

### **Task 3**

#### **SOAL 1. Monolitik**

Monolitik merupakan sebuah pendekatan tradisional dalam pembangunan sebuah aplikasi. Aplikasi monolitik terbentuk sebagai satu kesatuan kode yang tidak dapat dipisahkan satu dan lainnya. Salah satu karakter sistem arsitektur monolitik adalah saat pemrogram ingin melakukan perubahan pada sistem monolitik, pemrogram harus mengubah satu kesatuan kode secara menyeluruh dan bersamaan.

#### **Kelebihan Arsitektur Monolitik**

1. Kemudahan dalam penerapan.

Sistem monolitik terbilang sistem yang sederhana sehingga dalam penerapannya pun tidak perlu banyak menangani file atau direktori.

2. Sederhana untuk dikembangkan.

Monolitik adalah pendekatan standar dalam pembangunan sebuah aplikasi, sehingga banyak orang bisa melakukan pengembangannya.

3. Debugging dan testing yang lebih mudah.

Sistem monolitik tidak terbagi menjadi bagian-bagian kecil, sehingga lebih cepat dalam melakukan debugging dan testing.

#### **Kekurangan Arsitektur Monolitik**

1. Sulit memahami kode pemrograman saat pemeliharaan.

Sistem monolitik untuk pengembangan aplikasi berskala besar dan rumit akan membuat kode pemrogramannya semakin kompleks. Hal ini akan menimbulkan kesulitan pemahaman tersendiri, terlebih bagi pemrogram yang dari awal tidak ikut mengembangkan aplikasinya.

2. Sulit melakukan perubahan.  
Semakin besar aplikasi yang sudah ada, semakin rumit juga perubahan yang perlu dilakukan. Hal ini tentunya akan membuat proses pekerjaan semakin lama dan berbelitbelit, karena satu perubahan akan sangat mempengaruhi keseluruhan sistem yang ada.

### 3. Sulit mengembangkan aplikasi.

Dengan menggunakan sistem monolitik, pemrogram tidak bisa leluasa melakukan pengembangan program pada kemudian hari. Hal ini karena perubahan sistem harus dilakukan secara menyeluruh, tidak bisa hanya sebagian kecil.

### 4. Sulit mengadopsi teknologi baru.

Untuk bisa menggunakan teknologi baru, kode aplikasi dengan sistem monolitik harus ditulis ulang secara keseluruhan.

## Microservices

Jika monolitik adalah sebuah arsitektur aplikasi secara kesatuan atau tunggal, maka microservices adalah sebaliknya. Microservices terbagi menjadi unit pecahan yang lebih kecil dan spesifik. Setiap unitnya terpisah dan memiliki sistem beserta database sendiri untuk beroperasi dan menggunakan mekanisme API untuk terhubung dengan unit lainnya.

### Kelebihan Microservices

#### 1. Unit yang mandiri.

Setiap unit bisa beroperasi secara terpisah, sehingga bersifat lebih fleksibel. Saat terjadi bug, hanya unit yang terdampak yang harus diperbaiki dan tidak mempengaruhi unit yang lain.

#### 2. Lebih mudah dipahami.

Alur kerja microservices lebih mudah dipahami karena terpecah menjadi unit yang lebih kecil, dibanding harus mempelajari alur kerja monolitik yang harus dipahami secara keseluruhan.

#### 3. Mudah mengembangkan aplikasi.

Karena sifat setiap unitnya bisa beroperasi secara mandiri, microservices lebih mudah dikembangkan pada kemudian hari.

#### 4. Bebas adopsi teknologi baru.

Setiap unit pada arsitektur microservices bisa lebih fleksibel dikembangkan sehingga akan lebih maksimal saat mengadopsi teknologi baru sesuai kebutuhan.

## Kekurangan Microservices

### 1. Tingkat kerumitan yang berbeda.

Sistem yang terpecah menjadi unit-unit kecil memerlukan sistem distribusi yang baik untuk menghubungkan antar unit dengan database.

