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|  | **MINISTRY OF EDUCATION AND TRAINING** |

**FPT UNIVERSITY**

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| Project Document | |
| ***Exception and Error Log Recording***  ***and Management Application*** | |
|  | |
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| **Project code** | ELRM |

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**Report No. 3: Software Requirement Specification**

# **1. User Requirement Specification**

## **1.1.** **Administrator Requirement**

Administrators (admin) are people who manage the whole exception log report system.

Admin can use following functions:

* Login
* Register
* Reset forgotten password
* Change password
* View user’s profile
* Edit user’s profile (including edit information and change avatar)
* Logout
* Create Server
* Edit server information
* View server information
* Disable server
* Create Application
* Edit application information
* View application information
* Disable application
* Create Application instance
* Edit application instance information
* View application instance information
* Disable application instance
* View log information
* Edit log fixing status
* Create manager
* Edit manager profile
* View manager profile
* View employee profile
* Edit employee profile

## **1.2. Manager Requirement**

Managers are people who have authorization to modify applications’or application instances’ information. Managers may be Project Managers, Product Owners,…

Managers can use following functions:

* Login
* Register
* Reset forgotten password
* Change password
* View user’s profile
* Edit user’s profile (including edit information and change avatar)
* Logout
* View log information
* Edit log fixing status
* Create Application
* Edit application information
* View application information
* Disable application
* Create Application instance
* Edit application instance information
* View application instance information
* Disable application instance
* Create Employee
* View employee profile
* Edit employee profile

## **1.3. Employee Requirement**

Employees are people who will maintain or fix bugs from applications or application instances base on the exception log report. Employees may be deverlopers, testers,…

Employees can use following functions:

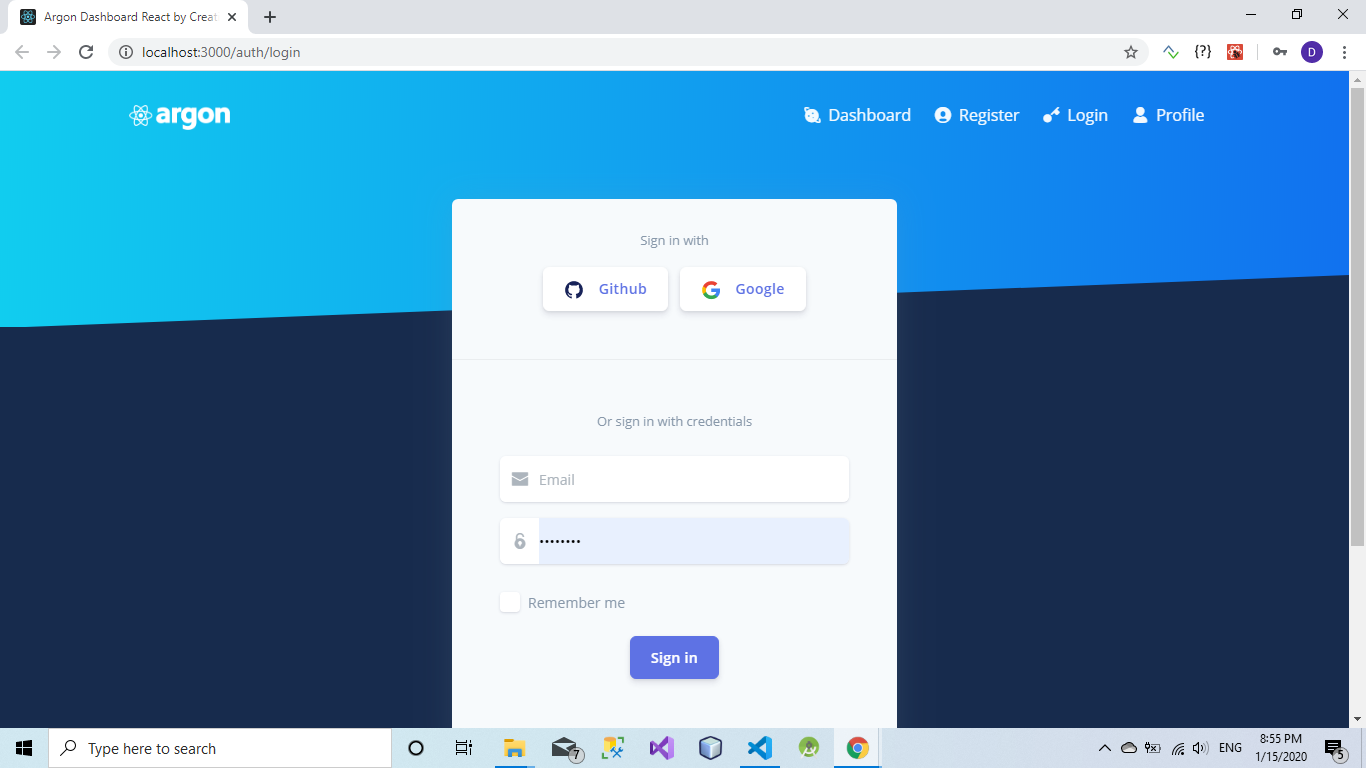
* Login
* Register
* Reset forgotten password
* Change password
* View user’s profile
* Edit user’s profile (including edit information and change avatar)
* Logout
* View log information
* Edit log fixing status

