

LAB1

Step 1

install apache

```
sudo apt install apache2
```

```
white@white ~
Setting up libaprutil1-ldap:amd64 (1.6.3-1.lubuntu7) ...
Setting up libaprutil1-dbd-sqlite3:amd64 (1.6.3-1.lubuntu7) ...
Setting up apache2-utils (2.4.58-1ubuntu8.1) ...
Setting up apache2-bin (2.4.58-1ubuntu8.1) ...
Setting up apache2 (2.4.58-1ubuntu8.1) ...
Enabling module mpm_event.
Enabling module authz_core.
Enabling module authz_host.
Enabling module authn_core.
Enabling module auth_basic.
Enabling module access_compat.
Enabling module authn_file.
Enabling module authz_user.
Enabling module alias.
Enabling module dir.
Enabling module autoindex.
Enabling module env.
Enabling module mime.
Enabling module negotiation.
Enabling module setenvif.
Enabling module filter.
Enabling module deflate.
Enabling module status.
Enabling module reqtimeout.
Enabling conf charset.
Enabling conf localized-error-pages.
Enabling conf other-vhosts-access-log.
Enabling conf security.
Enabling conf serve-cgi-bin.
Enabling site 000-default.
Created symlink /etc/systemd/system/multi-user.target.wants/apache2.service → /usr/lib/systemd/system/apache2.service.
Created symlink /etc/systemd/system/multi-user.target.wants/apache-htcacheclean.service → /usr/lib/systemd/system/apache-htcacheclean.service.
Processing triggers for ufw (0.36-2-6) ...
Processing triggers for man-db (2.12.0-4build2) ...
Processing triggers for libc-bin (2.39-0Ubuntu8.2) ...
Scanning processes...
Scanning linux images...
Running kernel seems to be up-to-date.
No services need to be restarted.
No containers need to be restarted.
No user sessions are running outdated binaries.
No VM guests are running outdated hypervisor (qemu) binaries on this host.
white@white:~$
```



```
sudo ufw app list
```

```
white@white:~$ sudo ufw app list
Available applications:
 Apache
 Apache Full
 Apache Secure
 OpenSSH
white@white:~$ |
```

```
sudo ufw app list
sudo ufw allow in "Apache"
sudo ufw status
```

```
white@white:~$ sudo ufw app list
[sudo] password for white:
Available applications:
 Apache
 Apache Full
 Apache Secure
 OpenSSH
white@white:~$ sudo ufw allow in "Apache"
Skipping adding existing rule
Skipping adding existing rule (v6)
white@white:~$ sudo ufw status
Status: inactive
white@white:~$ sudo service ufw start
white@white:~$ sudo ufw status
Status: inactive
white@white:~$ sudo ufw enable
Command may disrupt existing ssh connections. Proceed with operation (y|n)? y
Firewall is active and enabled on system startup
white@white:~$ sudo ufw status
Status: active

To                         Action      From
--                         -----      ---
Apache                      ALLOW      Anywhere
Apache (v6)                  ALLOW      Anywhere (v6)

white@white:~$
```

```
192.168.56.101
```

This is the default welcome page used to test the correct operation of the Apache2 server after installation on Ubuntu systems. It is based on the equivalent page on Debian, from which the Ubuntu Apache packaging is derived. If you can read this page, it means that the Apache HTTP server installed at this site is working properly. You should [replace this file](#) (located at `/var/www/html/index.html`) before continuing to operate your HTTP server.

If you are a normal user of this web site and don't know what this page is about, this probably means that the site is currently unavailable due to maintenance. If the problem persists, please contact the site's administrator.

Configuration Overview

Ubuntu's Apache2 default configuration is different from the upstream default configuration, and split into several files optimized for interaction with Ubuntu tools. The configuration system is **fully documented in `/usr/share/doc/apache2/README.Debian.gz`**. Refer to this for the full documentation. Documentation for the web server itself can be found by accessing the [manual](#) if the `apache2-doc` package was installed on this server.

The configuration layout for an Apache2 web server installation on Ubuntu systems is as follows:

```
/etc/apache2/
|-- apache2.conf
|-- ports.conf
|-- mods-enabled
|   |-- *.Load
|   |-- *.conf
|-- conf-enabled
|   |-- *.conf
|-- sites-enabled
|   |-- *.conf

```

- `apache2.conf` is the main configuration file. It puts the pieces together by including all remaining configuration files when starting up the web server.
- `ports.conf` is always included from the main configuration file. It is used to determine the listening ports for incoming connections, and this file can be customized anytime.
- Configuration files in the `mods-enabled/`, `conf-enabled/` and `sites-enabled/` directories contain particular configuration snippets which manage modules, global configuration fragments, or virtual host configurations, respectively.
- They are activated by symlinking available configuration files from their respective `*-available/` counterparts. These should be managed by using our helpers `a2enmod`, `a2dismod`, `a2ensite`, `a2dissite`, and `a2enconf`, `a2disconf`. See their respective man pages for detailed information.
- The binary is called `apache2` and is managed using `systemd`, so to start/stop the service use

install MySQL

```
sudo apt install mysql-server
```

```
white@white:~$ reading /usr/share/mecab/dic/ipadic/Verb.csv ... 130750
reading /usr/share/mecab/dic/ipadic/Noun.demonst.csv ... 120
reading /usr/share/mecab/dic/ipadic/Symbol.csv ... 208
reading /usr/share/mecab/dic/ipadic/Postp-col.csv ... 91
reading /usr/share/mecab/dic/ipadic/Noun.adverbial.csv ... 795
emitting double-array: 100% [#####
reading /usr/share/mecab/dic/ipadic/matrix.def ... 1316x1316
emitting matrix      : 100% [#####
done!
update-alternatives: using /var/lib/mecab/dic/ipadic-utf8 to provide /var/lib/mecab/dic/debian (mecab-dictionary) in a
uto mode
Setting up libhtml-parser-perl:amd64 (3.81-1build3) ...
Setting up libhttp-message-perl (6.45-1ubuntu1) ...
Setting up mysql-server (8.0.37-0ubuntu0.24.04.1) ...
Setting up libcgi-pm-perl (4.63-1) ...
Setting up libhtml-template-perl (2.97-2) ...
Setting up libcgi-fast-perl (1:2.17-1) ...
Processing triggers for man-db (2.12.0-4build2) ...
Processing triggers for libc-bin (2.39-0ubuntu8.2) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
white@white:~$
```

```
sudo mysql_secure_installation
```

```
white@white:~ Remove anonymous users? (Press y|Y for Yes, any other key for No) : y
Success.

Normally, root should only be allowed to connect from
'localhost'. This ensures that someone cannot guess at
the root password from the network.

Disallow root login remotely? (Press y|Y for Yes, any other key for No) : y
Success.

By default, MySQL comes with a database named 'test' that
anyone can access. This is also intended only for testing,
and should be removed before moving into a production
environment.

Remove test database and access to it? (Press y|Y for Yes, any other key for No) : y
- Dropping test database...
Success.

- Removing privileges on test database...
Success.

Reloading the privilege tables will ensure that all changes
made so far will take effect immediately.

Reload privilege tables now? (Press y|Y for Yes, any other key for No) : y
Success.

All done!
white@white:~$
```

```
sudo mysql
```

```
white@white:~ environment.

Remove test database and access to it? (Press y|Y for Yes, any other key for No) : y
- Dropping test database...
Success.

- Removing privileges on test database...
Success.

Reloading the privilege tables will ensure that all changes
made so far will take effect immediately.

Reload privilege tables now? (Press y|Y for Yes, any other key for No) : y
Success.

All done!
white@white:~$ sudo mysql
Welcome to the MySQL monitor. Commands end with ; or \g.
Your MySQL connection id is 10
Server version: 8.0.37-0ubuntu0.24.04.1 (Ubuntu)

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> exit
Bye
white@white:~$
```

install PHP

```
sudo apt install php libapache2-mod-php php-mysql
php -v
```

```
white@white:~$ Setting up libapache2-mod-php8.3 (8.3.6-0ubuntu0.24.04.1) ...
white@white:~$ Creating config file /etc/php/8.3/apache2/php.ini with new version
white@white:~$ Module mpm_event disabled.
white@white:~$ Enabling module mpm_prefork.
white@white:~$ apache2_switch_mpm Switch to prefork
white@white:~$ apache2_invoke: Enable module php8.3
white@white:~$ Setting up php8.3 (8.3.6-0ubuntu0.24.04.1) ...
white@white:~$ Setting up libapache2-mod-php (2:8.3+93ubuntu2) ...
white@white:~$ Setting up php (2:8.3+93ubuntu2) ...
white@white:~$ Processing triggers for man-db (2.12.0-4build2) ...
white@white:~$ Processing triggers for php8.3-cli (8.3.6-0ubuntu0.24.04.1) ...
white@white:~$ Processing triggers for libapache2-mod-php8.3 (8.3.6-0ubuntu0.24.04.1) ...
white@white:~$ Scanning processes...
white@white:~$ Scanning linux images...

white@white:~$ Running kernel seems to be up-to-date.

white@white:~$ No services need to be restarted.

white@white:~$ No containers need to be restarted.

white@white:~$ No user sessions are running outdated binaries.

white@white:~$ No VM guests are running outdated hypervisor (qemu) binaries on this host.

white@white:~$ ^[[200~php -v~
white@white:~$ php: command not found
white@white:~$ php -v
PHP 8.3.6 (cli) (built: Jun 13 2024 15:23:20) (NTS)
Copyright (c) The PHP Group
Zend Engine v4.3.6, Copyright (c) Zend Technologies
    with Zend OPcache v8.3.6, Copyright (c), by Zend Technologies
white@white:~$
```

Creating a Virtual Host for your Website

```
sudo mkdir /var/www/jiraphat_testing
sudo chown -R $USER:$USER /var/www/jiraphat_testing
sudo nano /etc/apache2/sites-available/jiraphat_testing.conf
```

```
<VirtualHost *:80>
    ServerName jiraphat_testing
    ServerAlias www.jiraphat_testing
    ServerAdmin webmaster@localhost
    DocumentRoot /var/www/jiraphat_testing
    ErrorLog ${APACHE_LOG_DIR}/error.log
    CustomLog ${APACHE_LOG_DIR}/access.log combined
</VirtualHost>
```

```
white@white:~$ sudo mkdir /var/www/jiraphat_testing
white@white:~$ ls
white@white:~$ pwd
/home/white
white@white:~$ sudo chown -R $USER:$USER /var/www/jiraphat_testing
white@white:~$ sudo nano /etc/apache2/sites-available/jiraphat_testing.conf
white@white:~$
```

```
sudo a2ensite jiraphat_testing
sudo a2dissite 000-default
sudo apache2ctl configtest
sudo systemctl reload apache2
```

