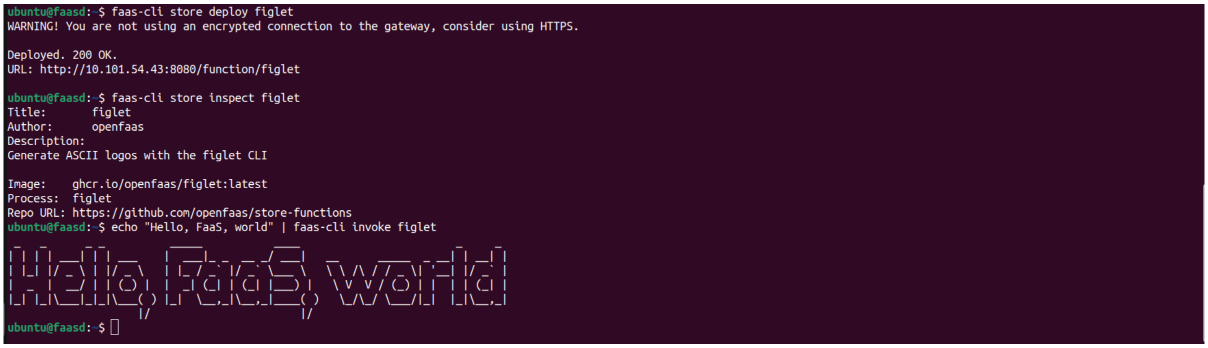
# CC COEN-241 HW - 2

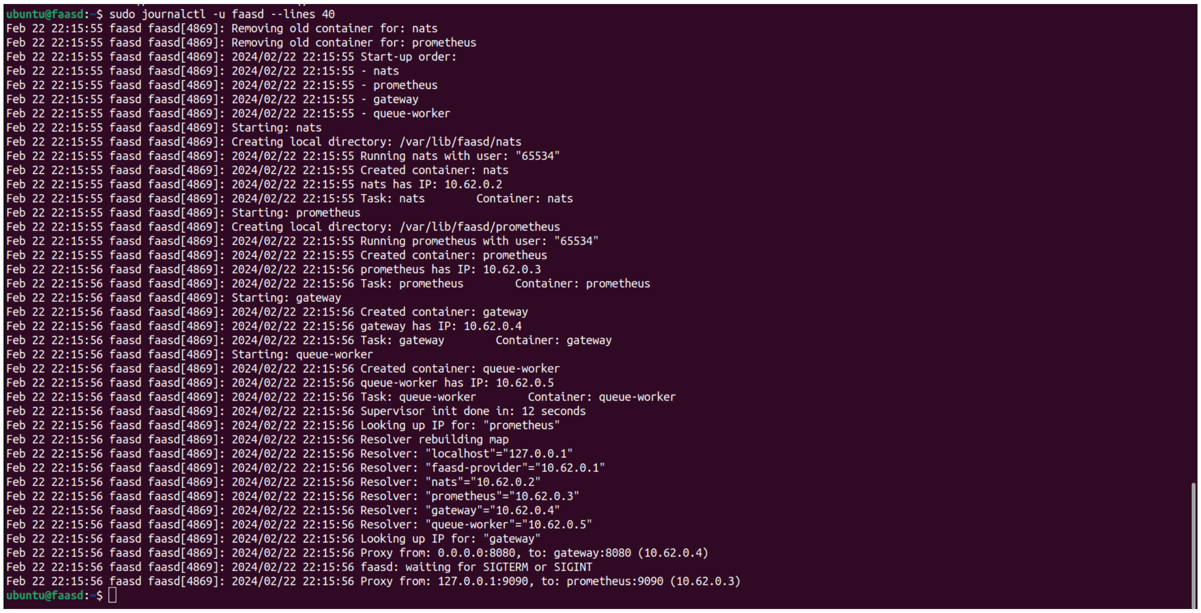
## Nityanand Pujari – W1650422

## 1. Provide a screenshot of invoking the figlet function (5 pts)



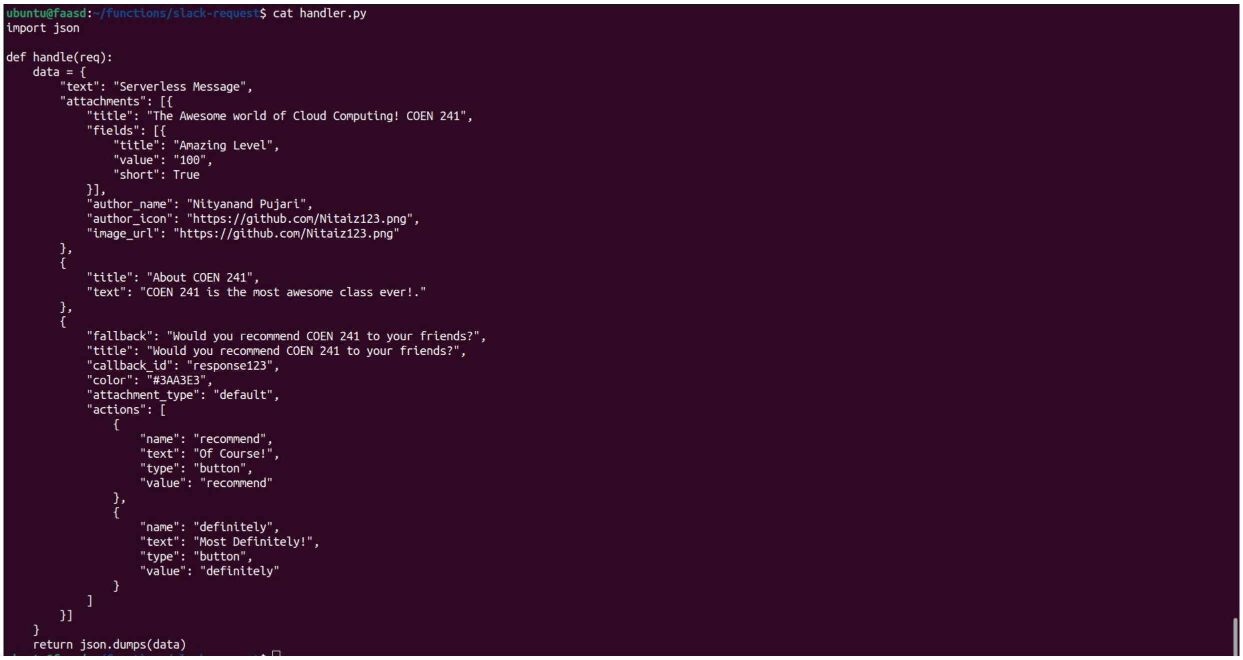
```
ubuntu@faasd:~$ faas-cli store deploy figlet
WARNING! You are not using an encrypted connection to the gateway, consider using HTTPS.

Deployed. 200 OK.
URL: http://10.101.54.43:8080/function/figlet

ubuntu@faasd:~$ faas-cli store inspect figlet
Title:       figlet
Author:      openfaas
Description:
Generate ASCII logos with the figlet CLI

Image:    ghcr.io/openfaas/figlet:latest
Process:  figlet
Repo URL: https://github.com/openfaas/store-functions
ubuntu@faasd:~$ echo "Hello, FaaS, world" | faas-cli invoke figlet
 _   _      _ _          _____           ____                       _     _ 
| | | | ___| | | ___    |  ___|_ _  __ _/ ___|    __      _____  _ __| | __| |
| |_| |/ _ \ | |/ _ \   | |_ / _` |/ _` \___ \    \ \ /\ / / _ \| '__| |/ _` |
|  _  |  __/ | | (_) |  |  _| (_| | (_| |___) |    \ V  V / (_) | |  | | (_| |
|_| |_|\___|_|_|\___( ) |_|  \__,_|\__,_|____( )    \_/\_/ \___/|_|  |_|\__,_|
                    |/                       |/                               
ubuntu@faasd:~$ 
```