### 2. Testing yang rumit.

Pengujian sistem akan menjadi lebih sulit karena banyak komponen yang harus diuji dan diperbaiki.

```
Ubuntu nasution - VMware Workstation 16 Player (Non-commercial use only)
Player
v16.18.1 (Latest LTS: Gallium)
v17.0.0
v17.0.1
v17.1.0
v17.2.0
v17.3.0
v17.3.1
v17.4.0
v17.5.0
v17.6.0
v17.7.0
v17.7.1
v17.7.2
v17.8.0
v17.9.0
v17.9.1
v18.0.0
v18.1.0
v18.2.0
v18.3.0
v18.4.0
v18.5.0
v18.6.0
v18.7.0
v18.8.0
v18.9.0
v18.9.1
v18.10.0
v18.11.0
v18.12.0 (LTS: Hydrogen)
v18.12.1 (Latest LTS: Hydrogen)
v19.0.0
v19.0.1
v19.1.0
aulia@rahman:~$ npm install 16
v16.18.1 is already installed.
```

```
Ubuntu nasution - VMware Workstation 16 Player (Non-commercial use only)
Player
v18.2.0
v18.3.0
v18.4.0
v18.5.0
v18.6.0
v18.7.0
v18.8.0
v18.9.0
v18.9.1
v18.10.0
v18.11.0
v18.12.0 (LTS: Hydrogen)
v18.12.1 (Latest LTS: Hydrogen)
v19.0.0
v19.0.1
v19.1.0
aulia@rahman:~$ npm install 16
v16.18.1 is already installed.
Now using node v16.18.1 (npm v8.19.2)
aulia@rahman:~$ npm use 16
Now using node v16.18.1 (npm v8.19.2)
aulia@rahman:~$ npm -v
0.38.0
aulia@rahman:~$ git clone https://github.com/dumbwaysdev/wayshub-frontend
Cloning into 'wayshub-frontend'...
remote: Enumerating objects: 153, done.
remote: Counting objects: 100% (9/9), done.
remote: Compressing objects: 100% (7/7), done.
remote: Total 153 (delta 3), reused 2 (delta 2), pack-reused 144
Receiving objects: 100% (153/153), 1.98 MiB | 2.16 MiB/s, done.
Resolving deltas: 100% (17/17), done.
aulia@rahman:~$ cd wayshub
bash: cd: wayshub: No such file or directory
aulia@rahman:~$ ls
aulia  g01.16.5.linux-amd64.tar.gz  index  index.go  lubis  wayshub-frontend
aulia@rahman:~$ cd wayshub-frontend
aulia@rahman:~/wayshub-frontend$
```

```
Ubuntu nasution - VMware Workstation 16 Player (Non-commercial use only)
Player ▾ | [Icons] | [Close] [Maximize] [Fullscreen]

aullia@rahman:~$ ping google.com
PING google.com (142.251.10.113) 56(84) bytes of data:
64 bytes from sd-in-f113.1e100.net (142.251.10.113): icmp_seq=1 ttl=251 time=80.4 ms
64 bytes from sd-in-f113.1e100.net (142.251.10.113): icmp_seq=2 ttl=251 time=95.6 ms
64 bytes from sd-in-f113.1e100.net (142.251.10.113): icmp_seq=3 ttl=251 time=132 ms
64 bytes from sd-in-f113.1e100.net (142.251.10.113): icmp_seq=4 ttl=251 time=74.3 ms
^C
--- google.com ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3005ms
rtt min/avg/max/mdev = 74.332/95.600/132.032/22.412 ms
aullia@rahman:~$ curl -o- https://raw.githubusercontent.com/nvm-sh/nvm/v0.38.0/install.sh | bash
% Total % Received % Xferd Average Speed Time Time Time Current
Dload Upload Total Spent Left Speed
100 14926 100 14926 0 0 12801 0 0:00:01 0:00:01 --:--:-- 12790
=> nvm is already installed in /home/aullia/.nvm, trying to update using git
