

CLOUD COMPUTING

JOBSHEET 12

CI/CD



Oleh:

Rajendra Rakha Arya Prabaswara

(1941720080)

TI – 3H

PROGRAM STUDI D4 TEKNIK INFORMATIKA

JURUSAN TEKNOLOGI INFORMASI

POLITEKNIK NEGERI MALANG

2021

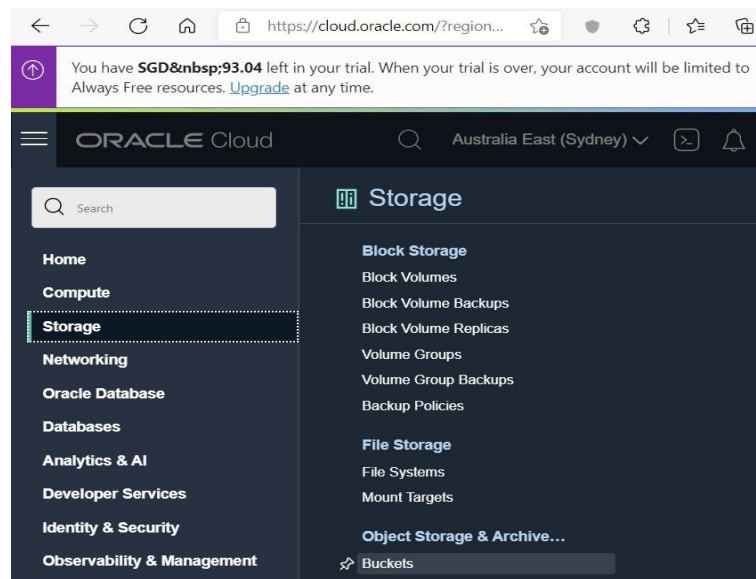
Praktikum

1. Hosting Static Website Menggunakan CI/CD Pipeline

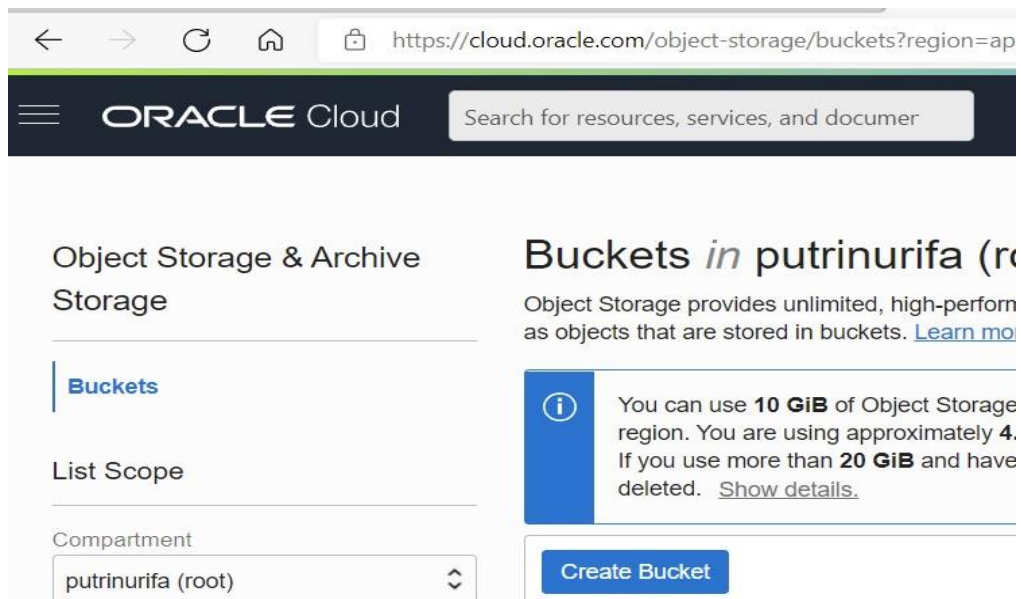
Pada praktikum yang pertama akan dilakukan hosting static website di layanan Object Storage dari Oracle menggunakan GitHub Actions.

1.1 Menyiapkan Bucket Object Storage

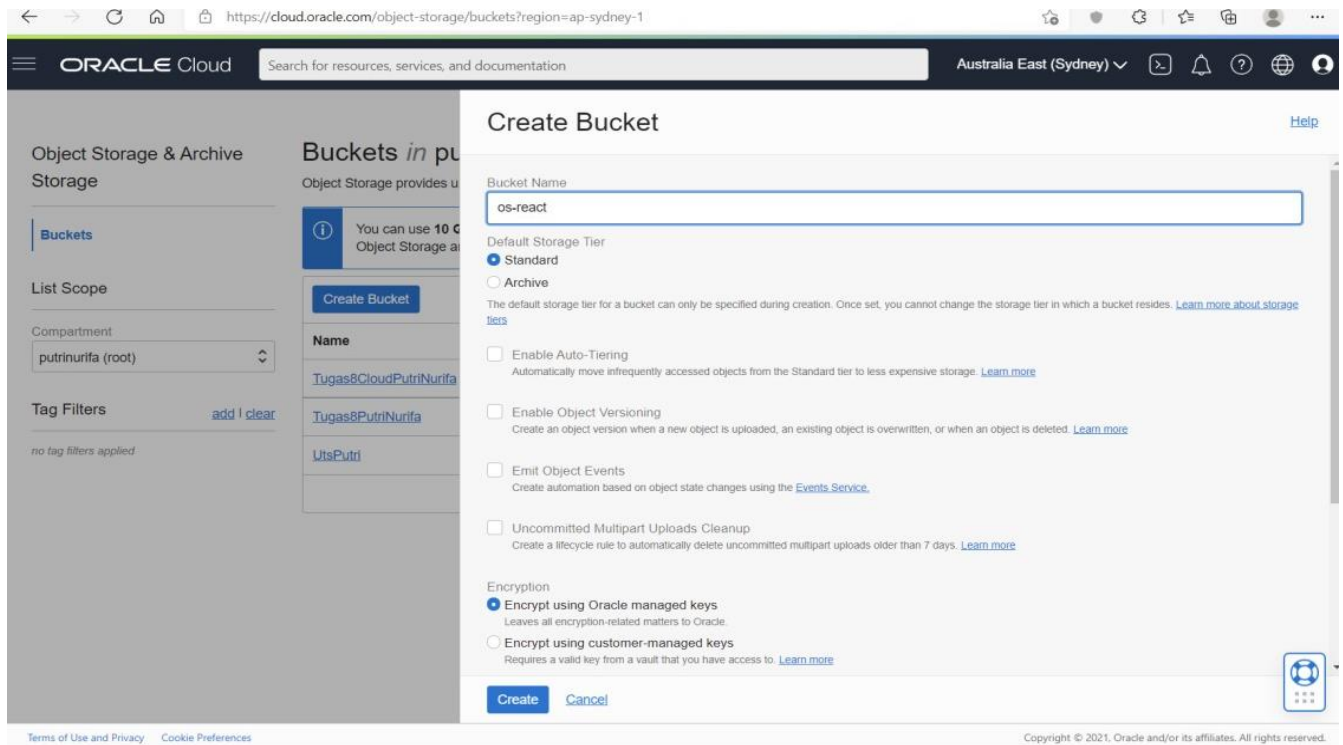
- Masuk ke akun <https://cloud.oracle.com> dan navigasi ke menu Storage -> Buckets



