

Manual

This is Group 2. We designed a website application for the Challenger 4 "Smart Building Data Access Management Scheme".

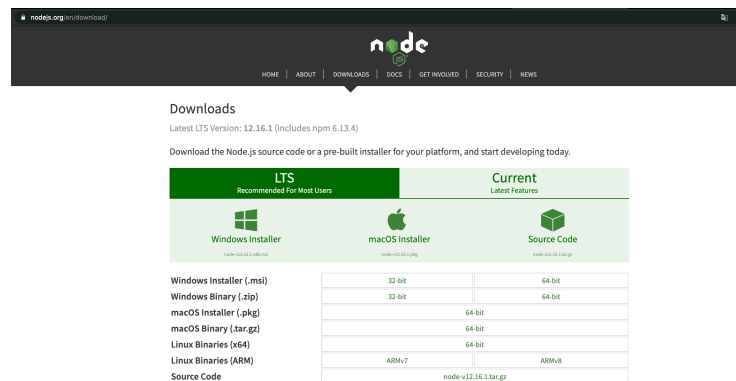
In order to run the website successfully in your own PC, you need to install the environment for node.js and MySQL.

1. Install necessary environment

1.1 Download Node.js

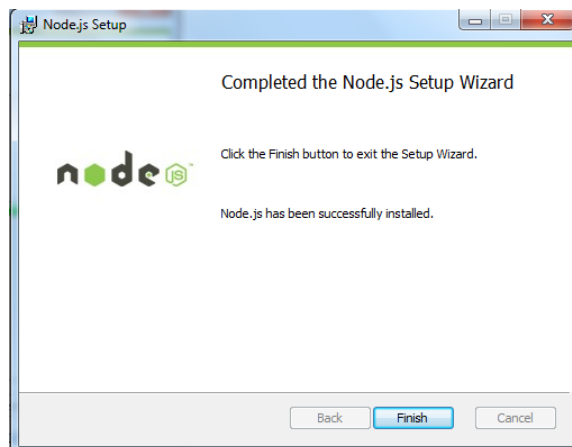
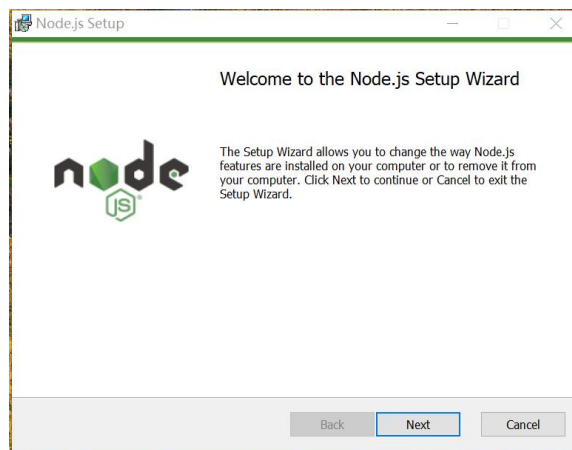
Download address: <https://nodejs.org/en/download/>

Download the installer for your platform:



1.2 For WINDOWS

Run the installer, install the node.js environment.



Then check the version of node and npm (Node Version Manager) .

```
E:\>node --version
v0.10.26
E:\>█
```

```
C:\WINDOWS\system32>npm -v
6.13.4
```

Next, use the npm command to install the Node.js web framework module express:

```
<C:\WINDOWS\system32>npm install express -g
<C:\WINDOWS\system32>npm install body-parser --save
<C:\WINDOWS\system32>npm install cookie-parser --save
<C:\WINDOWS\system32>npm install multer --save
<C:\WINDOWS\system32>npm install crypto --save
```

For MacOS

a) Method 1:

Download and run the pkg to install node.js.

b) Method 2:

Open the "Terminal", install node.js and express module.

```
Mac_Chen — -bash — 80x24
Last login: Sat Mar 21 14:21:51 on ttys001
MacBook-Chen:~ Mac_Chen$ brew install node
```

```
Mac_Chen — -bash — 80x24
Last login: Sat Mar 21 14:21:51 on ttys001
MacBook-Chen:~ Mac_Chen$ node --version
v13.8.0
MacBook-Chen:~ Mac_Chen$ npm -v
6.13.7
MacBook-Chen:~ Mac_Chen$ npm install express -g
+ express@4.17.1
added 50 packages from 37 contributors in 1.858s
```

```
$ npm install body-parser --save
$ npm install cookie-parser --save
$ npm install multer --save
$ npm install crypto --save
```