# **2. System Requirement Specification**

## **2.1. External Interface Requirement**

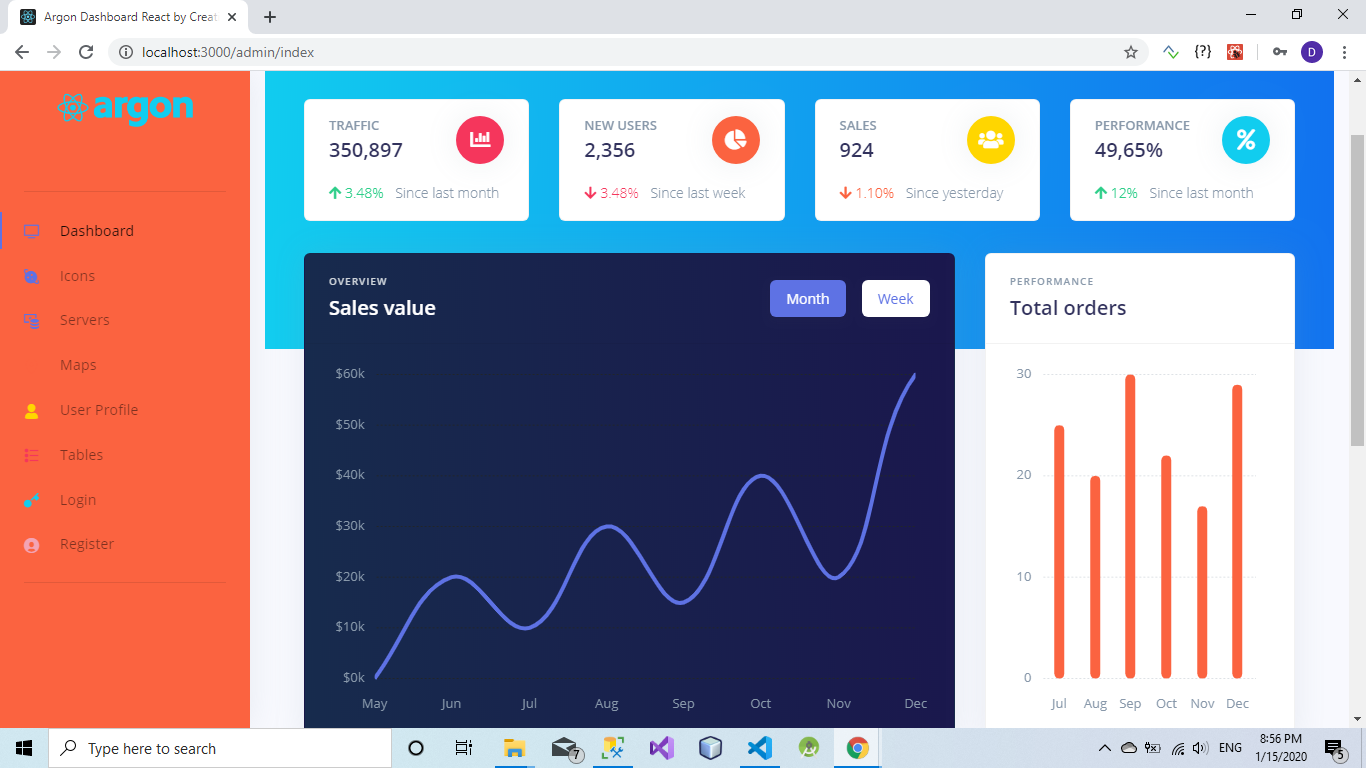
### 2.1.1. User Interface

Login page (demo layout):

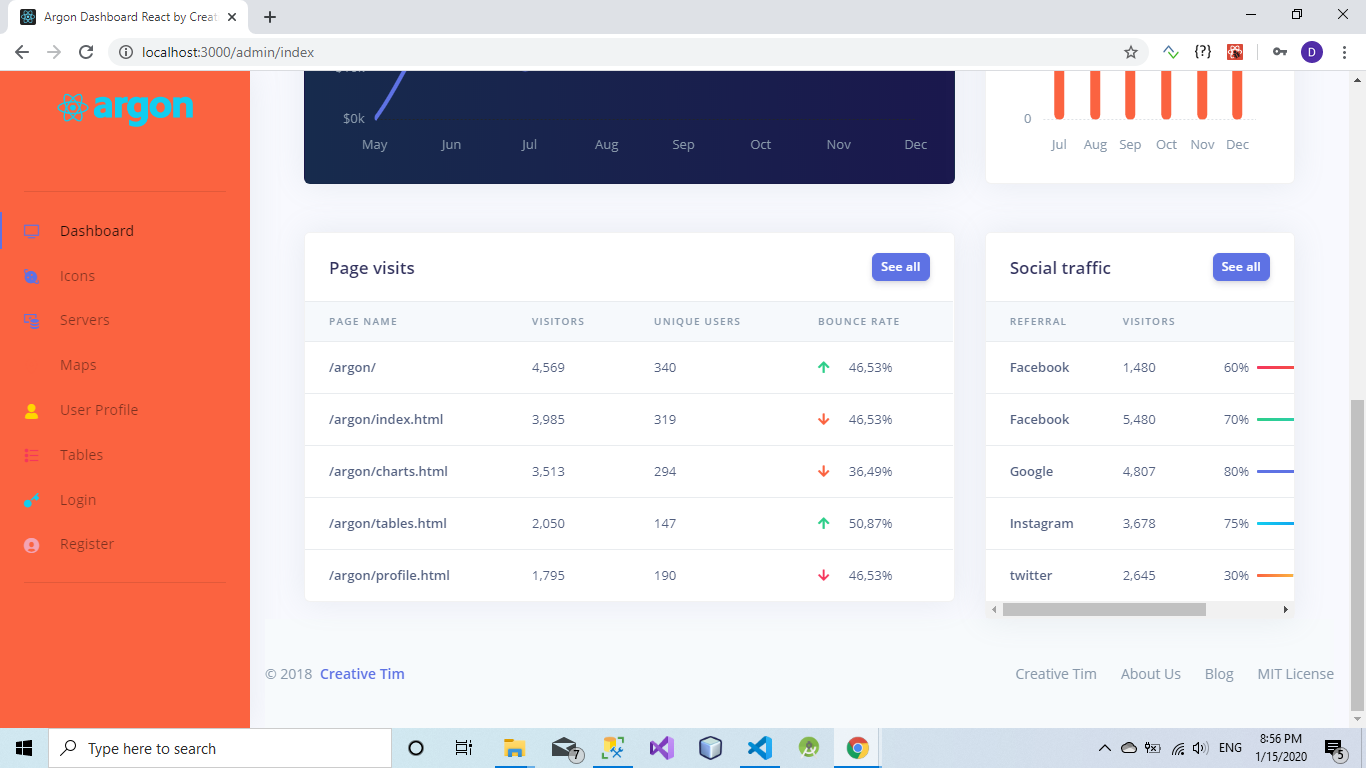


*Figure 1. Login page*

Dashboard (demo layout):

