

Homework-2(COEN-241)

1. ScreenShot of invoking the figlet function:

Command: echo "Hello, Faas, world" | faas-cli invoke figlet

The main command to invoke the figlet function is after pipe and before that I provided the input to the faas-cli command by using echo.

2. Screenshot of running the following command:

Command: sudo journalctl -u faasd --lines 40

This command is used to print the logs for various OpenFaas components such as nats, prometheus, gateway, queue-worker etc. We can also check if OpenFaas is running fine using this command.

```
rinkle@rinkle-VirtualBox:~/Functions$ sudo journalctl -u faasd --lines 40
-- Journal begins at Sun 2021-11-07 18:42:59 PST, ends at Mon 2021-11-08 00:57>
Nov 07 18:58:00 rinkle-VirtualBox faasd[5607]: 2021/11/07 18:58:00 Start-up or>
Nov 07 18:58:00 rinkle-VirtualBox faasd[5607]: 2021/11/07 18:58:00 - basic-auth>
Nov 07 18:58:00 rinkle-VirtualBox faasd[5607]: 2021/11/07 18:58:00 - nats
Nov 07 18:58:00 rinkle-VirtualBox faasd[5607]: 2021/11/07 18:58:00 - prometheus
Nov 07 18:58:00 rinkle-VirtualBox faasd[5607]: 2021/11/07 18:58:00 - gateway
Nov 07 18:58:00 rinkle-VirtualBox faasd[5607]: 2021/11/07 18:58:00 - queue-wor>
Nov 07 18:58:00 rinkle-VirtualBox faasd[5607]: Starting: basic-auth-plugin
Nov 07 18:58:01 rinkle-VirtualBox faasd[5607]: 2021/11/07 18:58:01 Created con>
Nov 07 18:58:01 rinkle-VirtualBox faasd[5607]: 2021/11/07 18:58:01 basic-auth->
Nov 07 18:58:01 rinkle-VirtualBox faasd[5607]: 2021/11/07 18:58:01 Task: basic>
Nov 07 18:58:01 rinkle-VirtualBox faasd[5607]: Starting: nats
Nov 07 18:58:01 rinkle-VirtualBox faasd[5607]: 2021/11/07 18:58:01 Created con>
Nov 07 18:58:00 rinkle-VirtualBox faasd[5607]: 2021/11/07 18:58:00 - queue-wor>
Nov 07 18:58:00 rinkle-VirtualBox faasd[5607]: Starting: basic-auth-plugin
Nov 07 18:58:00 rinkle-VirtualBox faasd[5607]: 2021/11/07 18:58:00 - queue-wor>
Nov 07 18:58:00 rinkle-VirtualBox faasd[5607]: Starting: basic-auth-plugin
Nov 07 18:58:01 rinkle-VirtualBox faasd[5607]: 2021/11/07 18:58:01 Created con>
Nov 07 18:58:01 rinkle-VirtualBox faasd[5607]: 2021/11/07 18:58:01 basic-auth->
Nov 07 18:58:01 rinkle-VirtualBox faasd[5607]: 2021/11/07 18:58:01 Task: basic>
Nov 07 18:58:01 rinkle-VirtualBox faasd[5607]: Starting: nats
Nov 07 18:58:01 rinkle-VirtualBox faasd[5607]: 2021/11/07 18:58:01 Created con>
Nov 07 18:58:01 rinkle-VirtualBox faasd[5607]: 2021/11/07 18:58:01 nats has IP>
Nov 07 18:58:01 rinkle-VirtualBox faasd[5607]: 2021/11/07 18:58:01 Task: nats >
Nov 07 18:58:01 rinkle-VirtualBox faasd[5607]: Starting: prometheus
Nov 07 18:58:01 rinkle-VirtualBox faasd[5607]: 2021/11/07 18:58:01 Created con>
Nov 07 18:58:01 rinkle-VirtualBox faasd[5607]: 2021/11/07 18:58:01 prometheus >
Nov 07 18:58:01 rinkle-VirtualBox faasd[5607]: 2021/11/07 18:58:01 Task: prome>
```

3. Screenshot of your OpenFaas gateway AFTER deploying figlet, slack-interactive and slack-handler functions

3.1 Screenshot of **figlet** function:

3.2 Slack-request function:

```
        "value": "...",
        "title": "Amazing Level"
    },
],
"author_icon": "https://github.com/RinkleRani",
"image_url": "https://www.scu.edu/media/offices/umc/scu-brand-guidelines/visual-identity-amp-photography/\nDont3.png",
"author_name": "Rinkle Rani",
"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"
}
]
}
```

3.3 Slack-interactive function:

The screenshot shows the OpenFaaS UI interface. On the left, there's a sidebar with a search bar for 'Search for Function' and a 'Deploy New Function' button. Below the search bar, there are two items: 'figlet' and 'slack-request'. Under 'slack-request', there is a sub-item 'slack-interactive' which is highlighted with a grey background.