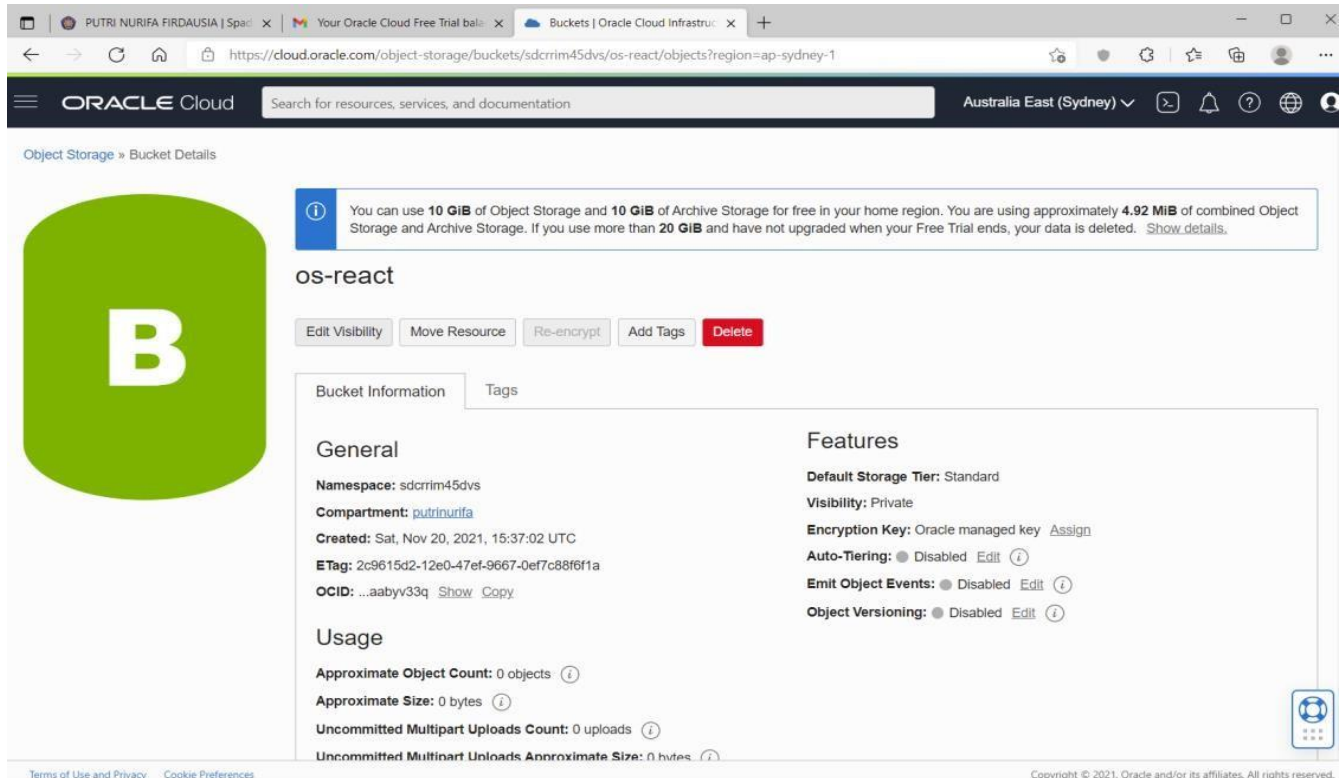
- Tekan tombol Create Bucket,



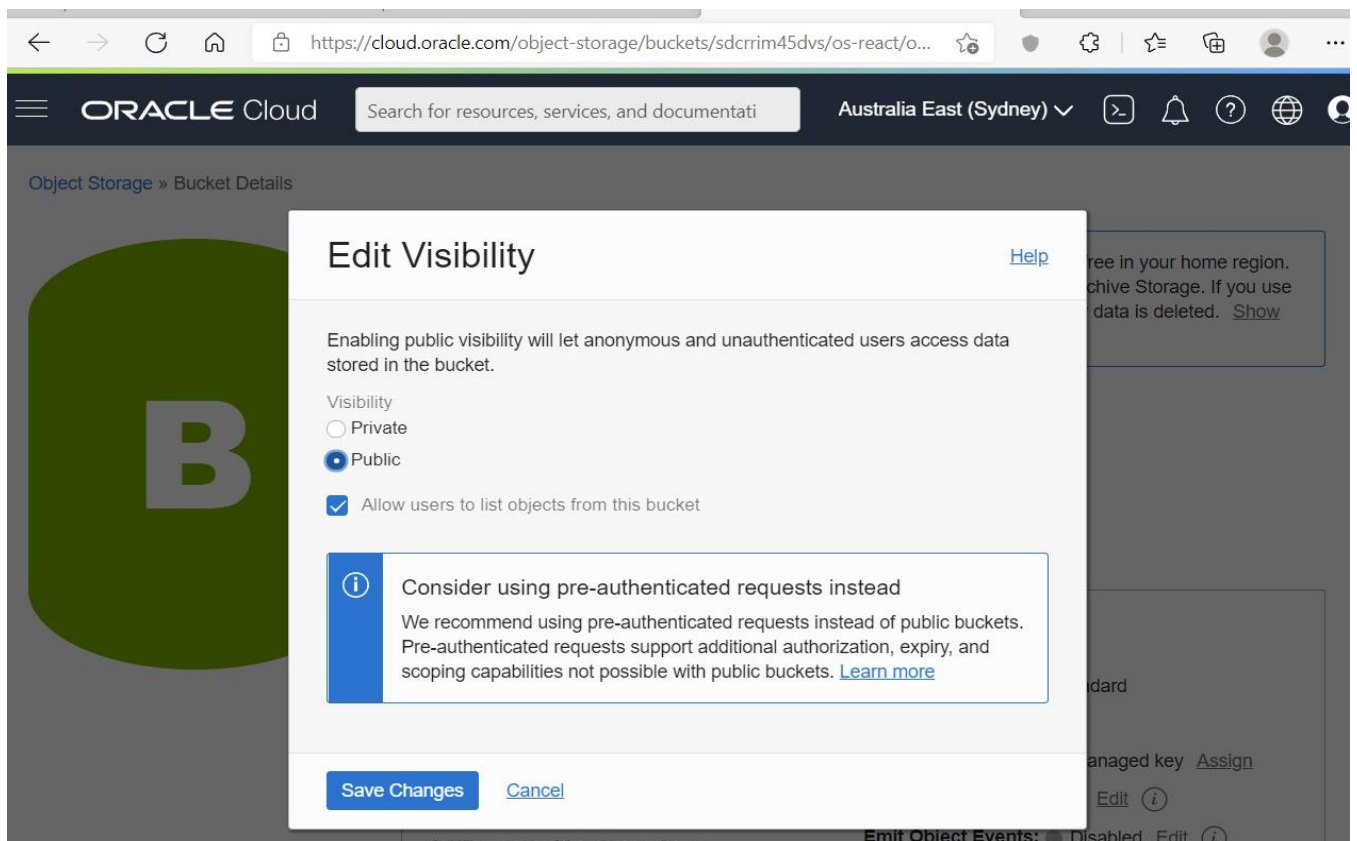
dan lengkapi Bucket Name dengan os-react. Biarkan nilai lainnya dengan nilai default kemudian tekan tombol Create.



c. Ubah visibility bucket dengan menekan tombol Edit Visibility,



dan ubah menjadi public. Tekan tombol Save Changes untuk menyimpan perubahan.



- d. Pada dashboard bucket, perhatikan nilai Namespace. Nilai ini nanti akan digunakan untuk pengaturan deployment.

Object Storage provides unlimited, high-performance, durable, and secure data storage. Data is uploaded as objects that are stored in buckets. [Learn more](#)

Info You can use **10 GiB** of Object Storage and **10 GiB** of Archive Storage for free in your home region. You are using approximately **4.92 MiB** of combined Object Storage and Archive Storage. If you use more than **20 GiB** and have not upgraded when your Free Trial ends, your data is deleted. [Show details](#)

[Create Bucket](#)

Name	Default Storage Tier	Visibility	Created
os-react	Standard	Public	Sat, Nov 20, 2021, 15:37:02 UTC

1.2 Menyiapkan Project

- a. Pada praktikum ini, akan digunakan React sehingga harus diinstall terlebih dahulu Node. Untuk langkah instalasi Node silahkan gunakan tautan berikut sebagai referensi <https://nodejs.org/en/download/> atau <https://nodejs.org/en/download/package-manager/>

Manual Installation

Langkah 1

Remove the old PPA if it exists

This step is only required if you previously used Chris Lea's Node.js PPA.

```
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  binutils binutils-common binutils-x86-64-linux-gnu cpp cpp-9 dpkg-dev fakeroot g++
  g++-9 gcc gcc-9 gcc-9-base libalgorithm-diff-perl libalgorithm-diff-xs-perl
  libalgorithm-merge-perl libasan5 libatomic1 libbinutils libc-dev-bin libc6-dev
  libcc1-0 libcrypt-dev libctf-nobfd0 libctf0 libdpkg-perl libfakeroot
  libfile-fcntllock-perl libgcc-9-dev libgomp1 libisl12 libitm1 liblsan0 libmpc3
  libquadmath0 libstdc++-9-dev libtsan0 libubsan1 linux-libc-dev make manpages-dev
Suggested packages:
  binutils-doc cpp-doc gcc-9-locales debian-keyring g++-multilib g++-9-multilib
  gcc-9-doc gcc-multilib autoconf automake libtool flex bison gdb gcc-doc gcc-9-multilib
  glibc-doc bzip libstdc++-9-doc make-doc
The following NEW packages will be installed:
  binutils binutils-common binutils-x86-64-linux-gnu build-essential cpp cpp-9 dpkg-dev
  fakeroot g++ g++-9 gcc gcc-9 gcc-9-base libalgorithm-diff-perl
```

```
me/ubuntu
asia:/home/ubuntu# sudo add-apt-repository -y -r ppa:chris-lea/node.js
asia:/home/ubuntu# sudo rm -f /etc/apt/sources.list.d/chris-lea-node.js-*.list
asia:/home/ubuntu# sudo rm -f /etc/apt/sources.list.d/chris-lea-node.js-*.list.save
asia:/home/ubuntu#
```

Langkah 2

Add the NodeSource package signing key

The key ID is 9FD3B784BC1C6FC31A8A0A1C1655A0AB68576280.

```
asia:/home/ubuntu# KEYRING=/usr/share/keyrings/nodesource.gpg
asia:/home/ubuntu# curl -fsSL https://deb.nodesource.com/gpgkey/nodesource.gpg
$KEYRING" >/dev/null
asia:/home/ubuntu# gpg --no-default-keyring --keyring "$KEYRING" --list-keys
```

Langkah 3

Add the desired NodeSource repository

```
buntu
a:/home/ubuntu# VERSION=node 8.x
a:/home/ubuntu# KEYRING=/usr/share/keyrings/nodesource.gpg
a:/home/ubuntu# DISTRO="$(lsb_release -s -c)"
a:/home/ubuntu# echo "deb [signed-by=$KEYRING] https://deb.nodesource.com/$
```


Langkah 4

Update package lists and install Node.js

```
a:~$ curl -fsSL https://deb.nodesource.com/setup_17.x |
> sudo -E bash -

## Installing the NodeSource Node.js 17.x repo...

## Populating apt-get cache...

# apt-get update
Hit:1 https://download.docker.com/linux/ubuntu focal InRelease
Get:2 http://security.ubuntu.com/ubuntu focal-security InRelease [114 kB]
Hit:3 http://ap-sydney-1-ad-1.clouds.archive.ubuntu.com/ubuntu focal InRelease
Get:4 http://ap-sydney-1-ad-1.clouds.archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]
Get:5 http://ap-sydney-1-ad-1.clouds.archive.ubuntu.com/ubuntu focal-backports InRelease [101 kB]
Get:6 http://ap-sydney-1-ad-1.clouds.archive.ubuntu.com/ubuntu focal-updates/main i386 Packages [563 kB]
Get:7 http://ap-sydney-1-ad-1.clouds.archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [1344
kB]
Get:8 http://ap-sydney-1-ad-1.clouds.archive.ubuntu.com/ubuntu focal-updates/universe i386 Packages [64
7 kB]
Get:9 http://ap-sydney-1-ad-1.clouds.archive.ubuntu.com/ubuntu focal-updates/universe amd64 Packages [8
76 kB]
Fetched 3759 kB in 6s (587 kB/s)
Reading package lists... Done
a:~$ sudo apt-get install -y nodejs
```

```
a:~$ sudo apt install nodejs

Reading package lists... Done
Building dependency tree
Reading state information... Done
nodejs is already the newest version (17.1.0-deb-1nodesource1).
0 upgraded, 0 newly installed, 0 to remove and 16 not upgraded.
```

```
a:/home/ubuntu# node -v
a:/home/ubuntu#
```

```
Select Command Prompt
Microsoft Windows [Version 10.0.22000.318]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Lenovo>node -v
v14.15.4

C:\Users\Lenovo>
```

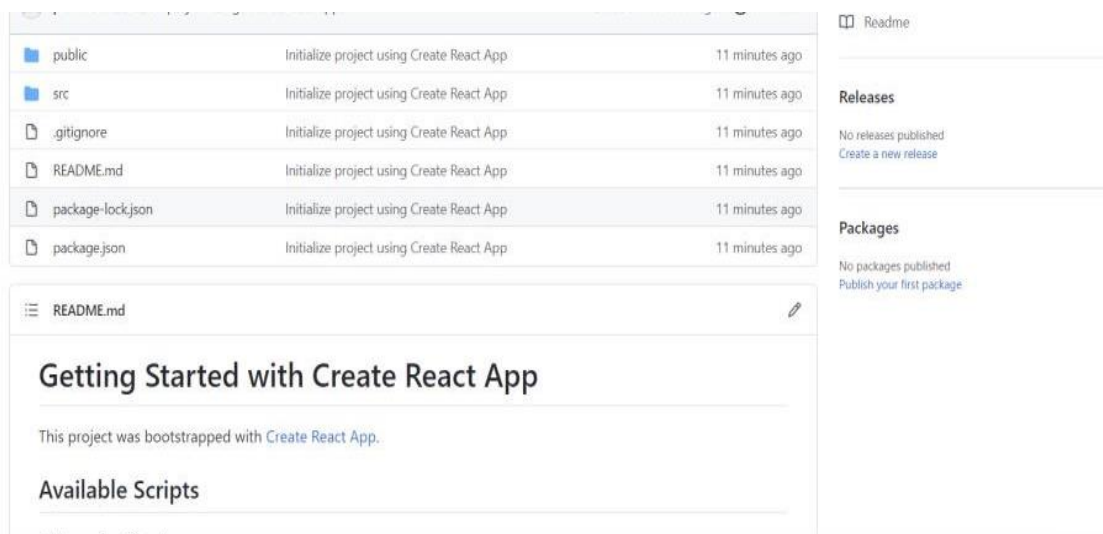
Setelah Node terinstall, silahkan lakukan Langkah generate project dengan menggunakan perintah berikut.

```
npx create-react-app os-react
```

```
>npx create-react-app os-react
```

```
Installing packages. This might take a couple of minutes.  
Installing react, react-dom, and react-scripts with cra-template...  
  
added 1901 packages, and audited 1902 packages in 2m  
  
153 packages are looking for funding  
  run `npm fund` for details  
  
27 vulnerabilities (16 moderate, 9 high, 2 critical)  
  
To address all issues, run:  
  npm audit fix  
  
Run `npm audit` for details.  
  
Initialized a git repository.  
  
Installing template dependencies using npm...  
  
added 57 packages, and audited 1959 packages in 8s  
  
154 packages are looking for funding  
  run `npm fund` for details  
  
27 vulnerabilities (16 moderate, 9 high, 2 critical)
```

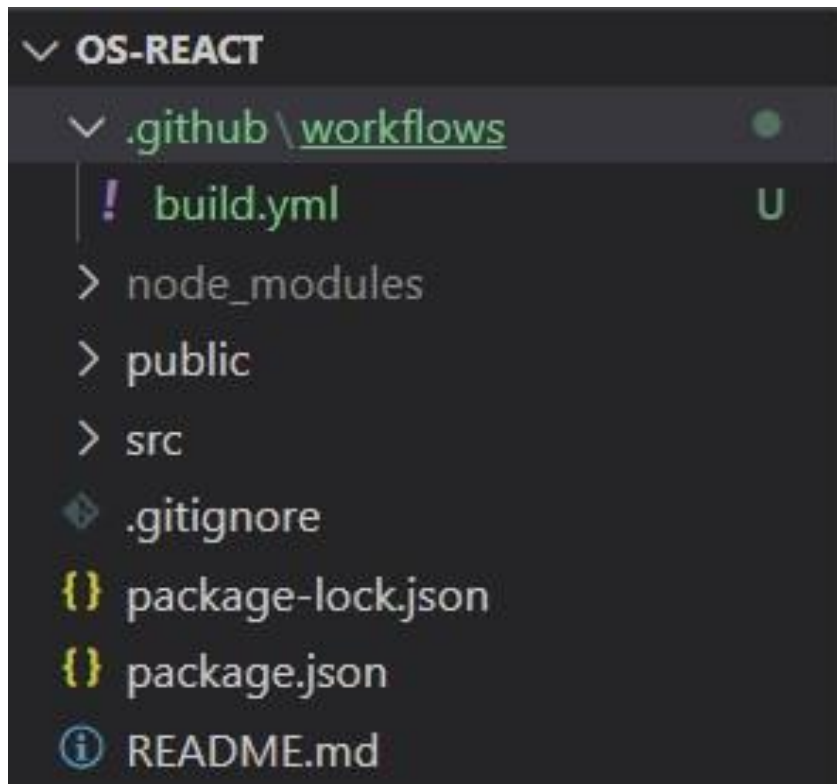
b. Buatlah repository pada GitHub kemudian push project tersebut ke dalam repository.



