LAPORAN PRAKTIKUM

TEKNOLOGI CLOUD

PERTEMUAN KE-1

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PROGRAM STUDI : Sistem Informasi
JENJANG : S1

UNIVERSITAS TEKNOLOGI DIGITAL INDONESIA
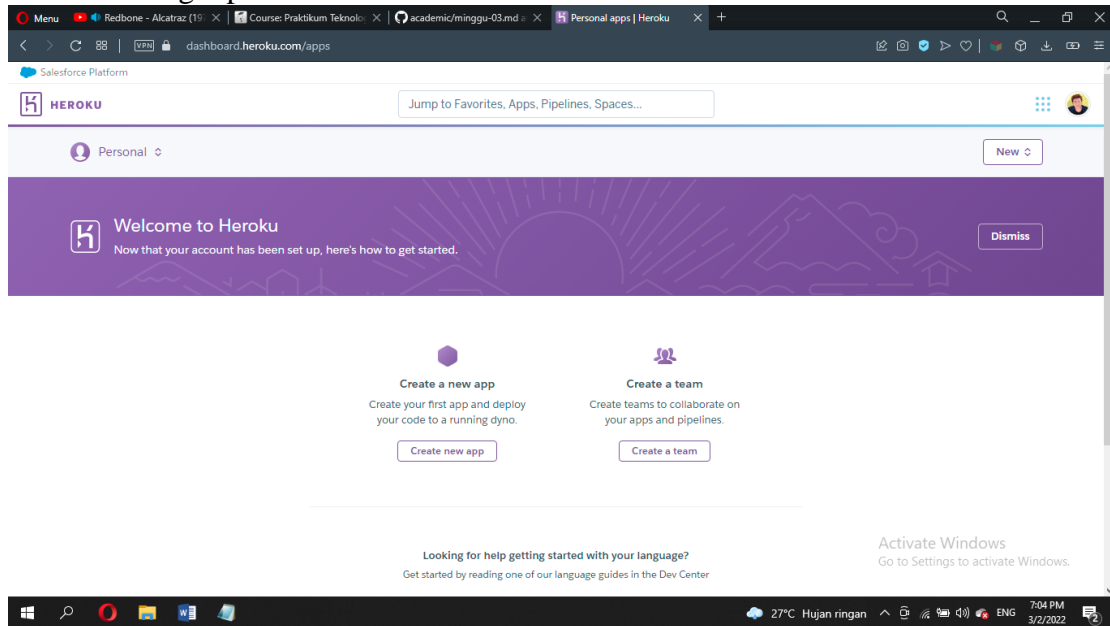
YOGYAKARTA

2022

A. Tujuan
   1. Mahasiswa memahami pengertian PaaS
   2. Mahasiswa mampu menggunakan PaaS dari Heroku untuk mendeploy aplikasi
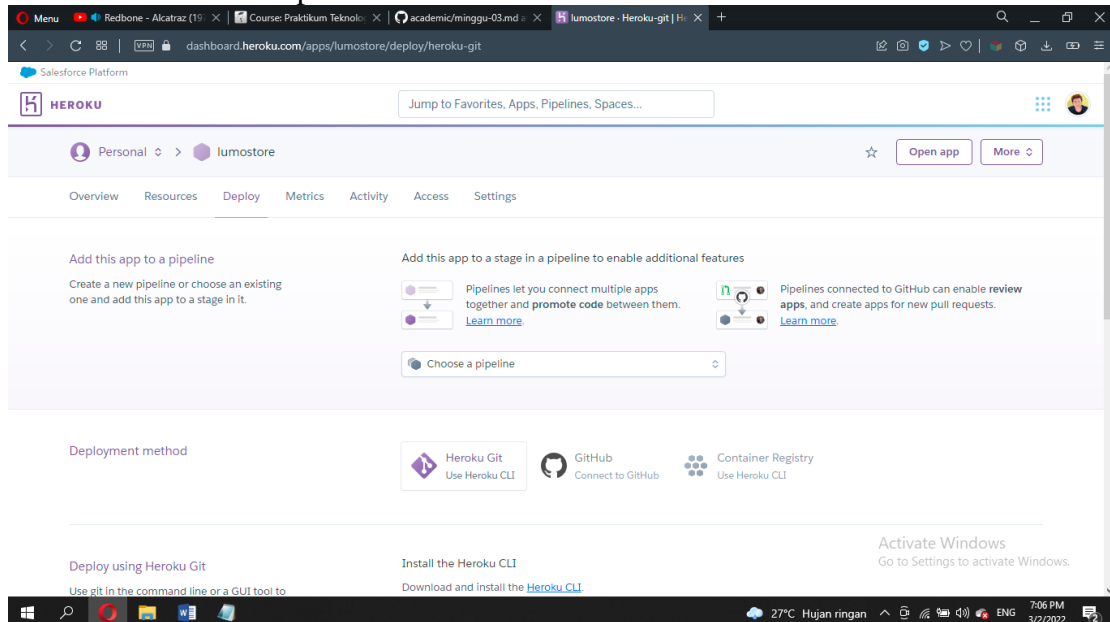B. Pembahasan
   1. Pengertian dan komponen PaaS
   2. Menggunakan layanan Heroku untuk deploy aplikasi di PaaS
C. Latihan
   1. Signup ke Heroku