## 2. Provide a screenshot of running the following command (5 pts) sudo journalctl -u faasd --lines 40



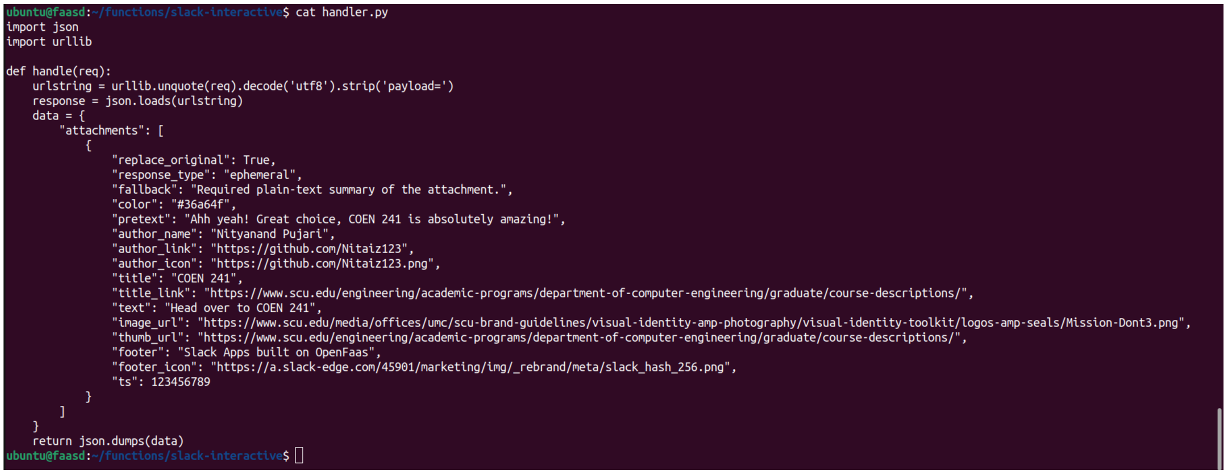
```
ubuntu@faasd:~$ sudo journalctl -u faasd --lines 40
Feb 22 22:15:55 faasd faasd[4869]: Removing old container for: nats
Feb 22 22:15:55 faasd faasd[4869]: Removing old container for: prometheus
Feb 22 22:15:55 faasd faasd[4869]: 2024/02/22 22:15:55 Start-up order:
Feb 22 22:15:55 faasd faasd[4869]: 2024/02/22 22:15:55 - nats
Feb 22 22:15:55 faasd faasd[4869]: 2024/02/22 22:15:55 - prometheus
Feb 22 22:15:55 faasd faasd[4869]: 2024/02/22 22:15:55 - gateway
Feb 22 22:15:55 faasd faasd[4869]: 2024/02/22 22:15:55 - queue-worker
Feb 22 22:15:55 faasd faasd[4869]: Starting: nats
Feb 22 22:15:55 faasd faasd[4869]: Creating local directory: /var/lib/faasd/nats
Feb 22 22:15:55 faasd faasd[4869]: 2024/02/22 22:15:55 Running nats with user: "65534"
Feb 22 22:15:55 faasd faasd[4869]: 2024/02/22 22:15:55 Created container: nats
Feb 22 22:15:55 faasd faasd[4869]: 2024/02/22 22:15:55 nats has IP: 10.62.0.2
Feb 22 22:15:55 faasd faasd[4869]: 2024/02/22 22:15:55 Task: nats        Container: nats
Feb 22 22:15:55 faasd faasd[4869]: Starting: prometheus
Feb 22 22:15:55 faasd faasd[4869]: Creating local directory: /var/lib/faasd/prometheus
Feb 22 22:15:55 faasd faasd[4869]: 2024/02/22 22:15:55 Running prometheus with user: "65534"
Feb 22 22:15:55 faasd faasd[4869]: 2024/02/22 22:15:55 Created container: prometheus
Feb 22 22:15:56 faasd faasd[4869]: 2024/02/22 22:15:56 prometheus has IP: 10.62.0.3
Feb 22 22:15:56 faasd faasd[4869]: 2024/02/22 22:15:56 Task: prometheus        Container: prometheus
Feb 22 22:15:56 faasd faasd[4869]: Starting: gateway
Feb 22 22:15:56 faasd faasd[4869]: 2024/02/22 22:15:56 Created container: gateway
Feb 22 22:15:56 faasd faasd[4869]: 2024/02/22 22:15:56 gateway has IP: 10.62.0.4
Feb 22 22:15:56 faasd faasd[4869]: 2024/02/22 22:15:56 Task: gateway        Container: gateway
Feb 22 22:15:56 faasd faasd[4869]: Starting: queue-worker
Feb 22 22:15:56 faasd faasd[4869]: 2024/02/22 22:15:56 Created container: queue-worker
Feb 22 22:15:56 faasd faasd[4869]: 2024/02/22 22:15:56 queue-worker has IP: 10.62.0.5
Feb 22 22:15:56 faasd faasd[4869]: 2024/02/22 22:15:56 Task: queue-worker        Container: queue-worker
Feb 22 22:15:56 faasd faasd[4869]: 2024/02/22 22:15:56 Supervisor init done in: 12 seconds
Feb 22 22:15:56 faasd faasd[4869]: 2024/02/22 22:15:56 Looking up IP for: "prometheus"
Feb 22 22:15:56 faasd faasd[4869]: 2024/02/22 22:15:56 Resolver rebuilding map
Feb 22 22:15:56 faasd faasd[4869]: 2024/02/22 22:15:56 Resolver: "localhost"="127.0.0.1"
Feb 22 22:15:56 faasd faasd[4869]: 2024/02/22 22:15:56 Resolver: "faasd-provider"="10.62.0.1"
Feb 22 22:15:56 faasd faasd[4869]: 2024/02/22 22:15:56 Resolver: "nats"="10.62.0.2"
Feb 22 22:15:56 faasd faasd[4869]: 2024/02/22 22:15:56 Resolver: "prometheus"="10.62.0.3"
Feb 22 22:15:56 faasd faasd[4869]: 2024/02/22 22:15:56 Resolver: "gateway"="10.62.0.4"
Feb 22 22:15:56 faasd faasd[4869]: 2024/02/22 22:15:56 Resolver: "queue-worker"="10.62.0.5"
Feb 22 22:15:56 faasd faasd[4869]: 2024/02/22 22:15:56 Looking up IP for: "gateway"
Feb 22 22:15:56 faasd faasd[4869]: 2024/02/22 22:15:56 Proxy from: 0.0.0.0:8080, to: gateway:8080 (10.62.0.4)
Feb 22 22:15:56 faasd faasd[4869]: 2024/02/22 22:15:56 faasd: waiting for SIGTERM or SIGINT
Feb 22 22:15:56 faasd faasd[4869]: 2024/02/22 22:15:56 Proxy from: 127.0.0.1:9090, to: prometheus:9090 (10.62.0.3)
ubuntu@faasd:~$ 
```