1.3 Menambahkan GitHub Workflow

- a. Pipeline CI/CD pada GitHub dibuat dengan format yaml dan diletakkan pada lokasi `.github/workflows`. Buatlah file yaml pada lokasi tersebut, sebagai ilustrasi silahkan perhatikan filename berikut

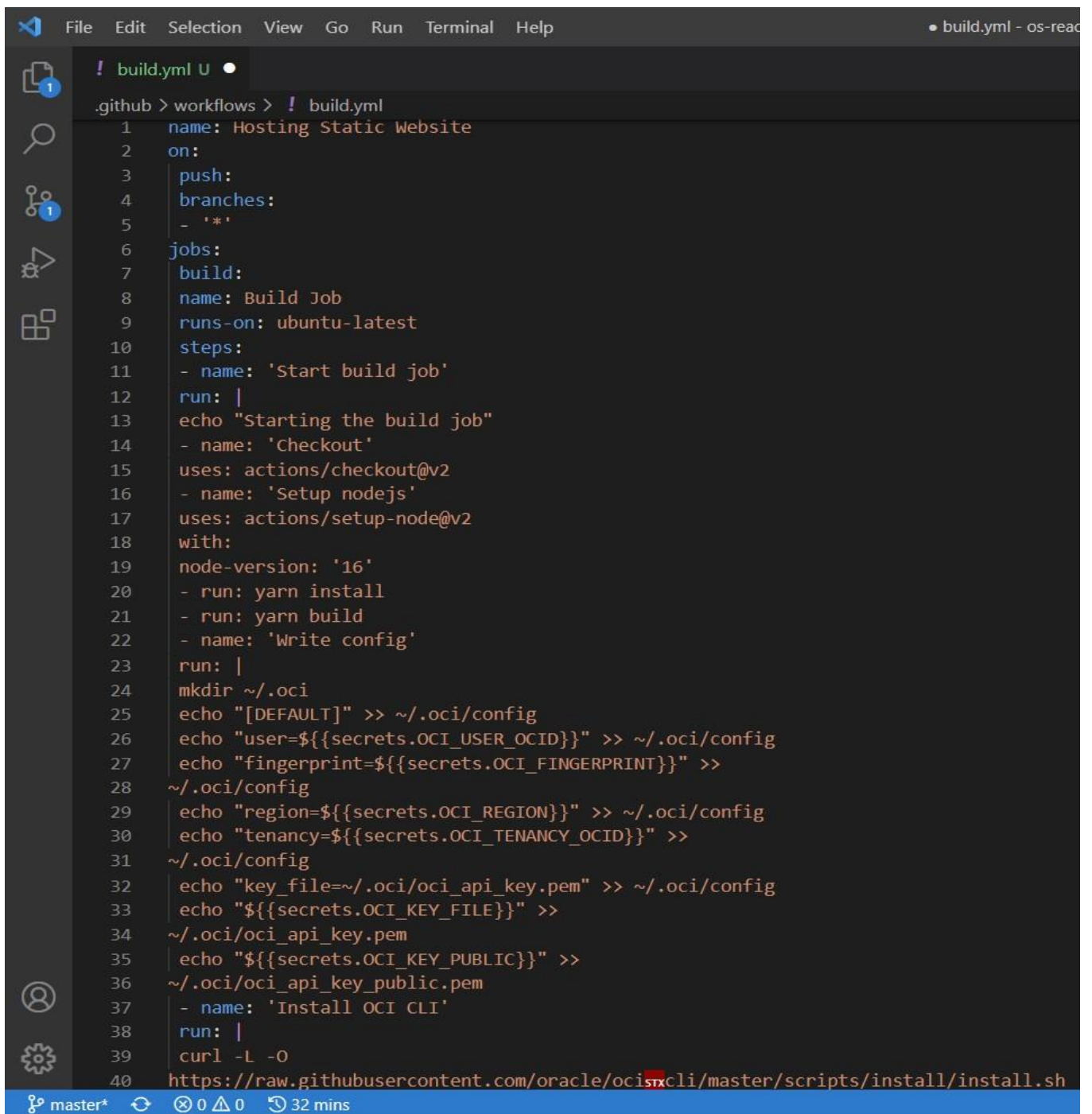
`.github/workflows/build.yml`



b. Salin konfigurasi pipeline berikut.

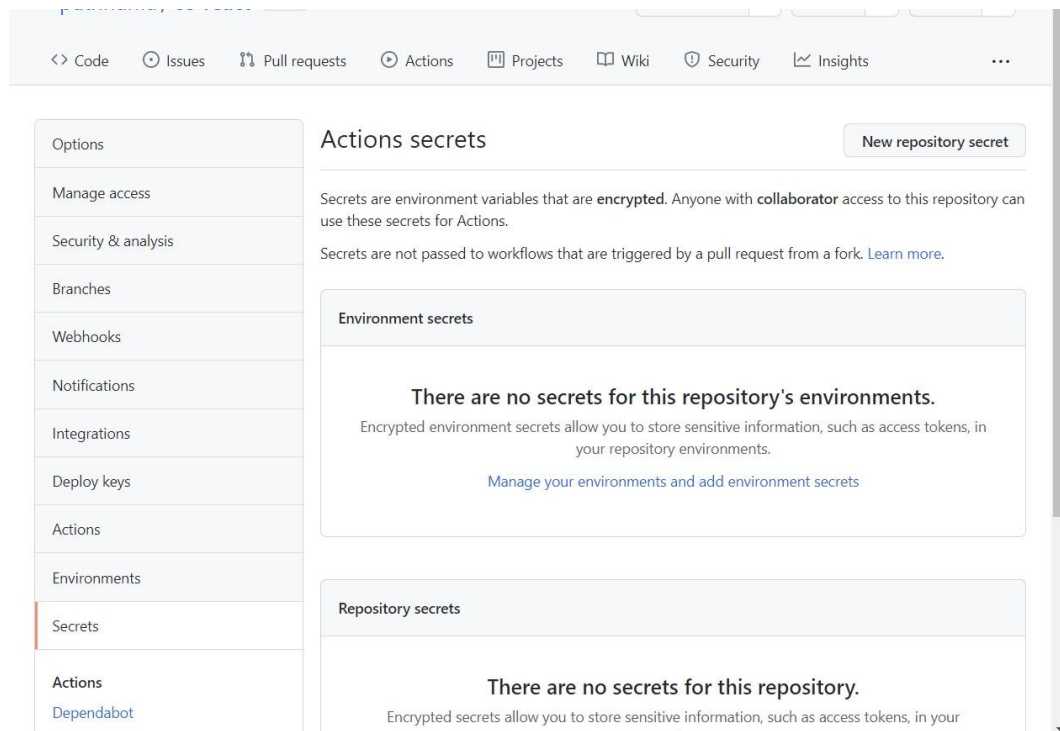
```
name: Hosting Static Website on:
push: branches:
-      '*' jobs: build:
name: Build Job runs-on: ubuntu-
latest steps:
-      name: 'Start build job' run: | echo
"Starting the build job"
-      name: 'Checkout' uses:
actions/checkout@v2
-      name: 'Setup nodejs' uses:
actions/setup-node@v2 with: node-version:
'16'
-      run: yarn install
-      run: yarn build - name: 'Write config'
run: | mkdir ~/.oci echo "[DEFAULT]" >>
~/.oci/config
echo "user=${{ secrets.OCI_USER_OCID }}" >> ~/.oci/config echo
"fingerprint=${{ secrets.OCI_FINGERPRINT }}" >> ~/.oci/config echo
"region=${{ secrets.OCI_REGION }}" >> ~/.oci/config echo
"tenancy=${{ secrets.OCI_TENANCY_OCID }}" >> ~/.oci/config echo
"key_file=~/.oci/oci_api_key.pem" >> ~/.oci/config echo
"${{ secrets.OCI_KEY_FILE }}" >> ~/.oci/oci_api_key.pem echo
"${{ secrets.OCI_KEY_PUBLIC }}" >> ~/.oci/oci_api_key_public.pem
-      name: 'Install OCI CLI' run: |
```

```
curl -L -O
https://raw.githubusercontent.com/oracle/oci-cli/master/scripts/install/install.sh chmod
+x install.sh
./install.sh --accept-all-defaults
echo "/home/runner/bin" >> $GITHUB_PATH exec -l $SHELL
- name: 'Fix Config File Permissions' run: |
oci setup repair-file-permissions --file /home/runner/.oci/config oci setup repair-file-
permissions --file /home/runner/.oci/oci_api_key.pem - name:
'Deploy Into Object Storage' run: | oci os object bulk-delete -bn
${{secrets.OCI_BUCKET}} --prefix static
--force oci os object put -bn ${{secrets.OCI_BUCKET}} --file ./build/manifest.json -
-content-type application/json --force oci os object bulk-upload -bn
${{secrets.OCI_BUCKET}} - -src-dir ./build -content-type text/html --include *.html
-- overwrite oci os object bulk-upload -bn ${{secrets.OCI_BUCKET}} - -src-dir
./build --content-type image/jpeg --include *.jpg -- overwrite oci os object bulk-upload
-bn ${{secrets.OCI_BUCKET}} - -src-dir ./build -content-type text/javascript --
include *.js - -overwrite oci os object bulk-upload -bn ${{secrets.OCI_BUCKET}} - -
src-dir ./build -content-type text/css --include *.css -- overwrite oci os object bulk-
upload -bn ${{secrets.OCI_BUCKET}} - -src-dir ./build --content-type text/plain -
exclude *.js -- exclude *.html --exclude *.jpg --exclude *.css --exclude
./build/manifest.json --overwrite
```