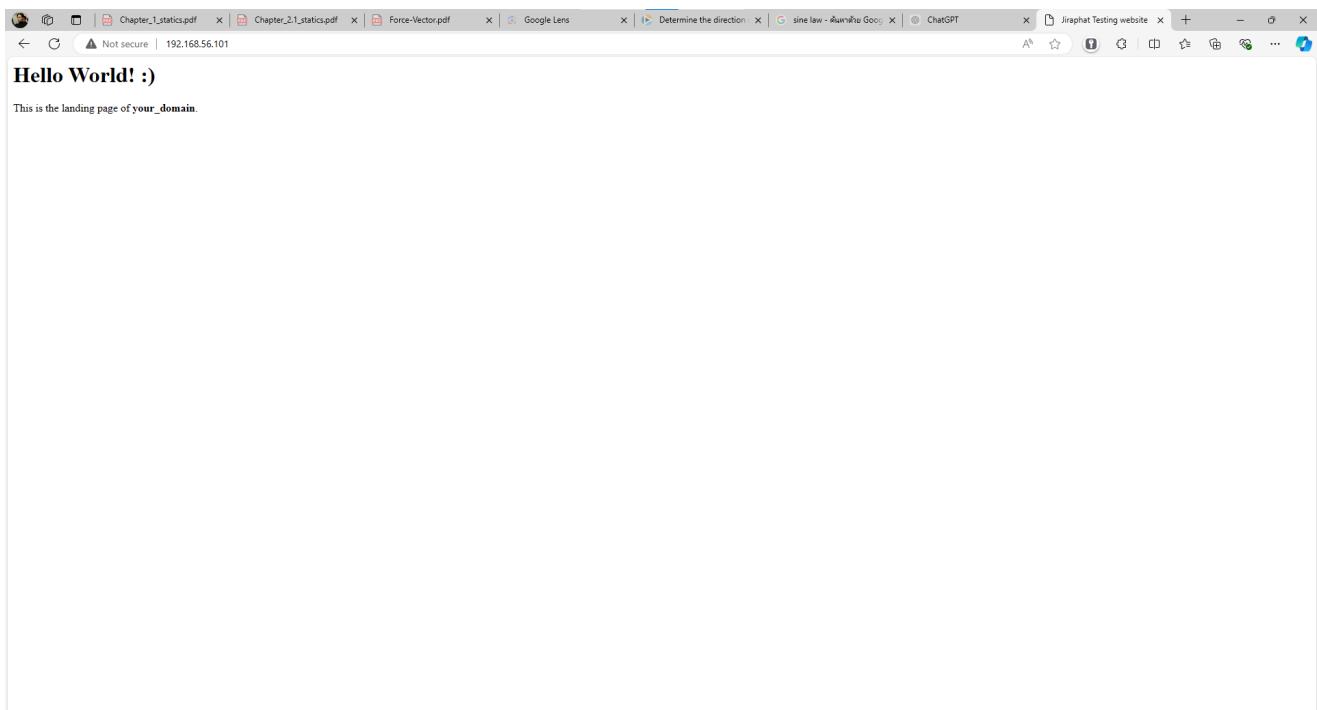
```
white@white:~$ sudo mkdir /var/www/jiraphat_testing
white@white:~$ ls
white@white:~$ pwd
/home/white
white@white:~$ sudo chown -R $USER:$USER /var/www/jiraphat_testing
white@white:~$ sudo nano /etc/apache2/sites-available/jiraphat_testing.conf
white@white:~$ sudo a2ensite jiraphat_testing
Enabling site jiraphat_testing.
To activate the new configuration, you need to run:
  systemctl reload apache2
white@white:~$ sudo a2dissite 000-default
Site 000-default disabled.
To activate the new configuration, you need to run:
  systemctl reload apache2
white@white:~$ sudo apache2ctl configtest
AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 127.0.1.1. Set the 'ServerName' directive globally to suppress this message
Syntax OK
white@white:~$ sudo systemctl reload apache2
white@white:~$
```

```
nano /var/www/jiraphat_testing/index.html
```

```
<html>
  <head>
    <title>Jiraphat Testing website</title>
  </head>
  <body>
    <h1>Hello World! :)</h1>

    <p>This is the landing page of <strong>your_domain</strong>.</p>
  </body>
</html>
```

http://192.168.56.101



Testing PHP Processing on your Web Server

```
nano /var/www/jiraphat_testing/info.php
```

```
<?php
phpinfo();
```

PHP Version 8.3.6	
System	Linux white 6.8.0-36-generic #36-Ubuntu SMP PREEMPT_DYNAMIC Mon Jun 10 10:49:14 UTC 2024 x86_64
Build Date	Jun 13 2024 15:23:20
Build System	Linux
Server API	Apache 2.0 Handler
Virtual Directory Support	disabled
Configuration File (php.ini) Path	/etc/php/8.3/apache2
Loaded Configuration File	/etc/php/8.3/apache2/php.ini
Scan this dir for additional .ini files	/etc/php/8.3/apache2/conf.d
Additional .ini files parsed	/etc/php/8.3/apache2/conf.d/10-mysqli.ini, /etc/php/8.3/apache2/conf.d/10-opcache.ini, /etc/php/8.3/apache2/conf.d/20-pdo.ini, /etc/php/8.3/apache2/conf.d/20-scheduler.ini, /etc/php/8.3/apache2/conf.d/20-dyre.ini, /etc/php/8.3/apache2/conf.d/20-exif.ini, /etc/php/8.3/apache2/conf.d/20-fil.ini, /etc/php/8.3/apache2/conf.d/20-filinfo.ini, /etc/php/8.3/apache2/conf.d/20-ftp.ini, /etc/php/8.3/apache2/conf.d/20-gd.ini, /etc/php/8.3/apache2/conf.d/20-mysqli.ini, /etc/php/8.3/apache2/conf.d/20-phar.ini, /etc/php/8.3/apache2/conf.d/20-pdo_mysql.ini, /etc/php/8.3/apache2/conf.d/20-pdo_pdo_mysql.ini, /etc/php/8.3/apache2/conf.d/20-postini, /etc/php/8.3/apache2/conf.d/20-pspell.ini, /etc/php/8.3/apache2/conf.d/20-pspell_socets.ini, /etc/php/8.3/apache2/conf.d/20-sysvmsg.ini, /etc/php/8.3/apache2/conf.d/20-sysvsem.ini, /etc/php/8.3/apache2/conf.d/20-tokenizer.ini
PHP API	20230831
PHP Extension	20230831
Zend Extension	420230831
Zend Extension Build	AP1420230831.NTS
PHP Extension Build	AP120230831.NTS
Debug Build	no
Thread Safety	disabled
Zend Signal Handling	enabled
Zend Memory Manager	enabled
Zend Multibyte Support	disabled
Zend Max Execution Timers	disabled
IPv6 Support	enabled
DTrace Support	disabled
Registered PHP Streams	https, ftps, compress_zlib, php, file, glob, data, http, ftp, phar
Registered Stream Socket Transports	tcp, udp, unix, udg, ssl, tls, tsqlv1.0, tsqlv1.1, tsqlv1.2, tsqlv1.3
Registered Stream Filters	zlib*, string.rot13, string.toupper, string.tolower, convert*, consumed, dechunk, convert.iconv*

This program makes use of the Zend Scripting Language Engine.
Zend Engine v4.3.6, Copyright (c) Zend Technologies with Zend OPcache v8.3.6. Copyright (c), by Zend Technologies

zendengine

Configuration

white@white:~\$

`sudo mysql`

```
CREATE DATABASE jiraphat_example_database;
CREATE USER 'jiraphat'@'%' IDENTIFIED BY '12345678';
```

```
white@white:~$ sudo mysql
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 11
Server version: 8.0.37-0ubuntu0.24.04.1 (Ubuntu)

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> CREATE DATABASE jiraphat_example_database;
Query OK, 1 row affected (0.01 sec)

mysql> CREATE USER 'jiraphat'@'%' IDENTIFIED BY '123456';
ERROR 1819 (HY000): Your password does not satisfy the current policy requirements
mysql>
```

```
GRANT ALL ON jiraphat_example_database.* TO 'jiraphat'@'%';
```

```
white@white:~$ sudo mysql
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 13
Server version: 8.0.37-0ubuntu0.24.04.1 (Ubuntu)

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owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> CREATE USER 'jiraphat'@'%' IDENTIFIED BY '12345678';
Query OK, 0 rows affected (0.01 sec)

mysql> GRANT ALL ON jiraphat_example_database.* TO 'jiraphat'@'%';
Query OK, 0 rows affected (0.01 sec)

mysql> [REDACTED]
```

```
mysql -u jiraphat -p
```

```
SHOW DATABASES;
```

```
white@white:~$ mysql -u jiraphat -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 14
Server version: 8.0.37-0ubuntu0.24.04.1 (Ubuntu)

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> SHOW DATABASES;
+-----+
| Database      |
+-----+
| information_schema |
| jiraphat_example_database |
| performance_schema |
+-----+
3 rows in set (0.00 sec)

mysql> [REDACTED]
```

```

CREATE TABLE jiraphat_example_database.todo_list (
    item_id INT AUTO_INCREMENT,
    content VARCHAR(255),
    PRIMARY KEY(item_id)
);

INSERT INTO jiraphat_example_database.todo_list (content) VALUES ("My first important item");

SELECT * FROM jiraphat_example_database.todo_list;