## 3. Complete slack-request/handler.py (10 pts)



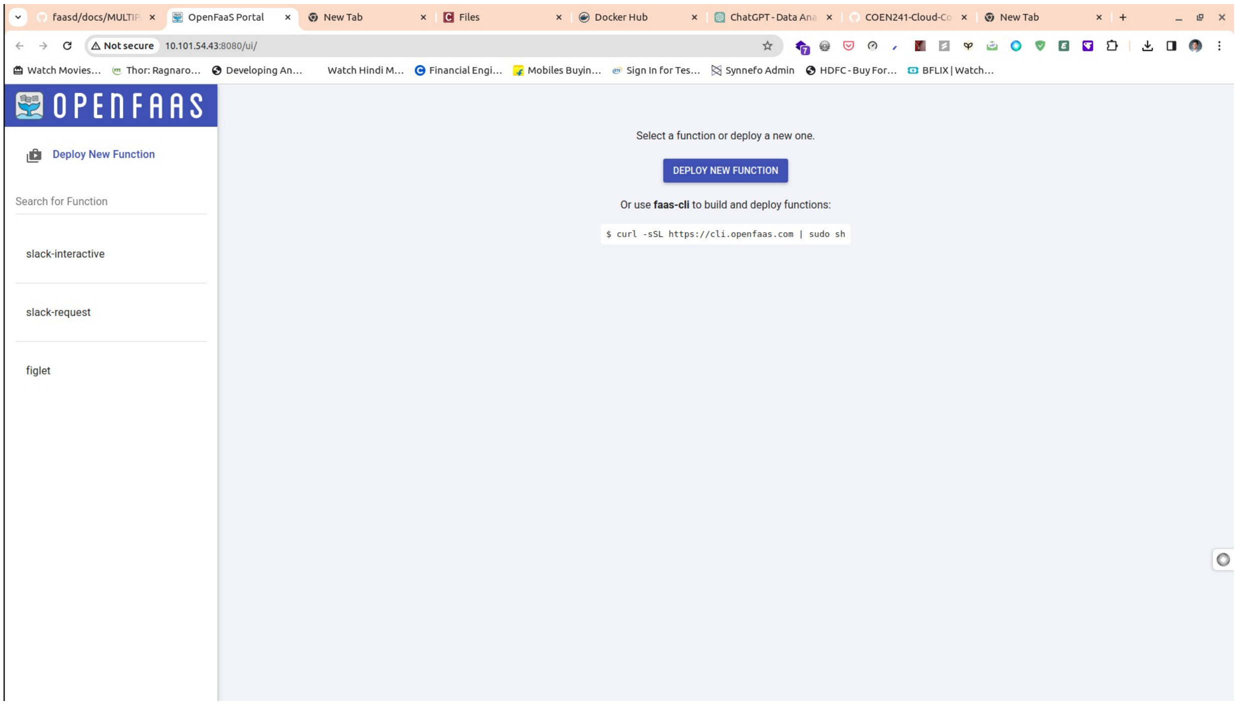
```
ubuntu@faasd:~/functions/slack-request$ cat handler.py
import json

def handle(req):
    data = {
        "text": "Serverless Message",
        "attachments": [{
            "title": "The Awesome world of Cloud Computing! COEN 241",
            "fields": [{
                "title": "Amazing Level",
                "value": "100",
                "short": True
            }],
            "author_name": "Nityanand Pujari",
            "author_icon": "https://github.com/Nitaiz123.png",
            "image_url": "https://github.com/Nitaiz123.png"
        },
        {
            "title": "About COEN 241",
            "text": "COEN 241 is the most awesome class ever!."
        },
        {
            "fallback": "Would you recommend COEN 241 to your friends?",
            "title": "Would you recommend COEN 241 to your friends?",
            "callback_id": "response123",
            "color": "#3AA3E3",
            "attachment_type": "default",
            "actions": [
                {
                    "name": "recommend",
                    "text": "Of Course!",
                    "type": "button",
                    "value": "recommend"
                },
                {
                    "name": "definitely",
                    "text": "Most Definitely!",
                    "type": "button",
                    "value": "definitely"
                }
            ]
        }]
    }
    return json.dumps(data)
```

## 4. Complete slack-interactive/handler.py (10 pts)



```
ubuntu@faasd:~/functions/slack-interactive$ cat handler.py
import json
import urllib

def handle(req):
    urlstring = urllib.unquote(req).decode('utf8').strip('payload=')
    response = json.loads(urlstring)
    data = {
        "attachments": [
            {
                "replace_original": True,
                "response_type": "ephemeral",
                "fallback": "Required plain-text summary of the attachment.",
                "color": "#36a64f",
                "pretext": "Ahh yeah! Great choice, COEN 241 is absolutely amazing!",
                "author_name": "Nityanand Pujari",
                "author_link": "https://github.com/Nitaiz123",
                "author_icon": "https://github.com/Nitaiz123.png",
                "title": "COEN 241",
                "title_link": "https://www.scu.edu/engineering/academic-programs/department-of-computer-engineering/graduate/course-descriptions/",
                "text": "Head over to COEN 241",
                "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",
                "thumb_url": "https://www.scu.edu/engineering/academic-programs/department-of-computer-engineering/graduate/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)
ubuntu@faasd:~/functions/slack-interactive$
```

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



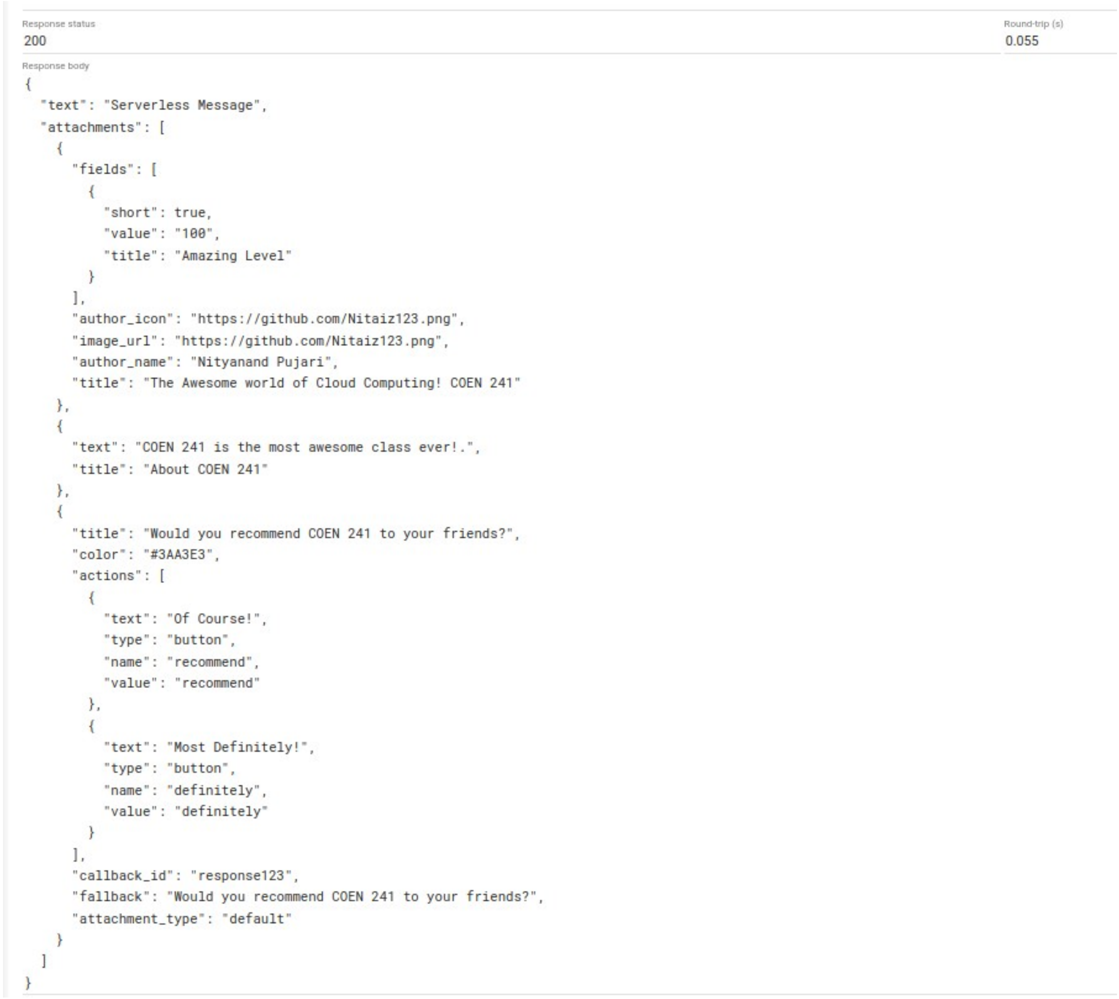
Select a function or deploy a new one.