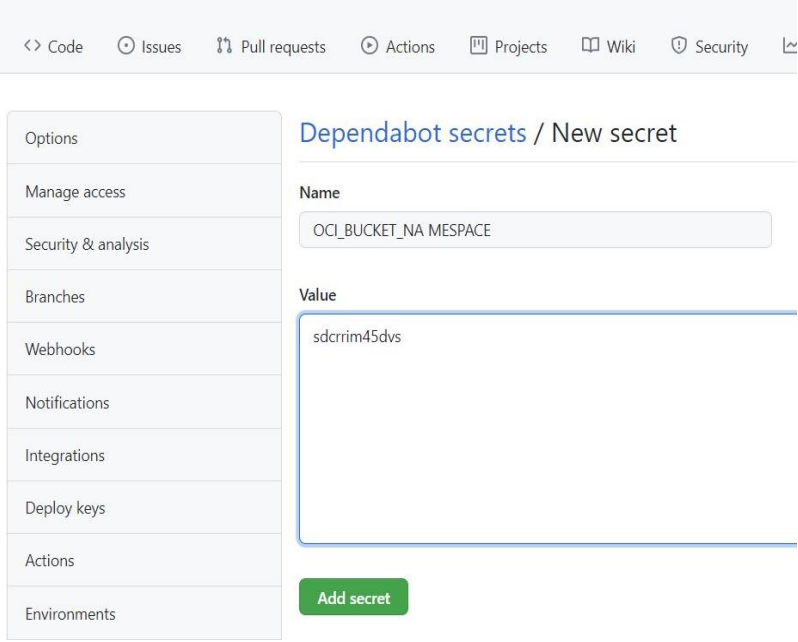
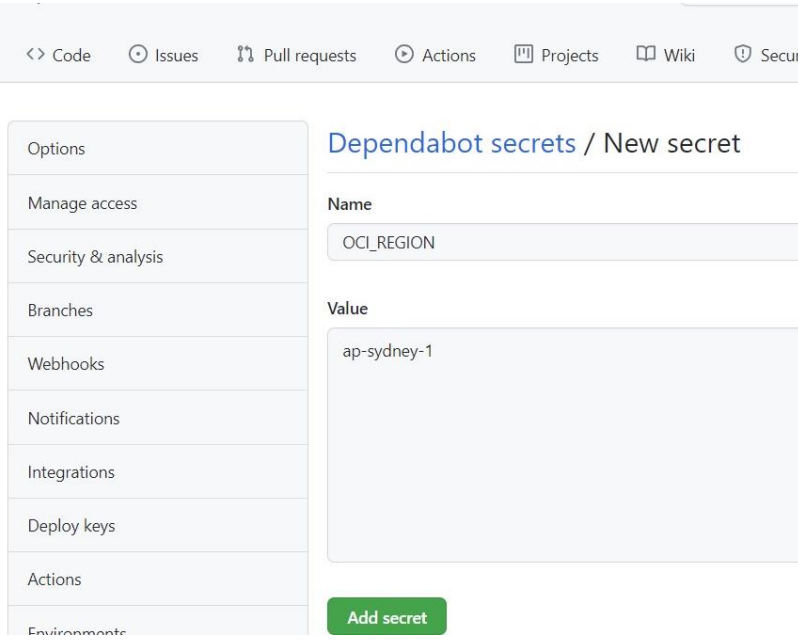
```
1 name: Hosting Static Website
2 on:
3   push:
4     branches:
5       - '*'
6 jobs:
7   build:
8     name: Build Job
9     runs-on: ubuntu-latest
10    steps:
11      - name: 'Start build job'
12        run: |
13          echo "Starting the build job"
14      - name: 'Checkout'
15        uses: actions/checkout@v2
16      - name: 'Setup nodejs'
17        uses: actions/setup-node@v2
18        with:
19          node-version: '16'
20      - run: yarn install
21      - run: yarn build
22      - name: 'Write config'
23        run: |
24          mkdir ~/.oci
25          echo "[DEFAULT]" >> ~/.oci/config
26          echo "user=${{secrets.OCI_USER_OCID}}" >> ~/.oci/config
27          echo "fingerprint=${{secrets.OCI_FINGERPRINT}}" >>
28          ~/.oci/config
29          echo "region=${{secrets.OCI_REGION}}" >> ~/.oci/config
30          echo "tenancy=${{secrets.OCI_TENANCY_OCID}}" >>
31          ~/.oci/config
32          echo "key_file=~/.oci/oci_api_key.pem" >> ~/.oci/config
33          echo "${{secrets.OCI_KEY_FILE}}" >>
34          ~/.oci/oci_api_key.pem
35          echo "${{secrets.OCI_KEY_PUBLIC}}" >>
36          ~/.oci/oci_api_key_public.pem
37      - name: 'Install OCI CLI'
38        run: |
39          curl -L -O
40          https://raw.githubusercontent.com/oracle/oci-cli/master/scripts/install/install.sh
```

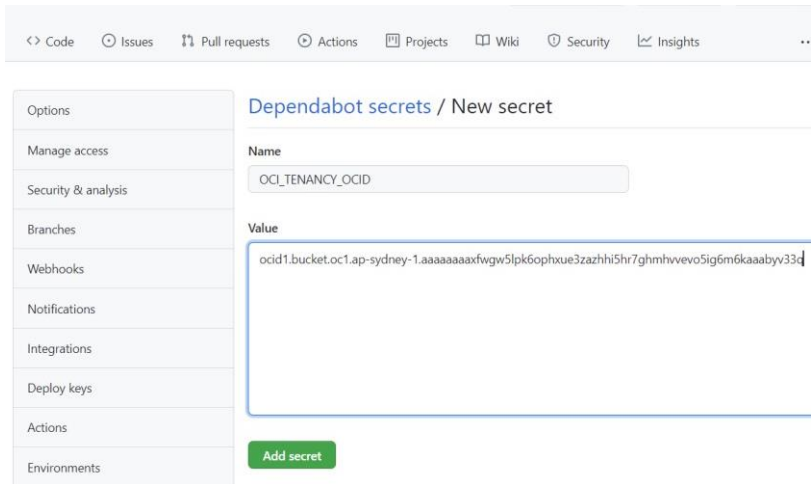
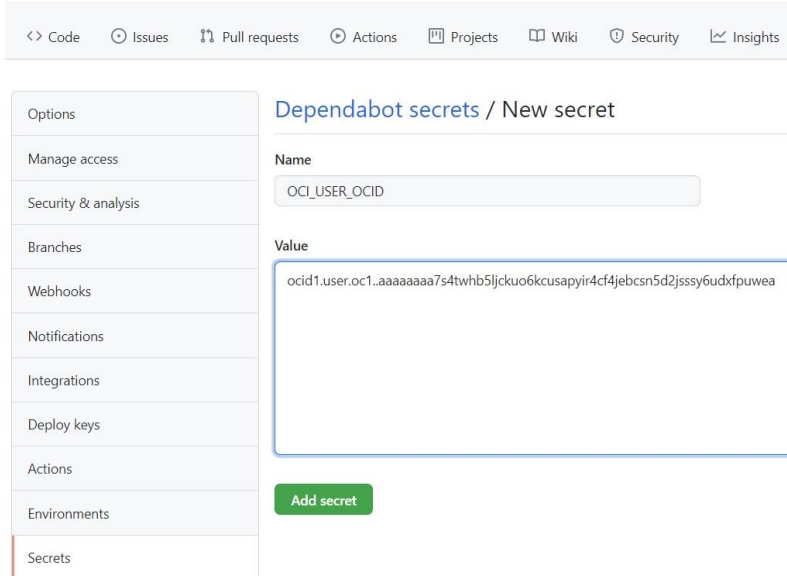
- c. Pada pengaturan pipeline, terdapat nilai secrets yang diatur melalui pengaturan pada repository GitHub.
- d. Buka alamat repository GitHub, dan masuk ke menu Settings -> Secrets



e. Sebagai panduan, silahkan gunakan table berikut untuk pengisian secrets

Nama Key	Keterangan
OCI_BUCKET	<p>Nama bucket, pada praktikum ini digunakan nama os-react</p> <p>Dependabot secrets / New secret</p> <p>Name</p> <p>OCI_BUCKET</p> <p>Value</p> <p>os-react</p> <p>Add secret</p>

OCI_BUCKET_NA MESPACE	<p>Namespace pada bucket, nilai ini dapat dilihat pada Bucket Information. Contoh: axlecckwcju3</p> 
OCI_REGION	<p>Nilai region dari akun oracle, Contoh: ap-melbourne-1</p> 
OCI_TENANCY_OC ID	<p>Nilai tenancy dapat dilihat pada menu Profile -> Tenancy. Contoh: ocid1.tenancy.oc1..aaaaaaa26ywtdlgaxl3p3fn2sknly3wdb553tmzgel4z222hk4kplcmcuq</p>

	
OCI_USER_OCID	<p>Nilai dapat dilihat pada User Information pada menu Identity & Security -> Users</p> 
OCI_FINGERPRINT	<p>Untuk mendapatkan nilai ini, pada User Information, pilih API Keys kemudian tekan tombol Add API Key. Pilih Generate API Key Pair, dan unduh private key dan public key. Pada berkas public key, diperlukan konversi format dengan menggunakan perintah ssh-keygen. Masukkan perintah berikut: ssh-keygen -I -m PKCS8 -f</p>
OCI_KEY_FILE	
OCI_KEY_PUBLIC	

<> Code

Issues

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Manage access

Security & analysis

Branches

Webhooks

Notifications

Integrations

Deploy keys

Actions

Environments

Dependabot secrets / New secret

Name

OCI_FINGERPRINT

Value

86:7b:4e:25:4c:87:c1:61:da:35:31:07:60:c0:18:0d

Add secret

! build.yml

🔒 1941720036-11-23-14-19.pem ✕

C: > Users > Lenovo > Downloads > 🔒 1941720036-11-23-14-19.pem

1

-----BEGIN PRIVATE KEY-----

2

MIIEvgIBADANBgkqhkiG9w0BAQEFAASCBAgEAAoIBAQC/1LFQnTNKvw/F

3

ygvP49UG8dlwanRuZ2L46SoS82XUAJYyOZHcYysivU8CK5g+YW2ssNvs56Pnev1H

4

whrIDYjHWAewij5QfBudr0E2VKQZ0uyDNYntr/ctYcUz8YvFi2CVYjhHvoMwowec

5

ZNSw+3u8HGBdCLOIGQ8XiRldhMUi749Me7pm8H3atyNJ2YWoWYyzZ5ihowrpr2i+

6

PKk3KChewAX+omGQvip9c9GwnJc9k3bH2erqdvGrzCrYmE5IeLCMHZYPpc+q7/aR

7

ICoPgUDgaY8W3JlXP5JR4R580Ju0kSIUacBx2R1e4SZJgR/lRX25azxEbZkDk02

8

9gvd3tC1AgMBAAECggEABSmgdwKwC3IuZryMClv/mW7/UtTumr0KDxhZU0a9JhI4

9

+JOPjx6VHdt56Z1KPN2K4d0lq4/FW7i14c1BwsIIfrLrfpOMX0ajyJ/bka5/9xTc

10

oiBZ/K1Yad6Ae+gjpgbAa+zHhnjEV5X/obAeAEBYWTjHAXc2dRw0UmVhuyIkKrV

11

UECjuUOywrNT/1fAV5hPpbzznBMQtNVYXgnJ/DtHnkknFTq8q3nzCPiixV/Vzx6t

12

AaDrJ6dHv7mLodqcnw9JKR655hCpeXP9Sm2fX4yK/JV6PSDDYDR0pb2Wf9pj6nFR

13

KzKYac/xccymwG9ujnIG446uXPnQRQZL/SXLNcdIuQKBgQD3qKTNjW064pvQuDRu

14

QBkXdwR3s/QeL9Xk3oTd2HMK9QGViuJRZ2+ABj6XLFzkmlWYv1WW/mh7f4e4c1vno

15

pKtpgdHjbxBM1MqeZ0+7ybEDK7a7ijF9Yarb0cKkHAUMdp07yODQhCRVZ/Dzf/1B

16

KAUGR2xUnF7Yp9qXYufBiiQa+QKBgQDGSrDdQq6MaMOJC9I0bBy3j2Vd04WiYFww

17

d/Phkv5+tJ+GNgUjtPS/KQ8UKwJPn1Pc2ys6lHZ+ETXHjYonIUHVXm4fdLv3J1wj

18

Pina/3doLCFB/V+Y4/Wxl+Kksbdr2c4StRcBuHyqu0hcCPw0ZELoKBRfk3zy8yqH

19

IsrbNwf2nQKBgQCrYKlCkNaAhCW85mtpy7NRWivf5chNR17ldNJ0ziS19Vt2Rjz8

20

o242EpwncoyJqf3cw3gYgadRST7T+DORuLnhVfOPReDquenIeCKp0WxjwTE9r+CV

21

WguojqzRcY5Q1JfzsgtYX8jgzP+hEPWIrBR3glVFq7u6g1Uxo0CqllTyQKBgENF

22

r79BEiq8mCn0groa05vi4EbDHNE708r1xx2uWvztlnlX9mJoz+fSrdTxanVM3oy9

23

JmtXVUPqPs6WrFoeJFGZGc8+MU7mYZHrUxPj08VyUHBs33PlUsOPferWCB5k5E7g

24

dQ+2YUUiOmKPAFcen58qnynKlra0IFkQmIgx2jZAoGBAJDzPVKjWtIjNG7mHU7A

25

lgNzJlB3zozHJ0l0WY80kwwiV6MkKI9TiC6k1x3y77uTbd/wheRfdip1EpTjXF5

26

tBNzT/z3lWnuhF2WyKScD+vOzjZavpF6yW5sH9fiHYN05QnRxnyyyypeG/j66e7r

27

y8IHgPnbYCb4+V/2m5VhPv+v

28

-----END PRIVATE KEY-----

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Options
Manage access
Security & analysis
Branches
Webhooks
Notifications
Integrations
Deploy keys
Actions

