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COEN 241: Cloud Computing

Homework 2 (Your Own Serverless Infrastructure)

Tasks:

- **Provide a screenshot of invoking the figlet function**

Deploying figlet:

```
ssingla@sparallels:~ (11.311s)
faas-cli store deploy figlet
Function figlet already exists, attempting rolling-update.

Deployed. 200 OK.
URL: http://127.0.0.1:8080/function/figlet
```
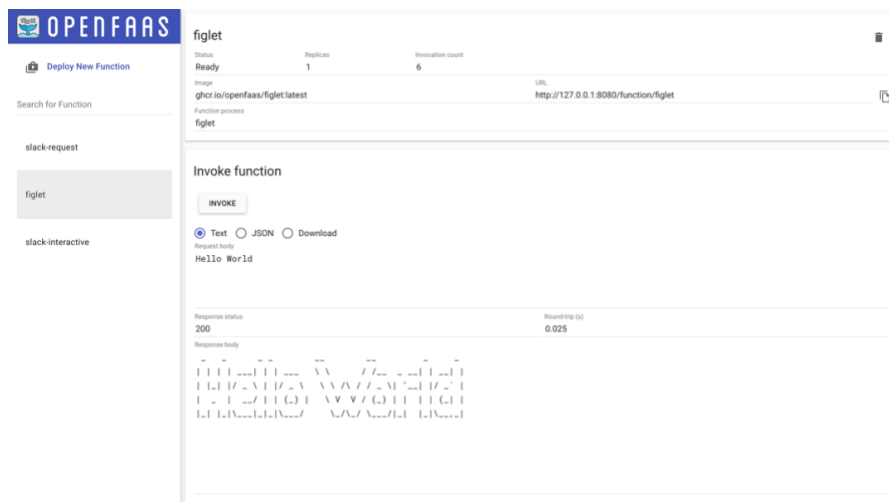
Invoking through command line:

Invoking through OpenFaaS UI:

- **Provide a screenshot of running the following command**
  ```
  sudo journalctl -u faasd --lines 40
  ```

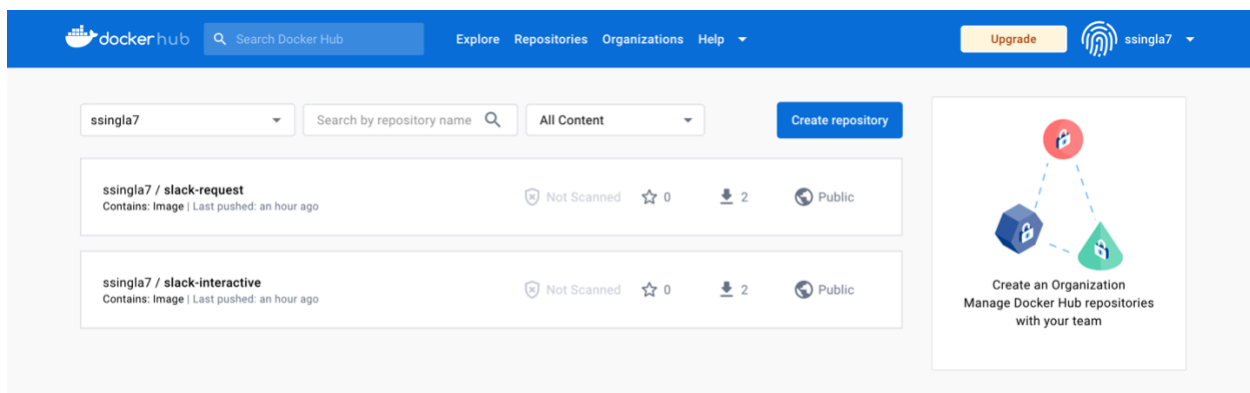 It shows the log entries of faasd

- **Provide a screenshot of your OpenFaaS gateway AFTER deploying figlet, slack-handler and slack-interactive functions**

