

HW2: Your Own Serverless Infrastructure

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Installation of OpenFaaS:

```
Activities Terminal Oct 28 04:48
ruopuhe@ruopuhe: ~/functions
:////var/run/docker.sock. Is the docker daemon running?
ruopuhe@ruopuhe:~/functions$ kdir -p ~/functions && cd ~/functions
Command 'kdir' not found, did you mean:
command 'mdir' from deb mtools (4.0.24-1)
command 'cdir' from deb cdtool (2.1.8-release-7)
command 'kdig' from deb knot-dnsutils (2.7.8-1)
command 'vdir' from deb coreutils (8.30-3ubuntu2)
command 'dir' from deb coreutils (8.30-3ubuntu2)
command 'hdir' from deb hfsutils (3.2.6-14)
command 'ddir' from deb ddir (2019.0505-1)
command 'mkdir' from deb coreutils (8.30-3ubuntu2)
Try: sudo apt install <deb name>
ruopuhe@ruopuhe:~/functions$ mkdir -p ~/functions && cd ~/functions
ruopuhe@ruopuhe:~/functions$ faas-cli new --lang python slack-request
2022/10/28 04:48:45 No templates found in current directory.
2022/10/28 04:48:45 Attempting to expand templates from https://github.com/openfaas/templates.git
2022/10/28 04:48:46 Fetched 17 template(s) : [csharp dockerfile go java11 java11-vert-x node node12-debian node14 node16 node17 php7 php8 python python3 python3-debian ruby] from https://github.com/openfaas/templates.git
Folder: slack-request created.
Function created in folder: slack-request
Stack file written: slack-request.yml
ruopuhe@ruopuhe:~/functions$
```

```
root@ruopuhe:/home/ruopuhe/functions# sudo systemctl status faasd
● faasd.service - faasd
   Loaded: loaded (/lib/systemd/system/faasd.service; enabled; vendor preset: enabled)
   Active: active (running) since Fri 2022-10-28 11:59:46 UTC; 19h ago
     Main PID: 737 (faasd)
        Tasks: 10 (limit: 4549)
       Memory: 30.1M (limit: 500.0M)
      CGroup: /system.slice/faasd.service
              └─737 /usr/local/bin/faasd up

Oct 28 11:59:48 ruopuhe faasd[737]: 2022/10/28 11:59:48 Resolver: "faasd-provider"="10.62.0.1"
Oct 28 11:59:48 ruopuhe faasd[737]: 2022/10/28 11:59:48 Resolver: "nats"="10.62.0.2"
Oct 28 11:59:48 ruopuhe faasd[737]: 2022/10/28 11:59:48 Resolver: "prometheus"="10.62.0.3"
Oct 28 11:59:48 ruopuhe faasd[737]: 2022/10/28 11:59:48 Resolver: "basic-auth-plugin"="10.62.0.4"
Oct 28 11:59:48 ruopuhe faasd[737]: 2022/10/28 11:59:48 Resolver: "gateway"="10.62.0.5"
Oct 28 11:59:48 ruopuhe faasd[737]: 2022/10/28 11:59:48 Resolver: "queue-worker"="10.62.0.6"
Oct 28 11:59:48 ruopuhe faasd[737]: 2022/10/28 11:59:48 Looking up IP for: "prometheus"
Oct 28 11:59:48 ruopuhe faasd[737]: 2022/10/28 11:59:48 Proxy from: 127.0.0.1:9090, to: prometheus:9090 (10.62.0.3)
Oct 28 11:59:48 ruopuhe faasd[737]: 2022/10/28 11:59:48 faasd: waiting for SIGTERM or SIGINT
Oct 28 11:59:48 ruopuhe faasd[737]: 2022/10/28 11:59:48 Proxy from: 0.0.0.0:8080, to: gateway:8080 (10.62.0.5)
root@ruopuhe:/home/ruopuhe/functions#
```

```

root@ruopuhe:/home/ruopuhe/functions# sudo systemctl status faasd-provider
● faasd-provider.service - faasd-provider
   Loaded: loaded (/lib/systemd/system/faasd-provider.service; enabled; vendor preset: enabled)
   Active: active (running) since Fri 2022-10-28 11:59:46 UTC; 19h ago
     Main PID: 736 (faasd)
        Tasks: 7 (limit: 4549)
      Memory: 22.4M (limit: 500.0M)
     CGroup: /system.slice/faasd-provider.service
             └─736 /usr/local/bin/faasd provider

Oct 29 06:24:25 ruopuhe faasd[736]: 2022/10/29 06:24:25 Resolve: "slack-interactive.openfaas-fn"
Oct 29 06:24:25 ruopuhe faasd[736]: 2022/10/29 06:24:25 slack-interactive.openfaas-fn took 0.060814 seconds
Oct 29 06:24:55 ruopuhe faasd[736]: 2022/10/29 06:24:55 Resolve: "slack-interactive.openfaas-fn"
Oct 29 06:24:56 ruopuhe faasd[736]: 2022/10/29 06:24:56 slack-interactive.openfaas-fn took 0.064867 seconds
Oct 29 06:40:33 ruopuhe faasd[736]: 2022/10/29 06:40:33 Resolve: "slack-request.openfaas-fn"
Oct 29 06:40:33 ruopuhe faasd[736]: 2022/10/29 06:40:33 slack-request.openfaas-fn took 0.043090 seconds
Oct 29 06:40:54 ruopuhe faasd[736]: 2022/10/29 06:40:54 Resolve: "figlet.openfaas-fn"
Oct 29 06:40:54 ruopuhe faasd[736]: 2022/10/29 06:40:54 figlet.openfaas-fn took 0.007167 seconds
Oct 29 06:41:02 ruopuhe faasd[736]: 2022/10/29 06:41:02 Resolve: "figlet.openfaas-fn"
Oct 29 06:41:02 ruopuhe faasd[736]: 2022/10/29 06:41:02 figlet.openfaas-fn took 0.003307 seconds
root@ruopuhe:/home/ruopuhe/functions#