Or use **faas-cli** to build and deploy functions:

```
$ curl -sSL https://cli.openfaas.com | sudo sh
```

## 6. Provide a screenshot of invoking slack-request and slack-interactive functions (5 pts)

### Invoking Slack-Request:



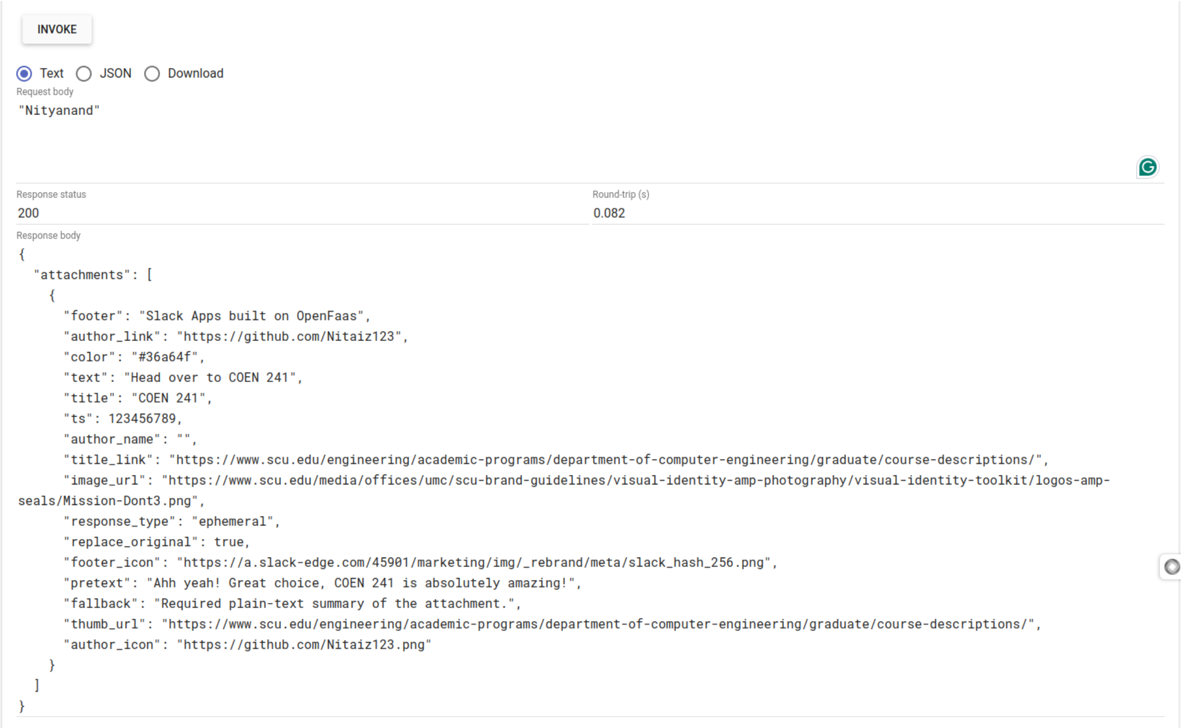
Response status
200

Round-trip (s)
0.055

Response body

```
{
  "text": "Serverless Message",
  "attachments": [
    {
      "fields": [
        {
          "short": true,
          "value": "100",
          "title": "Amazing Level"
        }
      ],
      "author_icon": "https://github.com/Nitaiz123.png",
      "image_url": "https://github.com/Nitaiz123.png",
      "author_name": "Nityanand Pujari",
      "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"
    }
  ]
}
```