The main content area is titled 'slack-interactive'. It displays the following details:

- Status: Ready
- Replicas: 1
- Invocation count: 4
- Image: docker.io/rinklerani/slack-interactive:latest
- Function process: python index.py
- URL: http://localhost:3080/function/slack-interactive

Below this, there's a section titled 'Invoke function' with a large 'INVOKE' button. Underneath the button, there are three radio buttons: 'Text' (unchecked), 'JSON' (checked), and 'Download' (unchecked). The 'Request body' field contains the JSON payload: {"name": "Rinkle"}

Further down, the response status is shown as 200, with a round-trip time of 0.235 seconds. The response body is displayed as a JSON object:

```
{  
  "attachments": [  
    {  
      "author_link": "https://github.com/RinkleRani/Homework_CloudComputing",  
      "text": "Head over to COEN 241",  
      "author_name": "Rinkle Rani",  
      "response_type": "ephemeral",  
      "replace_original": true,  
      "footer_icon": "https://a.slack-edge.com/45901/marketing/img/_rebrand/meta/slack_hash_256.png",  
      "title": "COEN 241",  
      "thumb_url": "https://www.scu.com/engineering/academic-programs/department-of-computer-engineering/graduate/course-descriptions/",  
      "footer": "Slack Apps build on OpenFaas",  
      "ts": 123456789,  
      "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",  
      "fallback": "Required plain-text summary of the attachment",  
      "author_icon": "https://github.com/RinkleRani"  
    }  
  ]  
}
```

4. Screenshots of invoking slack-interactive and slack-request functions from VM:

4.1 Slack-interactive

```
rinkle@rinkle-VirtualBox:~/functions$ echo '{"name": "rinkle"}' | faas-cli invoke slack-interactive
{"attachments": [{"author_link": "https://github.com/RinkleRani/Homework_CloudComputing", "text": "Head over to COEN 241", "author_name": "Rinkle Rani", "response_type": "ephemeral", "replace_original": true, "footer_icon": "https://slack-edge.com/45901/marketing/img/_rebrand/meta/slack_hash_256.png", "title": "COEN 241", "thumb_url": "https://www.scu.edu/engineering/academic-programs/department-of-computer-engineering/graduate/course-descriptions/", "footer": "Slack Apps build on OpenFaas", "ts": 123456789, "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", "fallback": "Required plain-text summary of the attachment", "author_icon": "https://github.com/RinkleRani"}]}
```

4.2 Slack-request

```
rinkle@rinkle-VirtualBox:~/functions$ echo "This is test" | sudo faas-cli invoke slack-request
{"text": "Serverless Message", "attachments": [{"fields": [{"short": true, "value": "100"}, {"text": "Amazing Level"}], "author_icon": "https://github.com/RinkleRani", "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": "Rinkle Rani", "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"}]}, {"text": "Would you recommend COEN 241 to your friends?", "callback_id": "response123", "fallback": "Would you recommend COEN 241 to your friends?", "attachment_type": "default"}]}
```

Step-6 Questions

1. Command to invoke slack-request function via **Curl**

```
curl http://localhost:8080/function/slack-request -d "testing-function"
```

Command to invoke slack-request via **faas-cli**

```
echo "testingfunction" | faas-cli invoke slack-request
```

2. Output when you invoke slack-request function from UI:

Response status: 200

Response body:

```
{
  "text": "Serverless Message",
  "attachments": [
    {
      "fields": [
        {
          "short": true,
          "value": "100",
          "title": "Amazing Level"
        }
      ],
      "author_icon": "https://github.com/RinkleRani",
      "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": "Rinkle Rani",
      "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"
}
]
}

```

From VM CLI:

```
rinkle@rinkle-VirtualBox:~/functions$ echo "This is test" | sudo faas-cli invoke slack-request
{
  "text": "Serverless Message", "attachments": [{"fields": [{"short": true, "value": "100"}, {"title": "Amazing Level"}]}, {"author_icon": "https://github.com/RinkleRani", "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": "Rinkle Rani", "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"}]
```

3. Invoke slack-interactive via Curl

```
curl http://localhost:8080/function/slack-interactive --data-binary '{"course": "CloudComputing"}'
```

Invoke slack-interactive via faas-cli

```
echo '{"course": "CloudComputing"}' | faas-cli invoke slack-interactive
```

