# OrderPredict :

## What's it:

This is a 'new man' project based on spring boot and xgboost for a order predict task.

The data is related with direct marketing campaigns of a Portuguese banking institution.

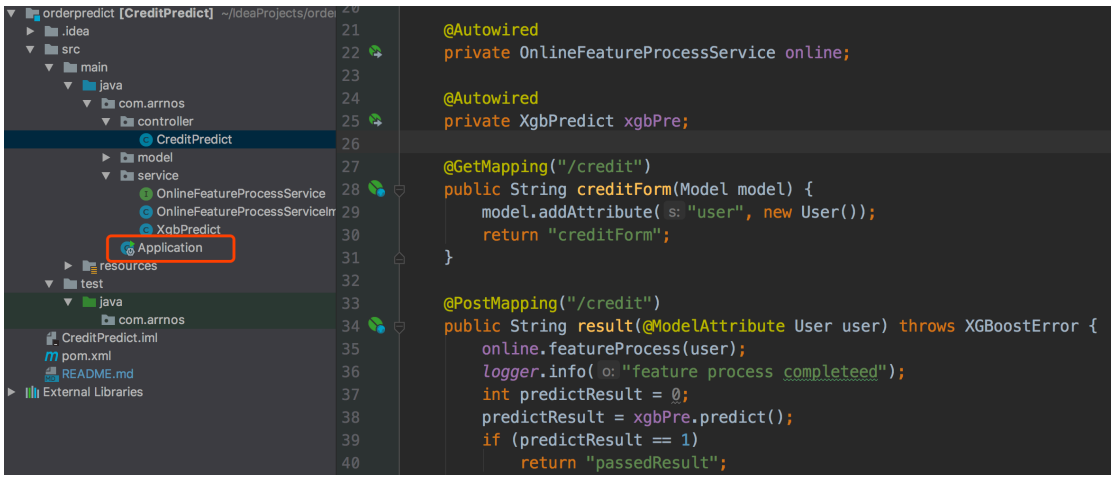
The marketing campaigns were based on phone calls. Often, more than one contact to the same client was required,

in order to access if the product (bank term deposit) would be (or not) subscribed.

So, the project is to predict the result whether the client will subscribe the product (bank term deposit) ,using xgboost and spring boot technics.

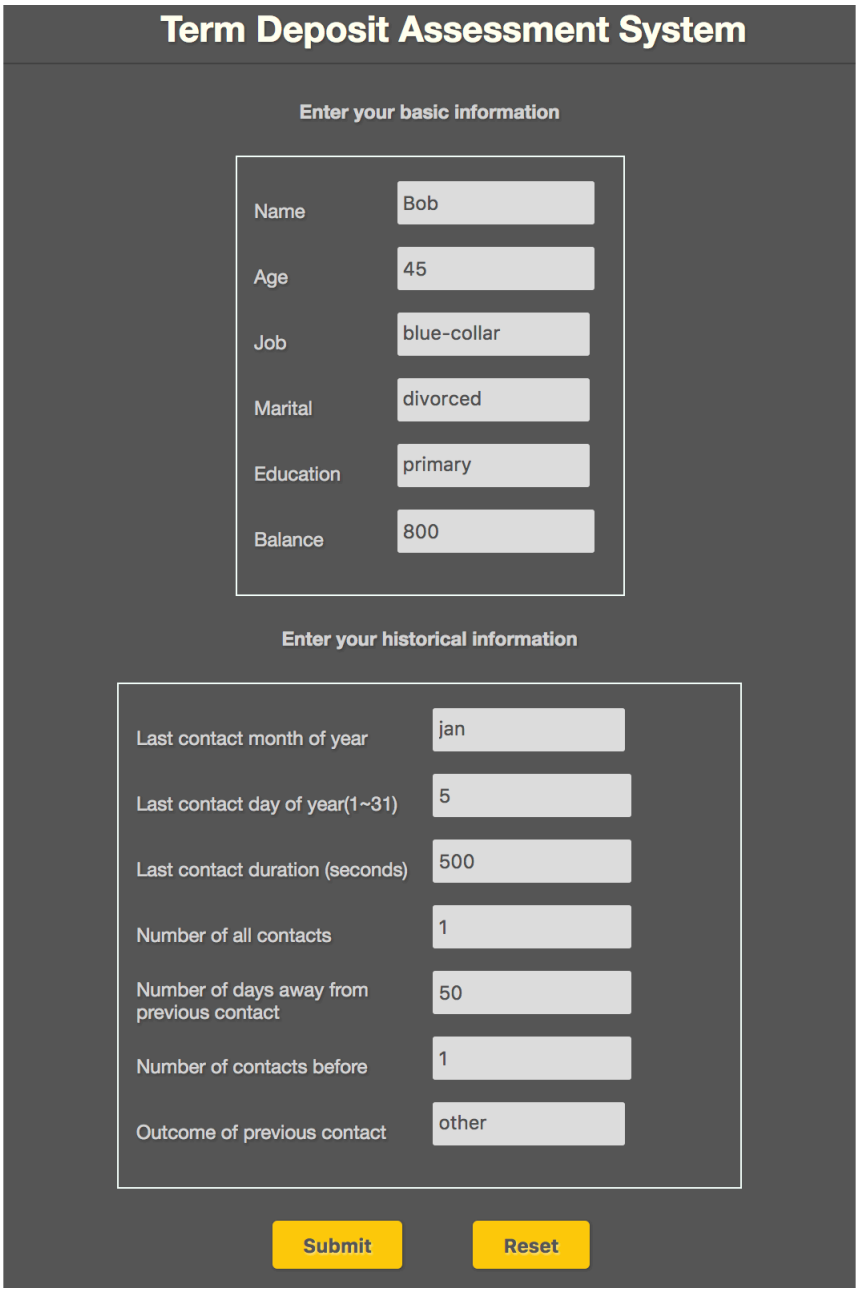
## How to use:

1. git clone the project
2. import the project using IDEA
3. wait for the maven configure completed
4. just run /src/main/java/com/arrnos/Application.java

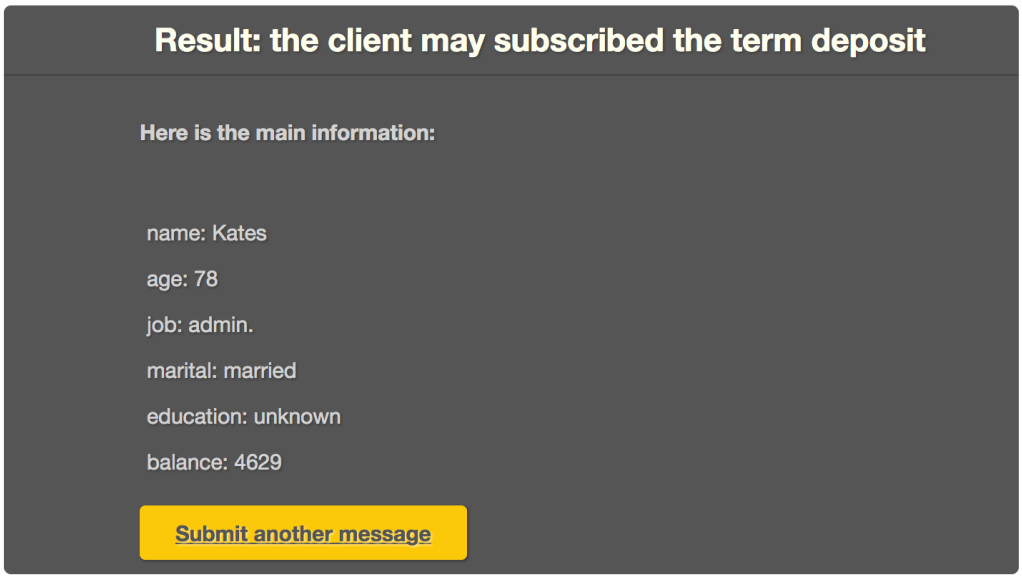



5. open your browser, and enter the localhost:8080/credit

6. fill the client information in the first page




7. submit the page, and if the predict result is passed, then it will return a passed page; and if the predict is failed , then a failed page will appear.




8. in the result page, you can click the link on the bottom to refill the information form。

## Test instance (each class[ yes & no ] has four instance to test)

| age | job | marital | education | balance | month | day | duration | campaign | pdays | previous | poutcome | label |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 78 | retired | divorced | primary | 229 | oct | 22 | 97 | 1 | -1 | 0 | unknown | yes |
| 32 | blue-collar | married | secondary | 2089 | nov | 14 | 132 | 1 | -1 | 0 | unknown | yes |
| 45 | blue-collar | divorced | primary | 844 | jun | 5 | 1018 | 3 | -1 | 0 | unknown | yes |
| 34 | technician | married | tertiary | 1539 | jun | 15 | 441 | 1 | 56 | 1 | other | yes |
| 30 | unemployed | married | primary | 1787 | oct | 19 | 79 | 1 | -1 | 0 | unknown | no |
| 30 | management | married | tertiary | 1476 | jun | 3 | 199 | 4 | -1 | 0 | unknown | no |
| 59 | blue-collar | married | secondary | 0 | may | 5 | 226 | 1 | -1 | 0 | unknown | no |
| 35 | management | single | tertiary | 747 | feb | 23 | 141 | 2 | 176 | 3 | failure | no |

## Prediction evaluation

```
********************** classify_report ****************************
              precision    recall  f1-score   support

           0       0.98      0.99      0.98      4000
```

```
          1      0.89      0.85      0.87       521

********** confusion_matrix **********
  [3944   56]
  [ 79   442]
********** acc_for_each_class **********
[ 0.98036291  0.8875502 ]
********** average_accuracy: **********
0.933957
********** overall_accuracy **********
0.970139
**********    score   **********
0.970139
```

## Data attribute information:

Input variables:

# bank client data:

1 - age (numeric)

2 - job : type of job (categorical: "admin.","unknown","unemployed","management","housemaid","entrepreneur","student","blue-collar","self-employed","retired","technician","services")

3 - marital : marital status (categorical: "married","divorced","single"; note: "divorced" means divorced or widowed)

4 - education (categorical: "unknown","secondary","primary","tertiary")

5 - default: has credit in default? (binary: "yes","no")

6 - balance: average yearly balance, in euros (numeric)

7 - housing: has housing loan? (binary: "yes","no")

8 - loan: has personal loan? (binary: "yes","no")

# related with the last contact of the current campaign:

9 - contact: contact communication type (categorical: "unknown","telephone","cellular")

10 - day: last contact day of the month (numeric)

11 - month: last contact month of year (categorical: "jan", "feb", "mar", ..., "nov", "dec")

12 - duration: last contact duration, in seconds (numeric)

# other attributes:

13 - campaign: number of contacts performed during this campaign and for this client (numeric, includes last contact)

14 - pdays: number of days that passed by after the client was last contacted from a previous campaign (numeric, -1 means client was not previously contacted)

15 - previous: number of contacts performed before this campaign and for this client (numeric)

16 - poutcome: outcome of the previous marketing campaign (categorical: "unknown","other","failure","success")

Output variable (desired target):

17 - y - has the client subscribed a term deposit? (binary: "yes","no")