## Invoking Slack-Interactive:



Request body

```
"Nityanand"
```

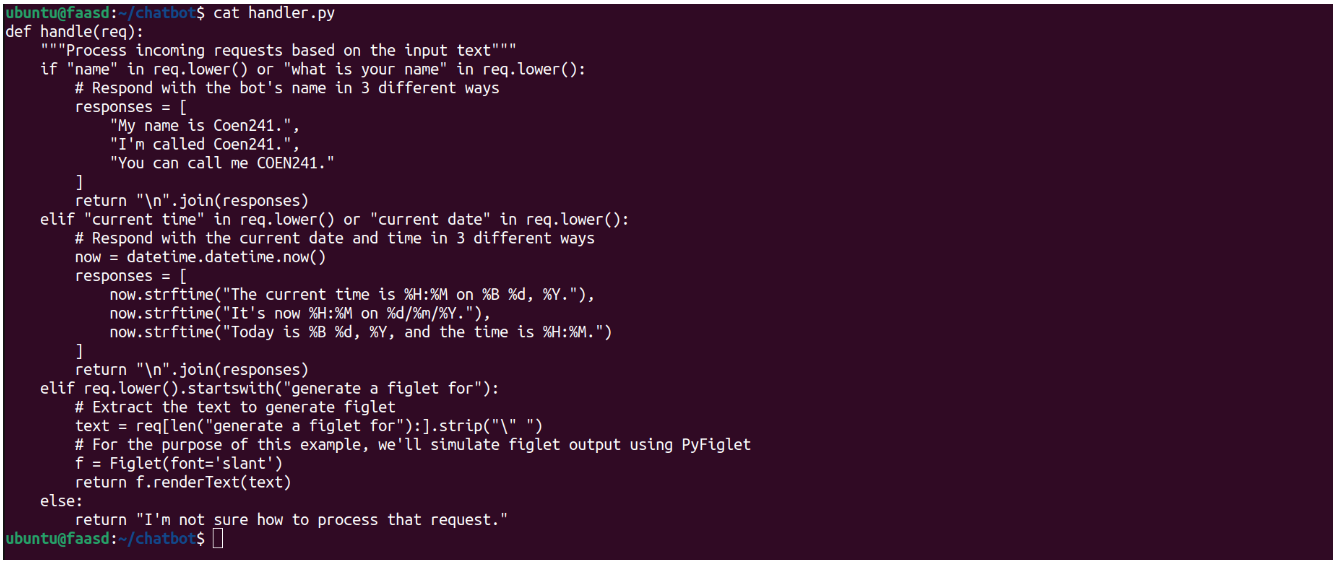
Response status: 200

Round-trip (s): 0.082

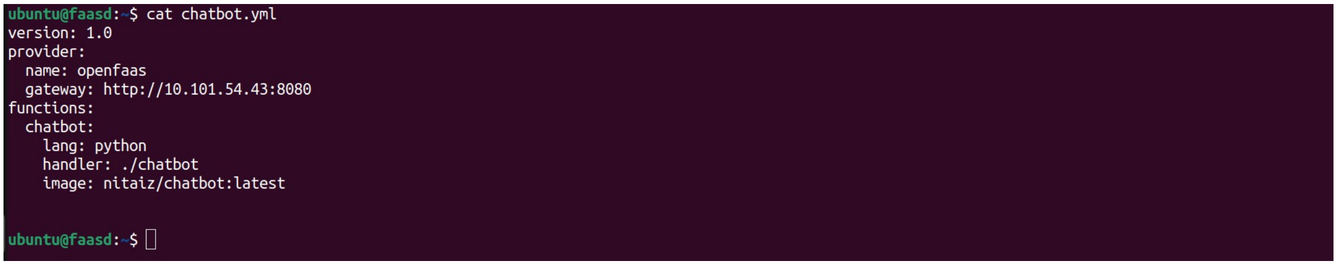
Response body

```
{
  "attachments": [
    {
      "footer": "Slack Apps built on OpenFaas",
      "author_link": "https://github.com/Nitaiz123",
      "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/Nitaiz123.png"
    }
  ]
}
```

## 7. Complete the chatbot with a yml file (25pt)

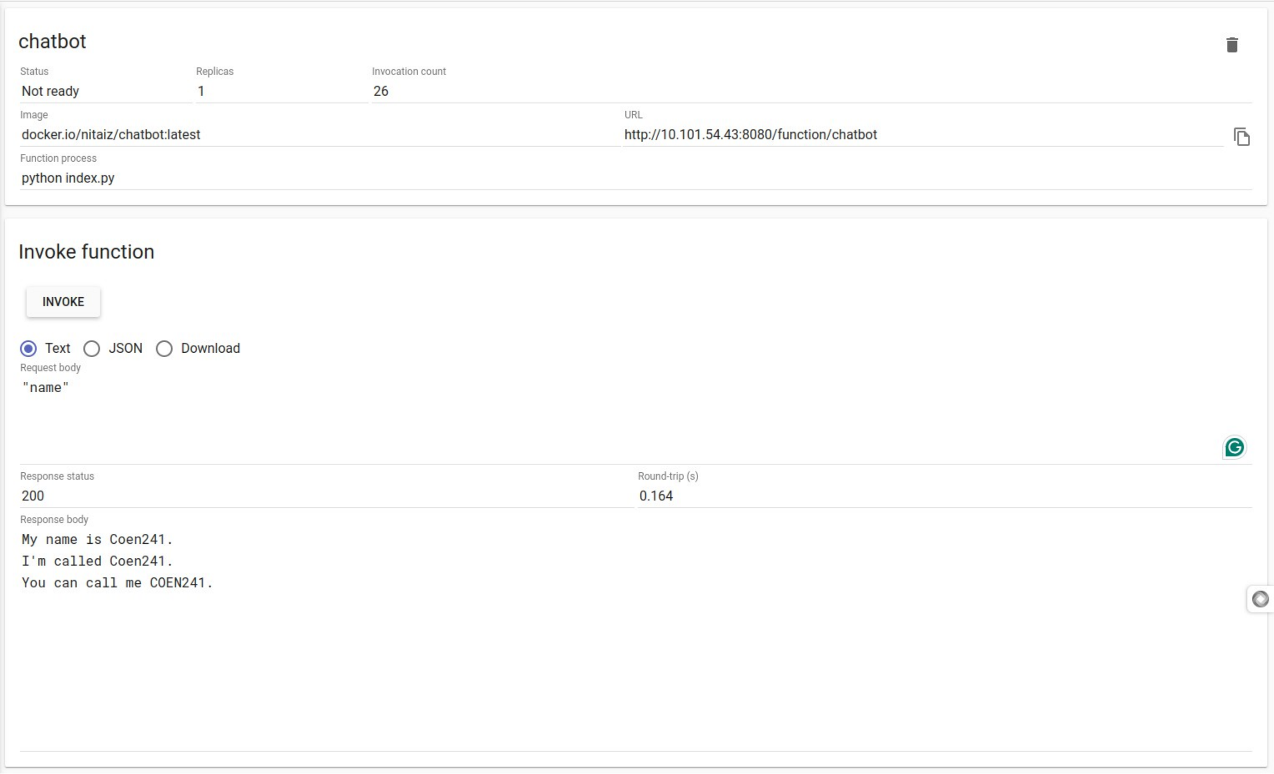


```
ubuntu@faasd:~/chatbot$ cat handler.py
def handle(req):
    """Process incoming requests based on the input text"""
    if "name" in req.lower() or "what is your name" in req.lower():
        # Respond with the bot's name in 3 different ways
        responses = [
            "My name is Coen241.",
            "I'm called Coen241.",
            "You can call me COEN241."
        ]
        return "\n".join(responses)
    elif "current time" in req.lower() or "current date" in req.lower():
        # Respond with the current date and time in 3 different ways
        now = datetime.datetime.now()
        responses = [
            now.strftime("The current time is %H:%M on %B %d, %Y."),
            now.strftime("It's now %H:%M on %d/%m/%Y."),
            now.strftime("Today is %B %d, %Y, and the time is %H:%M.")
        ]
        return "\n".join(responses)
    elif req.lower().startswith("generate a figlet for"):
        # Extract the text to generate figlet
        text = req[len("generate a figlet for"):].strip("\" ")
        # For the purpose of this example, we'll simulate figlet output using PyFiglet
        f = Figlet(font='slant')
        return f.renderText(text)
    else:
        return "I'm not sure how to process that request."
ubuntu@faasd:~/chatbot$ 
```



```
ubuntu@faasd:~$ cat chatbot.yml
version: 1.0
provider:
  name: openfaas
  gateway: http://10.101.54.43:8080
functions:
  chatbot:
    lang: python
    handler: ./chatbot
    image: nitaiz/chatbot:latest

ubuntu@faasd:~$ 
```