```

```

white@white: ~
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> SHOW DATABASES;
+-----+
| Database |
+-----+
| information_schema |
| jiraphat_example_database |
| performance_schema |
+-----+
3 rows in set (0.00 sec)

mysql> CREATE TABLE jiraphat_example_database.todo_list (
    ->     item_id INT AUTO_INCREMENT,
    ->     content VARCHAR(255),
    ->     PRIMARY KEY(item_id)
    -> );
Query OK, 0 rows affected (0.04 sec)

mysql> INSERT INTO jiraphat example database.todo list (content) VALUES ("My first important item");
Query OK, 1 row affected (0.01 sec)

mysql> SELECT * FROM example_database.todo_list;
ERROR 1142 (42000): SELECT command denied to user 'jiraphat'@'localhost' for table 'todo_list'
mysql> SELECT * FROM jiraphat_example_database.todo_list;
+-----+
| item_id | content      |
+-----+
|      1 | My first important item |
+-----+
1 row in set (0.00 sec)

mysql> 

```

```
nano /var/www/jiraphat_testing/todo_list.php
```

```

<?php
$user = "jiraphat";
$password = "12345678";
$database = "jiraphat_example_database";
$table = "todo_list";

try {
    $db = new PDO("mysql:host=localhost;dbname=$database", $user, $password);
    echo "<h2>TODO</h2><ol>";
    foreach($db->query("SELECT content FROM $table") as $row) {
        echo "<li>" . $row['content'] . "</li>";
    }
    echo "</ol>";
} catch (PDOException $e) {
    print "Error!: " . $e->getMessage() . "<br/>";
    die();
}

```

```
http://192.168.56.101/todo_list.php
```



Step 3

install git

```
sudo apt install git  
git --version
```

A screenshot of a terminal window. The command 'sudo apt install git' is run, followed by 'git --version'. The output shows that git is already the newest version (1:2.43.0-1ubuntu7.1) and that it is set to manually installed. The terminal prompt is 'white@white:~\$'.

```

git config --global user.name "Jiraphat-DEV"
git config --global user.email "aum.aumtp@gmail.com"
git config --list

```

A terminal window titled 'white@white:~\$' showing the output of the git configuration command. It includes the installation of git, setting global user.name and user.email, and listing the configuration.

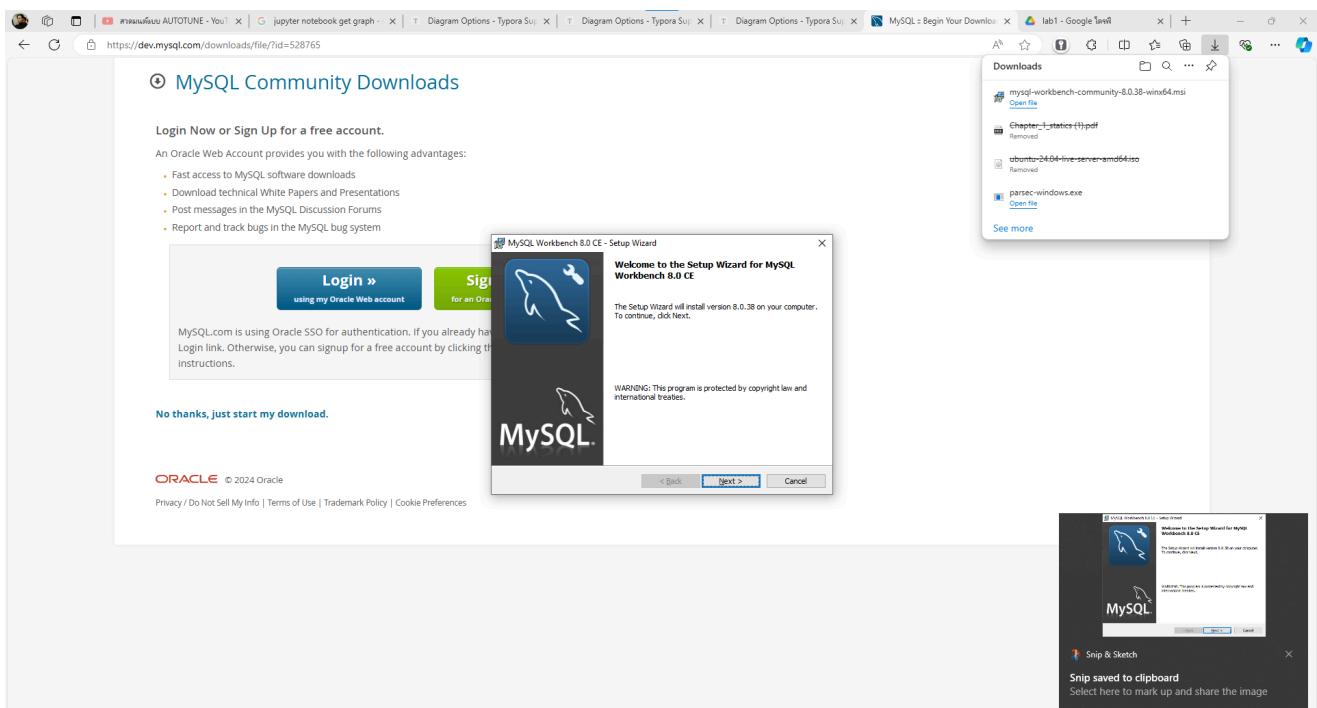
```

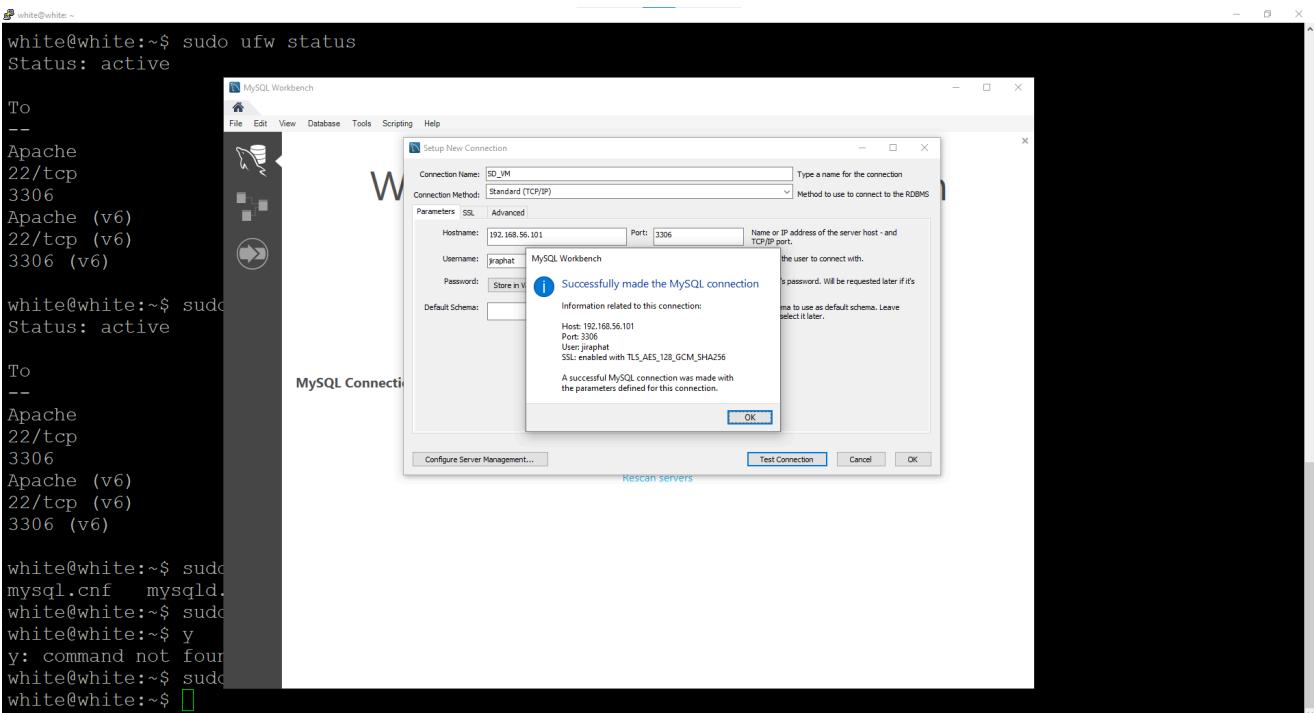
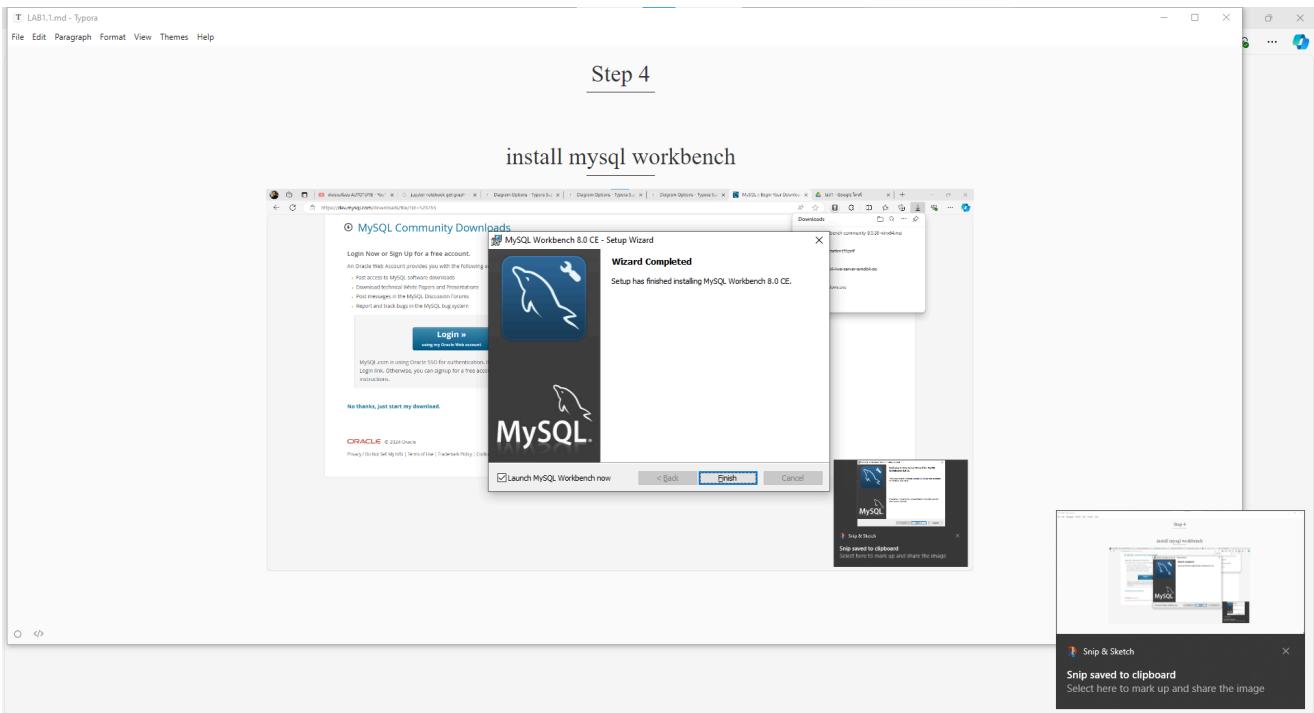
white@white:~$ sudo apt install git
[sudo] password for white:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
git is already the newest version (1:2.43.0-1ubuntu7.1).
git set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 36 not upgraded.
white@white:~$ git --version
git version 2.43.0
white@white:~$ git config --global user.name "Jiraphat-DEV"
git config --global user.email "aum.aumtp@gmail.com"
white@white:~$ git config --list
user.name=Jiraphat-DEV
user.email=aum.aumtp@gmail.com
white@white:~$ 