1.3 Install MySQL environment

Login MySQL as root: `$ mysql -u root -p`

Import 'usbaccess' database:

```
[mysql> show databases;
+-----+
| Database          |
+-----+
| information_schema |
| mysql              |
| performance_schema |
+-----+
3 rows in set (0.00 sec)

mysql> source ./Desktop/usbaccess.sql;
```

Import successfully!

```
mysql> show databases;
+-----+
| Database |
+-----+
| information_schema |
| mysql |
| performance_schema |
| usbaccess |
+-----+
4 rows in set (0.00 sec)
```

Create users and assign user permissions:

```
mysql> CREATE USER 'acs'@'localhost' IDENTIFIED BY 'mysql';
Query OK, 0 rows affected (0.00 sec)

mysql> GRANT ALL ON usbaccess.* TO 'acs'@'localhost';
Query OK, 0 rows affected (0.00 sec)

mysql> FLUSH PRIVILEGES;
Query OK, 0 rows affected (0.00 sec)
```

Exit:

```
mysql> exit;
Bye
```

Test whether the user was created successfully:

```
MacBook-Chen:~ Mac_Chen$ mysql -u acs -p usbaccess;
Enter password:
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Welcome to the MySQL monitor.  Commands end with ; or \g.
```

2. Run the project

Locate the project file and run the project in the terminal.

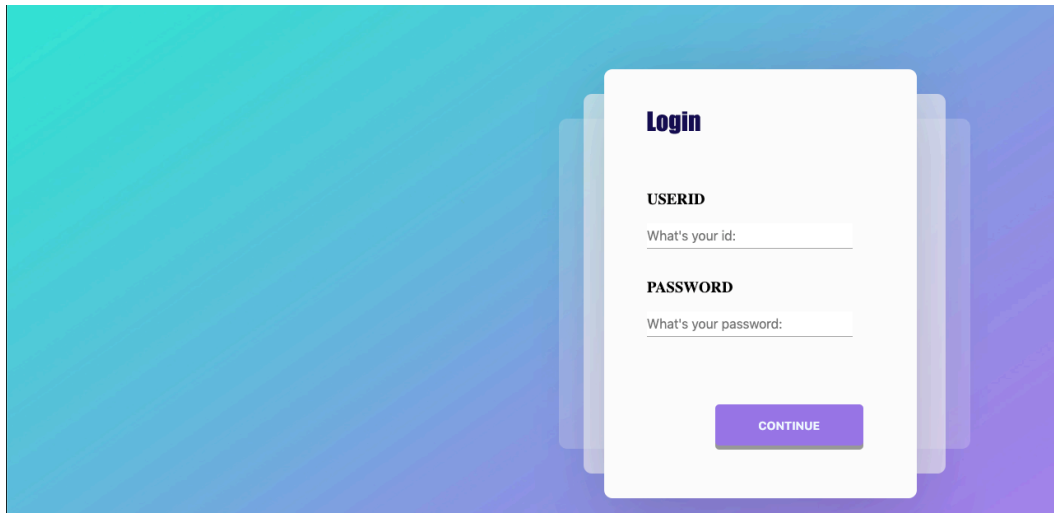
\$ node (path to the project) /AccessControlSystem/bin/www

```
MacBook-Chen:~ Mac_Chen$ node ./Desktop/CSC8208GroupProject/programming/AccessControlSystem/bin/www
GET /login 200 21.949 ms - 1769
GET /stylesheets/login.css 304 4.699 ms - -
GET /images/login/background.jpg 304 2.081 ms - -
GET /images/login/loginTable.png 304 3.250 ms - -
GET /images/login/loginIn.png 304 3.957 ms - -
```

3. Test

Open the web browser, and then input the URL:

<http://localhost:3000/login>



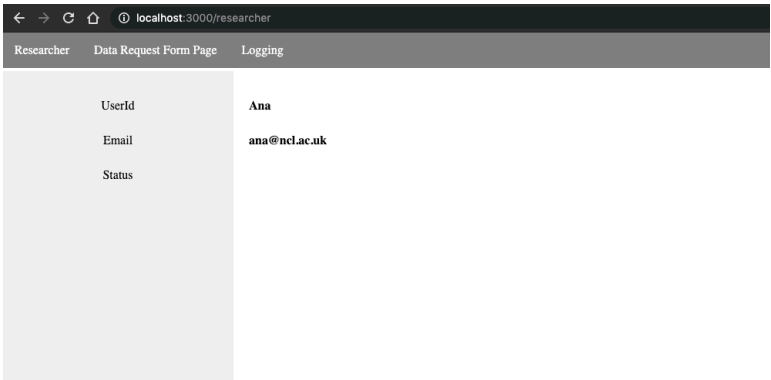
3.1 Login

user_id	password	dashboard		
Amy	123456	researcher	staff	school
Ana	123456	researcher	other	company
Ban	abc	occupant		
Bob	abc	occupant		
Cindy	code	both	student	university
David	code123	both	staff	university

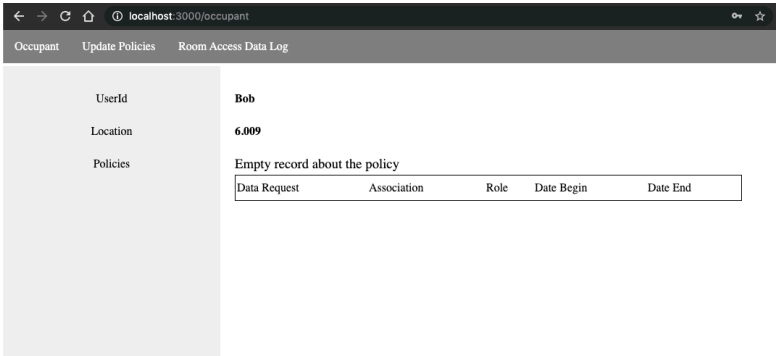
We have created these users previously. Only when the input "user_id" and "password" matches, you will be able to log in. Empty and input error will login failed.

3.2 Dashboard

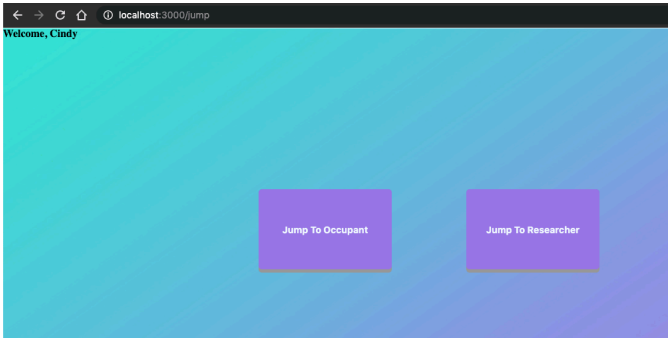
If you log in as a researcher (Amy/Ana), you will directly jump to page “/researcher”.



If you log in as an occupant (Ban, Bob), you will jump to page “/occupant”. (Initially, the database about the policies is empty, so the table about policy is empty. If this user has created some policies, they will be displayed in this table.)



If you log in as researcher and occupant (Cindy, David), you will jump to page “/jump” and be able to make selection by yourself.



3.3 Occupant

Click the label "Occupant", you will refresh and jump back to the page "/occupant".

Click the label "Update Policies", you will jump to "/UpDatePolicy". In this page, you will be able to set policies for the office "6.024"(The location is the user's office and can't be modified.)

Occupant Update Policies Logout

Data location: 6.024

Data available: ☐ CO2 ☐ Occupancy Sensor ☐ Relative Humidity ☐ Room Brightness ☐ Room Temperature

Permitted associations: School

Permitted roles: Staff

Date availability: yyyy/mm/dd * - yyyy/mm/dd *

Update

Then you can select the types of data, permitted associations, roles and available date and click the "Update" to submit the policy.

Occupant Update Policies

Data location: 6.024

Data available: ☒ CO2 ☐ Occupancy Sensor ☒ Relative Humidity ☒ Room Brightness ☐ Room Temperature

Permitted associations: University

Permitted roles: Student

Date availability: 2020/03/01 ✓ - 2020/03/21 ✓

Update

What you set will be displayed in the table.