## 8. Provide a screenshot of invoking three different cases of the chatbot (5 pts)



chatbot

Status: Not ready

Replicas: 1

Invocation count: 26

Image: docker.io/nitaiz/chatbot:latest

URL: http://10.101.54.43:8080/function/chatbot

Function process: python index.py

Invoke function

● Text ○ JSON ○ Download

Request body

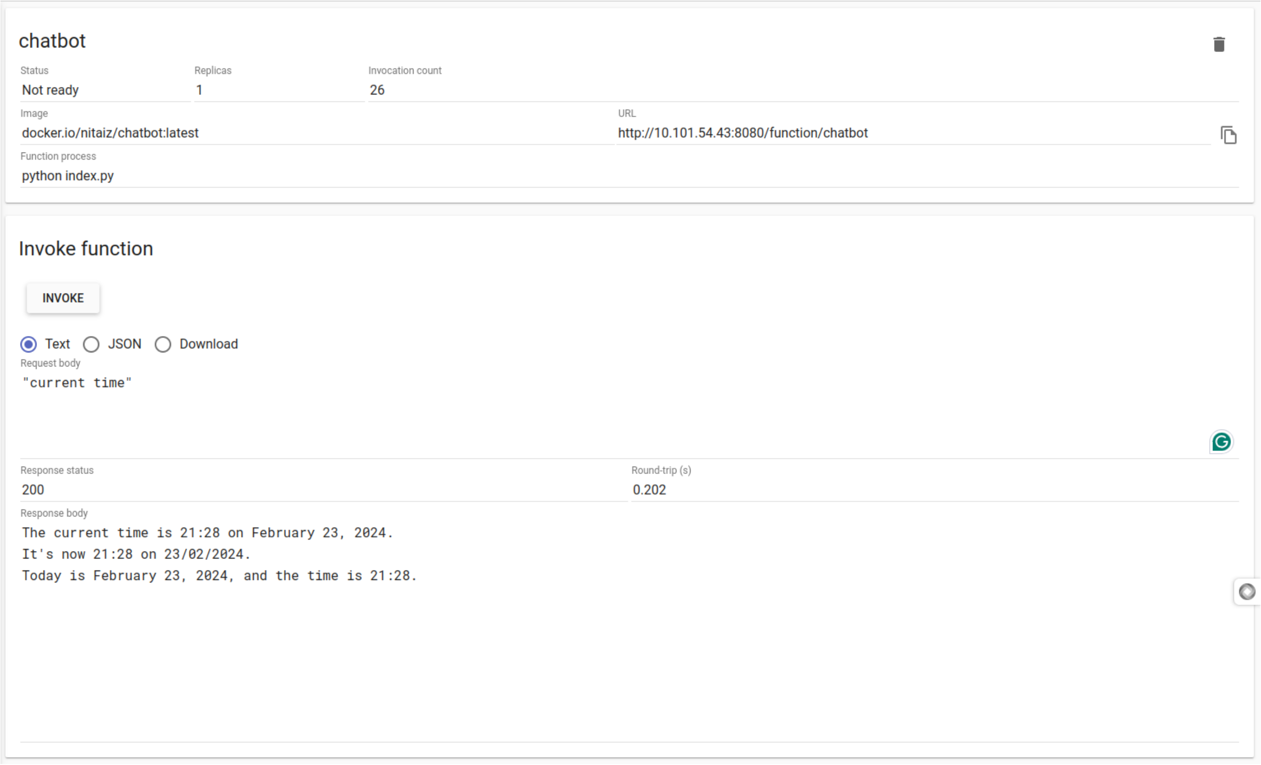
```
"name"
```

Response status: 200

Round-trip (s): 0.164

Response body

```
My name is Coen241.
I'm called Coen241.
You can call me COEN241.
```



chatbot

Status: Not ready

Replicas: 1

Invocation count: 26

Image: docker.io/nitaiz/chatbot:latest

URL: http://10.101.54.43:8080/function/chatbot

Function process: python index.py

Invoke function

● Text ○ JSON ○ Download

Request body

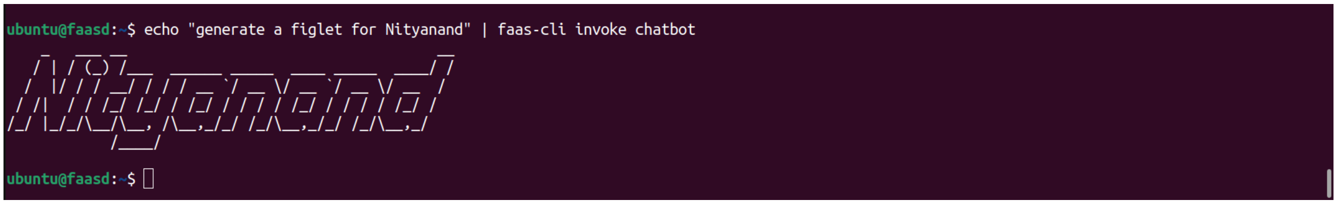
```
"current time"
```

Response status: 200

Round-trip (s): 0.202

Response body

```
The current time is 21:28 on February 23, 2024.
It's now 21:28 on 23/02/2024.
Today is February 23, 2024, and the time is 21:28.
```

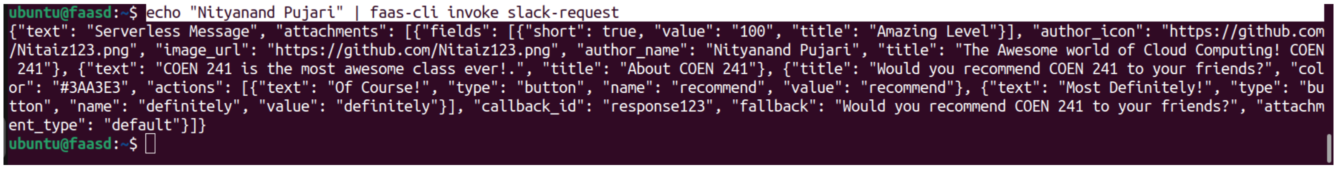


```
ubuntu@faasd:~$ echo "generate a figlet for Nityanand" | faas-cli invoke chatbot
    _   ___ __                                         __
   / | / (_) /___  ______ _____  ____ _____  ____  ____/ /
  /  |/ / / __/ / / / __ `/ __ \/ __ `/ __ \/ __ \/ __  /
 / /|  / / /_/ /_/ / /_/ / / / / /_/ / / / / /_/ / /_/ /
/_/ |_/_/\__/\__, /\__,_/_/ /_/\__,_/_/ /_/\__,_/\__,_/
            /____/

ubuntu@faasd:~$ 
```

### 1. What is the command to invoke the slack-request function (2 pts)?

→ echo "Nityanand Pujari" | faas-cli invoke slack-request

### 2. What is the output you see when you invoke the slack-request function? (2 pts)



```
ubuntu@faasd:~$ echo "Nityanand Pujari" | faas-cli invoke slack-request
{"text": "Serverless Message", "attachments": [{"fields": [{"short": true, "value": "100", "title": "Amazing Level"}], "author_icon": "https://github.com
/Nitaiz123.png", "image_url": "https://github.com/Nitaiz123.png", "author_name": "Nityanand Pujari", "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?", "col
or": "#3AA3E3", "actions": [{"text": "Of Course!", "type": "button", "name": "recommend", "value": "recommend"}, {"text": "Most Definitely!", "type": "bu
tton", "name": "definitely", "value": "definitely"}], "callback_id": "response123", "fallback": "Would you recommend COEN 241 to your friends?", "attachm
ent_type": "default"}]}
ubuntu@faasd:~$ 
```

### 3. What is the command to invoke the slack-interactive function? (2 pts)

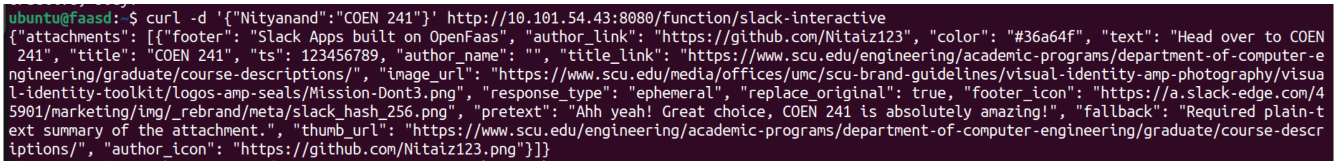
a. Via curl

→ curl -d '{"Nityanand":"COEN 241"}' http://10.101.54.43:8080/function/slack-interactive

