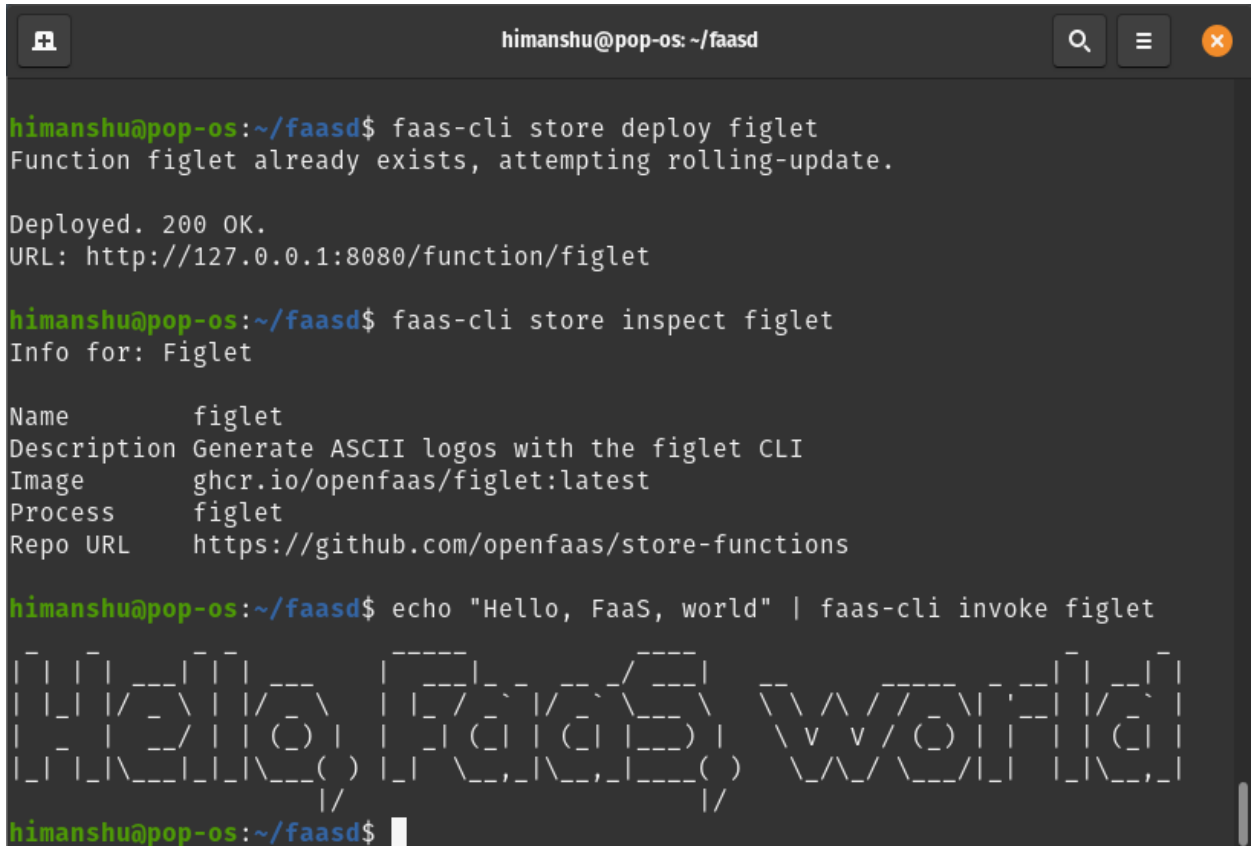


# COEN 241 HW 2

## Your Own Serverless Infrastructure

Invoke the figlet function:

A terminal window titled 'himanshu@pop-os: ~/faasd' with search, menu, and close buttons in the title bar. The terminal shows the following commands and output:

```
himanshu@pop-os:~/faasd$ faas-cli store deploy figlet
Function figlet already exists, attempting rolling-update.

Deployed. 200 OK.
URL: http://127.0.0.1:8080/function/figlet

himanshu@pop-os:~/faasd$ faas-cli store inspect figlet
Info for: Figlet

Name          figlet
Description    Generate ASCII logos with the figlet CLI
Image          ghcr.io/openfaas/figlet:latest
Process        figlet
Repo URL       https://github.com/openfaas/store-functions

himanshu@pop-os:~/faasd$ echo "Hello, FaaS, world" | faas-cli invoke figlet
Hello, FaaS, world

himanshu@pop-os:~/faasd$
```

slack-request/handler.py file uploaded to the git repository.


slack-interactive/handler.py file uploaded to the git repository.