UserId	Cindy				
Location	6.024				
Policies	Data Request	Association	Role	Date Begin	Date End
	co2	university	student	2020-03-01	2020-03-21
	relative-humidity	university	student	2020-03-01	2020-03-21
	room-brightness	university	student	2020-03-01	2020-03-21

Sure, you can set separate policies for each type of data one by one or modify several together at the same time. The last policies will overwrite the older policies.

Occupant

Update Policies

Logout

Data location:

6.024

Data available:

☐CO2 ☐Occupancy Sensor ☒Relative Humidity ☐Room Brightness ☐Room Temperature

Permitted associations:

School

Permitted roles:

Staff

Date availability:

2020 / 02 / 01 ✓ - 2020 / 02 / 08 ✓

Update

Occupant

Update Policies

Room Access Data Log

Logout

UserId

Cindy

Location

6.024

Policies

Data Request	Association	Role	Date Begin	Date End
co2	university	student	2020-03-01	2020-03-21
relative-humidity	school	staff	2020-02-01	2020-02-08
room-brightness	school	staff	2020-03-01	2020-03-21

The policies are set up for the data location and the types. The association/role/date are the judgement of access control.

Click the label “Room Access Data Log”, the page “/RoomAccessDataLog” will display the past access records(accepted/denied) according to the location.

Occupant

Update Policies

Room Access Data Log

Logout

Past Access Logging Data

Empty record about the requests

Location	UserId	UserName	Email	Role	Data Request	Association	Date Begin	Date End	Reason	State
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3.4 Researcher

Click the label "Researcher", you will refresh and jump back to the page "/researcher".

Click the label "Data Request Form Page", you will jump to "/DataRequestForm". In this page, it will automatically display the user's information (UserId, role, name, email address, association). These information can not be modified.

The screenshot shows a web interface with a header bar containing "Researcher", "Data Request Form Page", and a "Logout" link. The main content area is divided into two columns. The left column lists user information fields: UserId, Role, First Name, Last Name, Email, and Association, each with a corresponding text input field. The right column contains a "Data required" section with a prompt "Please select the data that you need:" and five checkboxes: CO2, Occupancy Sensor, Relative Humidity, Room Brightness, and Room Temperature. Below this is a "Data location" dropdown menu showing "6.008". The "Date" field is split into two parts, both showing "yyyy/mm/dd" with asterisks. The "Reason" field is a large text area with the placeholder "Write something..".

You can select the data which you need (single or several) and choose the office location, the date you want to apply. Next, click the "Submit" button to submit the request.

This screenshot shows the same form after selections have been made. The "Email" and "Association" fields are now populated with "amy@ncl.ac.uk" and "school" respectively. In the "Data required" section, the checkboxes for "Occupancy Sensor", "Relative Humidity", and "Room Brightness" are now checked. The "Data location" dropdown still shows "6.008". The "Date" field now shows "2020/03/01" and "2020/03/07" with checkmarks. The "Reason" text area contains the text "test1: I have't set up the policies for room 6.008". A green "Submit" button is visible at the bottom center of the form.

Because we have not set the policy for room 6.008.
The request will be denied, and you will jump back
to page “/researcher”.

Researcher	Data Request Form Page	Logging	Logout
UserId	Amy		
Email	amy@ncl.ac.uk		
Status	No policies for these data. Your requests are denied.		

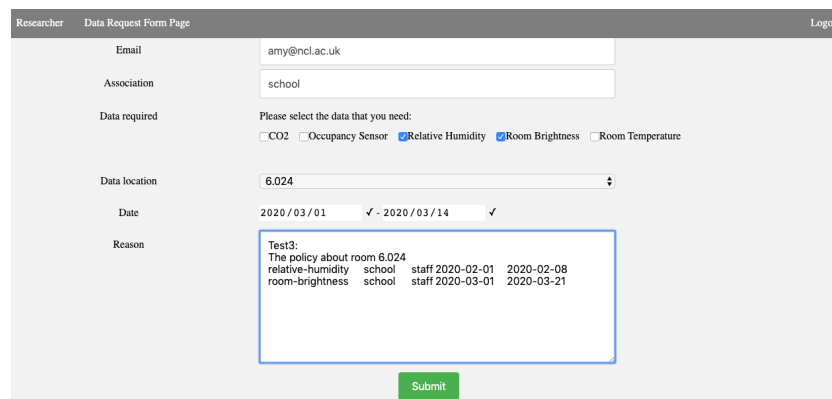
Here, we test to submit the request about room 6.024
which we have set policy in advanced.