  OpenFaaS Gateway, available at http://127.0.0.1:8080 by default. It shows list of all the deployed functions on the OpenFaaS
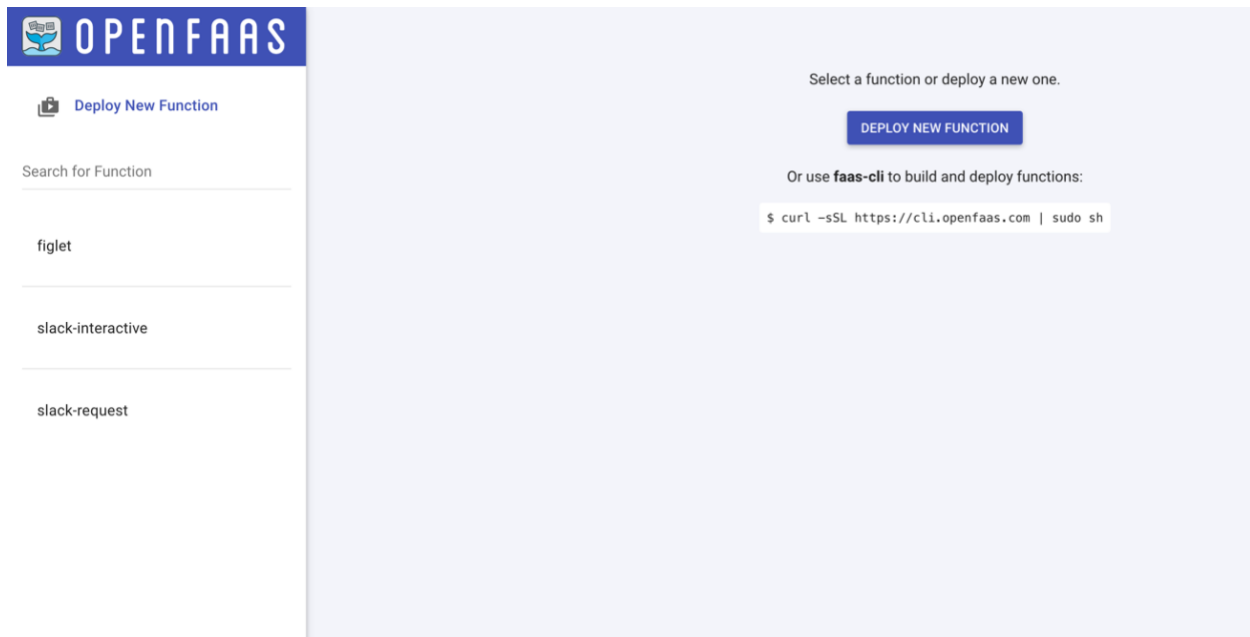
  Functions deployed can also be seen in Docker hub dashboard

- **Provide a screenshot of invoking slack-request and slack-interactive functions**

1. slack-request
   a) Invoking function through OpenFaaS CLI

```
ssingla@sparallels:~ (0.098s)
echo "Hello World" | faas-cli invoke slack-request
{"text": "Serverless Message", "attachments": [{"fields": [{"short": true, "value": "100", "title": "Amazing Leve
l"}], "author_icon": "", "image_url": "https://avatars.githubusercontent.com/u/49471018?s=400&v=4", "author_name"
: "Shubham Singla", "title": "The Awesome world of Cloud Computing! COEN 241"}, {"text": "COEN 241 is the most aw
esome class ever!.", "title": "About COEN 241"}, {"title": "Would you recommend COEN 241 to your friends?", "colo
r": "#3AA3E3", "actions": [{"text": "Of Course!", "type": "button", "name": "recommend", "value": "recommend"}, {
"text": "Most Definitely!", "type": "button", "name": "definitely", "value": "definitely"}], "callback_id": "resp
onse123", "fallback": "Would you recommend COEN 241 to your friends?", "attachment_type": "default"}]}
```

   b) Invoking function through OpenFaaS UI

2. slack-interactive

a) Invoking function through OpenFaaS CLI

b) Invoking function through OpenFaaS UI

Questions:

1. What is the command to invoke the slack-request function?
    a. Via Curl

    Ans. `curl http://127.0.0.1:8080/function/slack-request --data 'Hello World'`

    b. Via faas-cli

    Ans. `echo "Hello World" | faas-cli invoke slack-request`

2. What is the output you see when you invoke the slack-request function?

Ans. We see the JSON response as returned by the slack-request/handler.py python file

```
ssingla@sparallels:~ (0.195s)
curl http://127.0.0.1:8080/function/slack-request --data 'Hello World'

{"text": "Serverless Message", "attachments": [{"fields": [{"short": true, "value": "100", "title": "Amazing Leve
l"}], "author_icon": "", "image_url": "https://avatars.githubusercontent.com/u/49471018?s=400&v=4", "author_name"
: "Shubham Singla", "title": "The Awesome world of Cloud Computing! COEN 241"}, {"text": "COEN 241 is the most aw
esome class ever!.", "title": "About COEN 241"}, {"title": "Would you recommend COEN 241 to your friends?", "colo
r": "#3AA3E3", "actions": [{"text": "Of Course!", "type": "button", "name": "recommend", "value": "recommend"}, {
"text": "Most Definitely!", "type": "button", "name": "definitely", "value": "definitely"}], "callback_id": "resp
onse123", "fallback": "Would you recommend COEN 241 to your friends?", "attachment_type": "default"}]}
```

```
ssingla@sparallels:~ (0.098s)
echo "Hello World" | faas-cli invoke slack-request

{"text": "Serverless Message", "attachments": [{"fields": [{"short": true, "value": "100", "title": "Amazing Leve
l"}], "author_icon": "", "image_url": "https://avatars.githubusercontent.com/u/49471018?s=400&v=4", "author_name"
: "Shubham Singla", "title": "The Awesome world of Cloud Computing! COEN 241"}, {"text": "COEN 241 is the most aw
esome class ever!.", "title": "About COEN 241"}, {"title": "Would you recommend COEN 241 to your friends?", "colo
r": "#3AA3E3", "actions": [{"text": "Of Course!", "type": "button", "name": "recommend", "value": "recommend"}, {
"text": "Most Definitely!", "type": "button", "name": "definitely", "value": "definitely"}], "callback_id": "resp
onse123", "fallback": "Would you recommend COEN 241 to your friends?", "attachment_type": "default"}]}
```

3. What is the command to invoke the slack-interactive function?
    a. Via Curl

    Ans. `curl http://127.0.0.1:8080/function/slack-interactive --data '{"Name": "John"}'`

    b. Via faas-cli

    Ans. `echo '{"Name": "John"}' | faas-cli invoke slack-interactive`

4. What is the output you see when you invoke the slack-interactive function?

Ans. We see the JSON response as returned by the slack-interactive/handler.py python file

```
ssingla@sparallels:~ (0.129s)
curl http://127.0.0.1:8080/function/slack-interactive --data '{"Name":"John"}'

{"attachments": [{"footer": "Slack Apps built on OpenFaas", "author_link": "https://github.com/shubhamsingla27/CO
EN241_CloudComputing.git", "color": "#36a64f", "text": "Head over to COEN 241", "title": "COEN 241", "ts": 123456
789, "author_name": "", "title_link": "https://www.scu.edu/engineering/academic-programs/department-of-computer-e
ngineering/graduate/course-descriptions/", "image_url": "https://www.scu.edu/media/offices/umc/scu-brand-guidelin
es/visual-identity-amp-photography/visual-identity-toolkit/logos-amp-seals/Mission-Dont3.png", "response_type": "
ephemeral", "replace_original": true, "footer_icon": "https://a.slack-edge.com/45901/marketing/img/_rebrand/meta/
slack_hash_256.png", "pretext": "Ahh yeah! Great choice, COEN 241 is absolutely amazing!", "fallback": "Required
plain-text summary of the attachment.", "thumb_url": "https://www.scu.edu/engineering/academic-programs/departmen
t-of-computer-engineering/graduate/course-descriptions/", "author_icon": "https://avatars.githubusercontent.com/u
/49471018?s=400&v=4"}]}
```

```
ssingla@sparallels:~ (0.127s)
echo '{"Name":"John"}' | faas-cli invoke slack-interactive

{"attachments": [{"footer": "Slack Apps built on OpenFaas", "author_link": "https://github.com/shubhamsingla27/CO
EN241_CloudComputing.git", "color": "#36a64f", "text": "Head over to COEN 241", "title": "COEN 241", "ts": 123456
789, "author_name": "", "title_link": "https://www.scu.edu/engineering/academic-programs/department-of-computer-e
ngineering/graduate/course-descriptions/", "image_url": "https://www.scu.edu/media/offices/umc/scu-brand-guidelin
es/visual-identity-amp-photography/visual-identity-toolkit/logos-amp-seals/Mission-Dont3.png", "response_type": "
ephemeral", "replace_original": true, "footer_icon": "https://a.slack-edge.com/45901/marketing/img/_rebrand/meta/
slack_hash_256.png", "pretext": "Ahh yeah! Great choice, COEN 241 is absolutely amazing!", "fallback": "Required
plain-text summary of the attachment.", "thumb_url": "https://www.scu.edu/engineering/academic-programs/departmen
t-of-computer-engineering/graduate/course-descriptions/", "author_icon": "https://avatars.githubusercontent.com/u
/49471018?s=400&v=4"}]}
```