Dependabot secrets / Update secret

OCI_KEY_FILE

Value

```
-----BEGIN PRIVATE KEY-----
MIIEvgIBADANBgkqhkiG9w0BAQEFAASCBKggggSkAgEAAoIBAQC/1LFQnTNKww/F
ygvP49UG8dlwanRuZ2L46SoS82XUAJYyOZHcYysivU8CK5g+YW2ssNvs56Pnev1H
whrIDYjHWAEWij5QfBudr0E2VKQZOuyDNYntr/ctYcUz8YvFi2CVYjhHvoMwowiec
ZNSw+3u8HGBdCLOIGQ8XRldhMUI749Me7pm8H3atyNj2YWoWYyzZ5ihoWpr2i+
PKk3KChewAX+omGQvip9c9GWNjC9k3bH2erqdvGrzCrYmE5leLCMHZYPpC+q7/aR
ICoPgUDgaY8W3JlxP5JR4R58OJu0kSILUacBx2R1e4SZJgR/IRX25azxEbZkDk02
9gvd3tC1AgMBAAGCggEABSmgdwKwC3luZryMCIV/mW7/UtTumr0KDxhZU0a9Jhl4
+JOPjx6VHdt56Z1KPN2K4dOlq4/FW7i14c1BwslfRlrfpOMX0ajyJ/bka5/9xTc
```

Update secret

```

Microsoft Windows [Version 10.0.22000.318]
(c) Microsoft Corporation. All rights reserved.

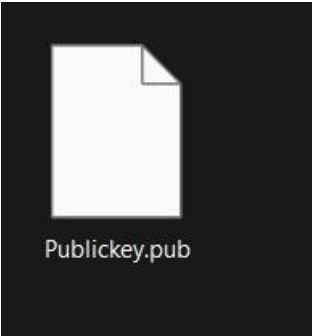
C:\Users\Lenovo>cd Downloads

C:\Users\Lenovo\Downloads>ssh-keygen -y -f oracleidentitycloudservice_1941720036-11-23-17-06.pem > Publickey.pub

C:\Users\Lenovo\Downloads>

```

Akan muncul file public key



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Options
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Dependabot secrets / Update secret

OCI_KEY_PUBLIC

Value

```
ssh-rsa
AAAAB3NzaC1yc2EAAAADAQABAAQAC/1LFQnTNKww/FygvP49UG8dlwanRuZ2L46SoS82XUAJYyOZHcYysivU8CK5g+
YW2ssNvs56Pnev1HwhrIDYjHWAEWij5QfBudr0E2VKQZOuyDNYntr/ctYcUz8YvFi2CVYjhHvoMwowiecZNSw+3u8HGBdCLO
IGQ8XRldhMUI749Me7pm8H3atyNj2YWoWYyzZ5ihoWpr2i+PKk3KChewAX+omGQvip9c9GWNjC9k3bH2erqdvGrzCrYm
E5leLCMHZYPpC+q7/aRiCoPgUDgaY8W3JlxP5JR4R58OJu0kSILUacBx2R1e4SZJgR/IRX25azxEbZkDk029gvd3tC1
```

Update secret

<> Code Issues Pull requests Actions Projects Wiki Security Insights ...

Options
Manage access
Security & analysis
Branches
Webhooks
Notifications
Integrations
Deploy keys
Actions
Environments
Secrets
Actions
Dependabot
Pages

Dependabot secrets

New repository secret

Secrets are credentials that are **encrypted**. Anyone with **collaborator** access to this repository can use these secrets for Dependabot.

Secrets are not passed to forks.

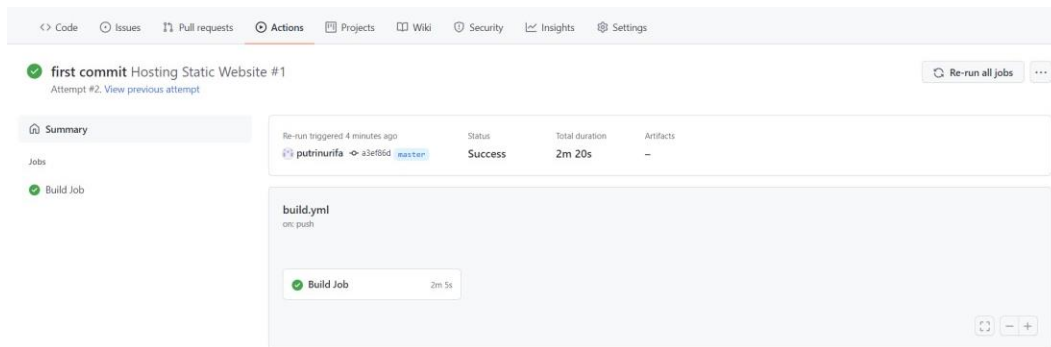
OCI_BUCKET	Updated yesterday	Update	Remove
OCI_BUCKET_NAMESPACE	Updated yesterday	Update	Remove
OCI_FINGERPRINT	Updated 32 minutes ago	Update	Remove
OCI_KEY_FILE	Updated 28 minutes ago	Update	Remove
OCI_KEY_PUBLIC	Updated 1 minute ago	Update	Remove
OCI_REGION	Updated yesterday	Update	Remove
OCI_TENANCY_OCID	Updated yesterday	Update	Remove
OCI_USER_OCID	Updated yesterday	Update	Remove

- f. Lengkapi nilai semua secrets yang dibutuhkan. Kemudian push perubahan ke repository GitHub.

.github/workflows	update baru	yesterday
.idea	update	yesterday
public	Initialize project using Create React App	3 days ago
src	Initialize project using Create React App	3 days ago
.gitignore	Initialize project using Create React App	3 days ago
README.md	Initialize project using Create React App	3 days ago
package-lock.json	Initialize project using Create React App	3 days ago
package.json	Initialize project using Create React App	3 days ago

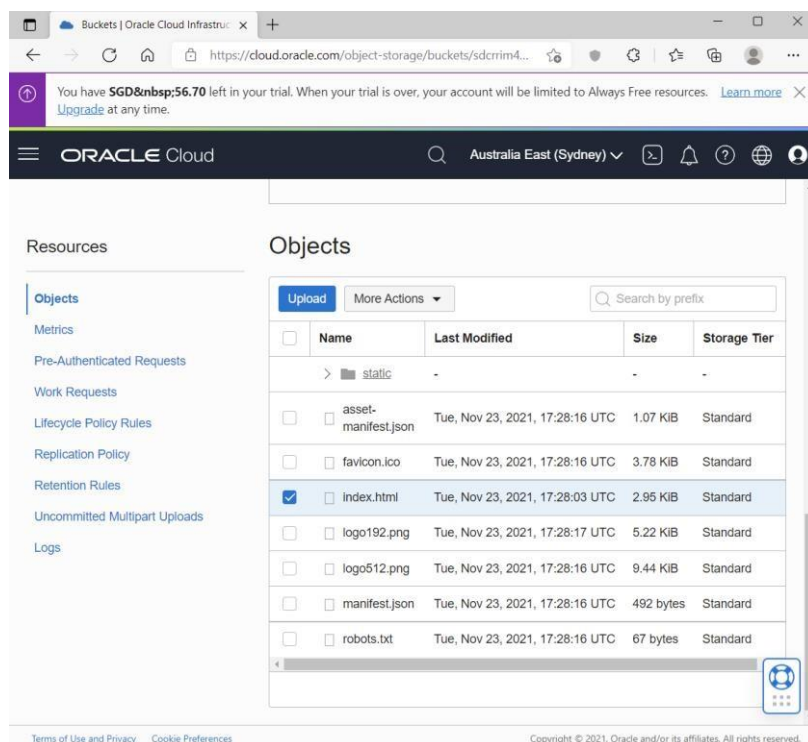
Readme
Releases
No releases published
Create a new release
Packages
No packages published
Publish your first package

- g. Perhatikan tab Actions pada halaman repository. Cek hasil proses deployment apakah terdapat kesalahan. Jika terjadi kesalahan, koreksi kembali nilai secrets yang dimasukkan.



- h. Jika proses deployment sudah mendapatkan tanda centang hijau, silahkan kembali ke dashboard bucket object storage. Centang berkas index.html, kemudian tekan menu titik tiga dan pilih View Object Details. Perhatikan URL Path dengan pola sebagai berikut

<https://objectstorage..oraclecloud.com/n/b/o/index.html>.

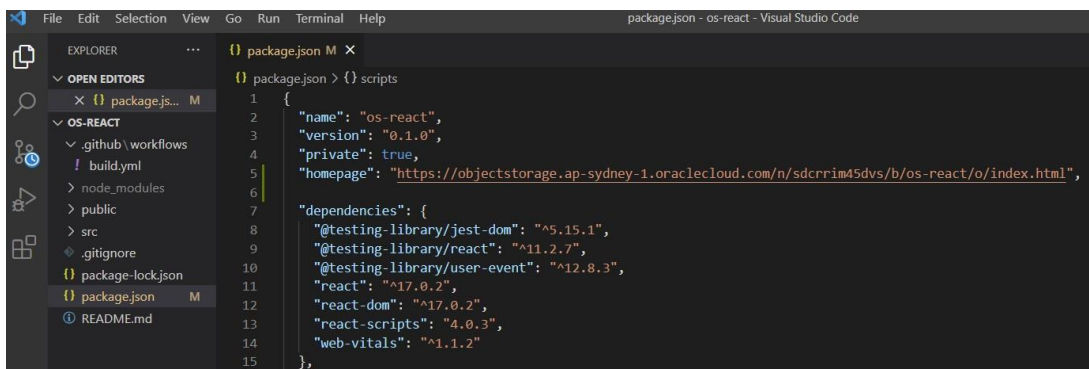


Hasil URL: <https://objectstorage.ap-sydney-1.oraclecloud.com/n/sdcrim45dvs/b/osreact/o/index.html>

- i. Salin URL Path tanpa nilai index.html, kemudian buka kembali project React. Cari berkas package.json dan tambahkan key "homepage" dengan

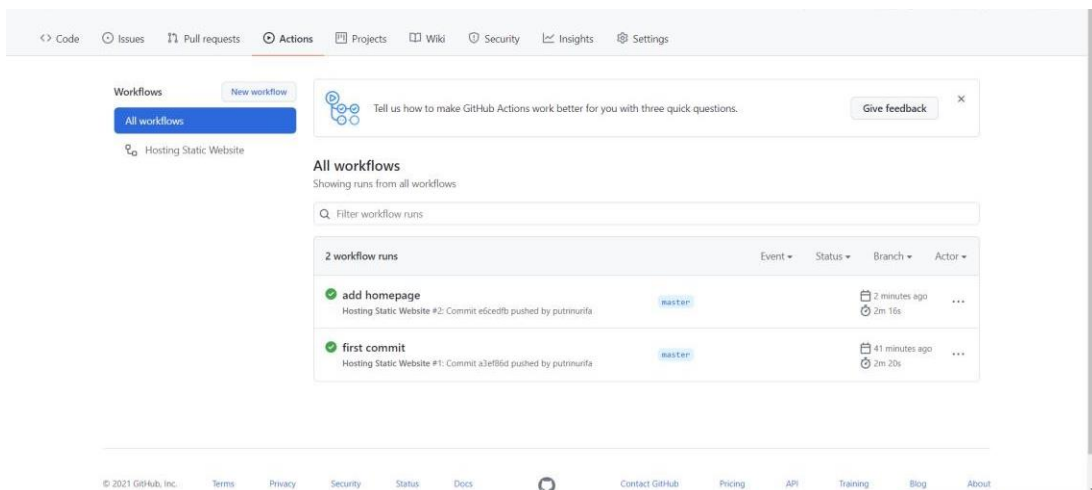
nilai URL Path pada Object Details. Ilustrasi berkas hasil akhir package.json dapat dilihat sebagai berikut.

```
{  "name": "hello-react",
  "version": "0.1.0",
  "private": true, "homepage":
  "https://objectstorage.region.oraclecloud.com/n/namespace/b/bucket/o/",
}
```

A screenshot of the Visual Studio Code editor. The Explorer sidebar on the left shows a project structure with folders like '.github/workflows', 'node_modules', 'public', 'src', and files like 'package-lock.json', 'package.json', and 'README.md'. The main editor area displays the 'package.json' file. The JSON content is as follows:

```
{
  "name": "os-react",
  "version": "0.1.0",
  "private": true,
  "homepage": "https://objectstorage.ap-sydney-1.oraclecloud.com/n/sdcrim45dvs/b/os-react/o/index.html",
  "dependencies": {
    "@testing-library/jest-dom": "^5.15.1",
    "@testing-library/react": "^11.2.7",
    "@testing-library/user-event": "^12.8.3",
    "react": "^17.0.2",
    "react-dom": "^17.0.2",
    "react-scripts": "4.0.3",
    "web-vitals": "^1.1.2"
  }
}
```

Hasil perubahan setelah menambahkan key “homepage” pada package.json



2. Deploy Simple Website Menggunakan Docker CI/CD Pipeline

Pada praktikum ini akan dilakukan proses deploy pada OCI Compute dengan menggunakan docker. Pada Langkah di bawah mengasumsikan telah dibuat VCN dengan akses pada port HTTP (80). Selain itu diasumsikan telah mempunyai akun docker hub.