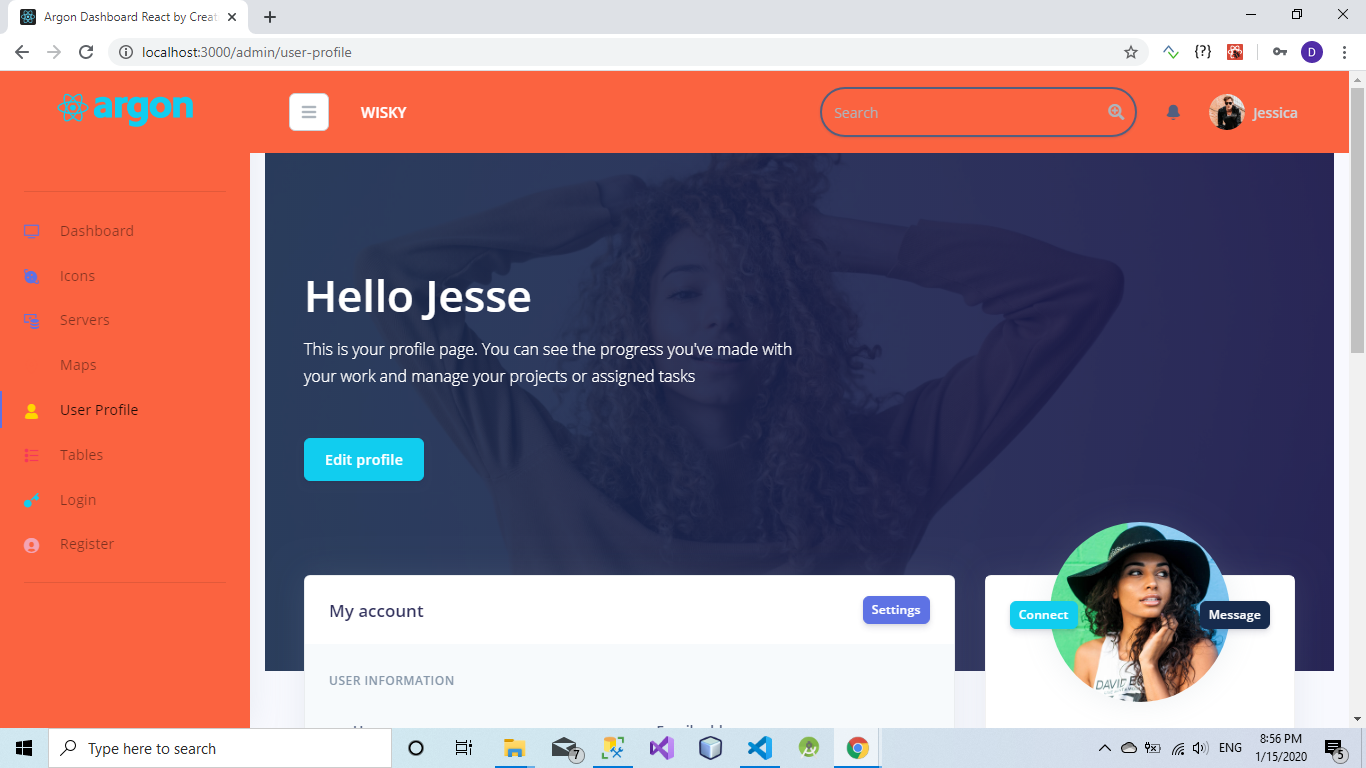


*Figure 2a. Dashboard*

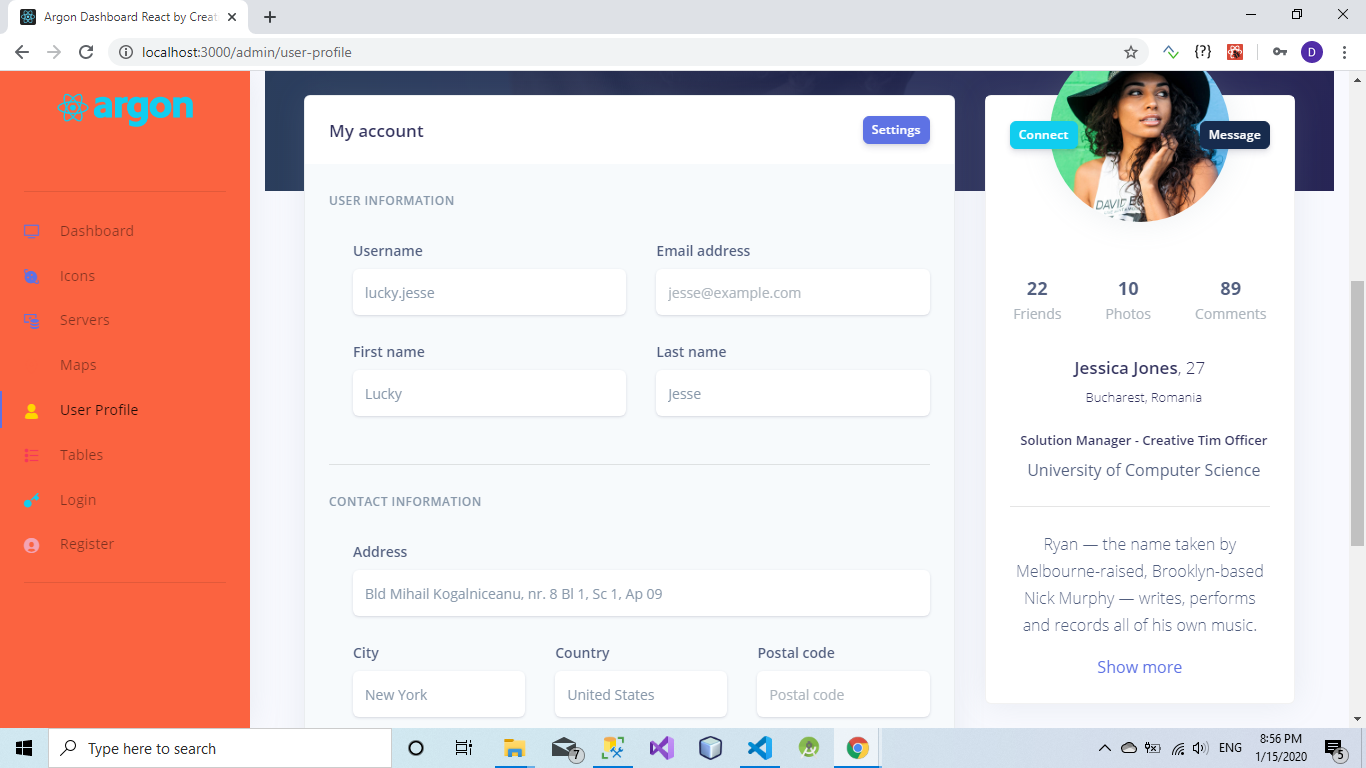


*Figure 2b. Dashboard*

User’s Profile page (demo layout):

