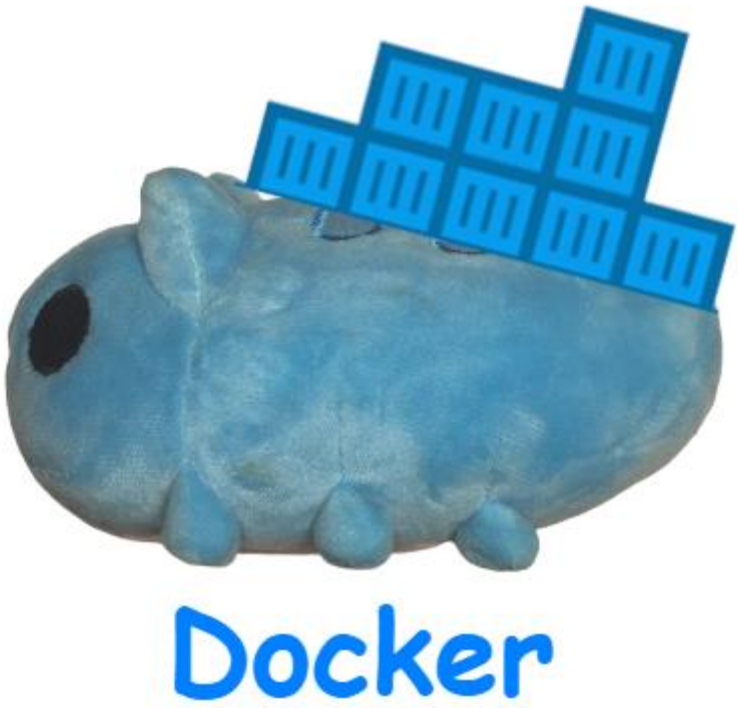
Lab02 Docker



提敘:

嘎波跟派大星發現網路上好多有關自己的梗圖，於是想要做個服務拿來存梗圖，但他們懶得自己寫程式。有一天他們在深海的大鳳梨裡找到了包含許多 Dockerfile 的檔案包，貌似每個 Dockerfile 都代表了組成他們要的服務的其中一項功能。

今天他們發包給你，因為你是位善於與鯨魚先生溝通的大師，能幫嘎波跟派大星將各個服務串接起來，並成功部屬梗圖倉庫服務嗎?

注意，嘎波跟派大星不希望你更改他們找到的檔案，所以你不能修改 Dockerfile 與原始程式碼。

目標:

在不修改 Dockerfile 與現有程式碼的狀況下，使用 docker-compose 或 docker run 或相關工具將服務架設起來，並符合以下規定。

本次 lab 需有以下容器實例，並請留意將各容器的 NAMES 設定為以下相同文字(將會以此評分)。

- frontend
- text
- img
- list

容器們能以以下方向 ping 的到(詳見附錄圖例之箭頭方向)

- frontend -> text (在 frontend 容器中能成功 ping 到 text 容器)
- frontend -> list (在 frontend 容器中能成功 ping 到 list 容器)
- text -> list (在 text 容器中能成功 ping 到 list 容器)
- img -> list(在 img 容器中能成功 ping 到 list 容器)

frontend 與 img 容器需設定端口映射(HostPort:ContainerPort)

- frontend (8080:8083)
- img (8081:8081)

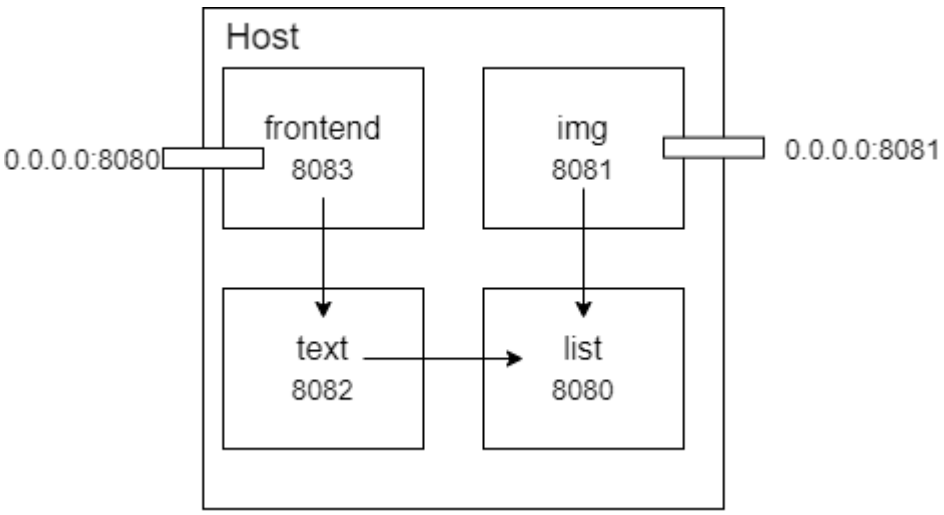
frontend 容器中須有設定環境變數 `HOSTIP` 為當前 wan ip

存取 http://hostip:8080 可正確顯示服務(圖片與文字顯示出來)

注意事項:

1. 第一次 build images 可能需要等待一陣子，若出現無法成功 build 請聯絡助教。
2. HOSTIP 可從 ip addr 指令中找到，即為 wireguard 網卡上的 ip。
3. 要測試服務 http://<wanip>:8080 請記得先使用 testvpn

附錄:



測試指令:

Test at external or internal	Host	Target	Test command	Score
External	VM	確認是否有以 frontend text img list 為名的容器實例。	ssh <studentId>@<wanip> 'sudo docker ps --format "table {{.Names}}" | grep -v "NAMES" | grep "img|frontend|text|list" | sort | wc -l' # 結果應該要是 4 (代表有四個符合條件的容器實例)	20
		docker exec 進入各容器，並開始測試是否能 ping 到其他容器	sudo docker exec -t <frontend frontend、text、img> ping <text、list、list、list> -c 1 -W 1 | grep -P "64 bytes from .* \(.*\): icmp_seq=1" # 會判斷是否有符合字串	20
		docker port [container] 檢測 frontend 與 img 是否有達成端口映射	sudo docker port frontend | grep -P "8083\/.* -> 0\.0\.0\.0:8080" sudo docker port img | grep -P "8081\/.* -> 0\.0\.0\.0:8081"	20
		檢測 frontend 中是否有環境變數 HOSTIP，其值為 <wan ip>	sudo docker exec -t frontend env | grep HOSTIP | sed "s/[^0-9.]*//g" # 判斷是否為 wan ip	20
		檢測 http://hostip:8080 是否有成功顯示服務。 1. 判斷服務是否運行 2. 確認服務內容是否正確 3. 判斷圖片網址是否正確	curl -s -w "%{http_code}" -o /dev/null <wan ip>:8080 curl -s $1:8080 | sha256sum | sed "s/[^0-9a-zA-Z]//g" curl -s -w "%{http_code}" -o /dev/null $imgurl	20

Target:

Without modifying the Dockerfile and existing code, use docker-compose or docker run or related tools to set up the service, and meet the following requirements.

This lab needs to have the following container instances, and please note that the NAMES of each container is set to the same text below (this will be the score).

- frontend
- text
- img
- list

Containers can be pinged in the following directions (see the arrow directions in the appendix legend for details)

- frontend -> text (Can successfully ping to the text container in the frontend container)
- frontend -> list
- text -> list
- img -> list

frontend and img containers need to set port mapping (HostPort:ContainerPort)

- frontend (8080:8083)
- img (8081:8081)

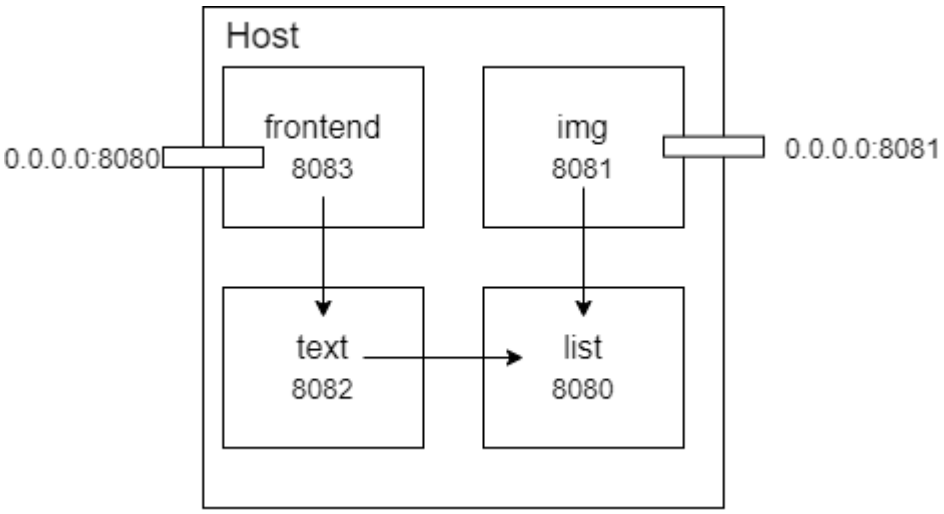
The frontend container must have the environment variable `HOSTIP` set to the current wan ip

Access http://hostip:8080 to display the service correctly (images and text are displayed)

Precautions:

1. It may take a while to build images for the first time. If the build fails, please contact the teaching assistant.
2. HOSTIP can be found from the ip addr command.
3. To test service http://<wanip>:8080 need to use testvpn first.

appendix:



test command:

Test at external or internal	Host	Target	Test command	Score
External	VM	Check if there is a container instance named frontend text img list.	ssh <studentId>@<wanip> 'sudo docker ps --format "table {{.Names}}" | grep -v "NAMES" | grep "img|frontend|text|list" | sort | wc -l' # The result should be 4 (representing four eligible container instances)	20
		docker exec enters each container and starts testing whether it can ping to other containers	sudo docker exec -t <frontend frontend、text、img> ping <text、list、list、list> -c 1 -W 1 | grep -P "64 bytes from .* \(.*\): icmp_seq=1" # Will determine whether there is a matching string	20
		docker port [container] Check whether frontend and img have reached port mapping	sudo docker port frontend | grep -P "8083\/.* -> 0\.0\.0\.0:8080" sudo docker port img | grep -P "8081\/.* -> 0\.0\.0\.0:8081"	20
		Check if there is an environment variable HOSTIP in frontend, its value is <wan ip>	sudo docker exec -t frontend env | grep HOSTIP | sed "s/[^0-9.]*//g" # Determine whether it is wan ip	20
		Check whether http://hostip:8080 has successfully displayed the service. 1. Determine if the service is running 2. confirm whether the service content is correct 3. Determine if the image URL is correct	curl -s -w "%{http_code}" -o /dev/null <wan ip>:8080 curl -s $1:8080 | sha256sum | sed "s/[^0-9a-zA-Z]//g" curl -s -w "%{http_code}" -o /dev/null $imgurl	20