   2. Membuat aplikasi baru melalui dashboard

   3. Install python (dan PostgreSQL jika diperlukan)
      Disini saya tidak memakai PostgreSQL.

```
Command Prompt

Microsoft Windows [Version 10.0.19042.1526]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Lenovo>python --version
Python 3.10.2

C:\Users\Lenovo>
```
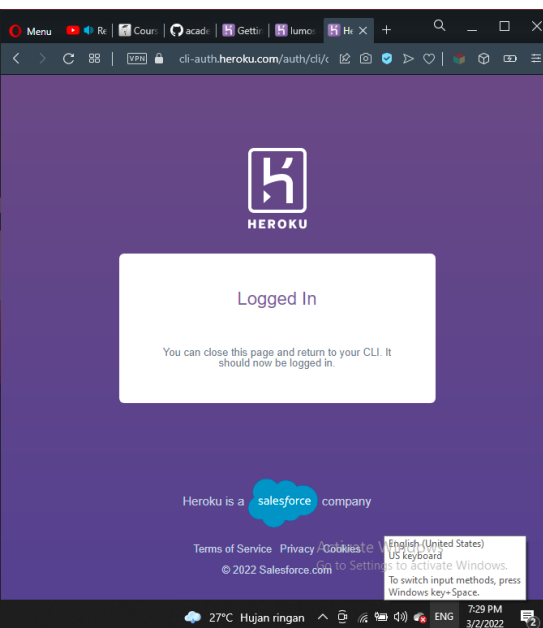
4. Kerjakan Getting Started on Heroku with Python,
   a. Set Up
      - Heroku login

   b. Prepare the app
      - Git clone https://github.com/heroku/python-getting-started.git
      - Cd python-getting-started


```
Lenovo@DESKTOP-5AOBNP2 MINGW64 /d/Kuliah/Semester 6/Praktikum Teknologi Cloud/mi
nggu3
$ git clone https://github.com/heroku/python-getting-started.git
Cloning into 'python-getting-started'...
remote: Enumerating objects: 512, done.
remote: Total 512 (delta 0), reused 0 (delta 0), pack-reused 512                 (42
Receiving objects:  83% (425/512)
Receiving objects: 100% (512/512), 95.55 KiB | 4.34 MiB/s, done.
Resolving deltas: 100% (237/237), done.

Lenovo@DESKTOP-5AOBNP2 MINGW64 /d/Kuliah/Semester 6/Praktikum Teknologi Cloud/minggu3
$ cd python-getting-started
```

