Dev-op Lab		
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1.Initiate Laravel Project :

- Install Laravel App with Composer on Docker
- ติดตั้ง Docker ลงบน Local computer ที่ cmd โดยการใช้คำสั่ง ดังรูปที่ 1

```
docker run --rm --interactive --tty --volume $PWD:/app composer create-project --prefer-dist laravel/laravel
app
```

รูปที่ 1 คำสั่งที่ใช้แสดงผลบน cmd

- Change permission of the directory because composer in Docker use root user to generate the project.

แสดงผลลัพธ์การติดตั้ง Docker บน cmd ดังรูปที่ 2

รูปที่ 2 ผลลัพธ์การติดตั้ง Docker บน cmd

2. Develop Laravel with docker-compose

- Add docker-compose.yml file to the root project directory.

```yaml
version: "3.5"
services:
  # Laravel (PHP/Nginx)
  app:
    image: registry.gitlab.com/creditok/docker-nginx-php-laravel/master
    depends_on:
      - database
    working_dir: /var/www/html/
    volumes:
      - ./:/var/www/html:cached
    env_file:
      - "docker-compose.env"
    environment:
      - "CONTAINER_ROLE=app"
    ports:
      - "8080:8080"
  # Database (MySQL)
  database:
    image: mysql:5.6
    volumes:
      - dbdata:/var/lib/mysql
    environment:
      - "MYSQL_DATABASE=homestead"
      - "MYSQL_USER=homestead"
      - "MYSQL_PASSWORD=secret"
      - "MYSQL_ROOT_PASSWORD=secret"
    ports:
      - "33061:3306"

volumes:
  dbdata:
```

รูปที่ 3 docker-compose.yml ใน VS code

- Add **docker-compose.env** to set env when run docker-compose

รูปที่ 4 docker-compose.env ใน VS code

- Run **docker-compose up** to launch the app.

รูปที่ 5 Run **docker-compose up** บน cmd

- Enter the web browser to http://127.0.0.1:8080 to open the app.

รูปที่ 6 Run web browser to http://127.0.0.1:8080

- To stop the docker-compose, press **"ctrl+c"** on your terminal or run **"docker-compose down"** to make sure docker-compose really goes down.

รูปที่ 7 stop the docker-compose

3. Build Dockerfile

- Create a file name **Dockerfile** with the content

```
FROM registry.gitlab.com/creditok/docker-nginx-php-laravel/master
COPY ./ /var/www/html/
RUN chown -R www-data /var/www/html/storage/
```

รูปที่ 8 Dockerfile ใน VS Code

- Build Docker image with command **"docker build .**

รูปที่ 9 สร้าง Docker image โดยคำสั่ง "docker build ." บน cmd

- Use this docker image as a container by running a command

"**docker run -p 8080:8080 … "** โดย … คือ image id ดังรูปที่ 9


```
C:\Users\Natchariyawong\lab_se_9.11.2020\app>docker images
REPOSITORY          TAG         IMAGE ID        CREATED          SIZE
herekao             latest      00c4b3024435    12 hours ago     296MB
composer            latest      9ebeaf27e5de    4 days ago       176MB
mysql               5.6         c580203d8753    2 weeks ago      302MB

C:\Users\Natchariyawong\lab_se_9.11.2020\app>docker run -p 8080:8080 herekao
[s6-init] making user provided files available at /var/run/s6/etc...exited 0.
[s6-init] ensuring user provided files have correct perms...exited 0.
[fix-attrs.d] applying ownership & permissions fixes...
[fix-attrs.d] done.
[cont-init.d] executing container initialization scripts...
[cont-init.d] done.
[services.d] starting services
[services.d] done.
wait-for-it.sh: waiting 120 seconds for 127.0.0.1:9000
[10-Nov-2020 02:44:02] NOTICE: fpm is running, pid 186
[10-Nov-2020 02:44:02] NOTICE: ready to handle connections
[10-Nov-2020 02:44:02] NOTICE: systemd monitor interval set to 10000ms
wait-for-it.sh: 127.0.0.1:9000 is available after 1 seconds
nginx port is opening at 8080
2020/11/10 02:44:03 [notice] 214#214: using the "epoll" event method
2020/11/10 02:44:03 [notice] 214#214: nginx/1.14.2
2020/11/10 02:44:03 [notice] 214#214: OS: Linux 4.19.128-microsoft-standard
2020/11/10 02:44:03 [notice] 214#214: getrlimit(RLIMIT_NOFILE): 1048576:1048576
2020/11/10 02:44:03 [notice] 214#214: start worker processes
```