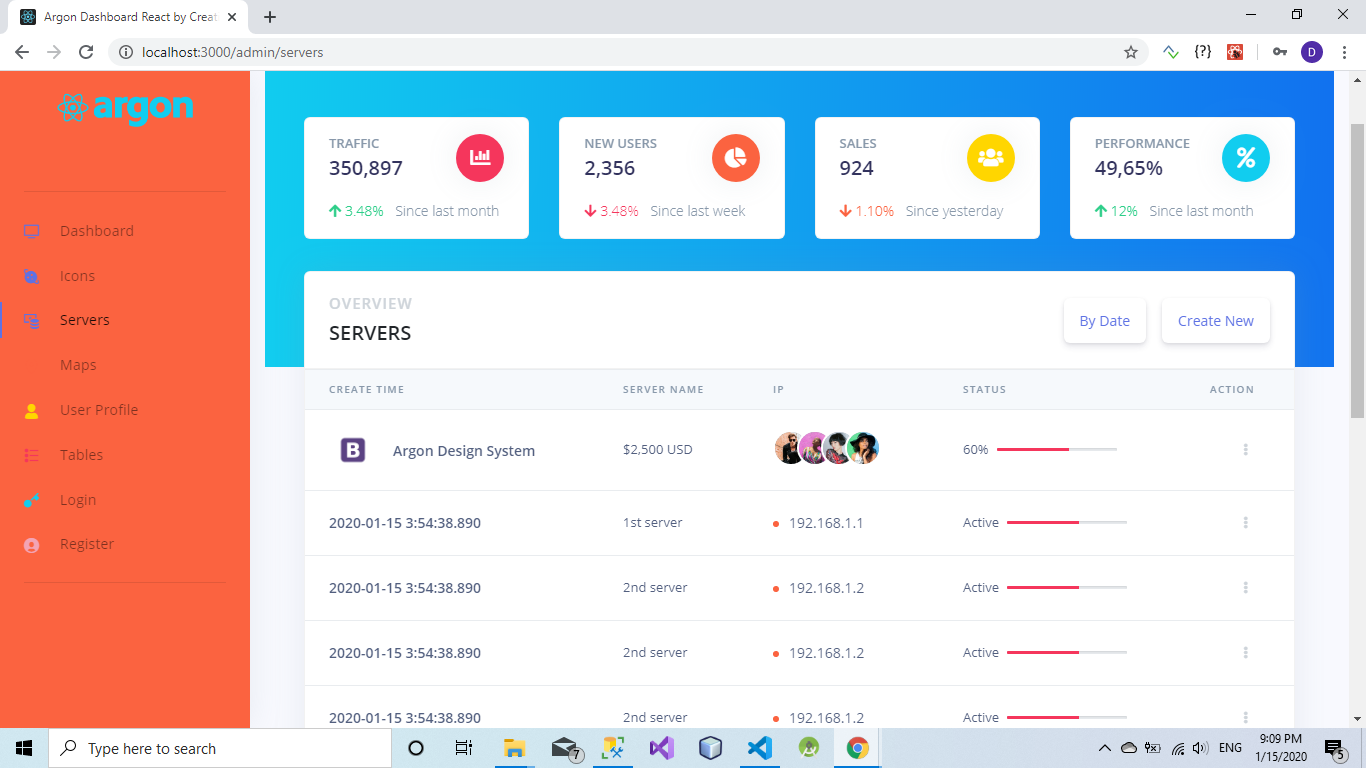


*Figure 3a. User’s Profile page*

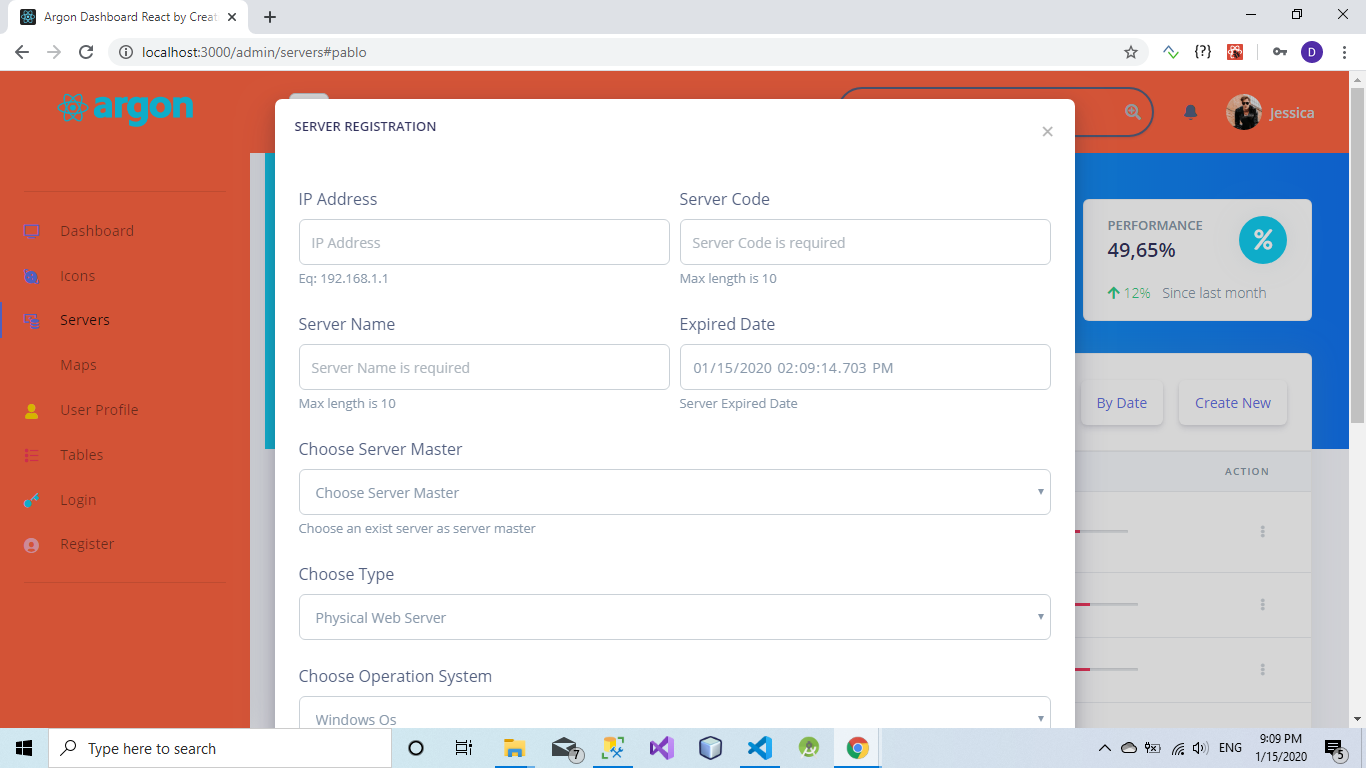


*Figure 3b. User’s Profile page*

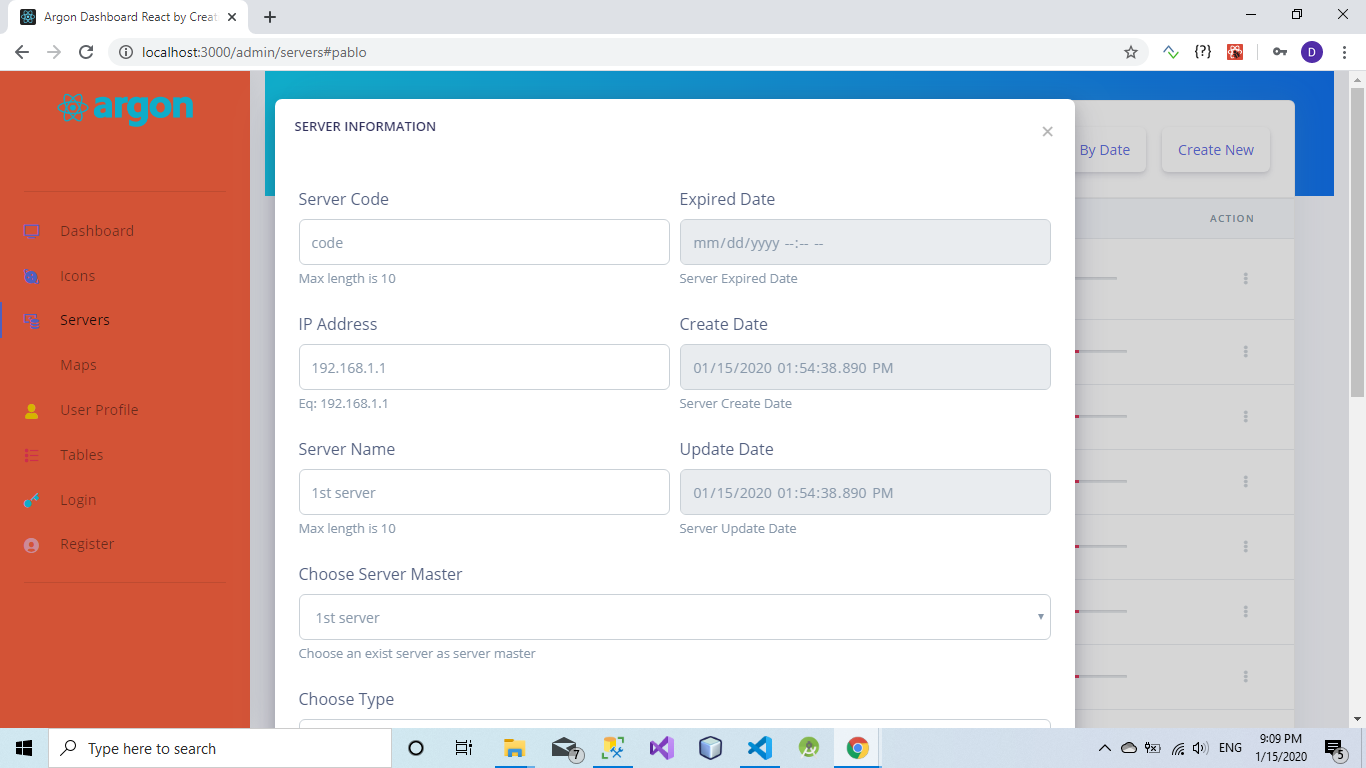
Main components (Server, Application, Application Intance, Log) (demo layout):