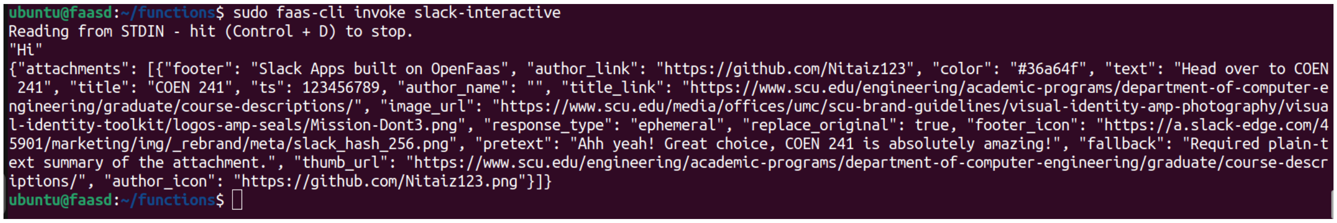
b. Via faas-cli

→ sudo faas-cli invoke slack-interactive

### 4. What is the output you see when you invoke the slack-interactive function? (2 pts)



```
ubuntu@faasd:~$ curl -d '{"Nityanand":"COEN 241"}' http://10.101.54.43:8080/function/slack-interactive
{"attachments": [{"footer": "Slack Apps built on OpenFaas", "author_link": "https://github.com/Nitaiz123", "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-e
ngineering/graduate/course-descriptions/", "image_url": "https://www.scu.edu/media/offices/umc/scu-brand-guidelines/visual-identity-amp-photography/visua
l-identity-toolkit/logos-amp-seals/Mission-Dont3.png", "response_type": "ephemeral", "replace_original": true, "footer_icon": "https://a.slack-edge.com/4
5901/marketing/img/_rebrand/meta/slack_hash_256.png", "pretext": "Ahh yeah! Great choice, COEN 241 is absolutely amazing!", "fallback": "Required plain-t
ext summary of the attachment.", "thumb_url": "https://www.scu.edu/engineering/academic-programs/department-of-computer-engineering/graduate/course-descr
iptions/", "author_icon": "https://github.com/Nitaiz123.png"}]}
```



```
ubuntu@faasd:~/functions$ sudo faas-cli invoke slack-interactive
Reading from STDIN - hit (Control + D) to stop.
"Hi"
{"attachments": [{"footer": "Slack Apps built on OpenFaas", "author_link": "https://github.com/Nitaiz123", "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-e
ngineering/graduate/course-descriptions/", "image_url": "https://www.scu.edu/media/offices/umc/scu-brand-guidelines/visual-identity-amp-photography/visua
l-identity-toolkit/logos-amp-seals/Mission-Dont3.png", "response_type": "ephemeral", "replace_original": true, "footer_icon": "https://a.slack-edge.com/4
5901/marketing/img/_rebrand/meta/slack_hash_256.png", "pretext": "Ahh yeah! Great choice, COEN 241 is absolutely amazing!", "fallback": "Required plain-t
ext summary of the attachment.", "thumb_url": "https://www.scu.edu/engineering/academic-programs/department-of-computer-engineering/graduate/course-descr
iptions/", "author_icon": "https://github.com/Nitaiz123.png"}]}
ubuntu@faasd:~/functions$ 
```

### 5. How would you pass different arguments to the functions? (3 pts)

Here are two ways of passing arguments to functions:

1. Using faas-cli: We can invoke the figlet function from the command line using faas-cli and pipe in the argument "Hello, FaaS World" like this:
   echo "Hello, FaaS World" | faas-cli invoke figlet
   The text "Hello, FaaS World" gets passed as an argument to the figlet function.

2. Using curl: We can send arguments in a POST request to an HTTP server. For example:

3. curl -d '{"text":"Hello COEN 241"}' http://example.com/function/slack-request

This curl command sends a JSON payload {"text":"Hello COEN 241"} as data in a POST request to the /function/slack-request endpoint. The text "Hello COEN 241" gets passed as an argument to the function.

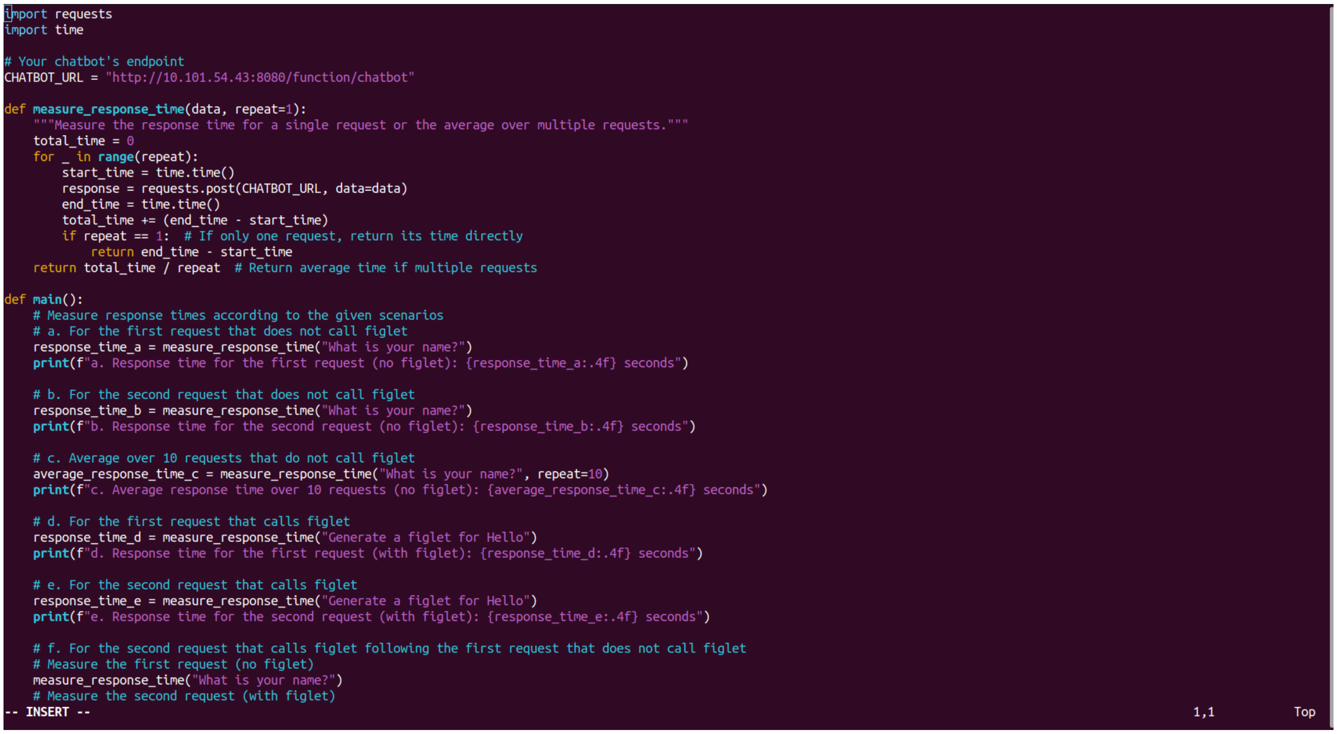
**6. How would you change the slack-interactive function to react to different inputs? (3 pts)**

→ The unquote function from the urllib package is used to decode a string into a URL, using UTF-8 encoding by default. The json.load() method then transforms the urlstring JSON string into a Python dictionary, stored in the response variable.
However, the response variable is currently not used after being assigned. To enable the slack-interactive function to handle different inputs, we can modify it to use the response data.