Researcher	Data Request Form Page	Logout
Email	<input type="text" value="amy@ncl.ac.uk"/>	
Association	<input type="text" value="school"/>	
Data required	Please select the data that you need: <input checked="" type="checkbox"/> CO2 <input type="checkbox"/> Occupancy Sensor <input checked="" type="checkbox"/> Relative Humidity <input checked="" type="checkbox"/> Room Brightness <input type="checkbox"/> Room Temperature	
Data location	<input type="text" value="6.024"/>	
Date	2020/01/01 ✓ - 2020/01/02 ✓	
Reason	<div>test2: the date in request is beyond the available time in policy.</div>	
<input type="button" value="Submit"/>		

The required date in the request is beyond the limit
of policy so the request is denied, too.

Researcher	Data Request Form Page	Logging	Logout
UserId	Amy		
Email	amy@ncl.ac.uk		
Status	Requests Denied		

According to policy about room 6.024, the request about room-brightness will be accepted.



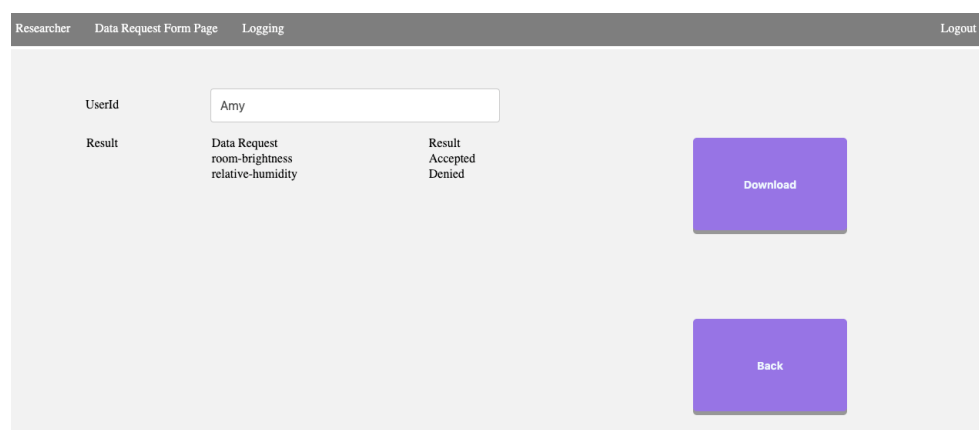
The screenshot shows a web form titled "Data Request Form Page" with a "Researcher" header and a "Logout" link. The form contains the following fields and options:

- Email:** amy@ncl.ac.uk
- Association:** school
- Data required:** Please select the data that you need:
 - ☐ CO2
 - ☐ Occupancy Sensor
 - ☒ Relative Humidity
 - ☒ Room Brightness
 - ☐ Room Temperature
- Data location:** 6.024
- Date:** 2020/03/01 ✓ - 2020/03/14 ✓
- Reason:** Test3:
The policy about room 6.024
relative-humidity school staff 2020-02-01 2020-02-08
room-brightness school staff 2020-03-01 2020-03-21

A green "Submit" button is located at the bottom right of the form.

Occupants set up the policies for the data location and the types. And the judgement of access control will be depended on the researcher's association, role and request date.

As long as one of the requests is approved, it will jump to the new interface "/download". In this page, you will know which requests are accepted and which requests are denied.



The screenshot shows a web page titled "Data Request Form Page" with a "Researcher" header, a "Logging" link, and a "Logout" link. The page displays the following information:

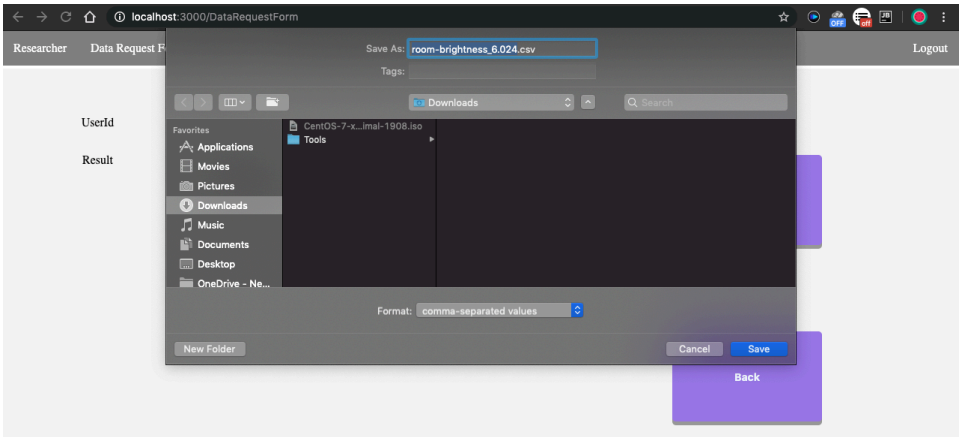
- Userid:** Amy
- Result:**

Data Request	Result
room-brightness	Accepted
relative-humidity	Denied

There are two purple buttons on the right side of the page: "Download" and "Back".

So, right now you will be accepted to download the csv file containing the room-brightness data in room

6.024 from 03/01/2020 to 03/14/2020. Chick the download button to do that.



room-brightness_6.024		
# URBAN OBSERVATORY (http://www.urbanobservatory.ac.uk/)		
# Licence info: http://www.urbanobservatory.ac.uk/licence/		
# Entity: Urban Sciences Building: Floor 6: Room 6.024		
# Metric: Room Brightness		
# Entity ID: f7452947-86c6-4737-b703-91aa58627b29		
# Feed ID: 513d67d1-ca28-45b4-b0ba-a38ae75d09b5		
# Timeseries ID: 9af7c8dc-1673-4169-a246-2cc38739f10d		
# Units: luxes		
# Stored in database as: Real		
time	value	duration / observation window
2020-03-14 23:59:56	266.24	-6.903
2020-03-14 23:57:52	250.88	-7.266
2020-03-14 23:57:17	266.24	-6.876
2020-03-14 23:56:45	250.88	-6.735
2020-03-14 23:09:32	266.24	-8.085
2020-03-14 23:09:00	250.88	-7.898

Click button “Back” to come back to page “/researcher”.

Click the label “Logging”, this page will present the historical records of this user’s requests.

Researcher	Data Request Form Page		Logging							Logout
Past Logging Data										
UserId	UserName	Email	Role	Data Request	Association	Location	Date Begin	Date End	Reason	State
Amy	Amy James	amy@ncl.ac.uk	staff	occupancy-sensor	school	6.008	2020-03-01	2020-03-07	test1: I haven't set up the policies for room 6.008	Denied
Amy	Amy James	amy@ncl.ac.uk	staff	relative-humidity	school	6.008	2020-03-01	2020-03-07	test1: I haven't set up the policies for room 6.008	Denied
Amy	Amy James	amy@ncl.ac.uk	staff	room-brightness	school	6.008	2020-03-01	2020-03-07	test1: I haven't set up the policies for room 6.008	Denied
Amy	Amy James	amy@ncl.ac.uk	staff	relative-humidity	school	6.024	2020-01-01	2020-01-02	test2: the date in request is beyond the available time in policy.	Denied
Amy	Amy James	amy@ncl.ac.uk	staff	co2	school	6.024	2020-01-01	2020-01-02	test2: the date in request is beyond the available time in policy.	Denied
Amy	Amy James	amy@ncl.ac.uk	staff	room-brightness	school	6.024	2020-01-01	2020-01-02	test2: the date in request is beyond the available time in policy.	Denied
Amy	Amy James	amy@ncl.ac.uk	staff	relative-humidity	school	6.024	2020-03-01	2020-03-14	Test3: The policy about room 6.024 relative-humidity school staff 2020-02-01 2020-02-08 room-bri	Denied
Amy	Amy James	amy@ncl.ac.uk	staff	room-brightness	school	6.024	2020-03-01	2020-03-14	Test3: The policy about room 6.024 relative-humidity school staff 2020-02-01 2020-02-08 room-bri	Accepted

3.5 Logout

In any page of dashboard, you can click the label "logout" to log out and come back to the interface of "/login".

4. Finish