*Figure 4a. Server page*



*Figure 4b. Server page*



*Figure 4c. Server page*

### 2.1.2. Hardware Interface:

* Enterprise Server Install: Minimum 4GB available disk space, 2GB RAM (4GB recommended).
* Minimum 1.4 GHz Processor Speed (2.0 GHz or faster recommended).
* Enterprise Client Install: minimum 1GB available disk space.
* Smartphone supports Android Operating System (Android 4.15 and above).
* PC or Mac which supports Browsers (Chromium required):
  + Chrome
  + Firefox
  + Opera
  + Microsoft Edge Insider (from 2019 and above)

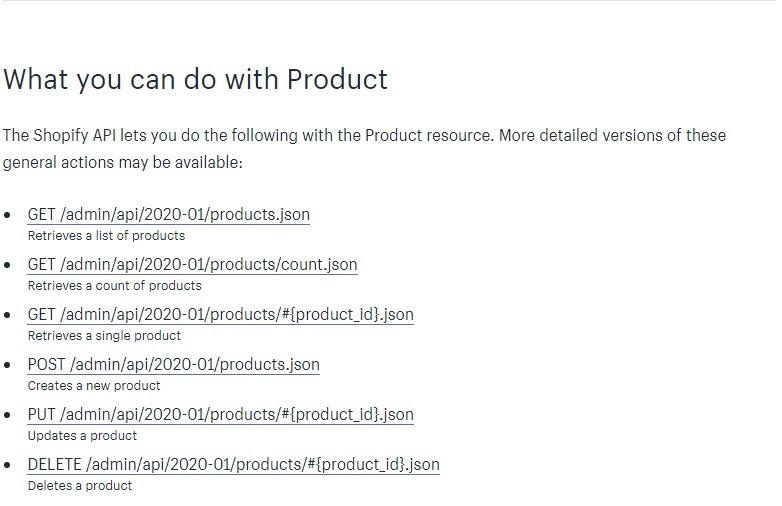
### 2.1.3. Software Interface

Smartphone with Android Operation System from version 4.1.5 or above.

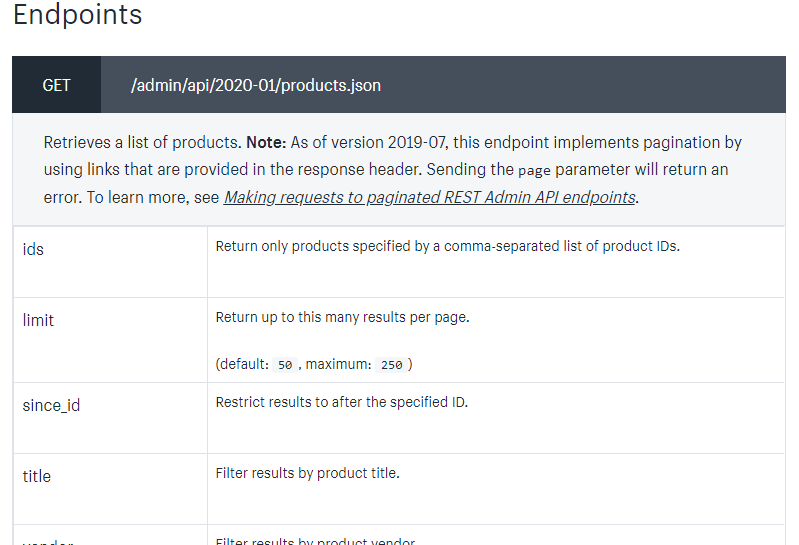
PC or Mac which supports Browser.

### 2.1.4. Communication Protocol

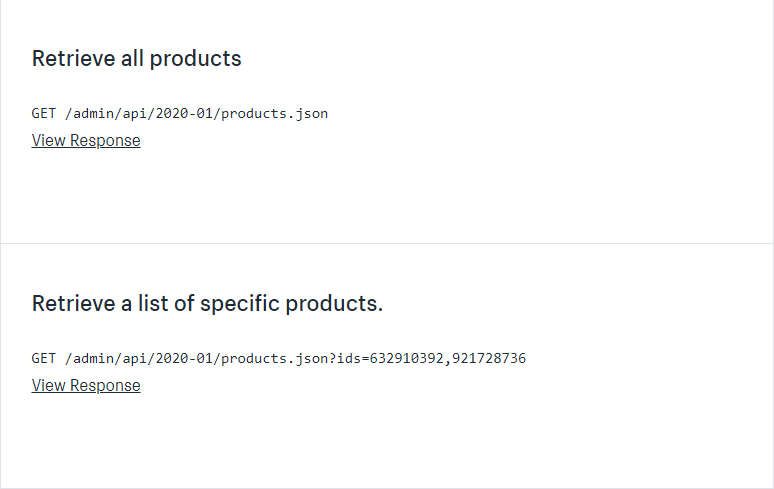
Restful API (follow the format of Shopify API):



