').listen(server);
var bodyParser=require('body-parser');
//CRSF
app.use(cors());
app.options('*', cors());
//activation du module bodyParser pour preparer les donnees des requete http
app.use(bodyParser.json());
//pour permettre l'acces a ces dossiers pour le client
app.use(express.static('public'));
app.use(express.static('node_modules'));
app.post("/societes", function (req, res,next) {
   io.sockets.emit("refreshSocietes",req.body);
});
app.listen(8300);
io.sockets.on('connection',function(socket){
    console.log("a client is connected");
    socket.on('refreshSocietes',function(data){
        console.log("refreshing societies");
socket.broadcast.emit("refreshSocietes",data);
        io.sockets.emit("refreshSocietes",data);
    });
});
```

7- AngularJS [Web RealTime Client]

1. Structure

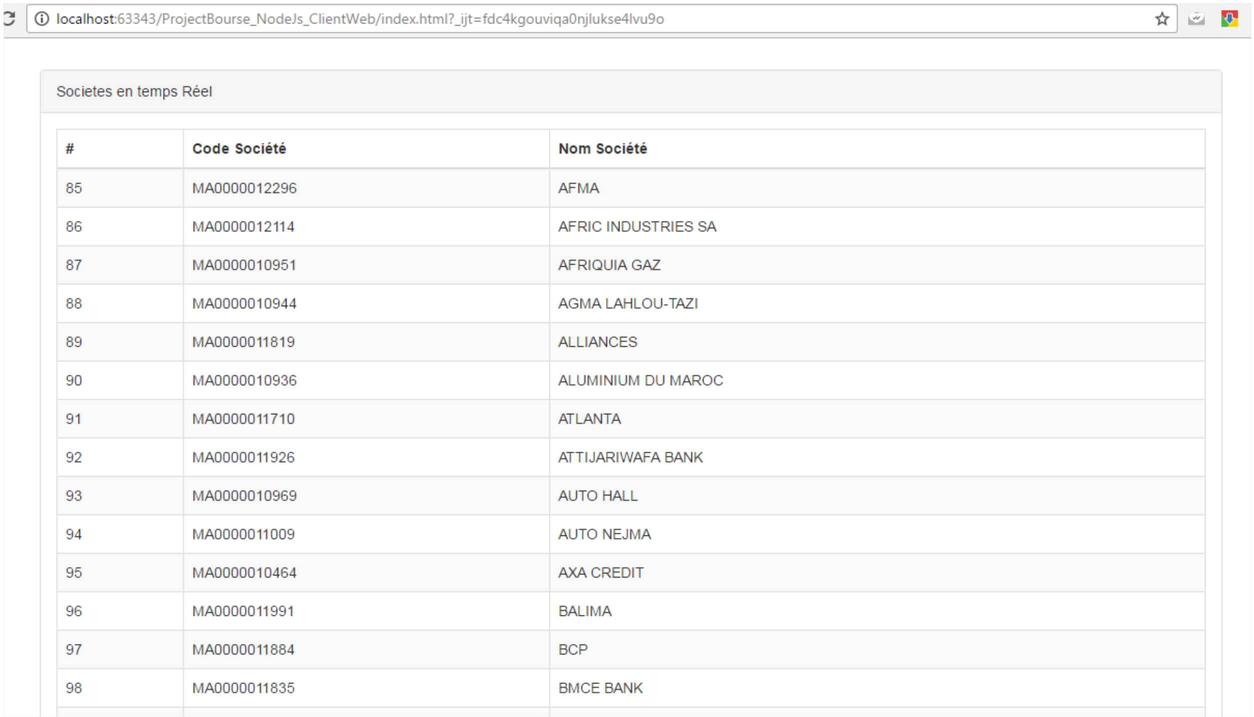


```
ProjetBourse_NodeJs_ClientWEB [ProjectBourse_NodeJ
    angular
    bootstrap-3.3.4-dist
    css
    js
        app.js
        socket.io-1.2.0.js
    index.html
External Libraries
```

2. Realtime client (Controller app.js)

```
var app=angular.module("bourseApp",[]);
var socket = io.connect('http://localhost:8300');
app.controller("bourseController",function($scope,$http){
    $scope.societes={};
$scope.i="yyy";
    console.log("mm : "+socket);
    socket.on('connect', function(){console.log('Connected !!')});
    socket.on('refreshSocietes',function(data){
        console.log("arrived");
        $scope.societes=data;
    });


});
```

3. Application interface



localhost:63343/ProjectBourse_NodeJs_ClientWeb/index.html?_ijt=fdc4kgouviqa0njlukse4lvu9o

Societes en temps Réel

#	Code Société	Nom Société
85	MA0000012296	AFMA
86	MA0000012114	AFRIC INDUSTRIES SA
87	MA0000010951	AFRIQUIA GAZ
88	MA0000010944	AGMA LAHLOU-TAZI
89	MA0000011819	ALLIANCES
90	MA0000010936	ALUMINIUM DU MAROC
91	MA0000011710	ATLANTA
92	MA0000011926	ATTIJARIWAFA BANK
93	MA0000010969	AUTO HALL
94	MA0000011009	AUTO NEJMA
95	MA0000010464	AXA CREDIT
96	MA0000011991	BALIMA
97	MA0000011884	BCP
98	MA0000011835	BMCE BANK