```

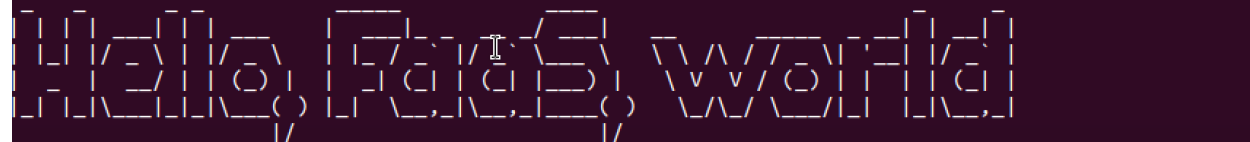
Tasks:

1. Provide a screenshot of invoking the figlet function

```

You must provide a username or registry prefix to the Function's image such as user1/function1
root@ruopuhe:/home/ruopuhe/functions# echo "Hello, FaaS, world" | faas-cli invoke figlet

```



2. Complete slack-request/handler.py

```

1 import json
2
3 def handle(req):
4     data = {
5         "text": "Serverless Message",
6         "attachments": [{
7             "title": "The Awesome world of Cloud Computing! COEN 241",
8             "fields": [{
9                 "title": "Amazing Level",
10                "value": "100",
11                "short": True
12            }],
13            "author_name": "ruopuhe",
14            "author_icon": "https://avatars.githubusercontent.com/u/51266570?s=400&v=4",
15            "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"
16        }],
17        {
18            "title": "About COEN 241",
19            "text": "COEN 241 is the most awesome class ever!."
20        },
21        {
22            "fallback": "Would you recommend COEN 241 to your friends?",
23            "title": "Would you recommend COEN 241 to your friends?",
24            "callback_id": "response123",
25            "color": "#3AA3E3",
26            "attachment_type": "default",
27            "actions": [
28                {
29                    "name": "recommend",
30                    "text": "Of Course!",
31                    "type": "button",
32                    "value": "recommend"
33                },
34                {
35                    "name": "definitely",
36                    "text": "Most Definitely!",
37                    "type": "button",
38                    "value": "definitely"
39                }
40            ]
41        }
42    ]
43    return json.dumps(data)