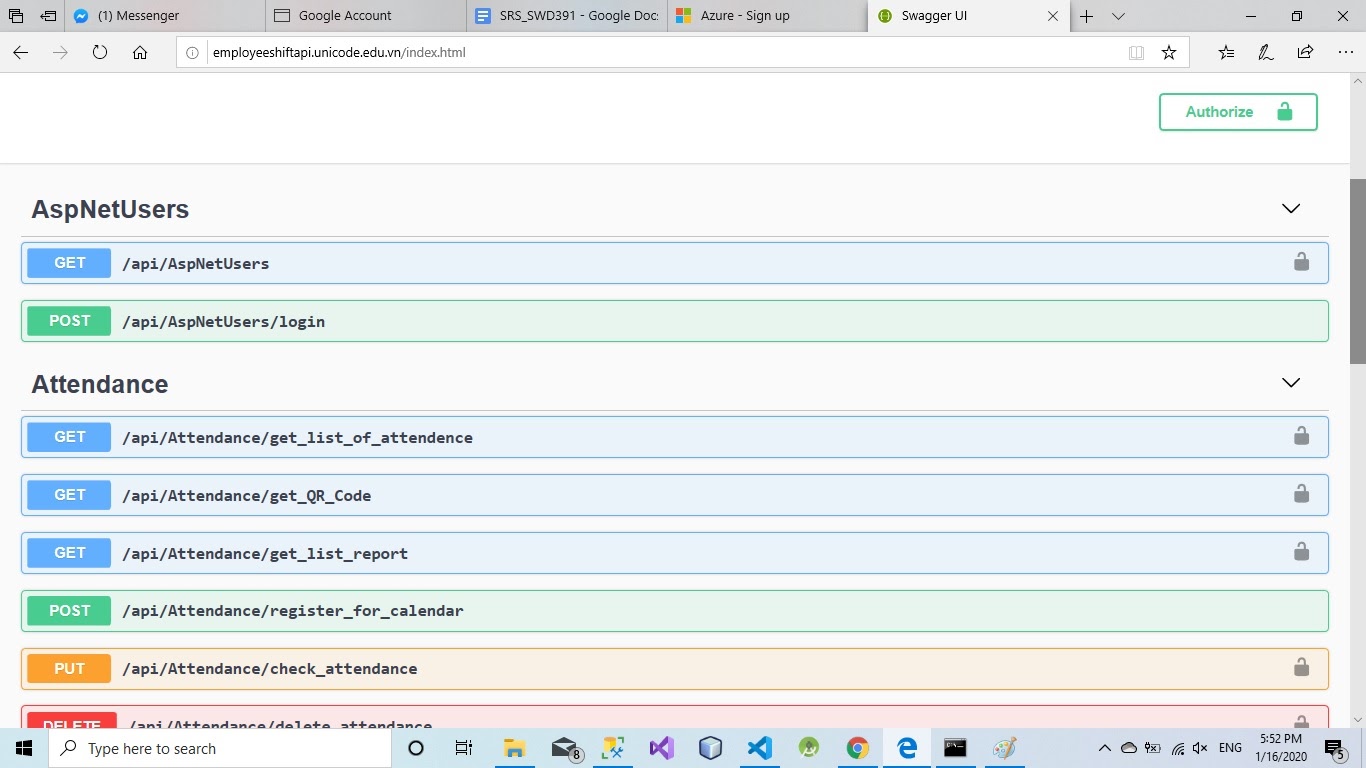
*Figure 5. Samples of API format*



*Figure 6. Sample of API endpoints*

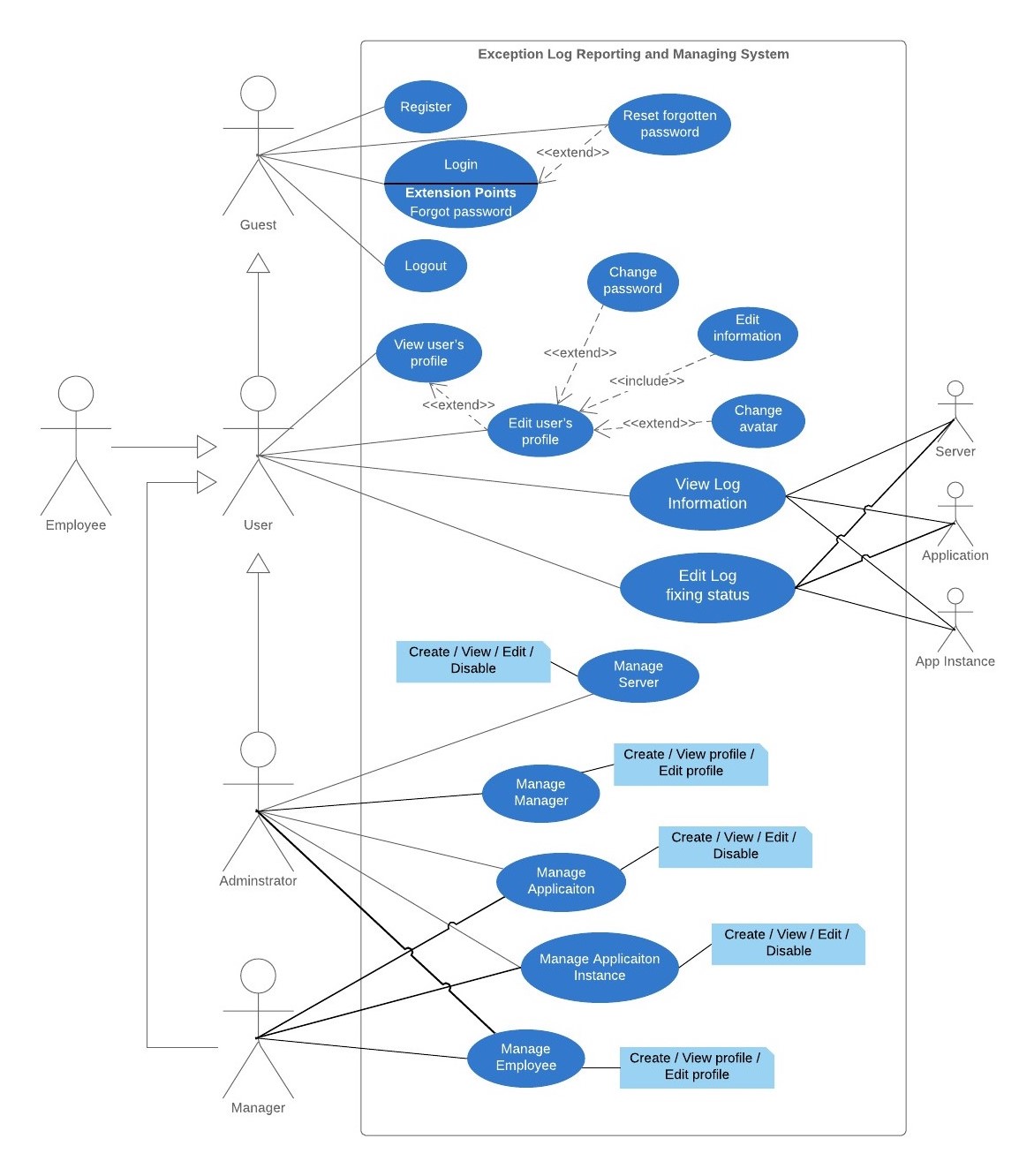


*Figure 7. Sample of API*



*Figure 8. Prototype of API*

## **2.2. System Overview Use Case**



*Figure 9. System overview use case*

# **3.** **Software System Attribute**

## **3.1. Usability**

### 3.1.1. Interface

* *Login screen* is easily to use with common feature: login by account, by Facebook, by Gmail.
* *Dashboard*: statistics and report on error, exception, visitor, server, application daily is intuitive and vivid, easy to understand.
* *Table and form component*: Eye-catching, easy to sympathize with bright and intuitive colors
* *Profile*: display full information with personalized photos and wallpapers
* *Search engine*: search item in main component with fast speed in ideal condition of internet and fluent protocol pipeline of client-server-client relationship.