=> => Compressing and cleaning up git repository

=> nvm source string already in /home/aullia/.bashrc
=> bash_completion source string already in /home/aullia/.bashrc
=> Close and reopen your terminal to start using nvm or run the following to use it now:

export NVM_DIR="$HOME/.nvm"
[ -s "$NVM_DIR/nvm.sh" ] && \. "$NVM_DIR/nvm.sh" # This loads nvm
[ -s "$NVM_DIR/bash_completion" ] && \. "$NVM_DIR/bash_completion" # This loads nvm bash_completion
aullia@rahman:~$ _
```

```
Ubuntu nasution - VMware Workstation 16 Player (Non-commercial use only)
Player ▾ | [Icons] | [Close] [Maximize] [Fullscreen]

atibility issues. Please, upgrade your dependencies to the actual version of core-js.
npm WARN deprecated core-js@2.6.11: core-js@3.23.3 is no longer maintained and not recommended for
usage due to the number of issues. Because of the V8 engine whims, feature detection in old core-js
versions could cause a slowdown up to 100x even if nothing is polyfilled. Some versions have web com
patibility issues. Please, upgrade your dependencies to the actual version of core-js.

added 1795 packages, and audited 1796 packages in 7m

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

57 vulnerabilities (11 moderate, 31 high, 15 critical)

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.
npm notice
npm notice New major version of npm available! 8.19.2 -> 9.1.2
npm notice Changelog: https://github.com/npm/cli/releases/tag/v9.1.2
npm notice Run npm install -g npm@9.1.2 to update!
npm notice
aullia@rahman:~/wayshub-frontends$ npm install pm2 --location=global
npm WARN deprecated uuid@3.4.0: Please upgrade to version 7 or higher. Older versions may use Math
.random() in certain circumstances, which is known to be problematic. See https://v8.dev/blog/math-
random for details.

added 184 packages, and audited 185 packages in 19s

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

found 0 vulnerabilities
aullia@rahman:~/wayshub-frontends$
```

```
Ubuntu nasution - VMware Workstation 16 Player (Non-commercial use only)
Player
Runtime Edition
PM2 is a Production Process Manager for Node.js applications
with a built-in Load Balancer.

Start and Daemonize any application:
$ pm2 start app.js

Load Balance 4 instances of api.js:
$ pm2 start api.js -i 4

Monitor in production:
$ pm2 monitor

Make pm2 auto-boot at server restart:
$ pm2 startup

To go further checkout:
http://pm2.io/

-----
[PM2] Spawning PM2 daemon with pm2_home=/home/aulia/.pm2
[PM2] PM2 Successfully daemonized
[PM2] Starting /home/aulia/.nvm/versions/node/v16.18.1/bin/npm in fork_mode (1 instance)
[PM2] Done.

  id  name            mode  status  cpu  memory
  --  -
0    npm             fork  online  0%   37.2mb

aulia@rahman:~/wayshub-frontends $
```