```

3. Complete slack-interactive/handler.py

```
1 import json
2 import urllib
3
4 def handle(req):
5     urlstring = urllib.unquote(req).decode('utf8').strip('payload=')
6     response = json.loads(urlstring)
7     data = {
8         "attachments": [
9             {
10                 "replace_original": True,
11                 "response_type": "ephemeral",
12                 "fallback": "Required plain-text summary of the attachment.",
13                 "color": "#36a64f",
14                 "pretext": "Ahh yeah! Great choice, COEN 241 is absolutely amazing!",
15                 "author_name": "ruopuhe",
16                 "author_link": "https://github.com/kinghe233",
17                 "author_icon": "https://avatars.githubusercontent.com/u/51266570?s=400&v=4",
18                 "title": "COEN 241",
19                 "title_link": "https://www.scu.edu/engineering/academic-programs/department-of-computer-engineering/graduate/course-descriptions/",
20                 "text": "Head over to COEN 241",
21                 "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",
22                 "thumb_url": "https://www.scu.edu/engineering/academic-programs/department-of-computer-engineering/graduate/course-descriptions/",
23                 "footer": "Slack Apps built on OpenFaas",
24                 "footer_icon": "https://a.slack-edge.com/45901/marketing/ing/_rebrand/meta/slack_hash_256.png",
25                 "ts": 123456789
26             }
27         ]
28     }
29     return json.dumps(data)
```

4. Provide a screenshot of running the following command

`sudo journalctl -u faasd --lines 40`

```
root@ruopuhe:/home/ruopuhe/functions# sudo journalctl -u faasd --lines 40
-- Logs begin at Fri 2022-10-28 05:31:10 UTC, end at Fri 2022-10-28 23:37:57 UTC. --
Oct 28 11:59:46 ruopuhe faasd[737]: 2022/10/28 11:59:46 - gateway
Oct 28 11:59:46 ruopuhe faasd[737]: 2022/10/28 11:59:46 - queue-worker
Oct 28 11:59:46 ruopuhe faasd[737]: Starting: nats
Oct 28 11:59:46 ruopuhe faasd[737]: Creating local directory: /var/lib/faasd/nats
Oct 28 11:59:46 ruopuhe faasd[737]: 2022/10/28 11:59:46 Running nats with user: "65534"
Oct 28 11:59:46 ruopuhe faasd[737]: 2022/10/28 11:59:46 Created container: nats
Oct 28 11:59:47 ruopuhe faasd[737]: 2022/10/28 11:59:47 nats has IP: 10.62.0.2
Oct 28 11:59:47 ruopuhe faasd[737]: 2022/10/28 11:59:47 Task: nats Container: nats
Oct 28 11:59:47 ruopuhe faasd[737]: Starting: prometheus
Oct 28 11:59:47 ruopuhe faasd[737]: Creating local directory: /var/lib/faasd/prometheus
Oct 28 11:59:47 ruopuhe faasd[737]: 2022/10/28 11:59:47 Running prometheus with user: "65534"
Oct 28 11:59:47 ruopuhe faasd[737]: 2022/10/28 11:59:47 Created container: prometheus
Oct 28 11:59:47 ruopuhe faasd[737]: 2022/10/28 11:59:47 prometheus has IP: 10.62.0.3
Oct 28 11:59:47 ruopuhe faasd[737]: 2022/10/28 11:59:47 Task: prometheus Container: prometheus
Oct 28 11:59:47 ruopuhe faasd[737]: Starting: basic-auth-plugin
Oct 28 11:59:47 ruopuhe faasd[737]: 2022/10/28 11:59:47 Created container: basic-auth-plugin
Oct 28 11:59:47 ruopuhe faasd[737]: 2022/10/28 11:59:47 basic-auth-plugin has IP: 10.62.0.4
Oct 28 11:59:47 ruopuhe faasd[737]: 2022/10/28 11:59:47 Task: basic-auth-plugin Container: basic-auth-plugin
Oct 28 11:59:47 ruopuhe faasd[737]: Starting: gateway
Oct 28 11:59:47 ruopuhe faasd[737]: 2022/10/28 11:59:47 Created container: gateway
Oct 28 11:59:48 ruopuhe faasd[737]: 2022/10/28 11:59:48 gateway has IP: 10.62.0.5
Oct 28 11:59:48 ruopuhe faasd[737]: 2022/10/28 11:59:48 Task: gateway Container: gateway
Oct 28 11:59:48 ruopuhe faasd[737]: Starting: queue-worker
Oct 28 11:59:48 ruopuhe faasd[737]: 2022/10/28 11:59:48 Created container: queue-worker
Oct 28 11:59:48 ruopuhe faasd[737]: 2022/10/28 11:59:48 queue-worker has IP: 10.62.0.6
Oct 28 11:59:48 ruopuhe faasd[737]: 2022/10/28 11:59:48 Task: queue-worker Container: queue-worker
Oct 28 11:59:48 ruopuhe faasd[737]: 2022/10/28 11:59:48 Supervisor init done in: 1 second
Oct 28 11:59:48 ruopuhe faasd[737]: 2022/10/28 11:59:48 Looking up IP for: "gateway"
Oct 28 11:59:48 ruopuhe faasd[737]: 2022/10/28 11:59:48 Resolver rebuilding map
Oct 28 11:59:48 ruopuhe faasd[737]: 2022/10/28 11:59:48 Resolver: "localhost"="127.0.0.1"
Oct 28 11:59:48 ruopuhe faasd[737]: 2022/10/28 11:59:48 Resolver: "faasd-provider"="10.62.0.1"
Oct 28 11:59:48 ruopuhe faasd[737]: 2022/10/28 11:59:48 Resolver: "nats"="10.62.0.2"
Oct 28 11:59:48 ruopuhe faasd[737]: 2022/10/28 11:59:48 Resolver: "prometheus"="10.62.0.3"
Oct 28 11:59:48 ruopuhe faasd[737]: 2022/10/28 11:59:48 Resolver: "basic-auth-plugin"="10.62.0.4"
Oct 28 11:59:48 ruopuhe faasd[737]: 2022/10/28 11:59:48 Resolver: "gateway"="10.62.0.5"
Oct 28 11:59:48 ruopuhe faasd[737]: 2022/10/28 11:59:48 Resolver: "queue-worker"="10.62.0.6"
Oct 28 11:59:48 ruopuhe faasd[737]: 2022/10/28 11:59:48 Looking up IP for: "prometheus"
Oct 28 11:59:48 ruopuhe faasd[737]: 2022/10/28 11:59:48 Proxy from: 127.0.0.1:9090, to: prometheus:9090 (10.62.0.3)
Oct 28 11:59:48 ruopuhe faasd[737]: 2022/10/28 11:59:48 faasd: waiting for SIGTERM or SIGINT
Oct 28 11:59:48 ruopuhe faasd[737]: 2022/10/28 11:59:48 Proxy from: 0.0.0.0:8080, to: gateway:8080 (10.62.0.5)
lines 5-41/41 (END)
```