รูปที่ 10 Run Docker image โดยคำสั่ง **"docker run -p 8080:8080 …"** บน cmd

- Open http://127.0.0.1:8080 on web browser to see the result.
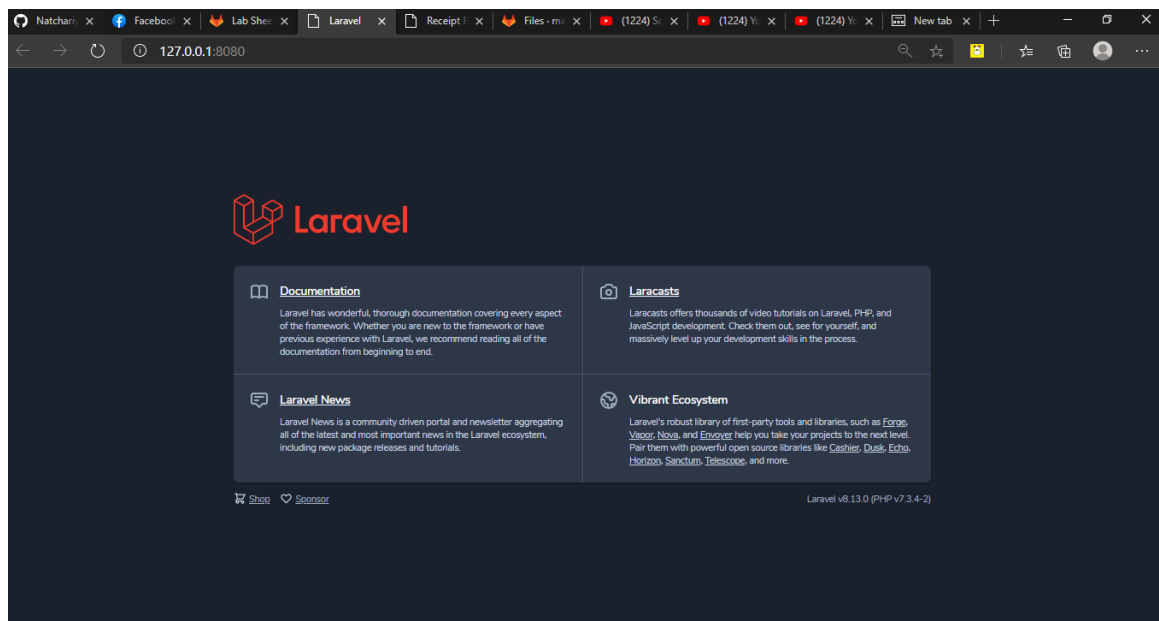
รูปที่ 11 Open http://127.0.0.1:8080 บน web browser