2.1 Menyiapkan Project Repository

- a. Buat baru project React dengan memasukkan perintah

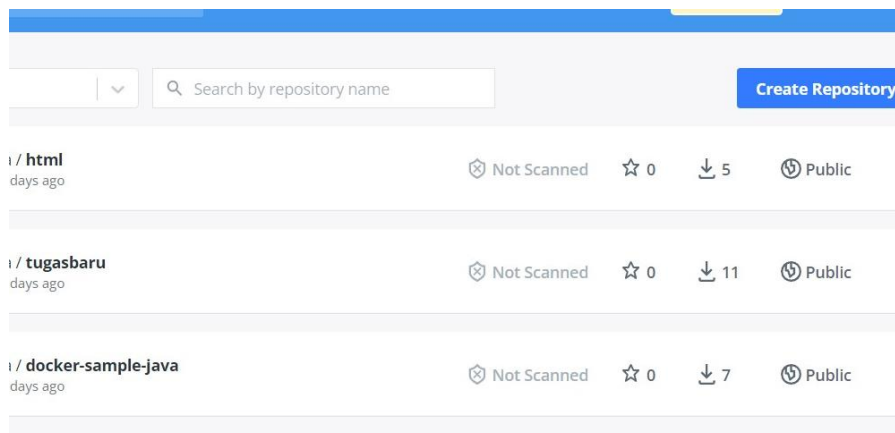
```
a>npx create-react-app docker-react
Creating a new React app in D:\KULIAH\SMT5\KOMPUTASI AWAN.
Installing packages. This might take a couple of minutes.
Installing react, react-dom, and react-scripts with cra-t
...
added 1901 packages, and audited 1902 packages in 1m
53 packages are looking for funding
run `npm fund` for details
17 vulnerabilities (16 moderate, 9 high, 2 critical)
To address all issues, run:
  npm audit fix
Run `npm audit` for details.
Initialized a git repository.
Installing template dependencies using npm...
added 57 packages, and audited 1959 packages in 13s
```

- b. Buatlah project baru pada GitHub, dan push project React tersebut.

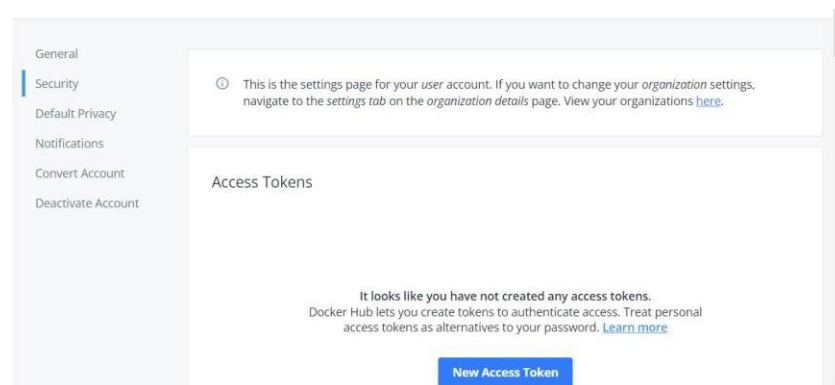
public	Initialize project using Create React App	5 minutes ago	
src	Initialize project using Create React App	5 minutes ago	
.gitignore	Initialize project using Create React App	5 minutes ago	
README.md	Initialize project using Create React App	5 minutes ago	
package-lock.json	Initialize project using Create React App	5 minutes ago	
package.json	Initialize project using Create React App	5 minutes ago	
README.md			

2.2 Menyiapkan Akses Docker Hub

- a. Silahkan login pada akun Docker pada <https://hub.docker.com>



- b. Untuk memberikan akses push ke dalam registry, perlu dibuat Access Token. Silahkan masuk pada halaman <https://hub.docker.com/settings/security> kemudian tekan tombol New Access Token.



- c. Masukkan GitHub Actions pada nama token, simpan nilai token yang telah didapatkan.

New Access Token

A personal access token is similar to a password except you can have many tokens and revoke access to each one at any time. [Learn more](#)

Access Token Description *

docker-react

Access permissions

Read, Write, Delete

Read, Write, Delete tokens allow you to manage your repositories.

Cancel

Copy Access Token

When logging in from your Docker CLI client, use this token as a password. [Learn more](#)

ACCESS TOKEN DESCRIPTION

docker-react

ACCESS PERMISSIONS

Read, Write, Delete

To use the access token from your Docker CLI client:

1. Run `docker login -u putrinurifa`
2. At the password prompt, enter the personal access token.

de862fab-959b-4775-8d0e-75ad3a64306



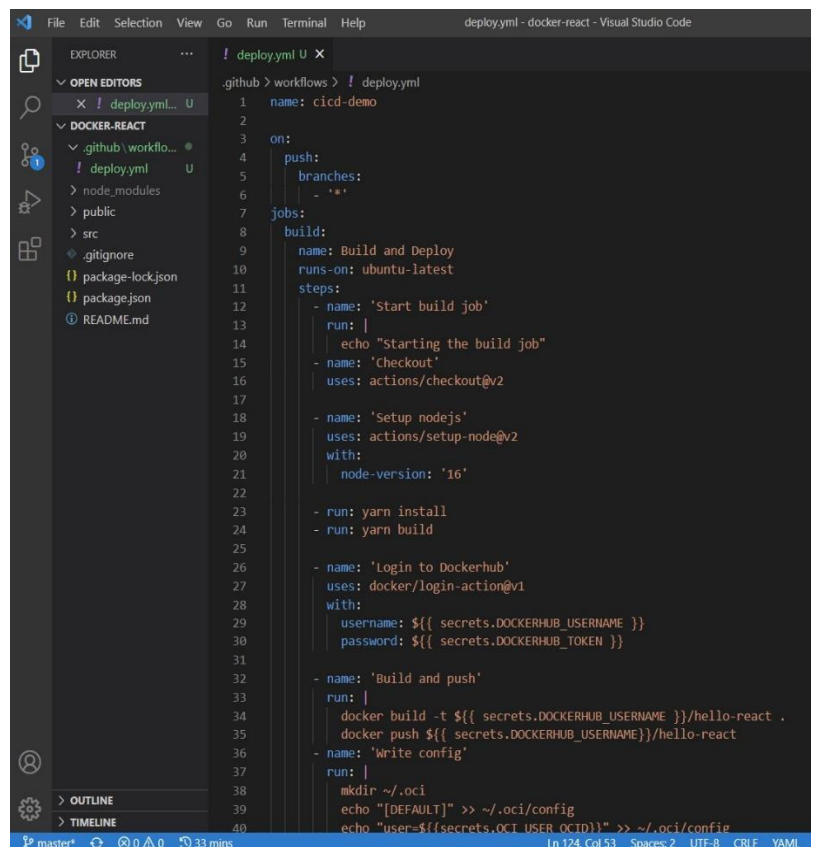
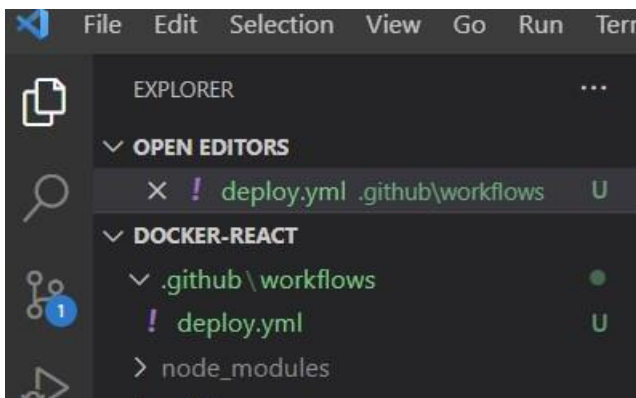
WARNING: This access token will only be displayed once. It will not be stored and cannot be retrieved. Please be sure to save it now.

Copy and Close

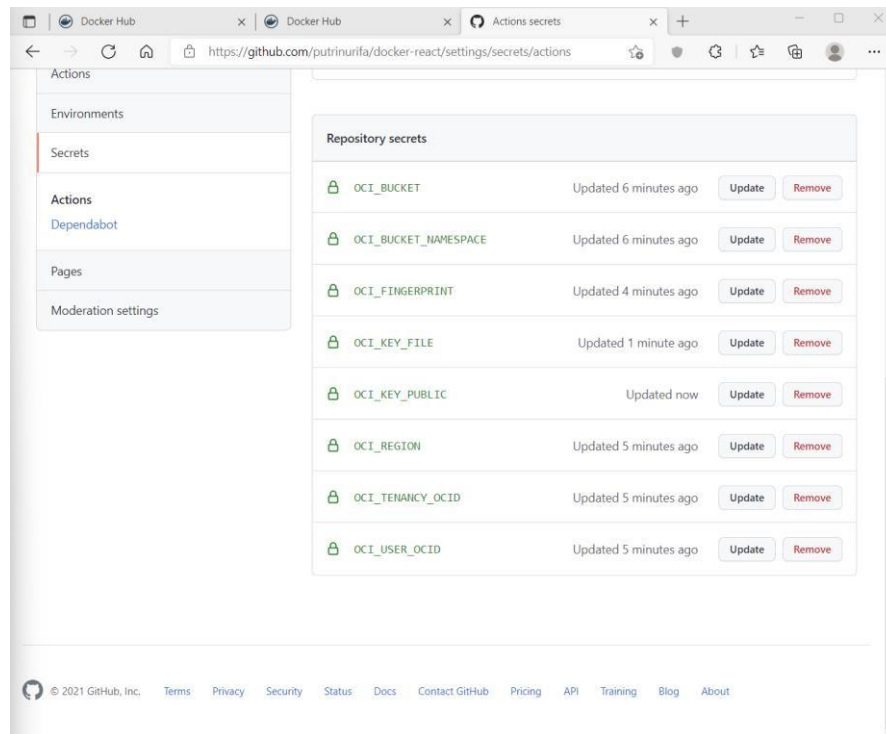
2.3 Menambahkan GitHub Workflow

- a. Buat sebuah file dengan berkas yaml, pada lokasi `.github/workflows/deploy.yml`.
- b. Unduh konfigurasi berkas pada tautan

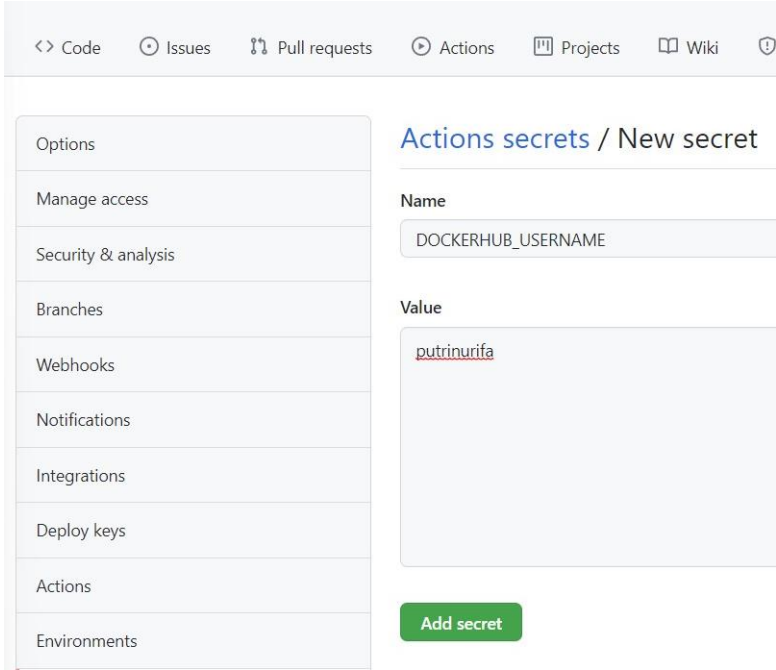
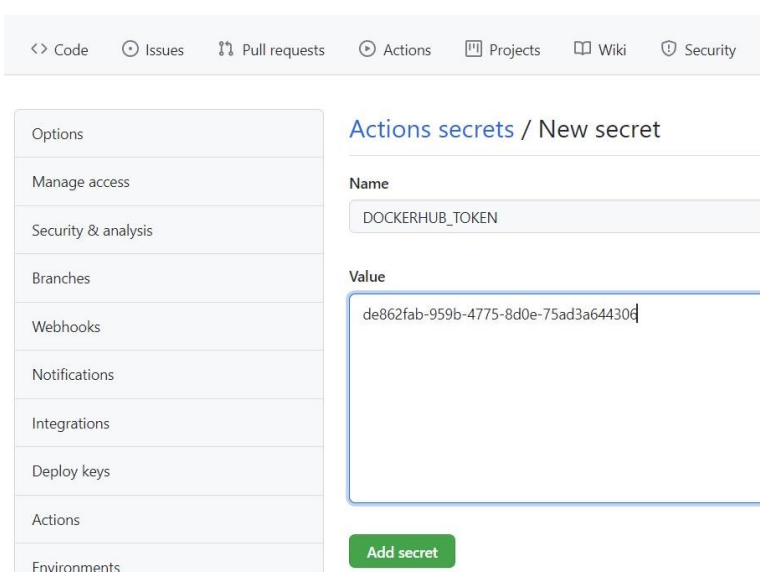
<https://github.com/dhanifudin/helloreactdocker/raw/master/.github/workflows/deploy.yml> dan simpan pada lokasi tersebut.