lubisa433/aulia x Add new SSH key x 5.SSH key for Gili x Dumbways-DO- x (108) YouTube x Dumbways-DO- x WaysHub x

Not secure | 192.168.198.200:3000/login

Trending Gmail YouTube Maps YouTube youtube...

# WAYSUB & Chill

Join now, share your creations with another people and enjoy other creations

Sign Up

## Sign In

Email

Password

Sign In

# DEPLOY GOLANG

```
Ubuntu nasution - VMware Workstation 16 Player (Non-commercial use only)
Player | [Icons] [Close] [Maximize] [Fullscreen]

aulia@rahman:~$ sudo apt install golang-go
Reading package lists... Done
Building dependency tree
Reading state information... Done
golang-go is already the newest version (2:1.13~1ubuntu2).
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
aulia@rahman:~$ ls
aulia          gol.16.7.linux-amd64.tar.gz  index.go  wayshub-frontend
gol.16.5.linux-amd64.tar.gz  index                        lubis
aulia@rahman:~$ cd wayshub-frontend
aulia@rahman:~/wayshub-frontend$ wget https://golang.org/dl/gol.16.5.linux-amd64.tar.gz
--2022-11-19 10:16:51-- https://golang.org/dl/gol.16.5.linux-amd64.tar.gz
Resolving golang.org (golang.org)... 34.101.5.81, 2404:ff340:4010:1802::2011
Connecting to golang.org (golang.org)[34.101.5.81]:443... connected.
HTTP request sent, awaiting response... 301 Moved Permanently
Location: https://go.dev/dl/gol.16.5.linux-amd64.tar.gz [following]
--2022-11-19 10:16:52-- https://go.dev/dl/gol.16.5.linux-amd64.tar.gz
Resolving go.dev (go.dev)... 216.239.32.21, 216.239.38.21, 216.239.36.21, ...
Connecting to go.dev (go.dev)[216.239.32.21]:443... connected.
HTTP request sent, awaiting response... 302 Found
Location: https://dl.google.com/go/gol.16.5.linux-amd64.tar.gz [following]
--2022-11-19 10:16:53-- https://dl.google.com/go/gol.16.5.linux-amd64.tar.gz
Resolving dl.google.com (dl.google.com)... 142.251.10.93, 142.251.10.91, 142.251.10.190, ...
Connecting to dl.google.com (dl.google.com)[142.251.10.93]:443... connected.
HTTP request sent, awaiting response... 404 Not Found
2022-11-19 10:16:53 ERROR 404: Not Found.

aulia@rahman:~/wayshub-frontend$ _

Ubuntu 20.04.5 LTS rahman tty6
rahman login: aulia
Password:
Welcome to Ubuntu 20.04.5 LTS (GNU/Linux 5.4.0-132-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

System information as of Sat 19 Nov 2022 10:20:13 AM UTC

System load:  0.1               Processes:    210
Usage of /:   62.4% of 9.75GB    Users logged in: 1
Memory usage: 20%              IPv4 address for ens33: 192.168.215.200
Swap usage:   0%

0 updates can be applied immediately.
Failed to connect to https://changelogs.ubuntu.com/meta-release-lts. Check your Internet connection
or proxy settings

Last login: Sat Nov 19 10:10:21 UTC 2022 on tty1
aulia@rahman:~$ sudo tar -C /usr/local -xvf gol.16.7.linux-amd64.tar.gz
[sudo] password for aulia:
gzip: stdin: not in gzip format
tar: Child returned status 1
tar: Error is not recoverable: exiting now
aulia@rahman:~$ _
```

```
Ubuntu 20.04.5 LTS rahman tty6

rahman login: aulia
Password:
Welcome to Ubuntu 20.04.5 LTS (GNU/Linux 5.4.0-132-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

System information as of Sat 19 Nov 2022 10:20:13 AM UTC

System load:  0.1               Processes:            210
Usage of /:   62.4% of 9.75GB   Users logged in:     1
Memory usage: 20%              IPv4 address for ens33: 192.168.215.200
Swap usage:   0%

0 updates can be applied immediately.

Failed to connect to https://changelogs.ubuntu.com/meta-release-lts. Check your Internet connection
or proxy settings

Last login: Sat Nov 19 10:10:21 UTC 2022 on tty1
aulia@rahman:~$ sudo tar -C /usr/local -xvf go1.16.7.linux-amd64.tar.gz
[sudo] password for aulia:

gzip: stdin: not in gzip format
tar: Child returned status 1
tar: Error is not recoverable: exiting now
aulia@rahman:~$ go version
go version go1.19.8 linux/amd64
aulia@rahman:~$
```

```
GNU nano 4.8 .bashrc
alias la='ls -A'
alias l='ls -CF'

# Add an "alert" alias for long running commands.  Use like so:
# sleep 10; alert
alias alert='notify-send --urgency=low -i "${([ $? = 0 ]) && echo terminal || echo error}" "$(history|tail -n 1|sed -e s/^[^]*$/:$/"'

# Alias definitions
# You may want to put all your additions into a separate file like
# ~/.bash_aliases, instead of adding them here directly.
# See /usr/share/doc/bash-doc/examples in the bash-doc package.

if [ -f ~/.bash_aliases ]; then
. ~/.bash_aliases
fi

# enable programmable completion features (you don't need to enable
# this, if it's already enabled in /etc/bash.bashrc and /etc/profile
# sources /etc/bash.bashrc).
if ! shopt -oq posix; then
if [ -f /usr/share/bash-completion/bash_completion ]; then
. /usr/share/bash-completion/bash_completion
elif [ -f /etc/bash_completion ]; then
. /etc/bash_completion
fi
fi

export NVM_DIR="$HOME/.nvm"
[ -s "$NVM_DIR/nvm.sh" ] && \. "$NVM_DIR/nvm.sh" # This loads nvm
[ -s "$NVM_DIR/bash_completion" ] && \. "$NVM_DIR/bash_completion" # This loads nvm bash_completion

export PATH=$PATH:/usr/local/go/bin

Get Help  Write Out  Where Is  Cut Text  Justify  Cur Pos  M-U Undo
Exit      Read File  Replace  Paste Text  To Spell  Go To Line  M-E Redo
```