### 3.1.2. Administrator (Admin)

* Admin can learn to manage main component (server, application, application instance, log, user) in short time (measure about under 10 minutes).
* Admin can understand the structure of company’s software and hardware resource with information on main component.

### 3.1.3. Manager

* Manager can focus on managing application, application instance, log status, employee without knowledge about company’s resources in hardware and software.
* Manager can control projects in charge easily with power in assigned.
* Only manager can active / deactive log status.

### 3.1.4. Employee

* Employee can only edit profile and see log, get incoming log appear notification so employees can focus on log report.
* Employee can view info on all main components to get to understand the right assignments.

## **3.2. Reliability**

* System for internal usage only.
* Users’ information, profile, company’s structure, api, application, application instance, server will not be public.

## **3.3. Availability**

* Connection fail / error
* Server lost / Cannot connected
* Invalid input
* Invalid roles
* Front-end / UI missing layout
* Push notification not working
* Browsers policies/socket fail
* Authentication failed
* Client/server connection fail

## **3.4. Security**

* Only specific role can have specific right to use specific function:
* Administrator: full right to create, update, edit, all components except deactive / active log status.
* Manager: except server component, have the full right.
* Employee: can only view all components, edit profile.
* User can not enter unassigned area and use other’s specific power.
* Only logged user can enter resource from record log system.
* Authentication in client and server side is secured and guaranteed.
* Server can defense against unauthorized intrusion, other protocol attack.
* Company’s hardware and software resources are protected in secret and secured.

## **3.5. Maintainability**

System record own error, defect, exception.

* Source code have full information and easy to understand comments.
* System will be deployed in git brand: develop, test, deploy, production to prevent DDOS and unreliable Internet connection.
* System operating team has 3 sub teams: developing and testing team, managing team, operating team to maintain system under crisis situations.
* System has document, SRS, SDD (both in book and e-book).

## **3.6. Portability**

Web version is on React JS, required low version browser to run.

* Mobile version is on Android, cover major mobile devices and run on low version of Android.
* API is on C#, Restful API, request and response in JSON so API can accept other programing or any request on Restful API standard.
* Server is on SQL Server, when data become larger, considering change to Cassandra.
* System currently accepts all applications on C# programing language.

## **3.7. Performance**

### 3.7.1. Front end

* Expect low response time in reload, loading: < 2 second
* Expect get data, forward data, edit data information: ≤ 5 second.
* Expect auto reload main page / dashboard: every 10 minutes.
* Expect log recording push notification: ≤ 3 minutes since a log is recorded.

### 3.7.2. Backend

* Expect server response time: maximum 5 seconds.
* Expect API response time: from 1 to 10 seconds.