4. Output when you invoke slack-interactive:

FROM UI

Response status: 200

Response output:

```
{
  "attachments": [
```

```
{
  "author_link": "https://github.com/RinkleRani/Homework_CloudComputing",
  "text": "Head over to COEN 241",
  "author_name": "Rinkle Rani",
  "response_type": "ephemeral",
  "replace_original": true,
  "footer_icon": "https://a.slack-edge.com/45901/marketing/img/_rebrand/meta/slack_hash_256.png",
  "title": "COEN 241",
  "thumb_url": "https://www.scu.com/engineering/academic-programs/department-of-computer-engineering/graduate/course-descriptions/",
  "footer": "Slack Apps build on OpenFaas",
  "ts": 123456789,
  "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-and-photography/visual-identity-toolkit/logos-and-seals/Mission-Dont3.png",
  "fallback": "Required plain-text summary of the attachment",
  "author_icon": "https://github.com/RinkleRani"
}
]
}
```

FROM VM CLI:

```
rinkle@rinkle-VirtualBox:~/functions$ echo '{"name": "rinkle"}' | faas-cli invoke slack-interactive
{"attachments": [{"author_link": "https://github.com/RinkleRani/Homework_CloudComputing", "text": "Head over to COEN 241", "author_name": "Rinkle Rani", "response_type": "ephemeral", "replace_original": true, "footer_icon": "https://a.slack-edge.com/45901/marketing/img/_rebrand/meta/slack_hash_256.png", "title": "COEN 241", "thumb_url": "https://www.scu.com/engineering/academic-programs/department-of-computer-engineering/graduate/course-descriptions/", "footer": "Slack Apps build on OpenFaas", "ts": 123456789, "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-and-photography/visual-identity-toolkit/logos-and-seals/Mission-Dont3.png", "fallback": "Required plain-text summary of the attachment", "author_icon": "https://github.com/RinkleRani"}]}
```

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

We can pass different arguments to the functions by using following commands:

- a. By using “-d” with curl command. For example:

```
curl http://localhost:8080/function/slack-request -d "testing-function"
```

- b. If we want to give the input as json then we can use the ‘--data-binary’ parameter. Ex:

```
curl http://localhost:8080/function/slack-interactive --data-binary '{"course": "CloudComputing"}'
```

- c. We can also use ‘echo’ command with pipe to give different input to the function. For example:

```
echo "testingfunction" | faas-cli invoke figlet
```

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

We can take the input in the response dictionary and get the key out of it and add that to the data dictionary which we are returning by json.dumps(data). So now whatever input we will give in the input json, it will be printed in the output.

Following code snippet has the changes in bold:

```
import json
import urllib

def handle(req):
    urlString = urllib.unquote(req.decode('utf8')).strip('payload=')
    response = json.loads(urlString)
    keys = response.keys()
    for new_key in keys:
        Key = new_key

    data = {
        "attachments": [
            {
                "response" : response[key]
            }
        ]
    }

    return data
```

```

        "author_icon": "https://github.com/RinkleRani",
        "title": "COEN 241",
        "title_link":
"https://www.scu.edu/engineering/academic-programs/department-of-computer-engineering/gra
duate/course-descriptions/",
        "text": "Head over to COEN 241",
        "image_url":
"https://www.scu.edu/media/offices/umc/scu-brand-guidelines/visual-identity-and-photography/v
isual-identity-toolkit/logos-and-seals/Mission-Dont3.png",
        "thumb_url":
"https://www.scu.edu/engineering/academic-programs/department-of-computer-engineering/gra
duate/course-descriptions/",
        "footer": "Slack Apps built on OpenFaas",
        "footer_icon":
"https://a.slack-edge.com/45901/marketing/img/_rebrand/meta/slack_hash_256.png",
        "ts": 123456789
    }
]
}
return json.dumps(data)

```

Response Output after building, pushing and deploying this code and invoking the slack-interactive function:

Command: echo '{"function": "invokedSlackInteractive"}' | faas-cli invoke slack-interactive
Response output:

```
{
  "attachments": [
    {
      "author_link": "https://github.com/RinkleRani/Homework_CloudComputing",
      "text": "Head over to COEN 241",
      "author_name": "Rinkle Rani",
      "response": "invokedSlackInteractive",
      "response_type": "ephemeral",
      "replace_original": true,
      "footer_icon":
"https://a.slack-edge.com/45901/marketing/img/_rebrand/meta/slack_hash_256.png",
      "title": "COEN 241",
      "thumb_url":
"https://www.scu.com/engineering/academic-programs/department-of-computer-engineering/gra
duate/course-descriptions/",
      "footer": "Slack Apps build on OpenFaas",
      "ts": 123456789,

```

```
    "title_link":  
    "https://www.scu.edu/engineering/academic-programs/department-of-computer-engineering/gra  
duate/course-descriptions/",  
    "image_url":  
    "https://www.scu.edu/media/offices/umc/scu-brand-guidelines/visual-identity-amp-photography/v  
isual-identity-toolkit/logos-amp-seals/Mission-Dont3.png",  
    "fallback": "Required plain-text summary of the attachment",  
    "author_icon": "https://github.com/RinkleRani"  
  }  
]  
}
```