   c. Deploy the app
      - Heroku create


```
Lenovo@DESKTOP-5AOBNP2 MINGW64 /d/Kuliah/Semester 6/Praktikum Teknologi Cloud/minggu3/python-g
etting-started (main)
Creating app... done, ● morning-lake-74460
https://morning-lake-74460.herokuapp.com/ | https://git.heroku.com/morning-lake-74460.git
```
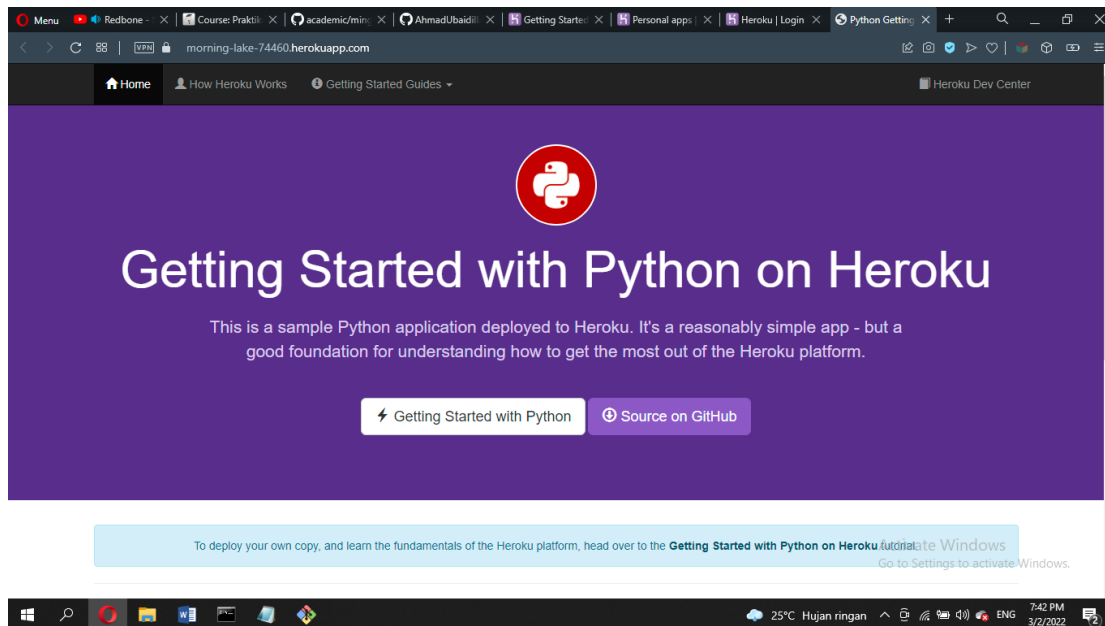
      - Git push heroku main

```
Lenovo@DESKTOP-5A0BNP2 MINGW64 /d/Kuliah/Semester 6/Praktikum Teknologi Cloud/minggu3/python-g
etting-started (main)
$ git push heroku main
Enumerating objects: 512, done.
Counting objects: 100% (512/512), done.
Delta compression using up to 4 threads
Compressing objects: 100% (238/238), done.
Writing objects: 100% (512/512), 95.53 KiB | 15.92 MiB/s, done.
Total 512 (delta 237), reused 512 (delta 237), pack-reused 0
remote: Compressing source files... done.
remote: Building source:
remote:
remote: -----> Building on the Heroku-20 stack
remote: -----> Determining which buildpack to use for this app
remote: -----> Python app detected
remote: -----> Using Python version specified in runtime.txt
remote: -----> Installing python-3.10.2
remote: -----> Installing pip 21.3.1, setuptools 57.5.0 and wheel 0.37.0
remote: -----> Installing SQLite3
remote: -----> Installing requirements with pip
remote:         Collecting django
remote:           Downloading Django-4.0.3-py3-none-any.whl (8.0 MB)
remote:         Collecting gunicorn
remote:           Downloading gunicorn-20.1.0-py3-none-any.whl (79 kB)
remote:         Collecting django-heroku
remote:           Downloading django_heroku-0.3.1-py2.py3-none-any.whl (6.2 kB)
remote:         Collecting sqlparse>=0.2.2
remote:           Downloading sqlparse-0.4.2-py3-none-any.whl (42 kB)
remote:         Collecting asgiref<4,>=3.4.1
remote:           Downloading asgiref-3.5.0-py3-none-any.whl (22 kB)
remote:         Collecting whitenoise