Ubuntu nasution - VMware Workstation 16 Player (Non-commercial use only)

```
GNU nano 4.8 namaku.go
package main

import "fmt"

func main() {
    fmt.Println("AULIA RAHMAN")
}
```

aulia@rahman:~\$ go run namaku.go\_

Type here to search

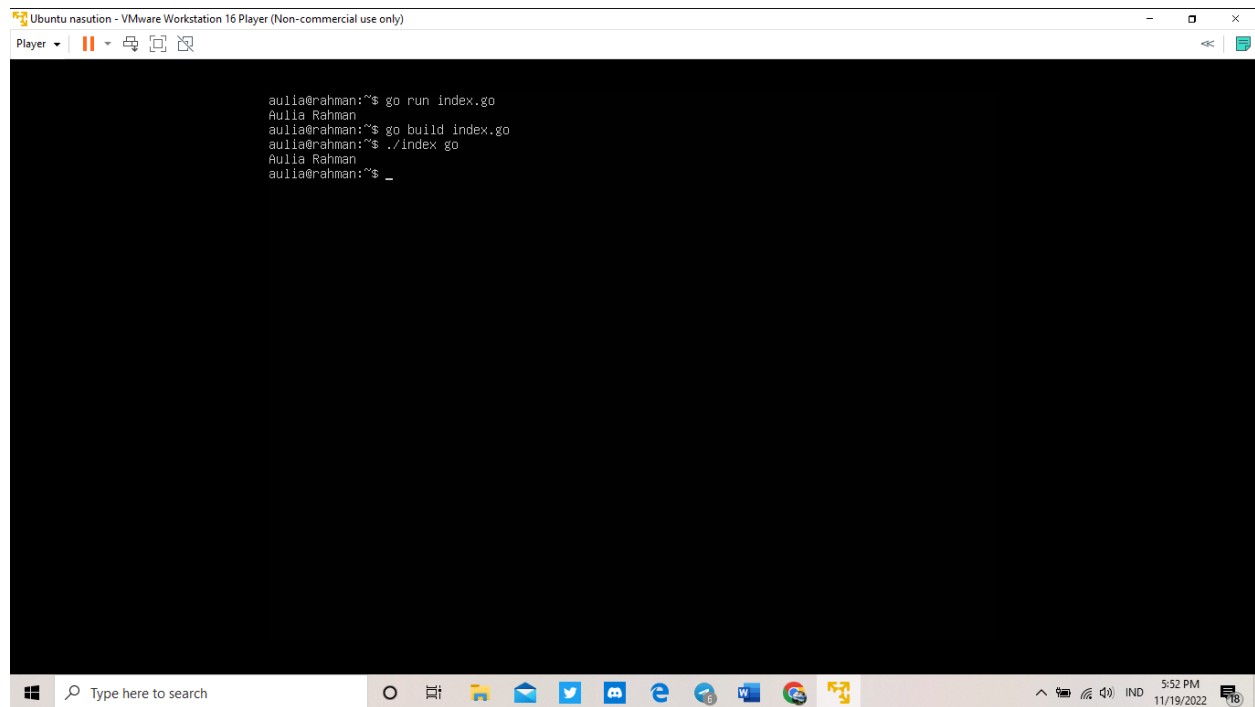
5:47 PM 11/19/2022