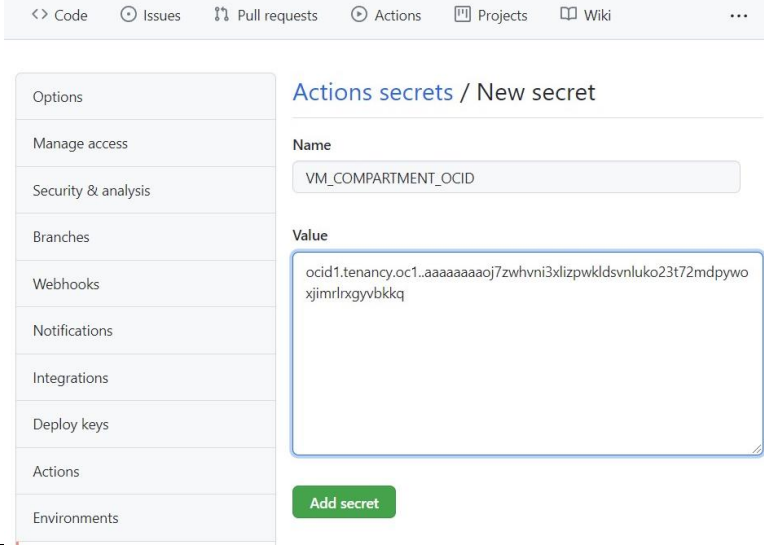
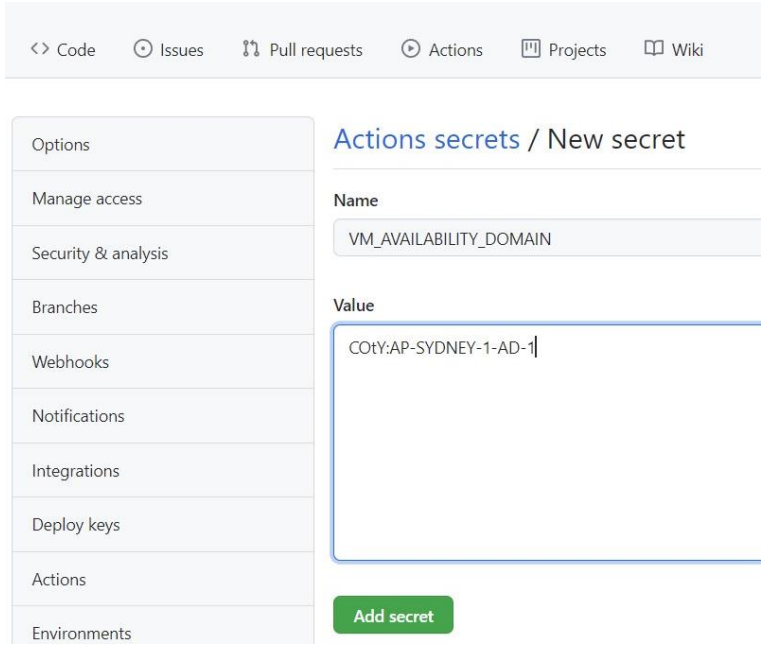


- c. Tambahkan nilai-nilai secrets yang terdapat pada GitHub Workflow tersebut. Untuk nilai yang diawali prefix OCI_ dapat digunakan table sebelumnya sebagai referensi.



d. Perhatikan table berikut sebagai referensi untuk pengisian nilai secrets

Nama Key	Keterangan
DOCKERHUB_USERNAME	<p>Username akun docker hub</p>  <p>The screenshot shows the GitHub Actions secrets management interface. On the left is a sidebar with navigation links: Options, Manage access, Security & analysis, Branches, Webhooks, Notifications, Integrations, Deploy keys, Actions, and Environments. The main area is titled 'Actions secrets / New secret'. It has a 'Name' field containing 'DOCKERHUB_USERNAME' and a 'Value' field containing 'putrinurifa'. At the bottom right is a green 'Add secret' button.</p>
DOCKERHUB_TOKEN	<p>Access token akun docker hub</p>  <p>The screenshot shows the GitHub Actions secrets management interface. On the left is a sidebar with navigation links: Options, Manage access, Security & analysis, Branches, Webhooks, Notifications, Integrations, Deploy keys, Actions, and Environments. The main area is titled 'Actions secrets / New secret'. It has a 'Name' field containing 'DOCKERHUB_TOKEN' and a 'Value' field containing a long alphanumeric string: 'de862fab-959b-4775-8d0e-75ad3a64430d'. At the bottom right is a green 'Add secret' button.</p>

VM_COMPARTMENT_OCID	<p>Nilai ini sama dengan tenancy id</p> 
VM_AVAILABILITY_DOMAIN	<p>Pilih menu Compute -> Instances dan perhatikan nilai Availability domain yang berada di pojok kiri bawah. Contoh: INJg:AP-MELBOURNE-1-AD-1</p> 
VM_SHAPE	<p>Pada praktikum ini digunakan shape VM.Standard.E2.1.Micro</p>

<> Code

Issues

Pull requests

Actions

Projects

Wiki

Options

Manage access

Security & analysis

Branches

Webhooks

Notifications

Integrations

Deploy keys

Actions

Environments

Actions secrets / New secret

Name

VM_SHAPE

Value

VM.Standard.E2.1.Micro

Add secret

VM_CUSTOM_IMAGE_OCID

Buka <https://docs.oracle.com/en-us/iaas/images/>

Contoh: ocid1.image.oc1.apmelbourne

1.aaaaaaaalpnwbccpcvukmqfus2rn5jcexymxjjqbiybzshnhcy Fojitermyq

<> Code

Issues

Pull requests

Actions

Projects

Wiki

...

Options

Manage access

Security & analysis

Branches

Webhooks

Notifications

Integrations

Deploy keys

Actions

Environments

Actions secrets / New secret

Name

VM_CUSTOM_IMAGE_OCID

Value

ocid1.image.oc1.ap-sydney-
 1.aaaaaaaabgcwtwog35htywlqin55iym65mzbbjm7myan3lhnzjrjfc6ny2
 xq

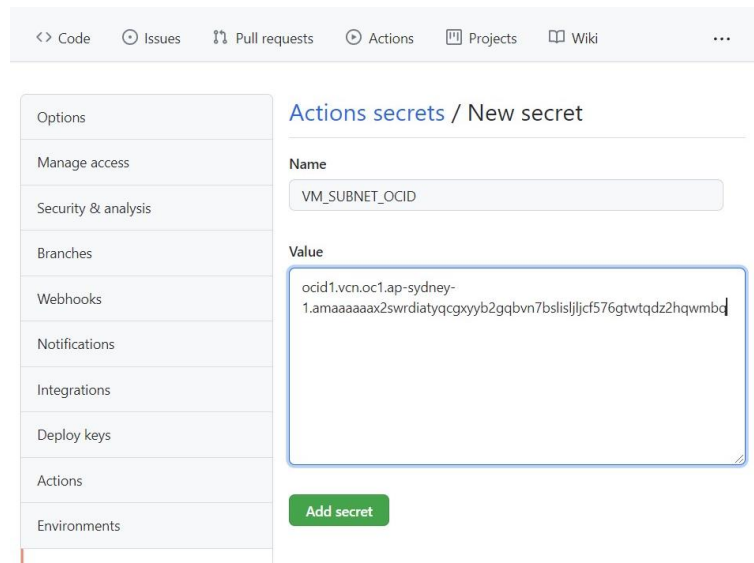
Add secret

November 30, 2021

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VM_SUBNET_OCID

Pilih menu Networking -> Virtual Cloud Network masuk ke vcn yang telah dibuat. Informasi id dapat dilihat dalam Subnet Information pada subnet yang tersedia.

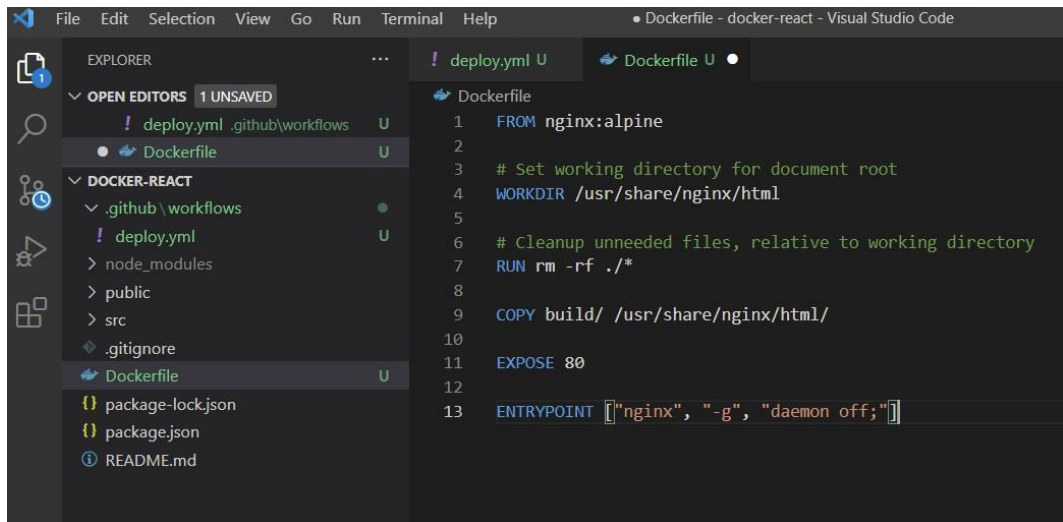


The screenshot shows the GitHub Actions secrets management interface. On the left is a sidebar with navigation options: Options, Manage access, Security & analysis, Branches, Webhooks, Notifications, Integrations, Deploy keys, Actions, and Environments. The main area is titled 'Actions secrets / New secret'. It contains a 'Name' field with the value 'VM_SUBNET_OCID' and a 'Value' text area containing a long alphanumeric string: 'ocid1.vcn.oc1.ap-sydney-1.amaaaaaax2swrdiatyqcgxyyb2gqbvn7bslsiljicf576gtwtqdz2hqwmdb'. At the bottom of the form is a green 'Add secret' button.

r-react/settings/secrets/actions			
OCI_BUCKET_NAMESPACE	Updated 32 minutes ago	Update	Remove
OCI_FINGERPRINT	Updated 30 minutes ago	Update	Remove
OCI_KEY_FILE	Updated 27 minutes ago	Update	Remove
OCI_KEY_PUBLIC	Updated 26 minutes ago	Update	Remove
OCI_REGION	Updated 31 minutes ago	Update	Remove
OCI_TENANCY_OCID	Updated 31 minutes ago	Update	Remove
OCI_USER_OCID	Updated 31 minutes ago	Update	Remove
VM_AVAILABILITY_DOMAIN	Updated 6 minutes ago	Update	Remove
VM_COMPARTMENT_OCID	Updated 8 minutes ago	Update	Remove
VM_CUSTOM_IMAGE_OCID	Updated 1 minute ago	Update	Remove
VM_SHAPE	Updated 4 minutes ago	Update	Remove
VM_SUBNET_OCID	Updated now	Update	Remove

2.4 Menyiapkan Dockerfile

- Buatlah berkas dengan nama Dockerfile. Gunakan tautan berikut <https://github.com/dhanifudin/hello-react-docker/blob/master/Dockerfile> sebagai template.