4. Build GitLab CI Pipeline

- Add a file ".gitlab-ci.yml" with content

```
before_script:
  - "[[ ! -e /.dockerenv ]] && exit 0"

stages:
  - dependency
  - test
  - release

variables:
  # MySQL configuration
  MYSQL_ROOT_PASSWORD: root
  MYSQL_DATABASE: homestead
  MYSQL_USER: homestead
  MYSQL_PASSWORD: secret
  DB_HOST: dbtest

  # dind configuration
  DOCKER_HOST: tcp://docker:2375/
  DOCKER_DRIVER: overlay2

dependency:composer:
  stage: dependency
  image: composer
  cache:
    untracked: true
    key: "$CI_COMMIT_REF_SLUG-vendor"
    paths:
      - vendor/
  script:
    - composer install --prefer-dist --no-ansi --no-interaction --no-progress
  artifacts:
    paths:
      - ./vendor
    expire_in: 1 days
    when: always

test:phpunit:
  stage: test
  image: registry.gitlab.com/creditok/docker-nginx-php-laravel/master
  services:
    - name: mysql:5.7
      alias: dbtest
  dependencies:
    - dependency:composer
```

```yaml
  needs:
    - dependency:composer
  variables:
    APP_KEY: "base64:qP6TeoYdYZarFrauZr0ezIpVZFH5gvgNVK15+ZAMIqI="
  script:
    - php vendor/phpunit/phpunit/phpunit
  artifacts:
    paths:
      - ./storage/logs # for debugging
    expire_in: 1 days
    when: always


release:docker:
  stage: release
  image: docker:stable
  services:
    - docker:dind
  dependencies:
    - dependency:composer
  script:
    - docker build --pull -t app_image .
    # Login to GitLab Registry
    - docker login -u $CI_REGISTRY_USER -p $CI_REGISTRY_PASSWORD $CI_REGISTRY
    # Tag and push to GitLab Registry
    - docker tag app_image $CI_REGISTRY_IMAGE/$CI_COMMIT_REF_NAME:$CI_BUILD_RE
F
    - docker push $CI_REGISTRY_IMAGE/$CI_COMMIT_REF_NAME:$CI_BUILD_REF
    - docker tag app_image $CI_REGISTRY_IMAGE/$CI_COMMIT_REF_NAME:latest
    - docker push $CI_REGISTRY_IMAGE/$CI_COMMIT_REF_NAME:latest
  only:
    - master
    - develop
  tags:
    - docker
  retry: 1
```