remote:           Downloading whitenoise-6.0.0-py3-none-any.whl (19 kB)
remote:         Collecting psycopg2
remote:           Downloading psycopg2-2.9.3.tar.gz (380 kB)
remote:           Preparing metadata (setup.py): started
remote:           Preparing metadata (setup.py): finished with status 'done'
remote:         Collecting dj-database-url>=0.5.0
remote:           Downloading dj_database_url-0.5.0-py2.py3-none-any.whl (5.5 kB)
remote:         Building wheels for collected packages: psycopg2
remote:           Building wheel for psycopg2 (setup.py): started
remote:           Building wheel for psycopg2 (setup.py): finished with status 'done'
remote:           Created wheel for psycopg2: filename=psycopg2-2.9.3-cp310-cp310-linux_x86_64.
whl size=586597 sha256=68d4bb81278585a567511d743fa00392fab47f3cb25fed535883b88af3af01a1
remote:           Stored in directory: /tmp/pip-ephem-wheel-cache-52d9lmla/wheels/81/b6/3d/091a
ad3e8919ea76c84c2674b02ce3ab52de882e091c39249e
remote:         Successfully built psycopg2
remote:         Installing collected packages: sqlparse, asgiref, whitenoise, psycopg2, django,
 dj-database-url, gunicorn, django-heroku
remote:         Successfully installed asgiref-3.5.0 dj-database-url-0.5.0 django-4.0.3 django-
heroku-0.3.1 gunicorn-20.1.0 psycopg2-2.9.3 sqlparse-0.4.2 whitenoise-6.0.0
remote: -----> $ python manage.py collectstatic --noinput
remote:         129 static files copied to '/tmp/build_4a0cf760/staticfiles', 379 post-processe
d.
remote:
remote: -----> Discovering process types
remote:         Procfile declares types -> web
remote:
remote: -----> Compressing...
remote:         Done: 68.1M
remote: -----> Launching...
remote:         Released v5
remote:         https://morning-lake-74460.herokuapp.com/ deployed to Heroku
remote:
remote: Verifying deploy... done.
To https://git.heroku.com/morning-lake-74460.git
 * [new branch]      main -> main
```