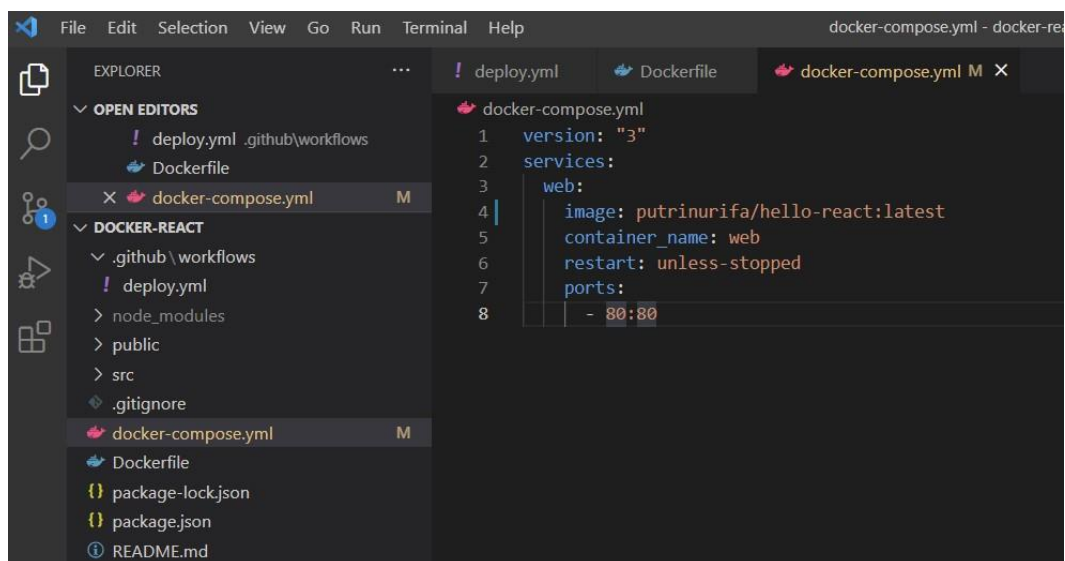


```
1 FROM nginx:alpine
2
3 # Set working directory for document root
4 WORKDIR /usr/share/nginx/html
5
6 # Cleanup unneeded files, relative to working directory
7 RUN rm -rf ./*
8
9 COPY build/ /usr/share/nginx/html/
10
11 EXPOSE 80
12
13 ENTRYPOINT ["nginx", "-g", "daemon off;"]
```

- Pastikan penamaan berkas sudah sesuai.

2.5 Menyiapkan Docker Compose

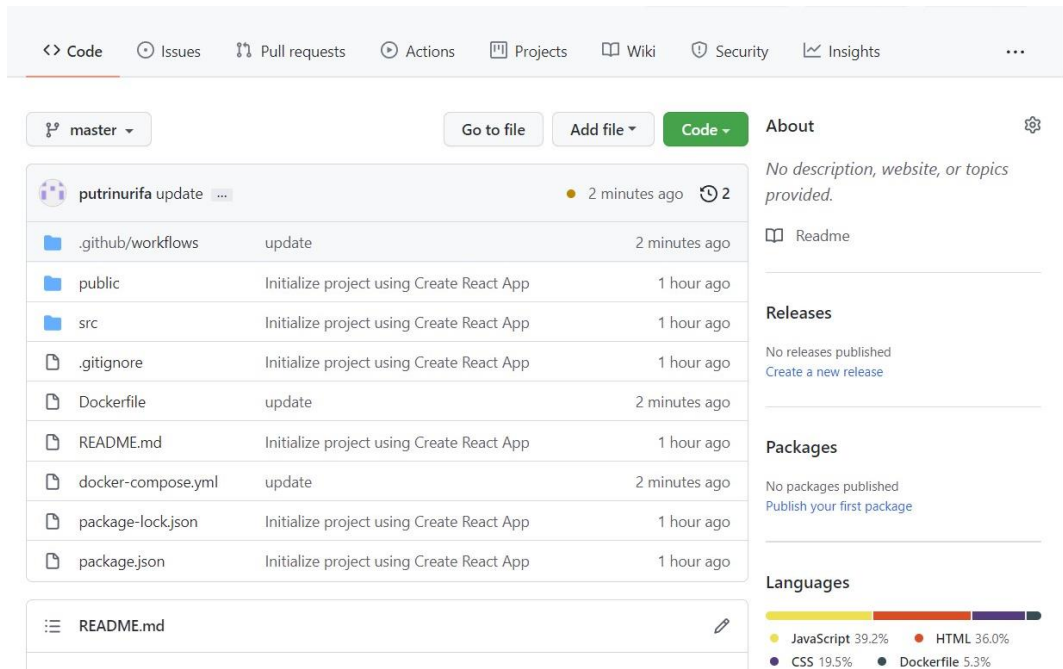
- Buatlah berkas dengan nama docker-compose.yml
- Gunakan tautan <https://github.com/dhanifudin/hello-react-docker/blob/master/dockercompose.yml> sebagai referensi untuk membuat docker-compose.yml. Jangan lupa untuk mengubah nilai image sesuai dengan username docker hub.



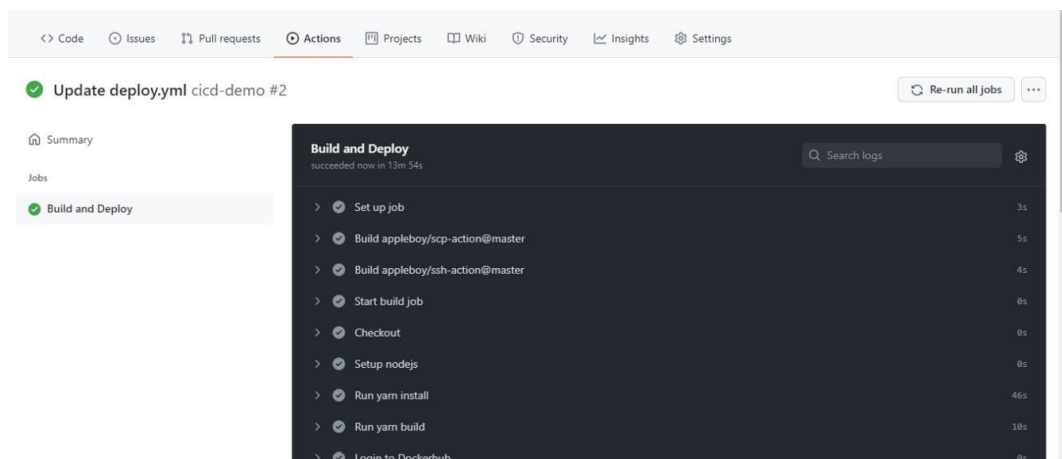
```
1 version: "3"
2 services:
3   web:
4     image: putrinurifa/hello-react:latest
5     container_name: web
6     restart: unless-stopped
7     ports:
8       - 80:80
```

2.6 Melakukan Deployment

- a. Setelah berkas deployment dan nilai secrets telah selesai diatur, lakukan push ke repository.

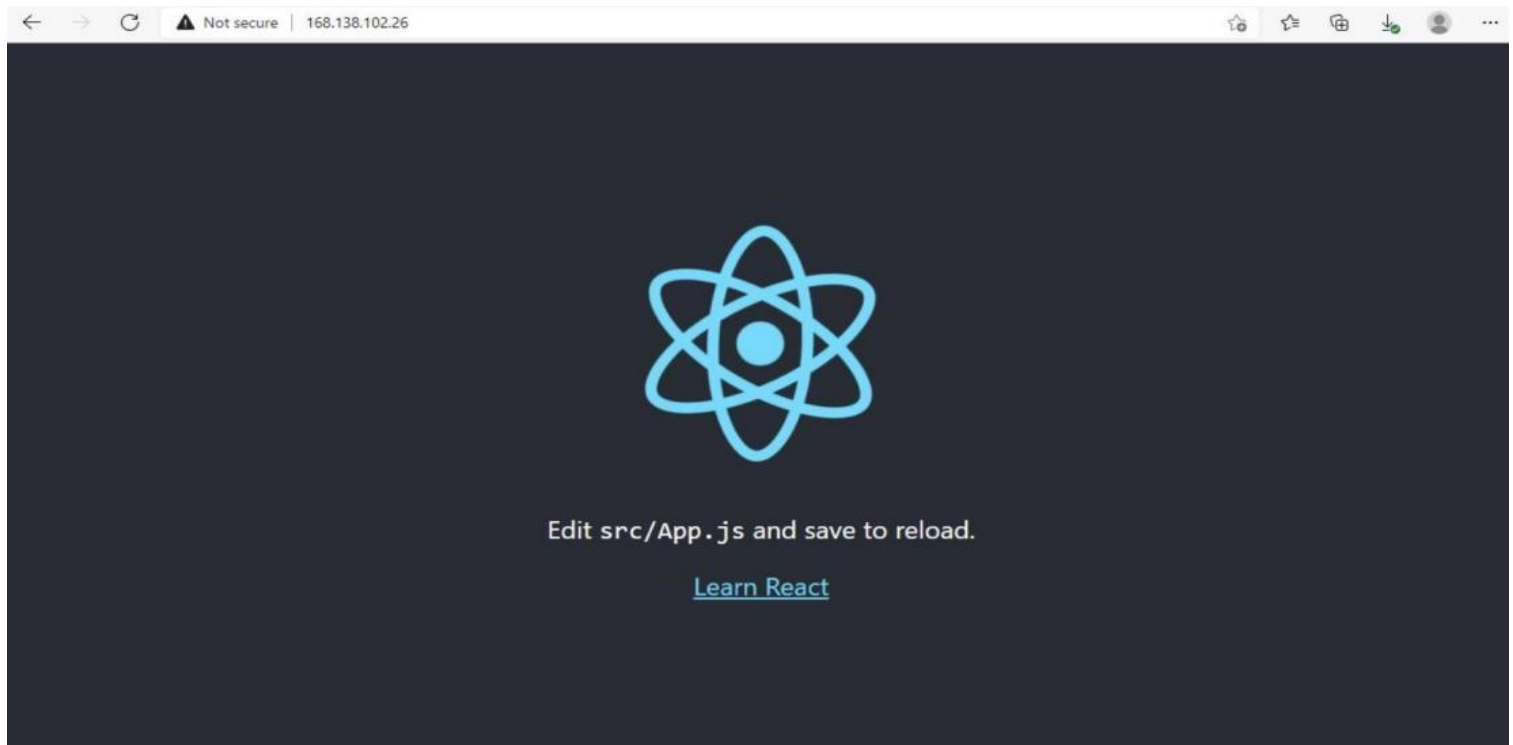


- b. Amati log deployment pada tab Actions, dan pastikan proses menghasilkan tanda centang hijau. Jika terjadi error, periksa kembali konfigurasi dan nilai secrets yang dimasukkan.



- c. Setelah proses deployment berhasil, untuk mendapatkan nilai IP public yang dapat diakses silahkan masuk ke dashboard pada halaman Compute Instances.
- d. Pada hasil akhir, jika tidak terdapat kesalahan akan didapatkan halaman website seperti pada gambar berikut.

LINK WEBSITE : 168.138.102.26



Referensi

- [1] J. Nickoloff, Docker in action. Shelter Island, NY: Manning Publications, Co, 2016.
- [2] S. Gallagher, Mastering Docker: rethink what's possible with Docker - become an expert in the innovative containerization tool to unlock new opportunities in the way you use and deploy software. Birmingham Mumbai: Packt Publishing, 2015.
- [3] J. Krochmalski, Docker and Kubernetes for Java developers: scale, deploy, and monitor multicontainer applications, First published. Birmingham Mumbai: Packt Publishing, 2017