## sudo journalctl -u faasd --lines 40

```
himanshu@pop-os: ~/functions
-- Logs begin at Thu 2021-09-16 14:55:02 PDT, end at Mon 2023-02-20 20:18:44 PST. --
Feb 20 18:11:51 pop-os faasd[16567]: 2023/02/20 18:11:51 - gateway
Feb 20 18:11:51 pop-os faasd[16567]: 2023/02/20 18:11:51 - queue-worker
Feb 20 18:11:51 pop-os faasd[16567]: Starting: basic-auth-plugin
Feb 20 18:11:52 pop-os faasd[16567]: 2023/02/20 18:11:52 Created container: basic-auth-plugin
Feb 20 18:11:52 pop-os faasd[16567]: 2023/02/20 18:11:52 basic-auth-plugin has IP: 10.62.0.2
Feb 20 18:11:52 pop-os faasd[16567]: 2023/02/20 18:11:52 Task: basic-auth-plugin      Container: basic-auth-plugin
Feb 20 18:11:52 pop-os faasd[16567]: Starting: nats
Feb 20 18:11:52 pop-os faasd[16567]: Creating local directory: /var/lib/faasd/nats
Feb 20 18:11:52 pop-os faasd[16567]: 2023/02/20 18:11:52 Running nats with user: "65534"
Feb 20 18:11:53 pop-os faasd[16567]: 2023/02/20 18:11:53 Created container: nats
Feb 20 18:11:53 pop-os faasd[16567]: 2023/02/20 18:11:53 nats has IP: 10.62.0.3
Feb 20 18:11:53 pop-os faasd[16567]: 2023/02/20 18:11:53 Task: nats      Container: nats
Feb 20 18:11:53 pop-os faasd[16567]: Starting: prometheus
Feb 20 18:11:53 pop-os faasd[16567]: Creating local directory: /var/lib/faasd/prometheus
Feb 20 18:11:53 pop-os faasd[16567]: 2023/02/20 18:11:53 Running prometheus with user: "65534"
Feb 20 18:11:53 pop-os faasd[16567]: 2023/02/20 18:11:53 Created container: prometheus
Feb 20 18:11:53 pop-os faasd[16567]: 2023/02/20 18:11:53 prometheus has IP: 10.62.0.4
Feb 20 18:11:53 pop-os faasd[16567]: 2023/02/20 18:11:53 Task: prometheus      Container: prometheus
Feb 20 18:11:53 pop-os faasd[16567]: Starting: gateway
Feb 20 18:11:54 pop-os faasd[16567]: 2023/02/20 18:11:54 Created container: gateway
Feb 20 18:11:54 pop-os faasd[16567]: 2023/02/20 18:11:54 gateway has IP: 10.62.0.5
Feb 20 18:11:54 pop-os faasd[16567]: 2023/02/20 18:11:54 Task: gateway      Container: gateway
Feb 20 18:11:54 pop-os faasd[16567]: Starting: queue-worker
Feb 20 18:11:54 pop-os faasd[16567]: 2023/02/20 18:11:54 Created container: queue-worker
Feb 20 18:11:54 pop-os faasd[16567]: 2023/02/20 18:11:54 queue-worker has IP: 10.62.0.6
Feb 20 18:11:54 pop-os faasd[16567]: 2023/02/20 18:11:54 Task: queue-worker      Container: queue-worker
Feb 20 18:11:54 pop-os faasd[16567]: 2023/02/20 18:11:54 Supervisor init done in: 39 seconds
Feb 20 18:11:54 pop-os faasd[16567]: 2023/02/20 18:11:54 Looking up IP for: "gateway"
Feb 20 18:11:54 pop-os faasd[16567]: 2023/02/20 18:11:54 Resolver rebuilding map
Feb 20 18:11:54 pop-os faasd[16567]: 2023/02/20 18:11:54 Looking up IP for: "prometheus"
Feb 20 18:11:54 pop-os faasd[16567]: 2023/02/20 18:11:54 Resolver: "localhost"="127.0.0.1"
Feb 20 18:11:54 pop-os faasd[16567]: 2023/02/20 18:11:54 Resolver: "faasd-provider"="10.62.0.1"
Feb 20 18:11:54 pop-os faasd[16567]: 2023/02/20 18:11:54 Resolver: "basic-auth-plugin"="10.62.0.2"
Feb 20 18:11:54 pop-os faasd[16567]: 2023/02/20 18:11:54 faasd: waiting for SIGTERM or SIGINT
Feb 20 18:11:54 pop-os faasd[16567]: 2023/02/20 18:11:54 Resolver: "nats"="10.62.0.3"
Feb 20 18:11:54 pop-os faasd[16567]: 2023/02/20 18:11:54 Resolver: "prometheus"="10.62.0.4"
Feb 20 18:11:54 pop-os faasd[16567]: 2023/02/20 18:11:54 Resolver: "gateway"="10.62.0.5"
Feb 20 18:11:54 pop-os faasd[16567]: 2023/02/20 18:11:54 Resolver: "queue-worker"="10.62.0.6"
Feb 20 18:11:54 pop-os faasd[16567]: 2023/02/20 18:11:54 Proxy from: 127.0.0.1:9090, to: prometheus:9090 (10.62.0.4)
Feb 20 18:11:55 pop-os faasd[16567]: 2023/02/20 18:11:55 Proxy from: 0.0.0.0:8080, to: gateway:8080 (10.62.0.5)
himanshu@pop-os: ~/functions$
```