Ubuntu nasution - VMware Workstation 16 Player (Non-commercial use only)

```
aulia@rahman:~$ go run index.go
Aulia Rahman
aulia@rahman:~$
```

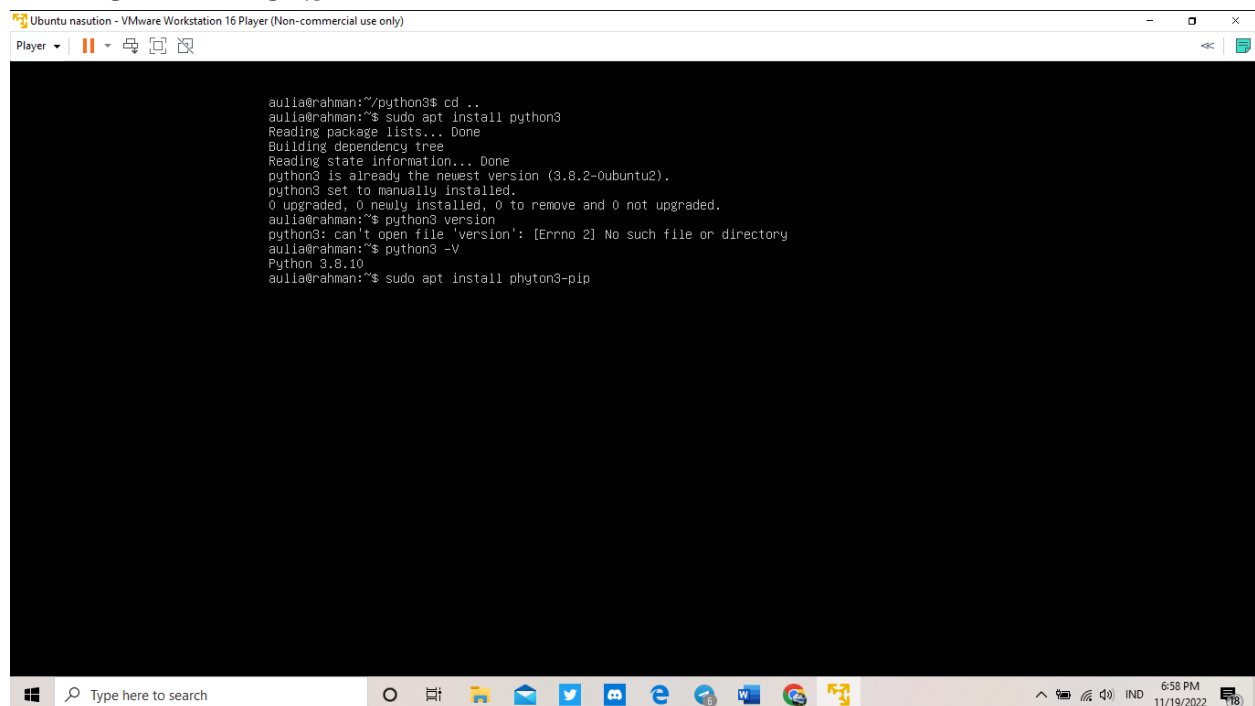
Type here to search

5:50 PM 11/19/2022



```
aulia@rahman:~$ go run index.go
Aulia Rahman
aulia@rahman:~$ go build index.go
aulia@rahman:~$ ./index.go
Aulia Rahman
aulia@rahman:~$ _
```