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

The screenshot shows the OpenFaaS gateway interface. On the left, there is a sidebar with the 'Deploy New Function' button and a search bar. Below the search bar, three functions are listed: 'slack-interactive', 'figlet', and 'slack-request'. The 'slack-interactive' function is selected. The main panel displays the details for 'slack-interactive':

Status	Replicas	Invocation count
Ready	1	7

Below the table, the 'Image' is 'docker.io/ruopuhe/slack-interactive:latest' and the 'URL' is 'http://127.0.0.1:8080/function/slack-interactive'. The 'Function process' is 'python index.py'.

The 'Invoke function' section has an 'INVOKE' button and three radio buttons: 'Text' (selected), 'JSON', and 'Download'. Below these is a 'Request body' input field. At the bottom, there are fields for 'Response status' and 'Round-trip (s)'.

6. Provide a screenshot of invoking slack-request and slack-interactive functions
Slack-request:

The screenshot shows the OpenFaaS gateway interface with the 'slack-request' function selected. The main panel displays the details for 'slack-request':

Status	Replicas	Invocation count
Ready	1	3

Below the table, the 'Image' is 'docker.io/ruopuhe/slack-request:latest' and the 'URL' is 'http://127.0.0.1:8080/function/slack-request'. The 'Function process' is 'python index.py'.

The 'Invoke function' section has an 'INVOKE' button and three radio buttons: 'Text', 'JSON' (selected), and 'Download'. Below these is a 'Request body' input field. At the bottom, there are fields for 'Response status' and 'Round-trip (s)'.

The 'Response status' is 200 and the 'Round-trip (s)' is 0.054. The 'Response body' is shown as an empty JSON object: {}.

Response status

200

Round-trip (s)

0.054

Response body

```
{
  "text": "Serverless Message",
  "attachments": [
    {
      "fields": [
        {
          "short": true,
          "value": "100",
          "title": "Amazing Level"
        }
      ],
      "author_icon": "https://avatars.githubusercontent.com/u/51266570?s=400&v=4",
      "image_url": "https://www.scu.edu/media/offices/umc/scu-brand-guidelines/visual-identity-and-photography/visual-identity-toolkit/logos-and-seals/Mission-Dont3.png",
      "author_name": "ruopu",
      "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"
        }
      ]
    },
    {
      "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"
}
```

Slack-interactive:

The screenshot displays the OpenFaas web interface in a browser window. The address bar shows the URL `127.0.0.1:8080/ui/`. The interface is divided into a left sidebar and a main content area.