# OpenFaaS Gateway

## Figlet

 **OPENFAAS**

 [Deploy New Function](#)

Search for Function

slack-interactive

figlet

slack-request

figlet

StatusReplicasInvocation count

Ready15

Imageghcr.io/openfaas/figlet:latestURLhttp://127.0.0.1:8080/function/figlet

Function processfiglet

Invoke function

INVOKE

☒ Text ☐ JSON ☐ Download

Request body

Response statusRound-trip (s)

Response body

# slack-request

OPENFAAS

Deploy New Function

Search for Function

slack-request

figlet

slack-interactive

slack-request

Status

Ready

Replicas

1

Invocation count

7

Image

docker.io/himanshudahiya7/slack-request:latest

URL

http://127.0.0.1:8080/function/slack-request

Function process

python index.py

Invoke function

INVOKE

☒ Text

☐ JSON

☐ Download

Request body

Response status

200

Round-trip (s)

0.065

Response body

```
{
  "text": "Serverless Message",
  "attachments": [
    {
      "fields": [
        {
          "short": true,
          "value": "100",
          "title": "Amazing Level"
        }
      ],
      "author_icon": "https://github.com/himanshudahiya7",
      "author_name": "Himanshu Dahiya"
    }
  ]
}
```

## slack-interactive

MySCU Portal - Login to Santa


Files


himanshudahiya7's Profile

himanshudahiya7/coen241

OpenFaaS Portal

127.0.0.1:8080/ui/

 **OPENFAAS**

 [Deploy New Function](#)

Search for Function

slack-interactive

slack-request

figlet

### slack-interactive

Status

Replicas

Invocation count

Ready

1

17

Image

docker.io/himanshudahiya7/slack-interactive:latest

URL

http://127.0.0.1:8080/function/slack-interactive

Function process

python index.py

#### Invoke function

INVOKE

☒ Text ☐ JSON ☐ Download

Request body

Round-trip (s)