- Heroku open

d. View logs
 - Heroku logs –tail

```
$ heroku logs --tail
»    Warning: heroku update available from 7.53.0 to 7.59.3.
2022-03-02T12:38:49.927371+00:00 app[api]: Initial release by user beedh866@gmail.com
2022-03-02T12:38:49.927371+00:00 app[api]: Release v1 created by user beedh866@gmail.com
2022-03-02T12:38:50.091121+00:00 app[api]: Enable Logplex by user beedh866@gmail.com
2022-03-02T12:38:50.091121+00:00 app[api]: Release v2 created by user beedh866@gmail.com
2022-03-02T12:39:45.000000+00:00 app[api]: Build started by user beedh866@gmail.com
2022-03-02T12:40:26.493351+00:00 app[api]: Attach DATABASE (@ref:postgresql-closed-81539) by u
ser beedh866@gmail.com
2022-03-02T12:40:26.493351+00:00 app[api]: Running release v3 commands by user beedh866@gmail.
com
2022-03-02T12:40:26.512798+00:00 app[api]: @ref:postgresql-closed-81539 completed provisioning
, setting DATABASE_URL. by user beedh866@gmail.com
2022-03-02T12:40:26.512798+00:00 app[api]: Release v4 created by user beedh866@gmail.com
2022-03-02T12:40:26.880472+00:00 app[api]: Release v5 created by user beedh866@gmail.com
2022-03-02T12:40:26.880472+00:00 app[api]: Deploy 9659528f by user beedh866@gmail.com
2022-03-02T12:40:26.896982+00:00 app[api]: Scaled to web@1:Free by user beedh866@gmail.com
2022-03-02T12:40:31.234044+00:00 heroku[web.1]: Starting process with command `gunicorn gettin
gstarted.wsgi`
2022-03-02T12:40:32.443419+00:00 app[web.1]: [2022-03-02 12:40:32 +0000] [4] [INFO] Starting g
unicorn 20.1.0
2022-03-02T12:40:32.443698+00:00 app[web.1]: [2022-03-02 12:40:32 +0000] [4] [INFO] Listening
at: http://0.0.0.0:45176 (4)
2022-03-02T12:40:32.443739+00:00 app[web.1]: [2022-03-02 12:40:32 +0000] [4] [INFO] Using work
er: sync
2022-03-02T12:40:32.446956+00:00 app[web.1]: [2022-03-02 12:40:32 +0000] [9] [INFO] Booting wo
rker with pid: 9
2022-03-02T12:40:32.475891+00:00 app[web.1]: [2022-03-02 12:40:32 +0000] [10] [INFO] Booting w
orker with pid: 10
2022-03-02T12:40:32.935817+00:00 heroku[web.1]: State changed from starting to up
2022-03-02T12:40:37.000000+00:00 app[api]: Build succeeded
2022-03-02T12:42:24.349151+00:00 heroku[router]: at=info method=GET path="/" host=morning-lake
-74460.herokuapp.com request_id=702d5c2b-e663-4cd8-8427-8629b81f3af2 fwd="140.213.214.158" dyn
o=web.1 connect=0ms service=15ms status=200 bytes=7719 protocol=https
2022-03-02T12:42:24.350124+00:00 app[web.1]: 10.1.82.132 - - [02/Mar/2022:12:42:24 +0000] "GET
/ HTTP/1.1" 200 7437 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML
, like Gecko) Chrome/98.0.4758.102 Safari/537.36 OPR/84.0.4316.21"
2022-03-02T12:42:25.874785+00:00 heroku[router]: at=info method=GET path="/static/lang-logo.pn
g" host=morning-lake-74460.herokuapp.com request_id=fe8e6e0b-f6df-4d18-870f-7b950ea8f0e2 fwd="
140.213.214.158" dyno=web.1 connect=0ms service=2ms status=200 bytes=2491 protocol=https
2022-03-02T12:42:25.875911+00:00 app[web.1]: 10.1.82.132 - - [02/Mar/2022:12:42:25 +0000] "GET
/static/lang-logo.png HTTP/1.1" 200 0 "https://morning-lake-74460.herokuapp.com/" "Mozilla/5.
0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/98.0.4758.102 Sa
fari/537.36 OPR/84.0.4316.21"
```

```
2022-03-02T12:42:26.734720+00:00 heroku[router]: at=info method=GET path="/favicon.ico" host=m
orning-lake-74460.herokuapp.com request_id=39d1bf2d-aa40-46a6-9941-a5edabd867a5 fwd="140.213.2
14.158" dyno=web.1 connect=0ms service=15ms status=404 bytes=2639 protocol=https
2022-03-02T12:42:26.735286+00:00 app[web.1]: Not Found: /favicon.ico
2022-03-02T12:42:26.735734+00:00 app[web.1]: 10.1.82.132 - - [02/Mar/2022:12:42:26 +0000] "GET
 /favicon.ico HTTP/1.1" 404 2365 "https://morning-lake-74460.herokuapp.com/" "Mozilla/5.0 (Win
dows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/98.0.4758.102 Safari/5
37.36 OPR/84.0.4316.21"
^CTerminate batch job (Y/N)? ^CY
```

    e.   Decine a procfile

    f.   Scale the app

       -   Heroku ps

```
Lenovo@DESKTOP-5A0BNP2 MINGW64 /d/Kuliah/Semester 6/Praktikum Teknologi Cloud/minggu3/python-g
etting-started (main)
$ heroku ps
 »   Warning: heroku update available from 7.53.0 to 7.59.3.
Free dyno hours quota remaining this month: 550h 0m (100%)
Free dyno usage for this app: 0h 0m (0%)
For more information on dyno sleeping and how to upgrade, see:
https://devcenter.heroku.com/articles/dyno-sleeping

=== web (Free): gunicorn gettingstarted.wsgi (1)
web.1: up 2022/03/02 19:40:32 +0700 (~ 19m ago)
```

    g.   Install app dependencies locally

       -   Python3 –m venv venv

```
Lenovo@DESKTOP-5A0BNP2 MINGW64 /d/Kuliah/Semester 6/Praktikum Teknologi Cloud/minggu3/python-g
etting-started (main)
$ python3 -m venv venv

Lenovo@DESKTOP-5A0BNP2 MINGW64 /d/Kuliah/Semester 6/Praktikum Teknologi Cloud/minggu3/python-g
```