## DEPLOY PYTHON3



```
aulia@rahman:~/python3$ cd ..
aulia@rahman:~$ sudo apt install python3
Reading package lists... Done
Building dependency tree
Reading state information... Done
python3 is already the newest version (3.8.2-0ubuntu2).
python3 set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
aulia@rahman:~$ python3 version
python3: can't open file 'version': [Errno 2] No such file or directory
aulia@rahman:~$ python3 -V
Python 3.8.10
aulia@rahman:~$ sudo apt install python3-pip
```

```
Ubuntu nasution - VMware Workstation 16 Player (Non-commercial use only)
Player
Setting up libpython3-dev:amd64 (3.8.2-0ubuntu2) ...
Setting up dpkg-dev (1.19.7ubuntu3.2) ...
Setting up python3-pip (20.0.2-5ubuntu1.6) ...
Setting up python3.8-dev (3.8.10-0ubuntu1~20.04.5) ...
Setting up build-essential (12.8ubuntu1.1) ...
Setting up python3-dev (3.8.2-0ubuntu2) ...
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for libc-bin (2.31-0ubuntu9.9) ...
aulia@rahman:~/python3$ pip install flask
Collecting flask
  Downloading Flask-2.2.2-py3-none-any.whl (101 kB)
    | 101 kB 997 kB/s
Collecting click>=8.0
  Downloading click-8.1.3-py3-none-any.whl (96 kB)
    | 96 kB 1.0 MB/s
Collecting importlib-metadata>=3.6.0; python_version < "3.10"
  Downloading importlib_metadata-5.0.0-py3-none-any.whl (21 kB)
Collecting Werkzeug>=2.2.2
  Downloading Werkzeug-2.2.2-py3-none-any.whl (232 kB)
    | 232 kB 238 kB/s
Collecting Jinja2>=3.0
  Downloading Jinja2-3.1.2-py3-none-any.whl (133 kB)
    | 133 kB 995 kB/s
Collecting itsdangerous>=2.0
  Downloading itsdangerous-2.1.2-py3-none-any.whl (15 kB)
Requirement already satisfied: zipp>=0.5 in /usr/lib/python3/dist-packages (from importlib-metadata>=3.6.0; python_version < "3.10">flask) (1.0.0)
Collecting MarkupSafe>=2.1.1
  Downloading MarkupSafe-2.1.1-cp38-cp38-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (25 kB)
Installing collected packages: click, importlib-metadata, MarkupSafe, Werkzeug, Jinja2, itsdangerous, flask
WARNING: The script flask is installed in '/home/aulia/.local/bin' which is not on PATH.
Consider adding this directory to PATH or, if you prefer to suppress this warning, use --no-warn-s
cript-location.
Successfully installed Jinja2-3.1.2 MarkupSafe-2.1.1 Werkzeug-2.2.2 click-8.1.3 flask-2.2.2 importli
b-metadata-5.0.0 itsdangerous-2.1.2
aulia@rahman:~/python3$ nano index.py
```

```
Ubuntu nasution - VMware Workstation 16 Player (Non-commercial use only)
Player
GNU nano 4.8 index.py
from flask import flask
app = flask(__name__)
@app.route("/")
def auliarahmanlubis():
    return "Aulia Rahman Lubis"
if __name__ == "__main__":
    app.run()

[ Read 7 lines ]
Get Help Write Out Where Is Out Text Justify Cur Pos M-U Undo
Exit Read File Replace Paste Text To Spell Go To Line M-E Redo
```

Browser tabs: (112) 2010s throwback mix, Python | DevOps Stage 1, dumbways-devops14/task3.md, https://crazy-pumas-obey-140-2

Address bar: crazy-pumas-obey-140-213-34-77.local.it

Navigation: Trending, Gmail, YouTube, Maps, YouTube, youtube...

User: Aulia Rahman

Windows taskbar: Search (Type here to search), Task View, File Explorer, Mail, Twitter, Messenger, Edge, Word, Chrome, 3D Viewer, Task Manager

System tray: Network, Volume, Bluetooth, Date/Time (9:52 PM 11/19/2022), Notifications