```

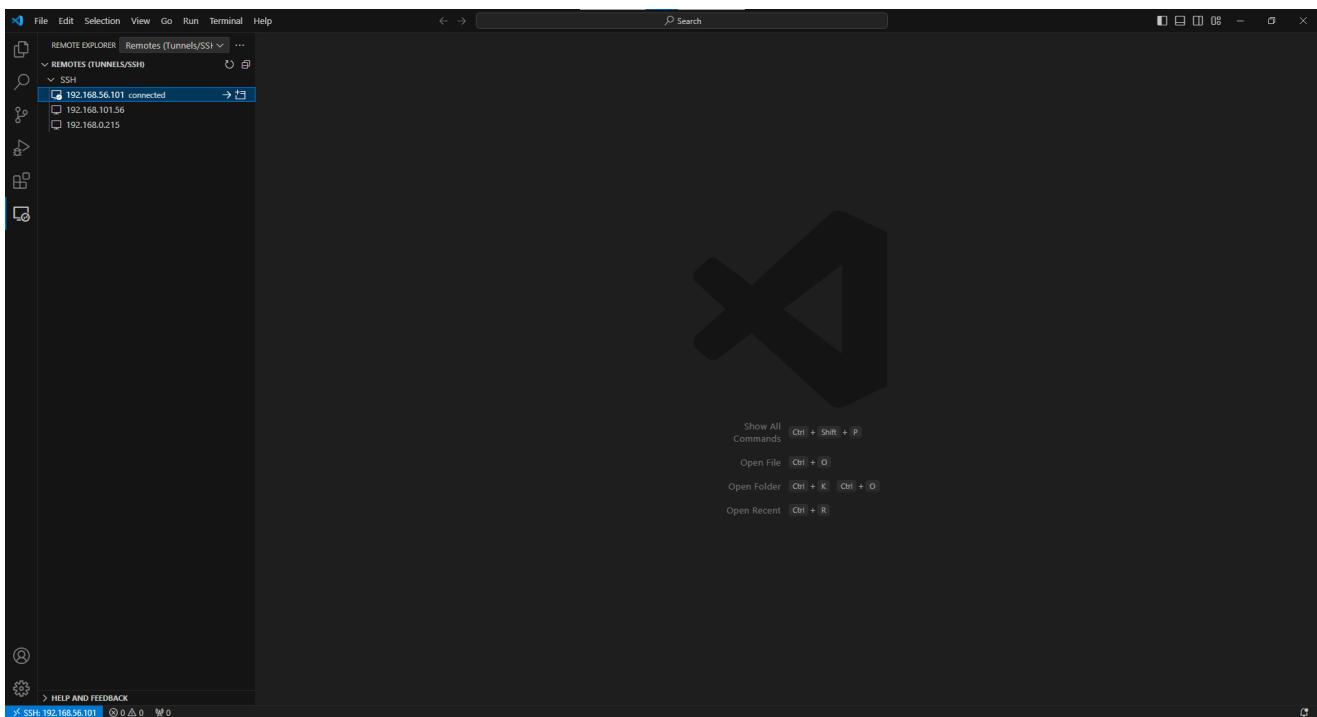
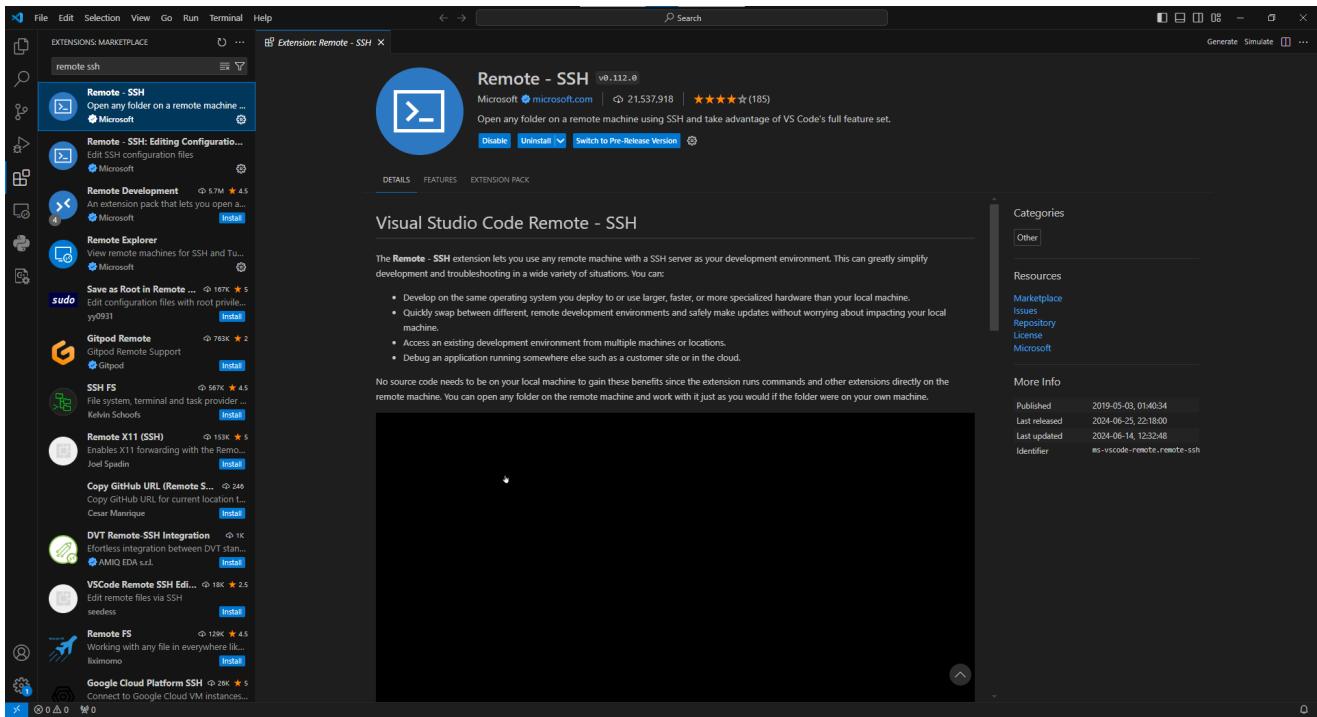
Step 4

install mysql workbench





Step 5



Step 6

```
sudo mkdir -p /var/www/jiraphat_1/public_html
sudo mkdir -p /var/www/jiraphat_2/public_html

sudo chown -R $USER:$USER /var/www/jiraphat_1/public_html
sudo chown -R $USER:$USER /var/www/jiraphat_2/public_html

sudo chmod -R 755 /var/www
```

```
white@white:~$ sudo mkdir -p /var/www/jiraphat_1/public_html
sudo mkdir -p /var/www/jiraphat_2/public_html
sudo chown -R $USER:$USER /var/www/jiraphat_1/public_html
sudo chown -R $USER:$USER /var/www/jiraphat_2/public_html
white@white:~$ ls /var/www/
html  jiraphat_1  jiraphat_2  jiraphat_testing
white@white:~$ sudo chmod -R 755 /var/www
white@white:~$
```

```
nano /var/www/jiraphat_1/public_html/index.html
```

```
<html>
  <head>
    <title>Welcome to jiraphat 1!</title>
  </head>
  <body>
    <h1>Success! The jiraphat 1 virtual host is working!</h1>
  </body>
</html>
```

```
nano /var/www/jiraphat_2/public_html/index.html
```

```
<html>
  <head>
    <title>Welcome to jiraphat 2!</title>
  </head>
  <body>
    <h1>Success! The jiraphat 2 virtual host is working!</h1>
  </body>
</html>
```

```
white@white:~$ sudo mkdir -p /var/www/jiraphat_1/public_html
sudo mkdir -p /var/www/jiraphat_2/public_html

sudo chown -R $USER:$USER /var/www/jiraphat_1/public_html
sudo chown -R $USER:$USER /var/www/jiraphat_2/public_html
white@white:~$ ls /var/www/
html  jiraphat_1  jiraphat_2  jiraphat_testing
white@white:~$ sudo chmod -R 755 /var/www
white@white:~$ nano /var/www/jiraphat_1/public_html/index.html
white@white:~$ nano /var/www/jiraphat_2/public_html/index.html
white@white:~$
```

```
sudo cp /etc/apache2/sites-available/000-default.conf /etc/apache2/sites-available/jiraphat_1.conf
sudo nano /etc/apache2/sites-available/jiraphat_1.conf
```

edit

```
<VirtualHost *:80>
...
    ServerAdmin admin@jiraphat_1
    ServerName jiraphat_1
    ServerAlias www.jiraphat_1
    DocumentRoot /var/www/jiraphat_1/public_html
    ...
    ErrorLog ${APACHE_LOG_DIR}/error.log
    CustomLog ${APACHE_LOG_DIR}/access.log combined
    ...
</VirtualHost>
```

copy config file to jiraphat_2

```
sudo cp /etc/apache2/sites-available/jiraphat_1.conf /etc/apache2/sites-available/jiraphat_2.conf
sudo nano /etc/apache2/sites-available/jiraphat_2.conf
```

edit

```
<VirtualHost *:80>
...
    ServerAdmin admin@jiraphat_2
    ServerName jiraphat_2
    ServerAlias www.jiraphat_2
    DocumentRoot /var/www/jiraphat_2/public_html
...
    ErrorLog ${APACHE_LOG_DIR}/error.log
    CustomLog ${APACHE_LOG_DIR}/access.log combined
...
</VirtualHost>
```