       -   Pip install –r requirements.txt

```
Lenovo@DESKTOP-5AOBNP2 MINGW64 /d/Kuliah/Semester 6/Praktikum Teknologi Cloud/minggu3/python-g
etting-started (main)
$ pip install -r requirements.txt
Collecting django
  Downloading Django-4.0.3-py3-none-any.whl (8.0 MB)
     |████████████████████████████████| 8.0 MB 96 kB/s
Collecting gunicorn
  Downloading gunicorn-20.1.0-py3-none-any.whl (79 kB)
     |████████████████████████████████| 79 kB 568 kB/s
Collecting django-heroku
  Downloading django_heroku-0.3.1-py2.py3-none-any.whl (6.2 kB)
Collecting sqlparse>=0.2.2
  Downloading sqlparse-0.4.2-py3-none-any.whl (42 kB)
     |████████████████████████████████| 42 kB 181 kB/s
Collecting asgiref<4,>=3.4.1
  Downloading asgiref-3.5.0-py3-none-any.whl (22 kB)
Collecting tzdata
  Downloading tzdata-2021.5-py2.py3-none-any.whl (339 kB)
     |████████████████████████████████| 339 kB 819 kB/s
Requirement already satisfied: setuptools>=3.0 in c:\program files\windowsapps\pythonsoftwaref
oundation.python.3.10_3.10.752.0_x64__qbz5n2kfra8p0\lib\site-packages (from gunicorn->-r requi
rements.txt (line 2)) (58.1.0)
Collecting whitenoise
  Downloading whitenoise-6.0.0-py3-none-any.whl (19 kB)
Collecting psycopg2
  Downloading psycopg2-2.9.3-cp310-cp310-win_amd64.whl (1.2 MB)
     |████████████████████████████████| 1.2 MB 1.1 MB/s
Collecting dj-database-url>=0.5.0
  Downloading dj_database_url-0.5.0-py2.py3-none-any.whl (5.5 kB)
Installing collected packages: tzdata, sqlparse, asgiref, whitenoise, psycopg2, django, dj-dat
abase-url, gunicorn, django-heroku
  WARNING: The script sqlformat.exe is installed in 'C:\Users\Lenovo\AppData\Local\Packages\Py
thonSoftwareFoundation.Python.3.10_qbz5n2kfra8p0\LocalCache\local-packages\Python310\Scripts'
which is not on PATH.
  Consider adding this directory to PATH or, if you prefer to suppress this warning, use --no-
warn-script-location.
  WARNING: The script django-admin.exe is installed in 'C:\Users\Lenovo\AppData\Local\Packages
\PythonSoftwareFoundation.Python.3.10_qbz5n2kfra8p0\LocalCache\local-packages\Python310\Script
s' which is not on PATH.
  Consider adding this directory to PATH or, if you prefer to suppress this warning, use --no-
warn-script-location.
  WARNING: The script gunicorn.exe is installed in 'C:\Users\Lenovo\AppData\Local\Packages\Pyt
honSoftwareFoundation.Python.3.10_qbz5n2kfra8p0\LocalCache\local-packages\Python310\Scripts' w
hich is not on PATH.
  Consider adding this directory to PATH or, if you prefer to suppress this warning, use --no-
warn-script-location.
```