5. How would you pass different arguments to the functions?

Ans. To pass different argument to the functions, in the curl command, we can change the string passed to the data flag, and, for faas-cli, we can change the stdin by changing the string passed with echo which is then piped to the command itself.

Example:

```
$ curl http://127.0.0.1:8080/function/function_name --data
<string>

$ echo <string> | faas-cli invoke function_name
```

Note: <string> can be a type of JSON object as well.

6. How would you change the slack-interactive function to react to different inputs?

Ans. We can modify the slack-interactive function to take input as **kwargs which is equivalent to taking in the list of arguments like command-line arguments and handle it appropriately inside the function.

Other way is we can take in string input and parse it to JSON and process the information as required inside the function and return JSON as the response of the function.

Extra Credit:

To get a public routable address, I used ngrok.

Steps to use our function as slack app are:

1. First head to https://api.slack.com/apps, select Create New App
2. Next go to Incoming Webhooks section, enable it, and then create a new webhook.
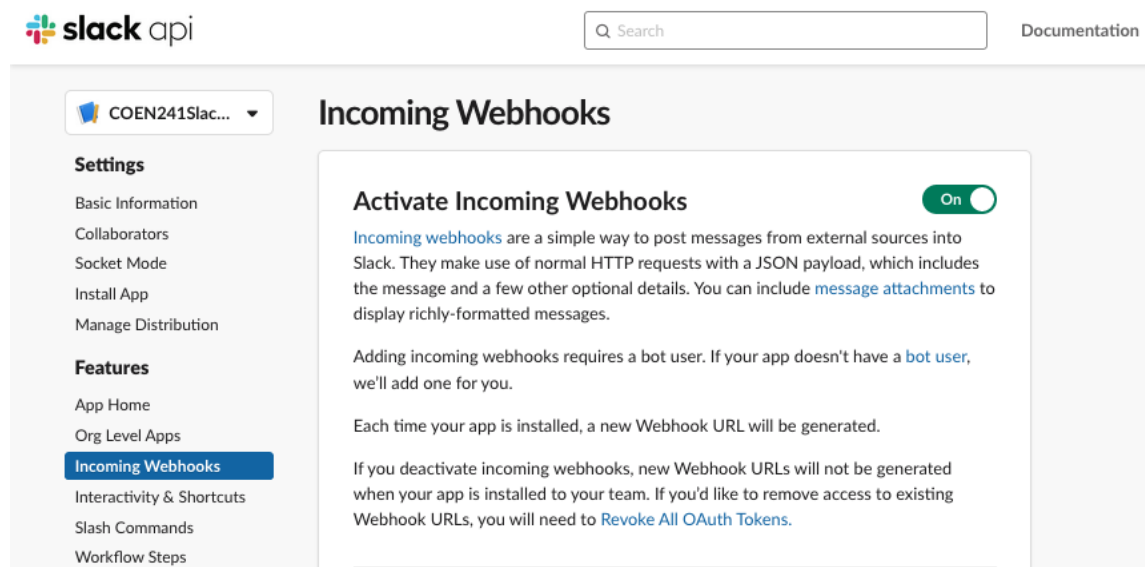
3. Now head over to slash commands and create a new command, e.g., /coen241, and set the Request URL to the public endpoint of your function: https://b836-70-228-75-24.ngrok.io/function/slack-request
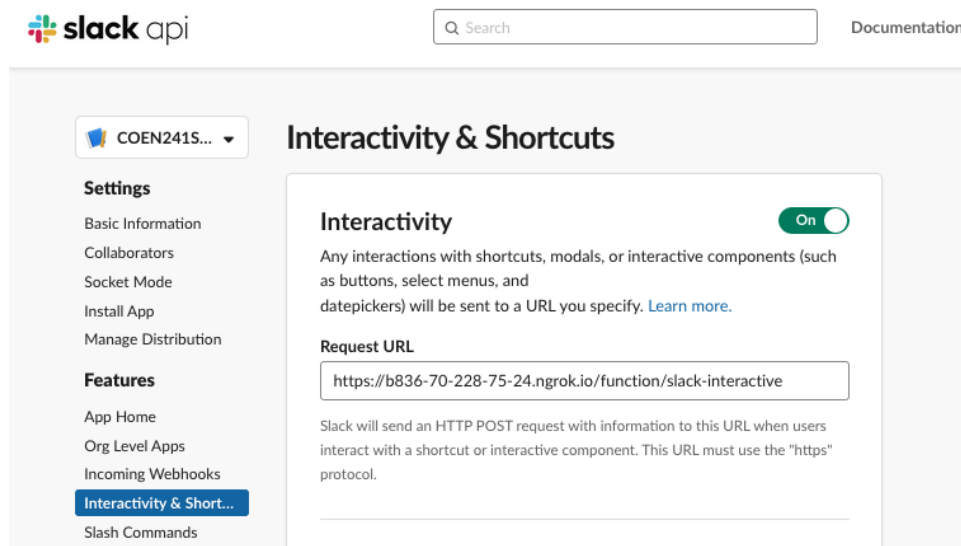