0.096

Response status

Response body

## Invoking slack-interactive and slack-request

```
himanshu@pop-os: ~/functions
himanshu@pop-os:~/functions$ curl -d '{"Hello":"Cloud"}' http://127.0.0.1:8080/function/slack-interactive
{"attachments": [{"footer": "Slack Apps built on OpenFaas", "author_link": "https://github.com/himanshudahiya7/coen241", "color": "#36a64f", "text": "Head over to COEN 241", "title": "COEN 241", "ts": 123456789, "author_name": "", "title_link": "https://www.scu.edu/engineering/academic-programs/department-of-computer-engineering/graduate/course-descriptions/", "image_url": "https://www.scu.edu/media/offices/umc/scu-brand-guidelines/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/department-of-computer-engineering/graduate/course-descriptions/", "author_icon": "https://github.com/himanshudahiya7"}]}
himanshu@pop-os:~/functions$ faas-cli invoke slack-interactive
Reading from STDIN - hit (Control + D) to stop.
"hello from the other side"
{"attachments": [{"footer": "Slack Apps built on OpenFaas", "author_link": "https://github.com/himanshudahiya7/coen241", "color": "#36a64f", "text": "Head over to COEN 241", "title": "COEN 241", "ts": 123456789, "author_name": "", "title_link": "https://www.scu.edu/engineering/academic-programs/department-of-computer-engineering/graduate/course-descriptions/", "image_url": "https://www.scu.edu/media/offices/umc/scu-brand-guidelines/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/department-of-computer-engineering/graduate/course-descriptions/", "author_icon": "https://github.com/himanshudahiya7"}]}
himanshu@pop-os:~/functions$
```

```
himanshu@pop-os:~/functions
ing/graduate/course-descriptions/", "image_url": "https://www.scu.edu/media/offices/umc/scu-brand-guidelines/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/department-of-computer-engineering/graduate/course-descriptions/", "author_icon": "https://github.com/himanshudahiya7"}]}
himanshu@pop-os:~/functions$ curl -d '{"Hello":"Cloud"}' http://127.0.0.1:8080/function/slack-request
{"text": "Serverless Message", "attachments": [{"fields": [{"short": true, "value": "100", "title": "Amazing Level"}], "author_icon": "https://github.com/himanshudahiya7", "image_url": "", "author_name": "Himanshu Dahiya", "title": "The Awesome world of Cloud Computing! COEN 241"}, {"text": "COEN 241 is the most awesome class ever!", "title": "About COEN 241"}, {"title": "Would you recommend COEN 241 to your friends?", "color": "#3AA3E3", "actions": [{"text": "Of Course!", "type": "button", "name": "recommend", "value": "recommend"}, {"text": "Most Definitely!", "type": "button", "name": "definitely", "value": "definitely"}], "callback_id": "response123", "fallback": "Would you recommend COEN 241 to your friends?", "attachment_type": "default"}]}
himanshu@pop-os:~/functions$ faas-cli invoke slack-request
Reading from STDIN - hit (Control + D) to stop.
{"text": "Serverless Message", "attachments": [{"fields": [{"short": true, "value": "100", "title": "Amazing Level"}], "author_icon": "https://github.com/himanshudahiya7", "image_url": "", "author_name": "Himanshu Dahiya", "title": "The Awesome world of Cloud Computing! COEN 241"}, {"text": "COEN 241 is the most awesome class ever!", "title": "About COEN 241"}, {"title": "Would you recommend COEN 241 to your friends?", "color": "#3AA3E3", "actions": [{"text": "Of Course!", "type": "button", "name": "recommend", "value": "recommend"}, {"text": "Most Definitely!", "type": "button", "name": "definitely", "value": "definitely"}], "callback_id": "response123", "fallback": "Would you recommend COEN 241 to your friends?", "attachment_type": "default"}]}
himanshu@pop-os:~/functions$
```

## Questions & Answers:

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

- a. Via Curl
- b. Via faas-cli

Ans:

- a. `Curl -d {} localhost:8080/function/slack-request`
- b. `faas-cli invoke slack-request`

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

Ans:

```
himanshu@pop-os:~/functions$ faas-cli invoke slack-request
Reading from STDIN - hit (Control + D) to stop.
{"text": "Serverless Message", "attachments": [{"fields": [{"short": true, "value": "100", "title": "Amazing Level"}], "author_icon": "https://github.com/himanshudahiya7", "image_url": "", "author_name": "Himanshu Dahiya", "title": "The Awesome world of Cloud Computing! COEN 241", {"text": "COEN 241 is the most awesome class ever!", "title": "About COEN 241"}, {"title": "Would you recommend COEN 241 to your friends?", "color": "#3AA3E3", "actions": [{"text": "Of Course!", "type": "button", "name": "recommend", "value": "recommend"}, {"text": "Most Definitely!", "type": "button", "name": "definitely", "value": "definitely"}], "callback_id": "response123", "fallback": "Would you recommend COEN 241 to your friends?", "attachment_type": "default"}]}
himanshu@pop-os:~/functions$
```

### 3. What is the command to invoke the slack-interactive function?

- a. Via curl
- b. Via faas-cli

Ans:

```
himanshu@pop-os: ~/functions
himanshu@pop-os:~/functions$ curl -d '{"Hello":"Cloud"}' http://127.0.0.1:8080/function/slack-interactive
{"attachments": [{"footer": "Slack Apps built on OpenFaas", "author_link": "https://github.com/himanshudahiya7/coen241", "color": "#36a64f", "text": "Head over to COEN 241", "title": "COEN 241", "ts": 123456789, "author_name": "", "title_link": "https://www.scu.edu/engineering/academic-programs/department-of-computer-engineering/graduate/course-descriptions/", "image_url": "https://www.scu.edu/media/offices/umc/scu-brand-guidelines/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/department-of-computer-engineering/graduate/course-descriptions/", "author_icon": "https://github.com/himanshudahiya7"}]}
himanshu@pop-os:~/functions$ faas-cli invoke slack-interactive
Reading from STDIN - hit (Control + D) to stop.
"hello from the other side"
{"attachments": [{"footer": "Slack Apps built on OpenFaas", "author_link": "https://github.com/himanshudahiya7/coen241", "color": "#36a64f", "text": "Head over to COEN 241", "title": "COEN 241", "ts": 123456789, "author_name": "", "title_link": "https://www.scu.edu/engineering/academic-programs/department-of-computer-engineering/graduate/course-descriptions/", "image_url": "https://www.scu.edu/media/offices/umc/scu-brand-guidelines/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/department-of-computer-engineering/graduate/course-descriptions/", "author_icon": "https://github.com/himanshudahiya7"}]}
himanshu@pop-os:~/functions$
```

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

Ans:

```
himanshu@pop-os:~/functions$ faas-cli invoke slack-request
Reading from STDIN - hit (Control + D) to stop.
{"text": "Serverless Message", "attachments": [{"fields": [{"short": true, "value": "100", "title": "Amazing Level"}], "author_icon": "https://github.com/himanshudahiya7", "image_url": "", "author_name": "Himanshu Dahiya", "title": "The Awesome world of Cloud Computing! COEN 241", {"text": "COEN 241 is the most awesome class ever!", "title": "About COEN 241"}, {"text": "Would you recommend COEN 241 to your friends?", "color": "#3AA3E3", "actions": [{"text": "Of Course!", "type": "button", "name": "recommend", "value": "recommend"}, {"text": "Most Definitely!", "type": "button", "name": "definitely", "value": "definitely"}], "callback_id": "response123", "fallback": "Would you recommend COEN 241 to your friends?", "attachment_type": "default"}]}
himanshu@pop-os:~/functions$
```



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

**Ans:** We can pass different arguments by changing the yaml file, just like we edited the hello-python file to return a text we want.

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

**Ans:** We can change the handler.py file to make the slack-interactive function react differently. We can also configure the file to react to the input after we invoke slack-interactive function.