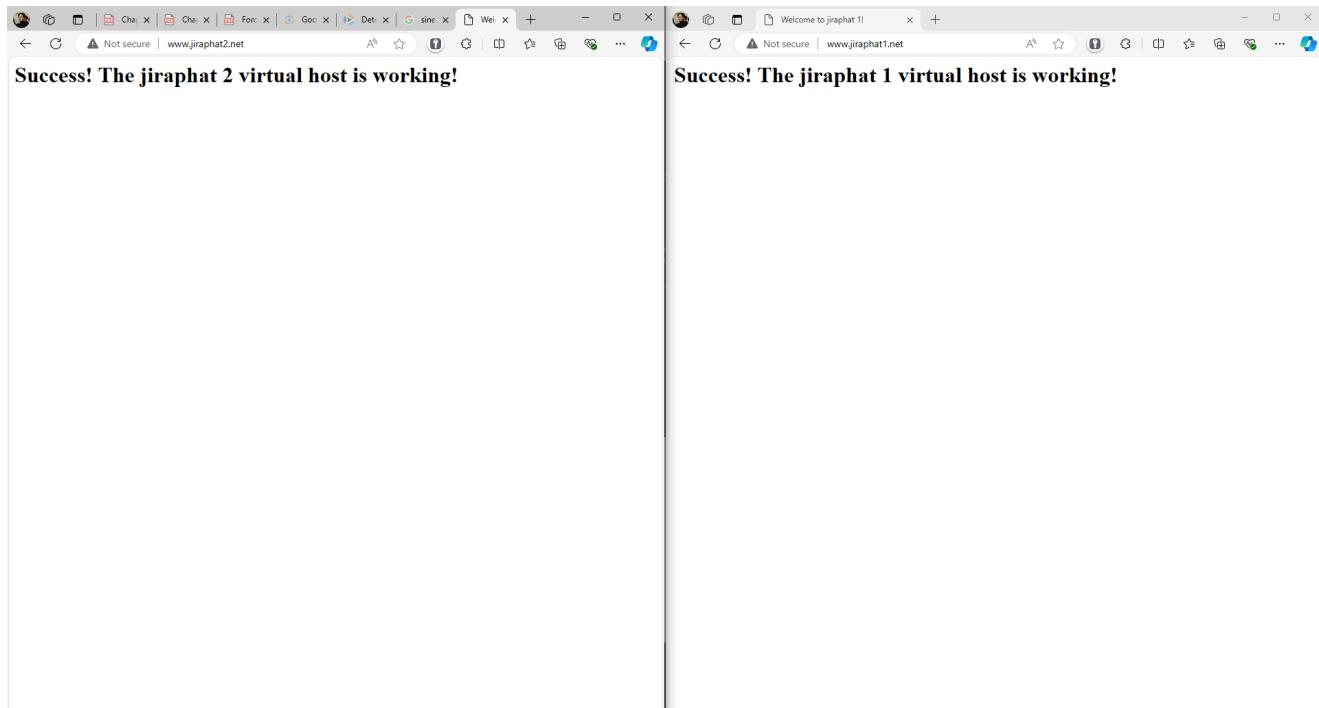
```
white@white:~$ sudo cp /etc/apache2/sites-available/000-default.conf /etc/apache2/sites-available/jiraphat_1.conf
white@white:~$ sudo nano /etc/apache2/sites-available/jiraphat_1.conf
white@white:~$ sudo cp /etc/apache2/sites-available/jiraphat_1.conf /etc/apache2/sites-available/jiraphat_2.conf
white@white:~$ sudo nano /etc/apache2/sites-available/jiraphat_2.conf
white@white:~$
```

```
sudo a2ensite jiraphat_1.conf
sudo a2ensite jiraphat_2.conf
sudo a2dissite 000-default.conf
sudo apache2ctl configtest
sudo systemctl restart apache2
sudo systemctl status apache2
```

```
white@white:~$ sudo a2ensite jiraphat_1.conf
sudo a2ensite jiraphat_2.conf
Enabling site jiraphat_1.
To activate the new configuration, you need to run:
    systemctl reload apache2
Enabling site jiraphat_2.
To activate the new configuration, you need to run:
    systemctl reload apache2
white@white:~$ sudo apache2ctl configtest
AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 127.0.1.1. Set t
he 'ServerName' directive globally to suppress this message
Syntax OK
white@white:~$ sudo systemctl restart apache2
white@white:~$ sudo systemctl status apache2
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/usr/lib/systemd/system/apache2.service; enabled; preset: enabled)
   Active: active (running) since Mon 2024-07-08 05:57:57 UTC; 29s ago
     Docs: https://httpd.apache.org/docs/2.4/
  Process: 2035 ExecStart=/usr/sbin/apachectl start (code=exited, status=0/SUCCESS)
 Main PID: 2039 (apache2)
    Tasks: 6 (limit: 2276)
   Memory: 10.8M (peak: 11.0M)
      CPU: 48ms
     CGroup: /system.slice/apache2.service
             ├─2039 /usr/sbin/apache2 -k start
             ├─2041 /usr/sbin/apache2 -k start
             ├─2042 /usr/sbin/apache2 -k start
             ├─2043 /usr/sbin/apache2 -k start
             ├─2044 /usr/sbin/apache2 -k start
             └─2045 /usr/sbin/apache2 -k start
```

<http://www.jiraphat1.net/>

<http://www.jiraphat2.net/>



on windows (host)

```
MINGW64:/c/Windows/System32/drivers/etc
# This is a sample HOSTS file used by Microsoft TCP/IP for Windows.
#
# This file contains the mappings of IP addresses to host names. Each
# entry should be kept on an individual line. The IP address should
# be placed in the first column followed by the corresponding host name.
# The IP address and the host name should be separated by at least one
# space.
#
# Additionally, comments (such as these) may be inserted on individual
# lines or following the machine name denoted by a '#' symbol.
#
# For example:
#
#      102.54.94.97    rhino.acme.com        # source server
#      38.25.63.10    x.acme.com            # x client host
#
# localhost name resolution is handled within DNS itself.
#      127.0.0.1    localhost
#      ::1          localhost
192.168.56.101 www.jiraphat1.net www.jiraphat2.net
RMUTL+jiraphat_ja64@DESKTOP-70SDOCE MINGW64 /c/Windows/System32/drivers/etc
$
```