4. Next go to Interactivity & Shortcuts and set the request URL for interactivity: https://b836-70-228-75-24.ngrok.io/function/slack-interactive

5. Once this is done, you should be able to see the slash command integration in your slack workspace.

Slack App: (working screenshots)
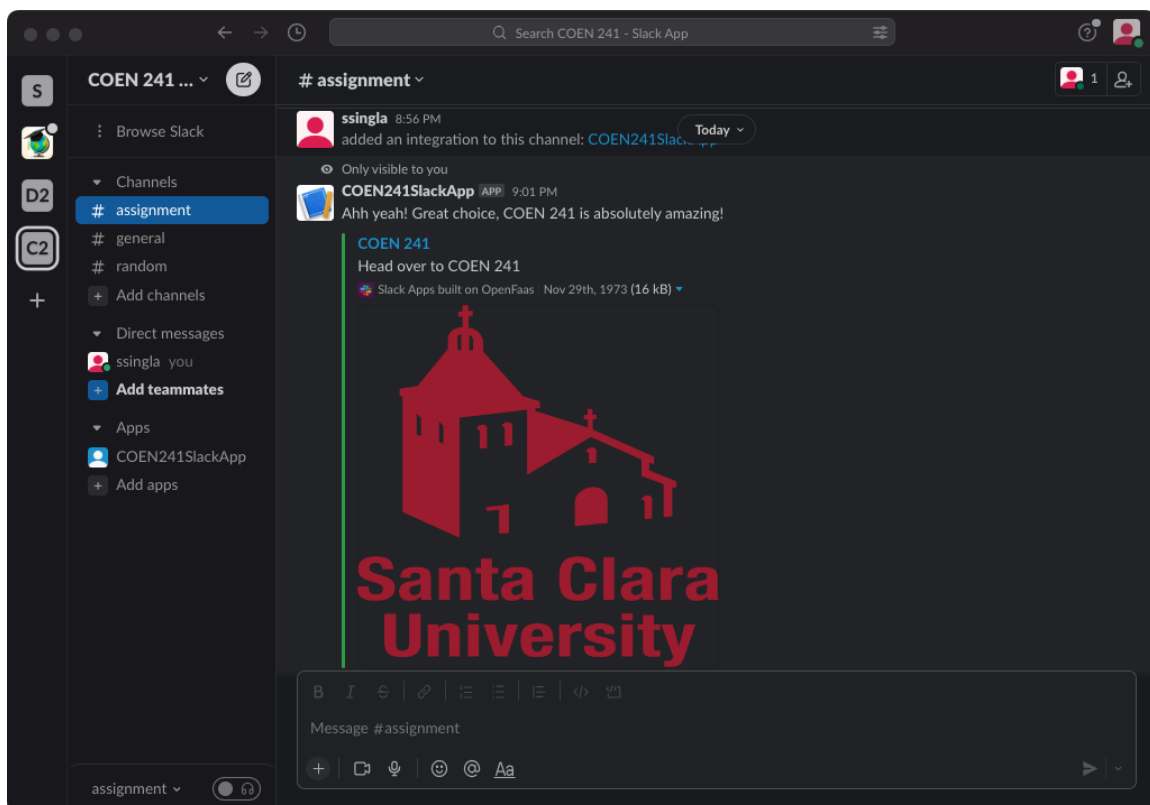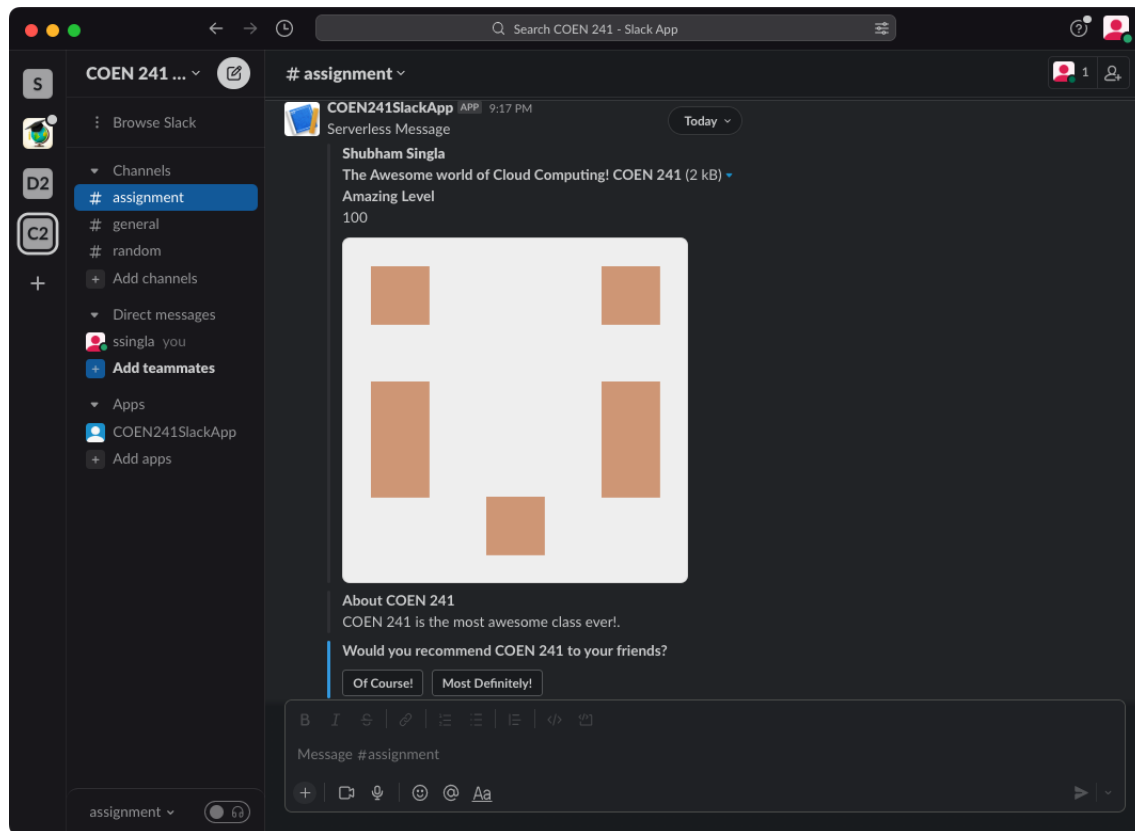
Slack App: (Links to application)

Private URL: https://app.slack.com/client/T04PG0CFK62/C04PR2HMMGC

This URL will only work on my personal workspace.

Public Url:
https://slack.com/oauth/v2/authorize?client_id=4798012529206.4804615658626&scope=incoming-webhook,commands&user_scope=

For this, the redirect URL is set to google, so it will just redirect one to google.com when install app option is clicked. As there was no requirement to enable distribution, I skipped on this step.