**4. Database Diagram**

## **4.1. Database Entities Relationship Diagram**

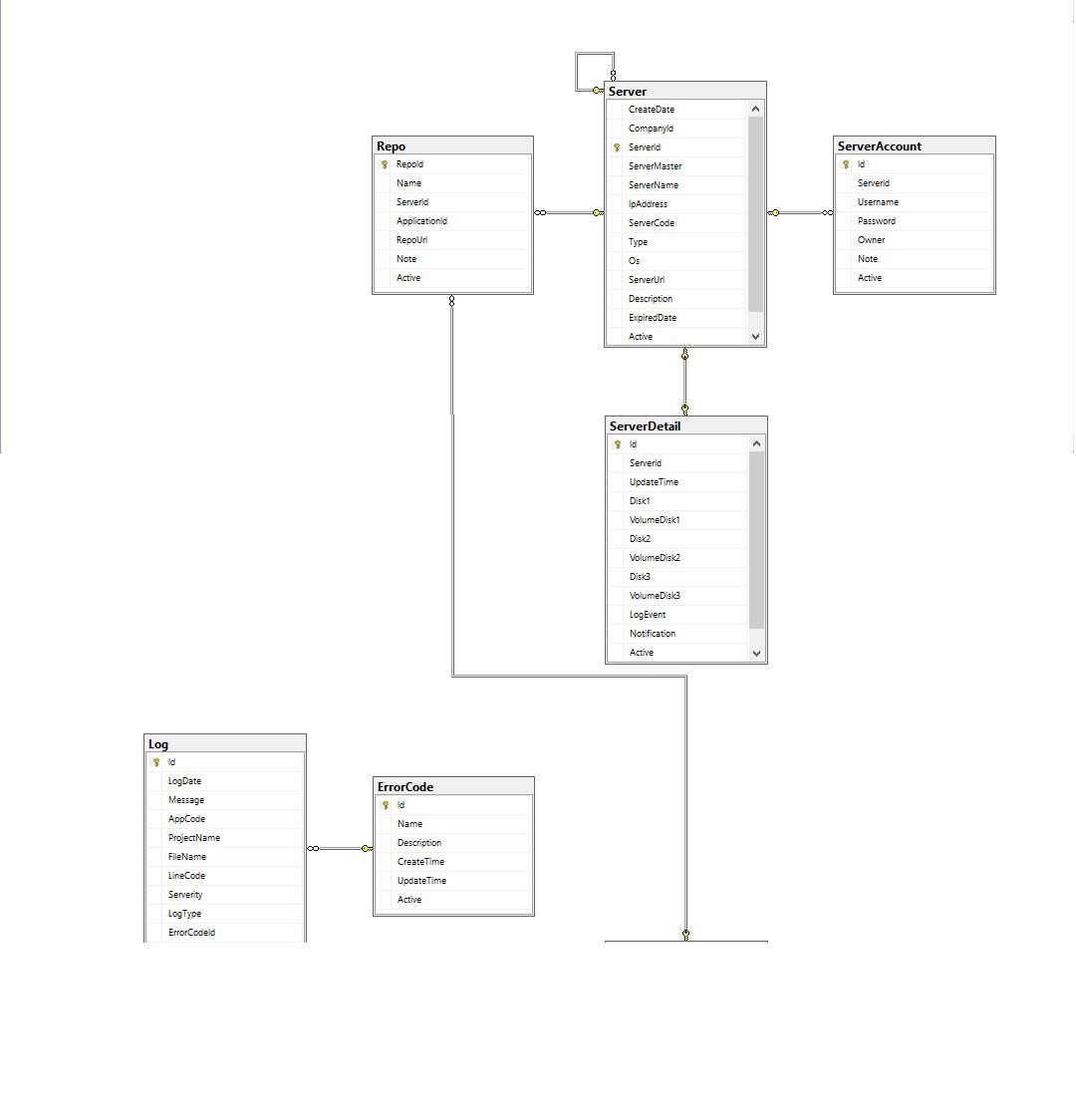
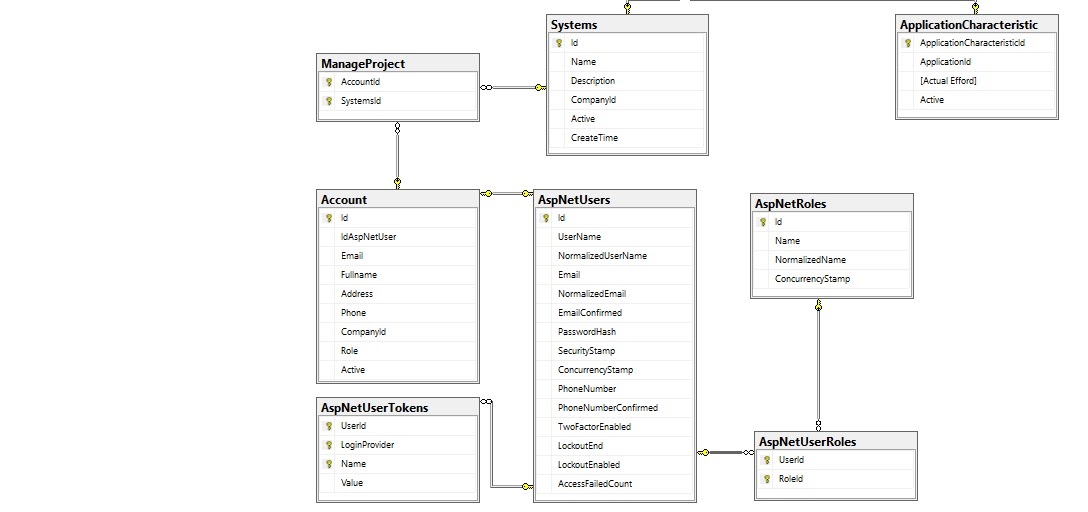
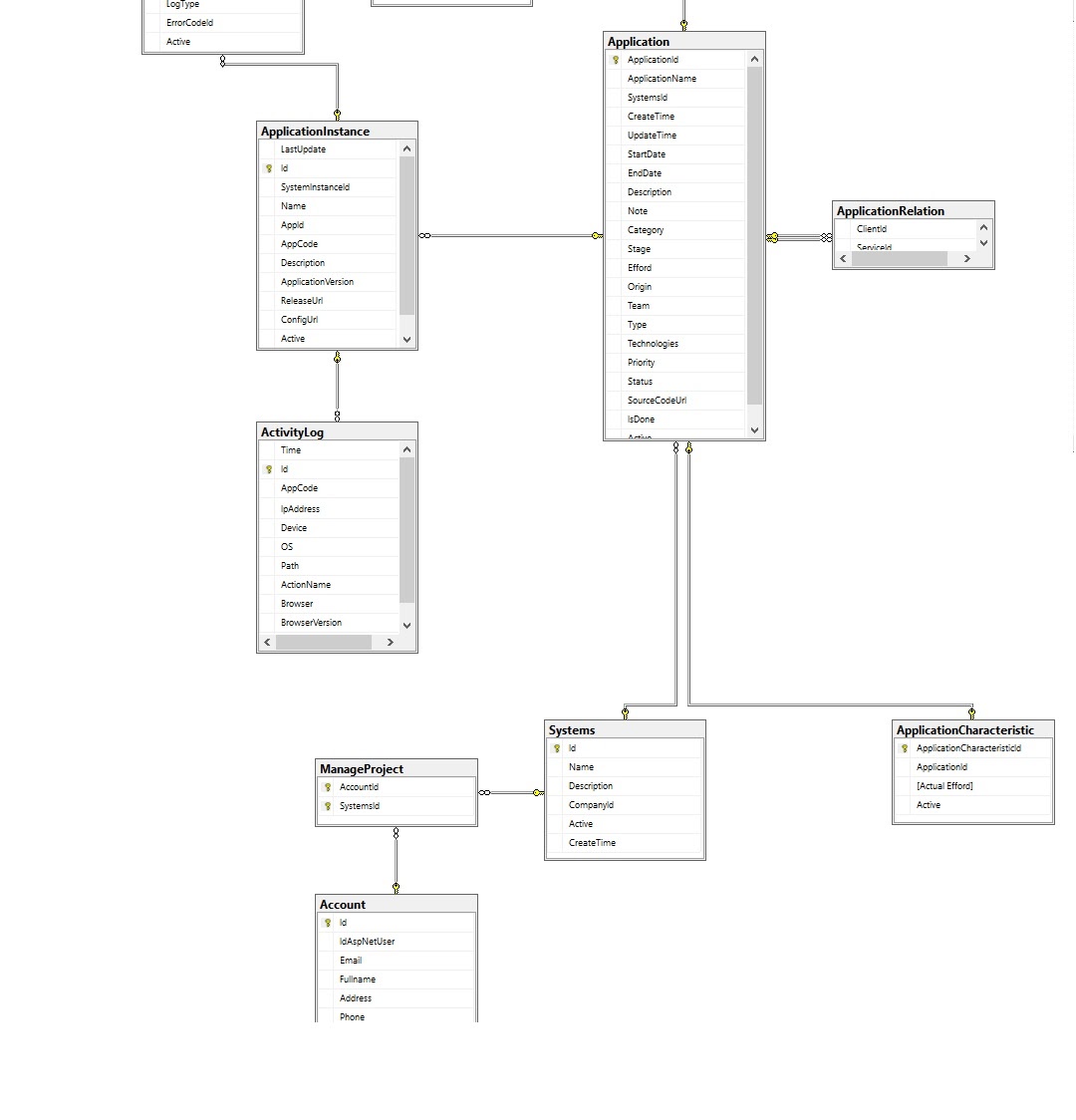


Figure 10. Entities Relationship Diagram

## **4.2. Data Dictionary**

|  |  |  |
| --- | --- | --- |
| ***Entity Data Dictionary: Describe content of all entities*** | | |
| ***No.*** | ***Entity Name*** | ***Description*** |
| 1 | Server | Server general detail |
| 2 | ServerDetail | Server specific detail |
| 3 | ServerAccount | Account and password to log into server |
| 4 | Repo | Repository held source code of application |
| 5 | Application | Application general detail |
| 6 | ApplicationInstance | Application instance detail |
| 7 | ApplicationRelation | Relation between application (server is one kind of application, product is one kind of application, so product is client and server is service) |
| 8 | Log | Log record general detail |
| 9 | ErrorCode | Detail about error / defect / error in log |
| 10 | ActivityLog | (future enhancement) Record all activity of application’s operating time |
| 11 | ApplicationCharacteristic | Effort values on application’s lifetime |
| 12 | System | System where application is deployed |
| 13 | ManageProject | Determine which application in charge of which user |
| 14 | Account | General detail of account |
| 15 | AspNetUsers | Specific detail of account |
| 16 | AspNetRoles | Role of account |
| 17 | AspNetUserTokens | Authentication, reset password token |
| 18 | AspNetUserRoles | Connect user and their role, 1 user can have many roles |

Table 1. Data Dictionary