รูปที่ 12 "**.gitlab-ci.yml**" ใน VS Code

-Create **"Repository"** to Gitlab

รูปที่ 13 Create **"Repository"** to Gitlab

- Git Commit and Push to the GitLab Repo.

```
Natchariyawong@LAPTOP-PPC7PING MINGW64 ~/lab_se_9.11.2020/app (master)
$ git commit -m "add creditOK"
[master (root-commit) a119b7b] add creditOK
 87 files changed, 10543 insertions(+)
 create mode 100644 .editorconfig
 create mode 100644 .env.example
 create mode 100644 .gitattributes
 create mode 100644 .gitignore
 create mode 100644 .gitlab-ci.yml
 create mode 100644 .styleci.yml
 create mode 100644 Dockerfile
 create mode 100644 README.md
 create mode 100644 app/Console/Kernel.php
 create mode 100644 app/Exceptions/Handler.php
 create mode 100644 app/Http/Controllers/Controller.php
 create mode 100644 app/Http/Kernel.php
 create mode 100644 app/Http/Middleware/Authenticate.php
 create mode 100644 app/Http/Middleware/EncryptCookies.php
 create mode 100644 app/Http/Middleware/PreventRequestsDuringMaintenance.php
 create mode 100644 app/Http/Middleware/RedirectIfAuthenticated.php
 create mode 100644 app/Http/Middleware/TrimStrings.php
 create mode 100644 app/Http/Middleware/TrustHosts.php
 create mode 100644 app/Http/Middleware/TrustProxies.php
 create mode 100644 app/Http/Middleware/VerifyCsrfToken.php
 create mode 100644 app/Models/User.php
 create mode 100644 app/Providers/AppServiceProvider.php
 create mode 100644 app/Providers/AuthServiceProvider.php
 create mode 100644 app/Providers/BroadcastServiceProvider.php
 create mode 100644 app/Providers/EventServiceProvider.php
 create mode 100644 app/Providers/RouteServiceProvider.php
 create mode 100644 artisan
 create mode 100644 bootstrap/app.php
 create mode 100644 bootstrap/cache/.gitignore
 create mode 100644 composer.json
```

```
Natchariyawong@LAPTOP-PPC7PING MINGW64 ~/lab_se_9.11.2020/app (master)
$ git pull
warning: no common commits
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
Unpacking objects: 100% (3/3), 237 bytes | 1024 bytes/s, done.
From https://gitlab.com/Natchariyawong25/creditok
 * [new branch]      master     -> origin/master
There is no tracking information for the current branch.
Please specify which branch you want to merge with.
See git-pull(1) for details.

    git pull <remote> <branch>

If you wish to set tracking information for this branch you can do so with:

    git branch --set-upstream-to=origin/<branch> master
```

```
Natchariyawong@LAPTOP-PPC7PING MINGW64 ~/lab_se_9.11.2020/app (master)
$ git pull origin master --allow-unrelated-histories
From https://gitlab.com/Natchariyawong25/creditok
 * branch            master     -> FETCH_HEAD
CONFLICT (add/add): Merge conflict in README.md
Auto-merging README.md
Automatic merge failed; fix conflicts and then commit the result.

Natchariyawong@LAPTOP-PPC7PING MINGW64 ~/lab_se_9.11.2020/app (master|MERGING)
$ git push origin master
To https://gitlab.com/Natchariyawong25/creditok.git
 ! [rejected]        master -> master (non-fast-forward)
error: failed to push some refs to 'https://gitlab.com/Natchariyawong25/creditok.git'
hint: Updates were rejected because the tip of your current branch is behind
hint: its remote counterpart. Integrate the remote changes (e.g.
hint: 'git pull ...') before pushing again.
hint: See the 'Note about fast-forwards' in 'git push --help' for details.

Natchariyawong@LAPTOP-PPC7PING MINGW64 ~/lab_se_9.11.2020/app (master|MERGING)
$ git pull origin master --allow-unrelated-histories
error: Pulling is not possible because you have unmerged files.
hint: Fix them up in the work tree, and then use 'git add/rm <file>'
hint: as appropriate to mark resolution and make a commit.
fatal: Exiting because of an unresolved conflict.

Natchariyawong@LAPTOP-PPC7PING MINGW64 ~/lab_se_9.11.2020/app (master|MERGING)
$ git add .

Natchariyawong@LAPTOP-PPC7PING MINGW64 ~/lab_se_9.11.2020/app (master|MERGING)
$ git commit -m "add creditOK"
[master 213db14] add creditOK

Natchariyawong@LAPTOP-PPC7PING MINGW64 ~/lab_se_9.11.2020/app (master)
$ git push origin master
Enumerating objects: 117, done.
Counting objects: 100% (117/117), done.
Delta compression using up to 8 threads
Compressing objects: 100% (96/96), done.
Writing objects: 100% (115/115), 69.32 KiB | 1.28 MiB/s, done.
Total 115 (delta 9), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (9/9), done.
To https://gitlab.com/Natchariyawong25/creditok.git
   3cf2eb0..213db14  master -> master
```
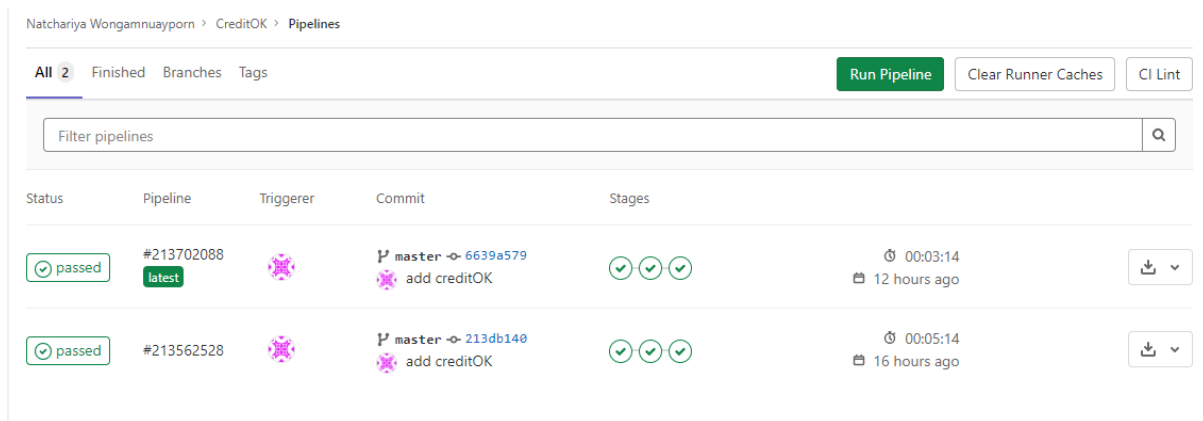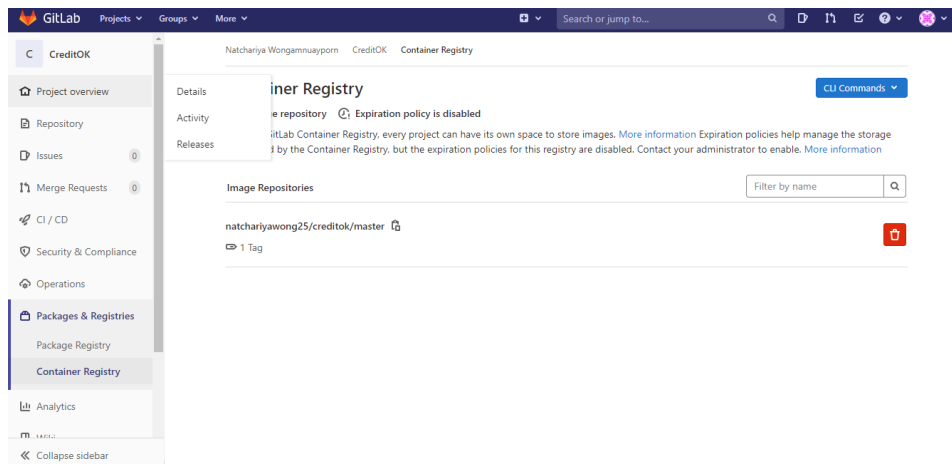
รูปที่ 14 Git Commit and Push to the GitLab Repo