Step 7

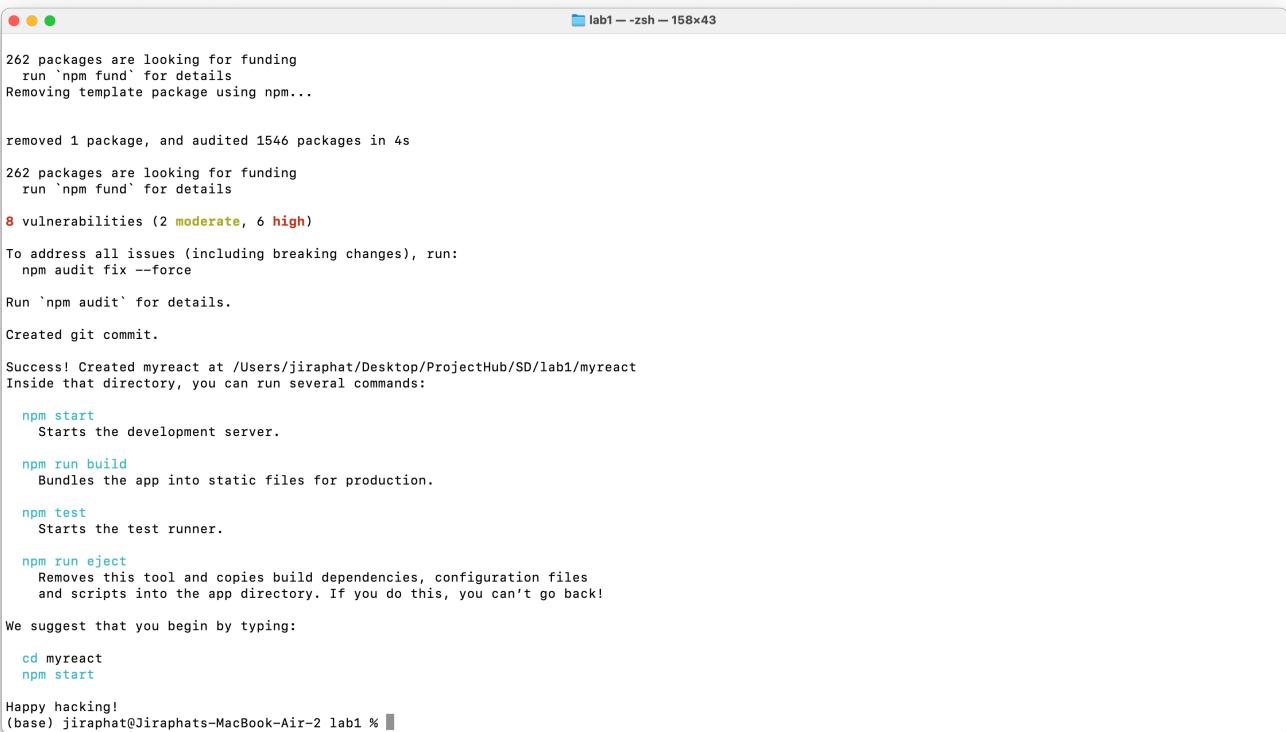
```
cd /Users/jiraphat/Desktop/ProjectHub/SD/lab1
npm install -g create-react-app
```

```
(base) jiraphat@Jiraphats-MacBook-Air-2 ~ % cd /Users/jiraphat/Desktop/ProjectHub/SD/lab1
(base) jiraphat@Jiraphats-MacBook-Air-2 lab1 % npm install -g create-react-app
npm warn deprecated inflight@1.0.6: This module is not supported, and leaks memory. Do not use it. Check out lru-cache if you want a good and tested way to co
alesce async requests by a key value, which is much more comprehensive and powerful.
npm warn deprecated fstream-ignore@1.0.5: This package is no longer supported.
npm warn deprecated uid-number@0.0.6: This package is no longer supported.
npm warn deprecated rimraf@2.7.1: Rimraf versions prior to v4 are no longer supported
npm warn deprecated glob@7.2.3: Glob versions prior to v9 are no longer supported
npm warn deprecated fstream@1.0.12: This package is no longer supported.
npm warn deprecated tar@2.2.2: This version of tar is no longer supported, and will not receive security updates. Please upgrade asap.

changed 64 packages in 7s

4 packages are looking for funding
  run `npm fund` for details
```

```
npx create-react-app myreact
```



```
262 packages are looking for funding
  run `npm fund` for details
Removing template package using npm...

removed 1 package, and audited 1546 packages in 4s

262 packages are looking for funding
  run `npm fund` for details

8 vulnerabilities (2 moderate, 6 high)

To address all issues (including breaking changes), run:
  npm audit fix --force

Run `npm audit` for details.

Created git commit.

Success! Created myreact at /Users/jiraphat/Desktop/ProjectHub/SD/lab1/myreact
Inside that directory, you can run several commands:

  npm start
    Starts the development server.

  npm run build
    Bundles the app into static files for production.

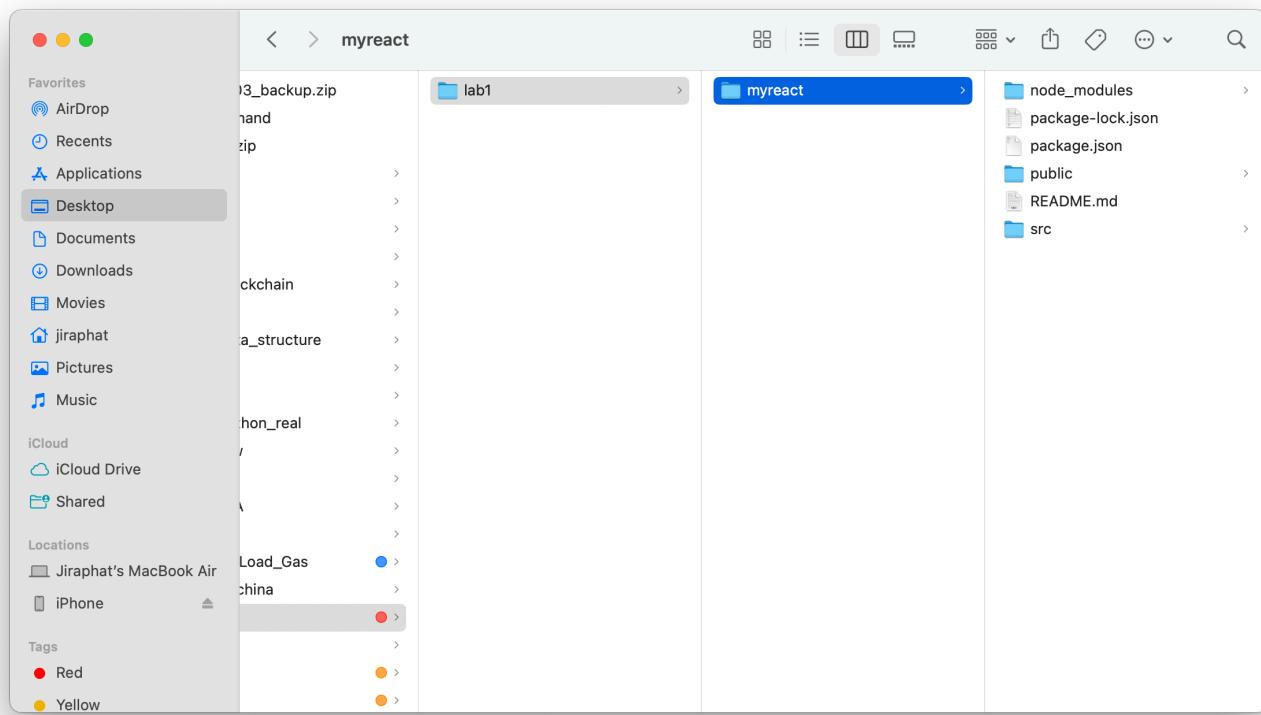
  npm test
    Starts the test runner.

  npm run eject
    Removes this tool and copies build dependencies, configuration files
    and scripts into the app directory. If you do this, you can't go back!

We suggest that you begin by typing:

  cd myreact
  npm start

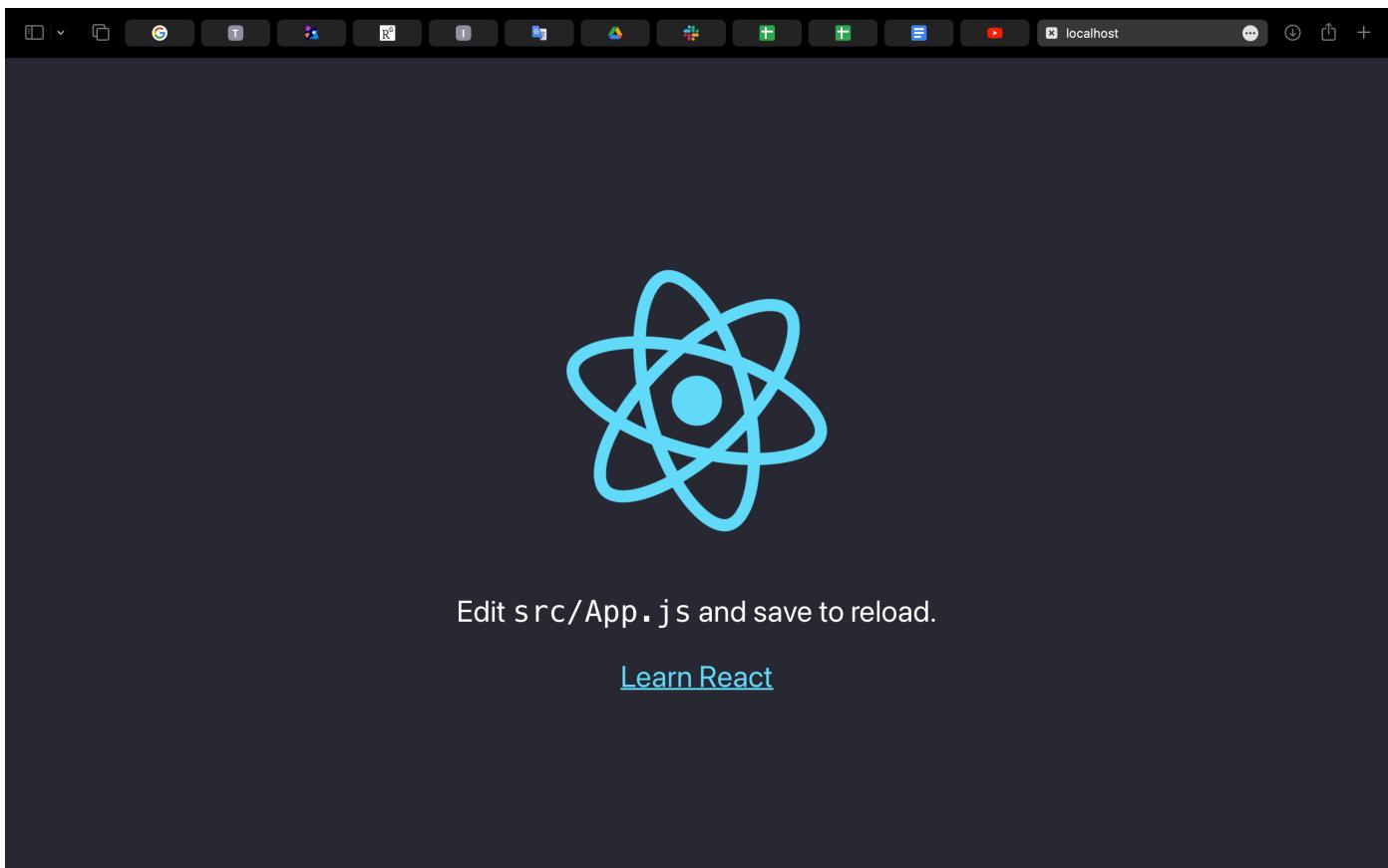
Happy hacking!
(base) jiraphat@Jiraphats-MacBook-Air-2 lab1 %
```



```
cd myreact
npm start
```

```
myreact — node < npm start __CFBundleIdentifier=com.apple.Terminal TMPDIR=/var/folders/pt/c26my_l534j4kpr5xt43t72h0000gn/T/ — 158x43
Compiled successfully!
You can now view myreact in the browser.
Local: http://localhost:3000
On Your Network: http://172.20.10.6:3000
Note that the development build is not optimized.
To create a production build, use npm run build.
webpack compiled successfully
One of your dependencies, babel-preset-react-app, is importing the
"@babel/plugin-proposal-private-property-in-object" package without
declaring it in its dependencies. This is currently working because
"@babel/plugin-proposal-private-property-in-object" is already in your
node_modules folder for unrelated reasons, but it may break at any time.

babel-preset-react-app is part of the create-react-app project, which
is not maintained anymore. It is thus unlikely that this bug will
ever be fixed. Add "@babel/plugin-proposal-private-property-in-object" to
your devDependencies to work around this error. This will make this message
go away.
```