Left Sidebar:

- OpenFaas logo and name.
- A button labeled "Deploy New Function".
- A search bar labeled "Search for Function".
- A list of functions: "slack-interactive", "slack-request", and "figlet".

Main Content Area:

The "slack-interactive" function is selected. Its details are shown in a table-like format:

Status	Replicas	Invocation count
Ready	1	12

Below the table, the function's configuration is listed:

- Image: `docker.io/ruopuhe/slack-interactive:latest`
- URL: `http://127.0.0.1:8080/function/slack-interactive`
- Function process: `python index.py`

Invoke function section:

- An "INVOKE" button.
- Radio buttons for request body format: ☐ Text, ☒ JSON, ☐ Download.
- A text input field for the request body containing `{}`.

Invocation Results:

Response status	Round-trip (s)
200	0.077

The response body is displayed as a JSON object:

```
{
  "attachments": [
    {
      "footer": "Slack Apps built on OpenFaas",
      "author_link": "https://github.com/kinghe233",
      "color": "#36a64f",
      "text": "Head over to COEN 241",
      "title": "COEN 241",
      "ts": 123456789,
      "author_name": "ruopuhe",
      "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/"
    }
  ]
}
```



Questions:

1. What is the command to invoke the slack-request function?
 - a. Via Curl
`curl 127.0.0.1:8080/function/slack-request -d {}`
 - b. Via faas-cli
`faas-cli invoke slack-request`
2. What is the output you see when you invoke the slack-request function?

Screenshot:

```
root@ruopuhe:/home/ruopuhe/functions# curl 127.0.0.1:8080/function/slack-request -d {}
{"text": "Serverless Message", "attachments": [{"fields": [{"short": true, "value": "100", "title": "Amazing Level"}], "author_icon": "https://avatars.githubusercontent.com/u/51266570?s=400&v=4", "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", "author_name": "ruopuhe", "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"}]
```

Output:

```
{"text": "Serverless Message", "attachments": [{"fields": [{"short": true, "value": "100", "title": "Amazing Level"}], "author_icon": "https://avatars.githubusercontent.com/u/51266570?s=400&v=4", "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", "author_name": "ruopuhe", "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"}]
```



```
"type": "button", "name": "definitely", "value": "definitely"]], "callback_id":  
"response123", "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

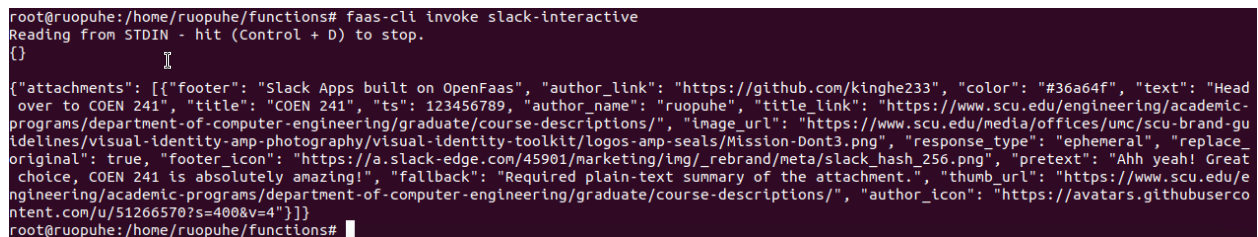
```
curl 127.0.0.1:8080/function/slack-interactive -d {}
```

b. Via faas-cli

```
faas-cli invoke slack-interactive
```

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

Screenshot:



```
root@ruopuhe:/home/ruopuhe/functions# faas-cli invoke slack-interactive  
Reading from STDIN - hit (Control + D) to stop.  
{  
  "attachments": [{  
    "footer": "Slack Apps built on OpenFaas",  
    "author_link": "https://github.com/kinghe233",  
    "color": "#36a64f",  
    "text": "Head over to COEN 241",  
    "title": "COEN 241",  
    "ts": 123456789,  
    "author_name": "ruopuhe",  
    "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://avatars.githubusercontent.com/u/51266570?s=400&v=4"}]}  
root@ruopuhe:/home/ruopuhe/functions#
```

Output:

```
{"attachments": [{  
  "footer": "Slack Apps built on OpenFaas",  
  "author_link": "https://github.com/kinghe233",  
  "color": "#36a64f",  
  "text": "Head over to COEN 241",  
  "title": "COEN 241",  
  "ts": 123456789,  
  "author_name": "ruopuhe",  
  "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://avatars.githubusercontent.com/u/51266570?s=400&v=4"}]}]
```

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

Answer:

a. Via Curl: using -d{<arguments>} for curl

```
curl 127.0.0.1:8080/function/slack-request -d {<arguments>}
```

b. Via faas-cli: using 'echo' '{<arguments>}' for faas-cli

```
echo '{<arguments>}' | faas-cli invoke slack-request
```

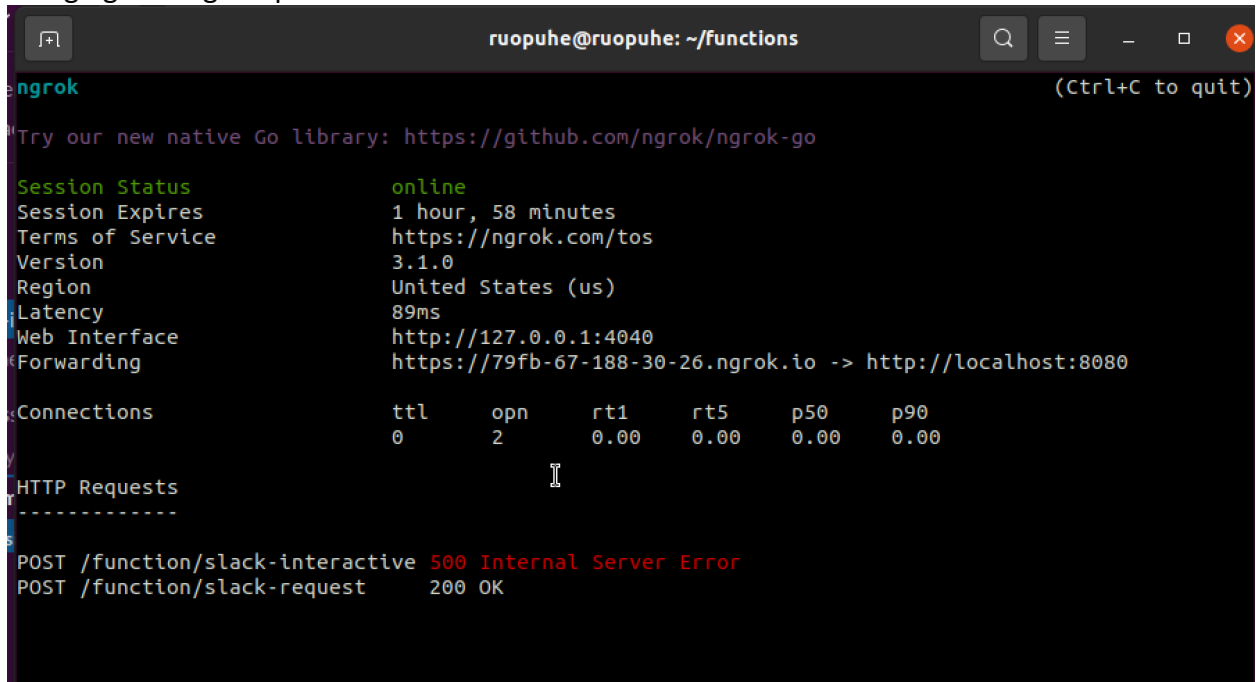

6. How would you change the slack-interactive function to react to different inputs?

Answer:

For different inputs "req", we can parse them into Json , process information which is required in the function and return Json based on the input as the response of the function.

Extra credit:

Using ngrok to get a public routable address.



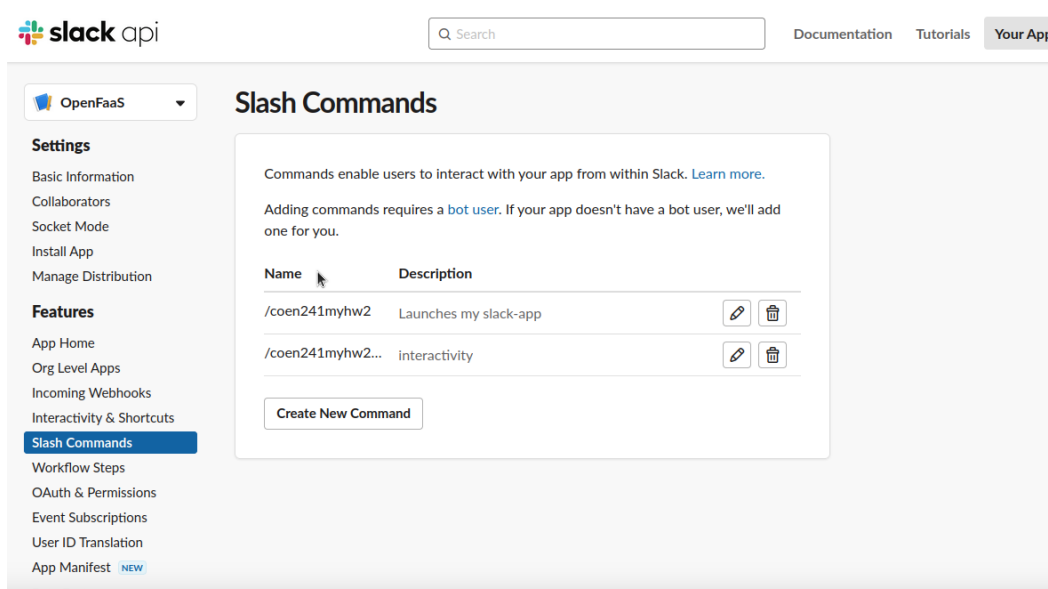
```
ruopuhe@ruopuhe: ~/functions
ngrok (Ctrl+C to quit)
Try our new native Go library: https://github.com/ngrok/ngrok-go