- Pip list

```
Lenovo@DESKTOP-5A0BNP2 MINGW64
etting-started (main)
$ pip list
Package                   Version
------------------------- ---------
argon2-cffi               21.1.0
asgiref                   3.5.0
attrs                     21.2.0
backcall                  0.2.0
bleach                    4.1.0
certifi                   2021.10.8
cffi                      1.15.0
charset-normalizer        2.0.8
colorama                  0.4.4
cycler                    0.11.0
debugpy                   1.5.1
decorator                 5.1.0
defusedxml                0.7.1
dj-database-url           0.5.0
Django                    4.0.3
django-heroku             0.3.1
entrypoints               0.3
fonttools                 4.28.2
future                    0.18.2
gunicorn                  20.1.0
idna                      3.3
ipykernel                 6.5.0
ipython                   7.29.0
ipython-genutils          0.2.0
ipywidgets                7.6.5
jedi                      0.18.0
Jinja2                    3.0.3
jsonschema                4.2.1
jupyter                   1.0.0
jupyter-client            7.0.6
jupyter-console           6.4.0
jupyter-core              4.9.1
jupyterlab-pygments       0.1.2
jupyterlab-widgets        1.0.2
kiwisolver                1.3.2
MarkupSafe                2.0.1
matplotlib                3.5.0
matplotlib-inline         0.1.3
mistune                   0.8.4
mysql-connector           2.2.9
```

```
mysql-connector           2.2.9
nbclient                  0.5.8
nbconvert                 6.3.0
nbformat                  5.1.3
nest-asyncio              1.5.1
notebook                  6.4.5
numpy                     1.21.4
oauthlib                  3.1.1
packaging                 21.2
pandas                    1.3.4
pandocfilters             1.5.0
parso                     0.8.2
pickleshare               0.7.5
Pillow                    8.4.0
prometheus-client         0.12.0
prompt-toolkit            3.0.22
psycopg2                  2.9.3
pycparser                 2.21
Pygments                  2.10.0
pymongo                   3.12.0
pyparsing                 2.4.7
pyrsistent                0.17.3
python-dateutil           2.8.2
python-twitter            3.5
pytz                      2021.3
pywin32                   302
pywinpty                  1.1.5
pyzmq                     22.3.0
qtconsole                 5.2.0
QtPy                      1.11.2
requests                  2.26.0
requests-oauthlib         1.3.0
Send2Trash                1.8.0
setuptools-scm            6.3.2
six                       1.16.0
sqlparse                  0.4.2
terminado                 0.12.1
testpath                  0.5.0
tomli                     1.2.2
tornado                   6.1
traitlets                 5.1.1
tweepy                    4.4.0
tzdata                    2021.5
urllib3                   1.26.7
wcwidth                   0.2.5
webencodings              0.5.1
whitenoise                6.0.0
widgetsnbextension        3.5.2
```

h. Run the app locally
- Python manage.py collecstatic

```
Lenovo@DESKTOP-5A0BNP2 MINGW64 /d/Kuliah/Semester 6/Praktikum Teknologi Cloud/minggu3/python-g
etting-started (main)
$ python manage.py collectstatic

129 static files copied to 'D:\Kuliah\Semester 6\Praktikum Teknologi Cloud\minggu3\python-gett
ing-started\staticfiles', 379 post-processed.
```

- Heroku local –f

```
Lenovo@DESKTOP-5AOBNP2 MINGW64 /d/Kuliah/Semester 6/Praktikum Teknologi Cloud/minggu3/python-g
etting-started (main)
$ heroku local -f Procfile.windows
 »    Warning: heroku update available from 7.53.0 to 7.59.3.
[OKAY] Loaded ENV .env File as KEY=VALUE Format
8:20:41 PM web.1 |  Watching for file changes with StatReloader
8:20:41 PM web.1 |  Performing system checks...
8:20:42 PM web.1 |  System check identified some issues:
8:20:42 PM web.1 |  WARNINGS:
8:20:42 PM web.1 |  hello.Greeting: (models.W042) Auto-created primary key used when not defin
ing a primary key type, by default 'django.db.models.AutoField'.
8:20:42 PM web.1 |      HINT: Configure the DEFAULT_AUTO_FIELD setting or the AppConfig.defaul
t_auto_field attribute to point to a subclass of AutoField, e.g. 'django.db.models.BigAutoFiel
d'.
8:20:42 PM web.1 |  System check identified 1 issue (0 silenced).
8:20:42 PM web.1 |  You have 19 unapplied migration(s). Your project may not work properly unt
il you apply the migrations for app(s): admin, auth, contenttypes, hello, sessions.
8:20:42 PM web.1 |  Run 'python manage.py migrate' to apply them.
8:20:42 PM web.1 |  March 02, 2022 - 20:20:42
8:20:42 PM web.1 |  Django version 4.0.3, using settings 'gettingstarted.settings'
8:20:42 PM web.1 |  Starting development server at http://0.0.0.0:5000/
8:20:42 PM web.1 |  Quit the server with CTRL-BREAK.
```

- Heroku local

```
etting-started (main)
$ heroku local
 »    Warning: heroku update available from 7.53.0 to 7.59.3.
[OKAY] Loaded ENV .env File as KEY=VALUE Format
8:26:46 PM web.1 |  'gunicorn' is not recognized as an internal or external command,
8:26:46 PM web.1 |  operable program or batch file.
[DONE] Killing all processes with signal  SIGINT
8:26:46 PM web.1 Exited with exit code null
```

D. Tugas