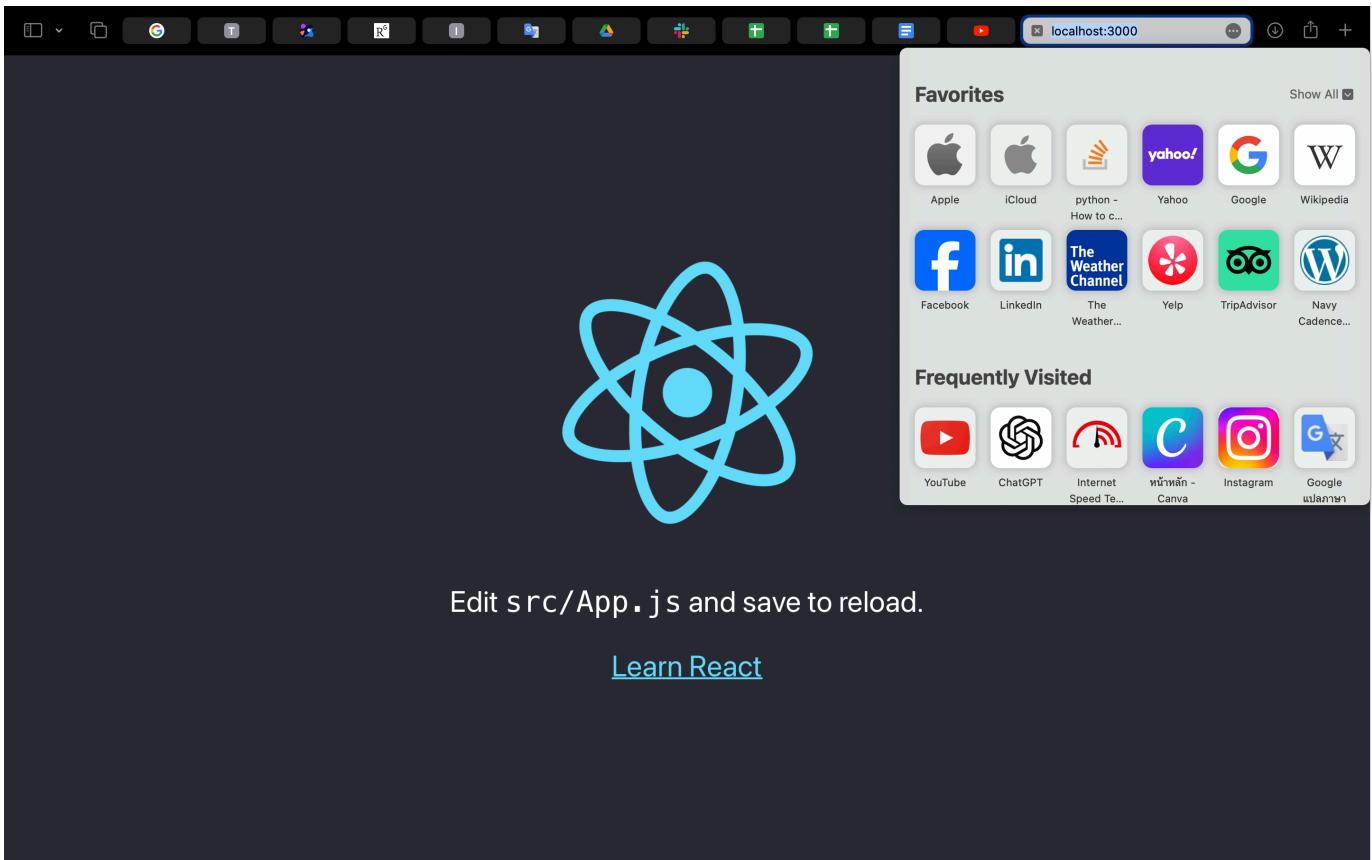


ตั้งค่าการทำงานบน port 4000

```
version: "0.1.0",
private: true,
dependencies: {
  "@testing-library/jest-dom": "^5.17.0",
  "@testing-library/react": "^13.4.0",
  "@testing-library/user-event": "^13.5.0",
  "react": "^18.3.1",
  "react-dom": "^18.3.1",
  "react-scripts": "5.0.1",
  "web-vitals": "2.1.4"
},
scripts: {
  "start": "set PORT=4000 && react-scripts start",
  "build": "react-scripts build",
  "test": "react-scripts test",
  "eject": "react-scripts eject"
},
eslintConfig: {
  "extends": [
    "react-app",
    "react-app/jest"
  ]
},
browserslist: {
  "production": [
    ">0.2%",
    "not dead",
    "not op_mini all"
  ]
}
```

Restart Visual Studio Code to apply the latest update.

Update Now Later Release Notes



การ build เพื่อ deploy

```
npm run build
```

```
webpack compiled successfully
^C
(base) jiraphat@Jiraphats-MacBook-Air-2 myreact % npm run build

> myreact@0.1.0 build
> react-scripts build

Creating an optimized production build...
One of your dependencies, babel-preset-react-app, is importing the
"babel/plugin-proposal-private-property-in-object" package without
declaring it in its dependencies. This is currently working because
"babel/plugin-proposal-private-property-in-object" is already in your
node_modules folder for unrelated reasons, but it may break at any time.

babel-preset-react-app is part of the create-react-app project, which
is not maintained anymore. It is thus unlikely that this bug will
ever be fixed. Add "babel/plugin-proposal-private-property-in-object" to
your devDependencies to work around this error. This will make this message
go away.

Compiled successfully.

File sizes after gzip:

 46.56 kB  build/static/js/main.a861eaa4.js
 1.78 kB   build/static/js/453.fc89fcfa.chunk.js
 515 B     build/static/css/main.f855eebc.css

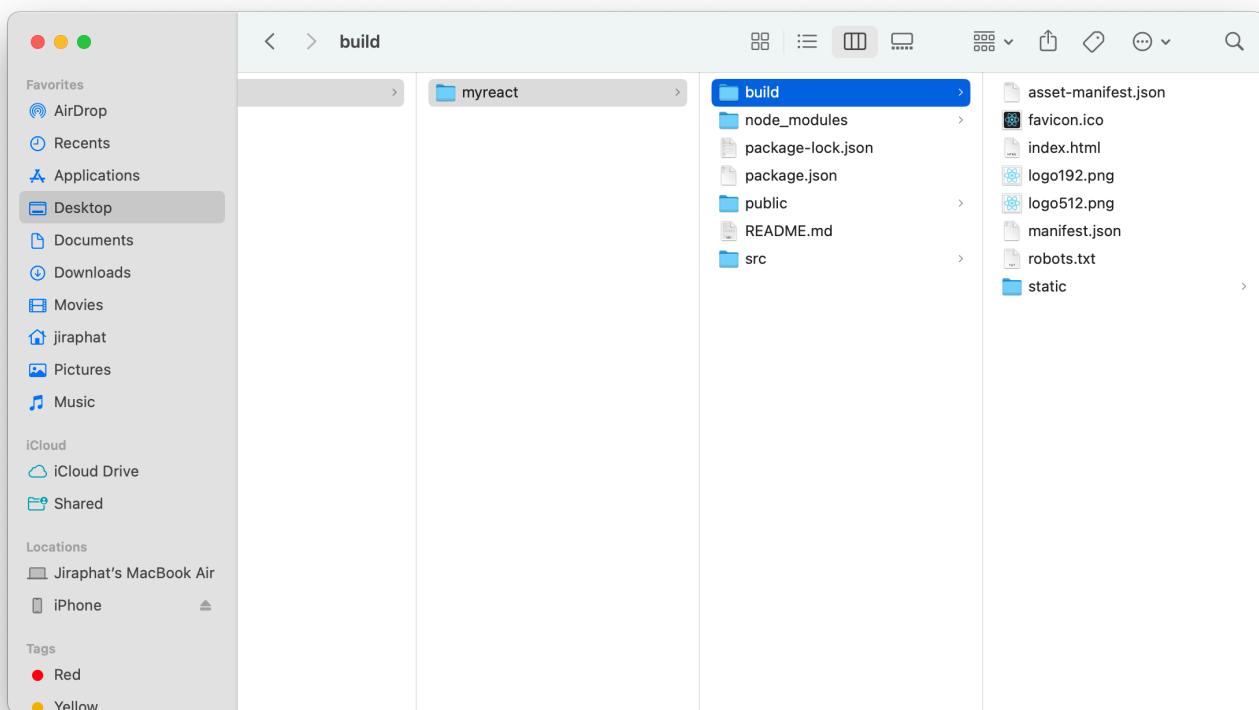
The project was built assuming it is hosted at /.
You can control this with the homepage field in your package.json.

The build folder is ready to be deployed.
You may serve it with a static server:

  npm install -g serve
  serve -s build

Find out more about deployment here:
  https://cra.link/deployment

(base) jiraphat@Jiraphats-MacBook-Air-2 myreact %
```



Step 8

clone project

```
[/Users/jiraphat/Desktop/ProjectHub/SD/backend]
mkdir backend && cd backend
git clone https://github.com/tkeatkaew/react-nodejs-example.git
```

```
(base) jiraphat@Jiraphats-MacBook-Air-2 SD % mkdir backend
(base) jiraphat@Jiraphats-MacBook-Air-2 SD % cd backend
(base) jiraphat@Jiraphats-MacBook-Air-2 backend % pwd
/Users/jiraphat/Desktop/ProjectHub/SD/backend
(base) jiraphat@Jiraphats-MacBook-Air-2 backend % git clone https://github.com/tkeatkaew/react-nodejs-example.git

Cloning into 'react-nodejs-example'...
remote: Enumerating objects: 5861, done.
remote: Counting objects: 100% (595/595), done.
remote: Compressing objects: 100% (504/504), done.
remote: Total 5861 (delta 112), reused 91 (delta 91), pack-reused 5266
Receiving objects: 100% (5861/5861), 6.13 MiB | 1.51 MiB/s, done.
Resolving deltas: 100% (1184/1184), done.
(base) jiraphat@Jiraphats-MacBook-Air-2 backend % ls
react-nodejs-example
(base) jiraphat@Jiraphats-MacBook-Air-2 backend % cd react-nodejs-example
(base) jiraphat@Jiraphats-MacBook-Air-2 react-nodejs-example % ls
Dockerfile      api          my-app
(base) jiraphat@Jiraphats-MacBook-Air-2 react-nodejs-example % cd api
(base) jiraphat@Jiraphats-MacBook-Air-2 api %
```

แก้ไข port ทั้งสองที่ให้เป็น 3001

The screenshot shows a code editor with two tabs open: `package.json` and `server.js`.

package.json:

```

1  You, 31 seconds ago | 2 authors (bbachi and one other)
2  react-nodejs-example",
3  "1.0.0",
4  "n": "example project react with nodejs",
5  erver.js",
6  ▷ Debug
7  {
8    "node server.bundle.js",
9    "webpack",
10   nodemon ./server.js localhost 3001"
11  ":
12  "git",
13  ;it+https://github.com/bbachi/react-nodejs-e
14  'Bhargav Bachina",
15  "ISC",
16
17  https://github.com/bbachi/react-nodejs-examp
18  : "https://github.com/bbachi/react-nodejs-ex
21  les": {
22  '^4.17.1",
23  oxy-middleware": "^1.0.4"