-Open the project and go to CI/CD page to see the CI/CD pipeline.

รูปที่ 15 CI/CD pipeline

- Open **Packages & Registries** => **"Container Registry"** to see your Docker Image

รูปที่ 16 Container Registry

- Try run your docker image from GitLab on Localhost and hope it works!
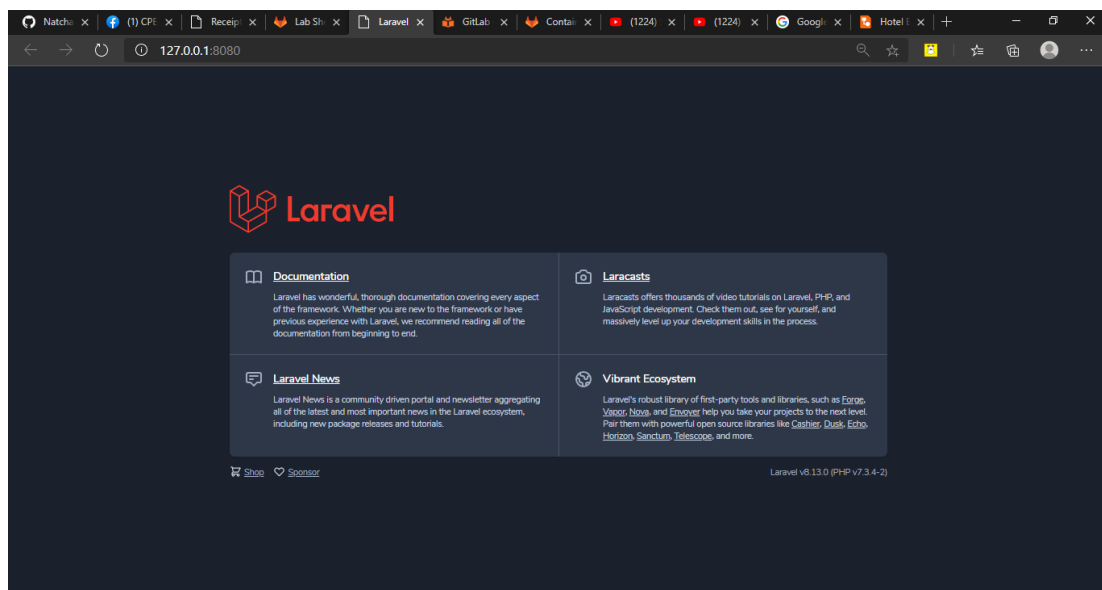
* ใช้คำสั่ง run บน cmd ดังรูปที่ 17

```
docker run [options] registry.example.com/group/project/image [arguments]
```

รูปที่ 17 คำสั่ง run บน cmd

รูปที่ 18 run your docker image from GitLab บน cmd

รูปที่ 19 run your docker image from GitLab on Localhost