Session Status      online
Session Expires     1 hour, 58 minutes
Terms of Service     https://ngrok.com/tos
Version             3.1.0
Region              United States (us)
Latency              89ms
Web Interface        http://127.0.0.1:4040
Forwarding           https://79fb-67-188-30-26.ngrok.io -> http://localhost:8080

Connections          ttl    opn    rt1    rt5    p50    p90
                    0      2      0.00   0.00   0.00   0.00

HTTP Requests
-----
POST /function/slack-interactive 500 Internal Server Error
POST /function/slack-request     200 OK
```

Commands:



The screenshot shows the 'Slash Commands' configuration page in the Slack API interface. The page has a sidebar with 'Settings' and 'Features' sections. The 'Slash Commands' section is active. The main content area shows a table of commands and a 'Create New Command' button.

Name	Description		
/coen241myhw2	Launches my slack-app		
/coen241myhw2...	interactivity		

[Create New Command](#)

Slash command of request components:

/coen241hw2

Request URL:

<https://79fb-67-188-30-26.ngrok.io/function/slack-request>

Slash command for interactive components:

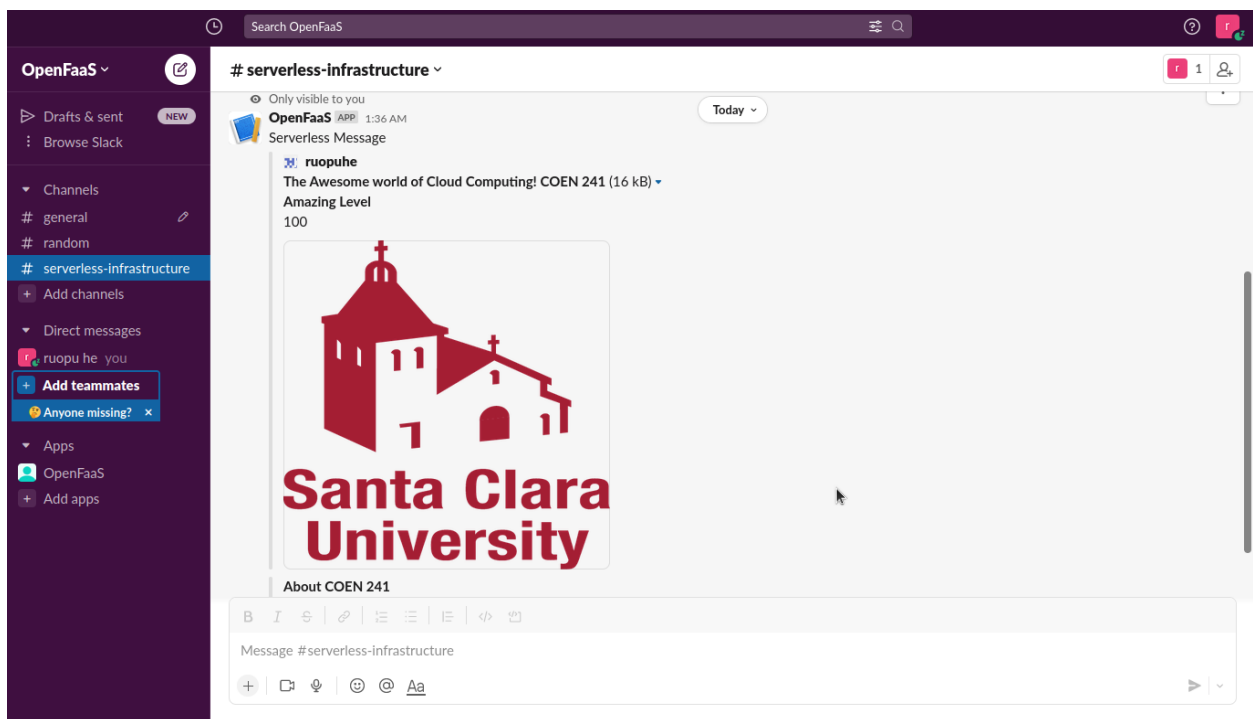
/coen241hw2interactive

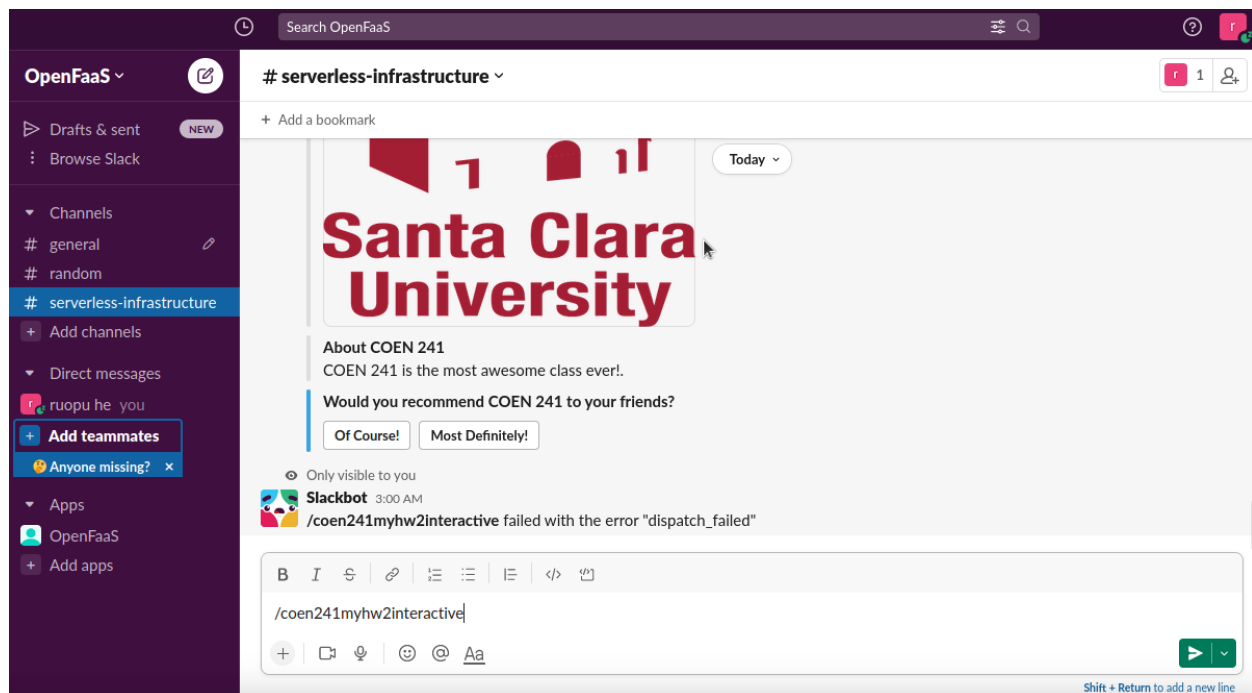
Request URL for the interactivity:

<https://79fb-67-188-30-26.ngrok.io/function/slack-interactive>

The link for slack app:

<https://app.slack.com/client/T048GQTMUQN/C048RSQEN5S>





I have deployed the slack app and the slash command of request component works fine. And I have done the same method for slack- interactive but it failed with the error “dispatch_failed” and I can’t find where my error exists.