```

server.js:

```

1  You, 12 seconds ago | 2 authors (bbachi and one other)
2  const express = require('express');
3  const path = require('path');
4  const app = express(),
5  bodyParser = require("body-parser");
6  port = 3001;
7
8  // place holder for the data
9  const users = [
10  {
11    firstName: "first1",
12    lastName: "last1",
13    email: "abc@gmail.com"
14  },
15  {
16    firstName: "first2",
17    lastName: "last2",
18    email: "abc@gmail.com"
19  },
20  {
21    firstName: "first3",
22    lastName: "last3",
23    email: "abc@gmail.com"
24  };

```

```

npm install
npm audit fix --force
npm run dev

```

```

(base) jiraphat@Jiraphats-MacBook-Air-2 api % npm install
npm warn deprecated inflight@1.0.6: This module is not supported, and leaks memory. Do not use it. Check out lru-cache if you want a good and tested way to co
alesce async requests by a key value, which is much more comprehensive and powerful.
npm warn deprecated rimraf@2.7.1: Rimraf versions prior to v4 are no longer supported
npm warn deprecated rimraf@2.7.1: Rimraf versions prior to v4 are no longer supported
npm warn deprecated rimraf@2.7.1: Rimraf versions prior to v4 are no longer supported
npm warn deprecated rimraf@3.0.2: Rimraf versions prior to v4 are no longer supported
npm warn deprecated glob@7.2.3: Glob versions prior to v9 are no longer supported
npm warn deprecated fs-write-stream-atomic@0.1.10: This package is no longer supported.
npm warn deprecated copy-concurrently@1.0.5: This package is no longer supported.
npm warn deprecated move-concurrently@1.0.1: This package is no longer supported.
npm warn deprecated figgy-pudding@3.5.2: This module is no longer supported.
npm warn deprecated source-map-url@0.4.1: See https://github.com/lydell/source-map-url#deprecated
npm warn deprecated resolve-url@0.2.1: https://github.com/lydell/resolve-url#deprecated
npm warn deprecated urix@0.1.0: Please see https://github.com/lydell/urix#deprecated
npm warn deprecated source-map-resolve@0.5.3: See https://github.com/lydell/source-map-resolve#deprecated
npm warn deprecated fsevents@1.2.13: The v1 package contains DANGEROUS / INSECURE binaries. Upgrade to safe fsevents v2
npm warn deprecated chokidar@2.1.8: Chokidar 2 does not receive security updates since 2019. Upgrade to chokidar 3 with 15x fewer dependencies

added 713 packages, and audited 714 packages in 1m

38 packages are looking for funding
  run `npm fund` for details

20 vulnerabilities (3 moderate, 17 high)

To address issues that do not require attention, run:
  npm audit fix

To address all issues (including breaking changes), run:
  npm audit fix --force

Run `npm audit` for details.
(base) jiraphat@Jiraphats-MacBook-Air-2 api % npm run dev

> react-nodejs-example@1.0.0 dev
> nodemon ./server.js localhost 3001

[nodemon] 2.0.22
[nodemon] to restart at any time, enter `rs`
[nodemon] watching path(s): ***!
[nodemon] watching extensions: js,mjs,json
[nodemon] starting `node ./server.js localhost 3001`

```

testing

```
http://localhost:3001/api/users
```



```
[{"firstName": "first1", "lastName": "last1", "email": "abc@gmail.com"}, {"firstName": "first2", "lastName": "last2", "email": "abc@gmail.com"}, {"firstName": "first3", "lastName": "last3", "email": "abc@gmail.com"}]
```

ຕ້ອໄປ cd ໃປໃນ folder backend\react-nodejs-example\my-app

ແກ້ໄຂ port

React Port : 4000

API Port : 3001

The screenshot shows the Visual Studio Code interface with the following details:

- Explorer View:** Shows the project structure with files like server.js, package.json, README.md, and various configuration files.
- Editor View:** Displays the package.json file content. Key parts include:
 - dependencies:** A list of packages and their versions, including react-scripts (3.4.1), react (16.13.1), react-dom (16.13.1), react-bootstrap (1.0.1), and testing-library/user-event (7.2.1).
 - scripts:** A section defining build commands: "start": "SET PORT=4000 && react-scripts start", "build": "react-scripts build", "test": "react-scripts test", and "eject": "react-scripts eject".
 - proxy:** A proxy URL set to "http://localhost:3001".
 - eslintConfig:** Configuration for ESLint, extending the react-app rule.
 - browserslist:** Production browser support rules: '>0.2%', 'not dead', 'not op_mini all'.
 - development:** Development browser support rules: 'last 1 chrome version', 'last 1 firefox version', and 'last 1 safari version'.
- Status Bar:** Shows code spaces (2), encoding (UTF-8), line endings (LF), JSON, Auto-Detect Project, Go Live, Spell, and Prettier.
- Notification Bar:** A message from Microsoft encourages updating VS Code, with options to "Update Now", "Later", and "Release Notes".

สำหรับ mac

```
export NODE_OPTIONS=--openssl-legacy-provider
```

และทำการ ติดตั้งและทำงาน

```
npm install  
npm start
```

ต้องทำงานทั้ง api ที่เป็น back-end และ my app ที่เป็น font-end

```

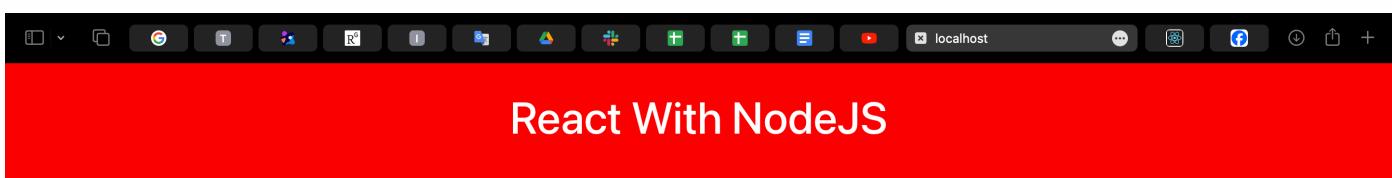
./src/components/DisplayBoard.js
Line 5:11: 'headerStyle' is assigned a value but never used no-unused-vars
Search for the keywords to learn more about each warning.
To ignore, add // eslint-disable-next-line to the line before.

^C
(base) jiraphat@Jiraphats-MacBook-Air-2 api % npm start
> react-nodejs-example@1.0.0 start
> node server.bundle.js

Server listening on the port::3080
^C
(base) jiraphat@Jiraphats-MacBook-Air-2 api % npm run dev
> react-nodejs-example@1.0.0 dev
> nodemon ./server.js localhost 3001

[nodemon] 2.0.22
[nodemon] to restart at any time, enter `rs`
[nodemon] watching path(s): ***!
[nodemon] watching extensions: js,mjs,json
[nodemon] starting `node ./server.js localhost 3001`
Server listening on the port::3001
api/users called!
api/users called!
api/users called!
api/users called!

```



Create User

First Name	Last Name
<input type="text" value="First Name"/>	<input type="text" value="Last Name"/>
Email	
<input type="text" value="Email"/>	
<input type="button" value="Create"/>	

Users Created

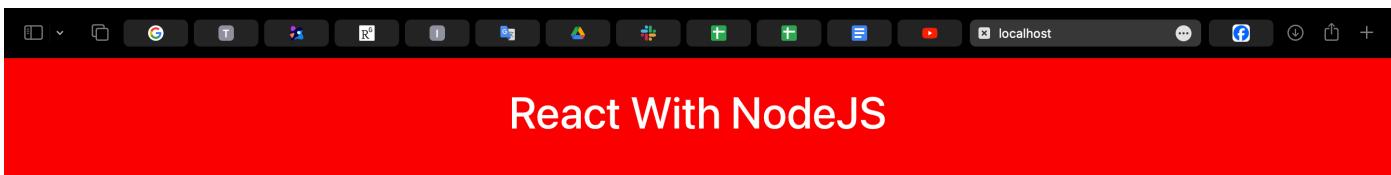
3

[Get all Users](#)

Users

User Id	Firstname	Lastname	Email
1	first1	last1	abc@gmail.com
2	first2	last2	abc@gmail.com
3	first3	last3	abc@gmail.com

ทดสอบเพิ่ม user ชื่อ testfirst



Create User

First Name

Last Name

Email

Users Created

4

Users

User Id	Firstname	Lastname	Email
1	first1	last1	abc@gmail.com
2	first2	last2	abc@gmail.com
3	first3	last3	abc@gmail.com
4	testfirsrt	testlast	testfirstemail@gmail.com

สร้างไฟล์ใน components/Movies.js และวาง code ตัวอย่างเข้าไป

```
import React from 'react'

export const Movies = ({movies}) => {
  console.log('movies length:::', movies.length)
  if (movies.length === 0) return null

  const MovieRow = (movie, index) => {
    return(
      <tr key={index} className={index%2 === 0?'odd':'even'}>
        <td>{index + 1}</td>
        <td>{movie.title}</td>
        <td>{movie.genre}</td>
        <td>{movie.director}</td>
        <td>{movie.release_year}</td>
      </tr>
    )
  }

  const movieTable = movies.map((movie, index) => MovieRow(movie, index))

  return(
    <div className="container">
      <h2>Movies</h2>
      <table className="table table-bordered">
        <thead>
          <tr>
            <th>Movie Id</th>
          </tr>
        </thead>
        <tbody>
          {movieTable}
        </tbody>
      </table>
    </div>
  )
}
```

services/MovieService.js

The screenshot shows a Mac OS X desktop with Visual Studio Code open. The title bar indicates the file is titled "react-nodejs-example". The left sidebar displays the project structure under "EXPLORER". The main editor pane shows a file named "MovieService.js" with the following code:

```
1  export async function getAllMovies() {
2
3    try{
4      //const response = await fetch('/api/users');
5      const response = await fetch('http://10.2.6.100:3002/api/movie/all');
6      //const response = await fetch('/api/movie/all');
7      return await response.json();
8    }catch(error) {
9      return [];
10   }
11 }
12
13
14 export async function createMovie(data) {
15   const response = await fetch('/api/user` , {
16     method: 'POST',
17     headers: {'Content-Type': 'application/json'},
18     body: JSON.stringify({user: data})
19   })
20   return await response.json();
21 }
```

A tooltip for the parameter "data" is visible, showing the type "(parameter) data: any". A status bar at the bottom of the screen includes links for "Update Now", "Later", and "Release Notes".