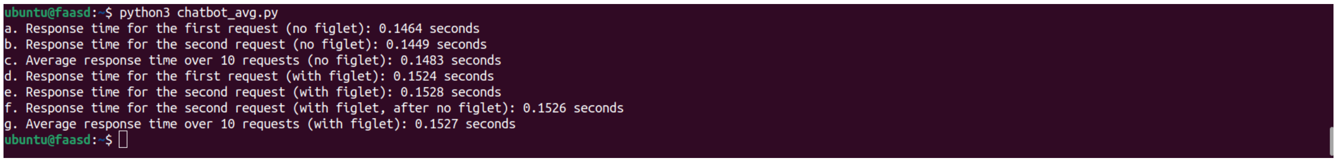
Since response is a Python dictionary, it can be incorporated into the existing data dictionary. This will allow the function to start responding to varied inputs. By returning json.dumps(data), the slack-interactive function can now handle and respond to diverse inputs, based on the response data.

**7. How long does it take for the chat response to come back? (10pts)**

a. For the first request that does not call figlet
b. For the second request that does not call figlet
c. Average over 10 requests that do not call figlet
d. For the first request that calls figlet
e. For the second request that calls figlet
f. For the second request that calls figlet that follows the first request that does not call figlet
g. Average over 10 requests that do call figlet

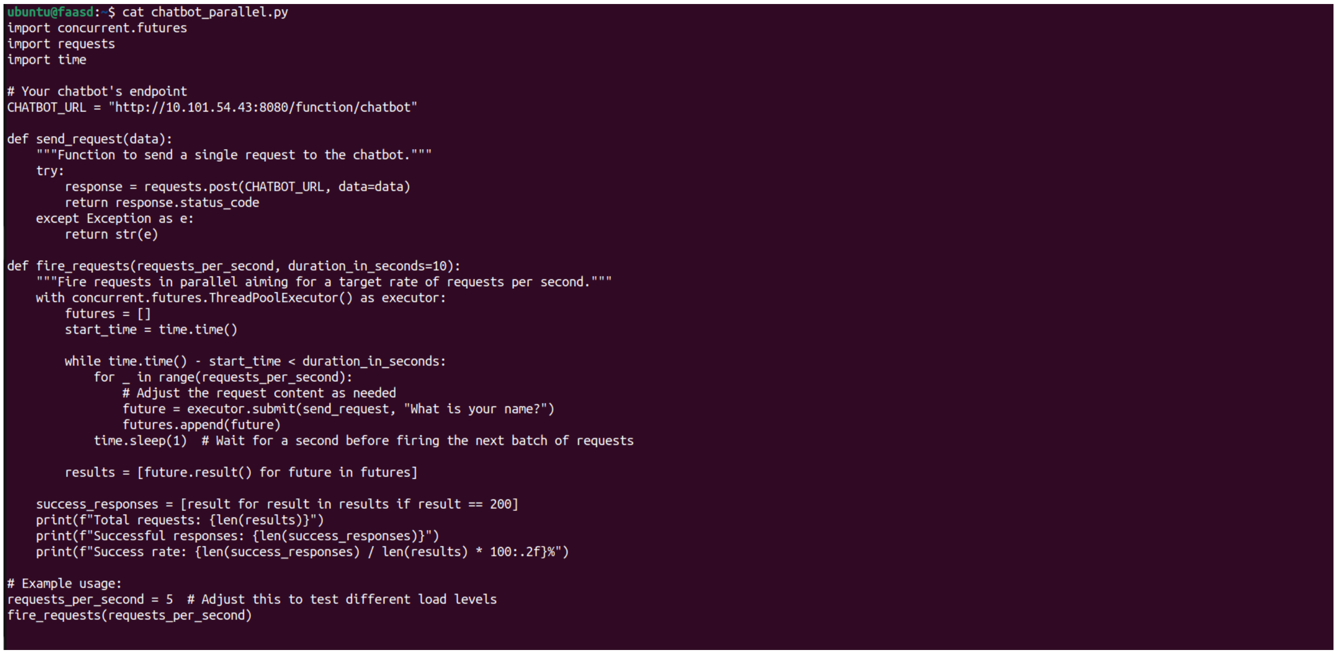


```
import requests
import time

# Your chatbot's endpoint
CHATBOT_URL = "http://10.101.54.43:8080/function/chatbot"

def measure_response_time(data, repeat=1):
    """Measure the response time for a single request or the average over multiple requests."""
    total_time = 0
    for _ in range(repeat):
        start_time = time.time()
        response = requests.post(CHATBOT_URL, data=data)
        end_time = time.time()
        total_time += (end_time - start_time)
        if repeat == 1:  # If only one request, return its time directly
            return end_time - start_time
    return total_time / repeat  # Return average time if multiple requests

def main():
    # Measure response times according to the given scenarios
    # a. For the first request that does not call figlet
    response_time_a = measure_response_time("What is your name?")
    print(f"a. Response time for the first request (no figlet): {response_time_a:.4f} seconds")

    # b. For the second request that does not call figlet
    response_time_b = measure_response_time("What is your name?")
    print(f"b. Response time for the second request (no figlet): {response_time_b:.4f} seconds")

    # c. Average over 10 requests that do not call figlet
    average_response_time_c = measure_response_time("What is your name?", repeat=10)
    print(f"c. Average response time over 10 requests (no figlet): {average_response_time_c:.4f} seconds")

    # d. For the first request that calls figlet
    response_time_d = measure_response_time("Generate a figlet for Hello")
    print(f"d. Response time for the first request (with figlet): {response_time_d:.4f} seconds")

    # e. For the second request that calls figlet
    response_time_e = measure_response_time("Generate a figlet for Hello")
    print(f"e. Response time for the second request (with figlet): {response_time_e:.4f} seconds")

    # f. For the second request that calls figlet following the first request that does not call figlet
    # Measure the first request (no figlet)
    measure_response_time("What is your name?")
    # Measure the second request (with figlet)
-- INSERT --                                                                                1,1           Top
```

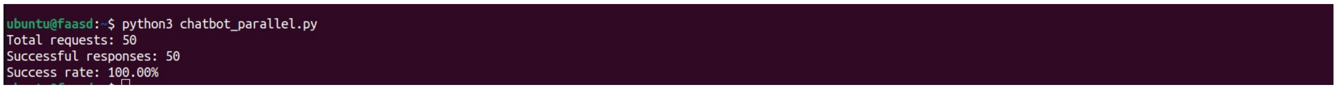


```
ubuntu@faasd:~$ python3 chatbot_avg.py
a. Response time for the first request (no figlet): 0.1464 seconds
b. Response time for the second request (no figlet): 0.1449 seconds
c. Average response time over 10 requests (no figlet): 0.1483 seconds
d. Response time for the first request (with figlet): 0.1524 seconds
e. Response time for the second request (with figlet): 0.1528 seconds
f. Response time for the second request (with figlet, after no figlet): 0.1526 seconds
g. Average response time over 10 requests (with figlet): 0.1527 seconds
ubuntu@faasd:~$
```

## 8. Now try sending a series of requests to the chatbot in parallel. At what queries per second does OpenFaaS add a new instance of the function? (6 pts)

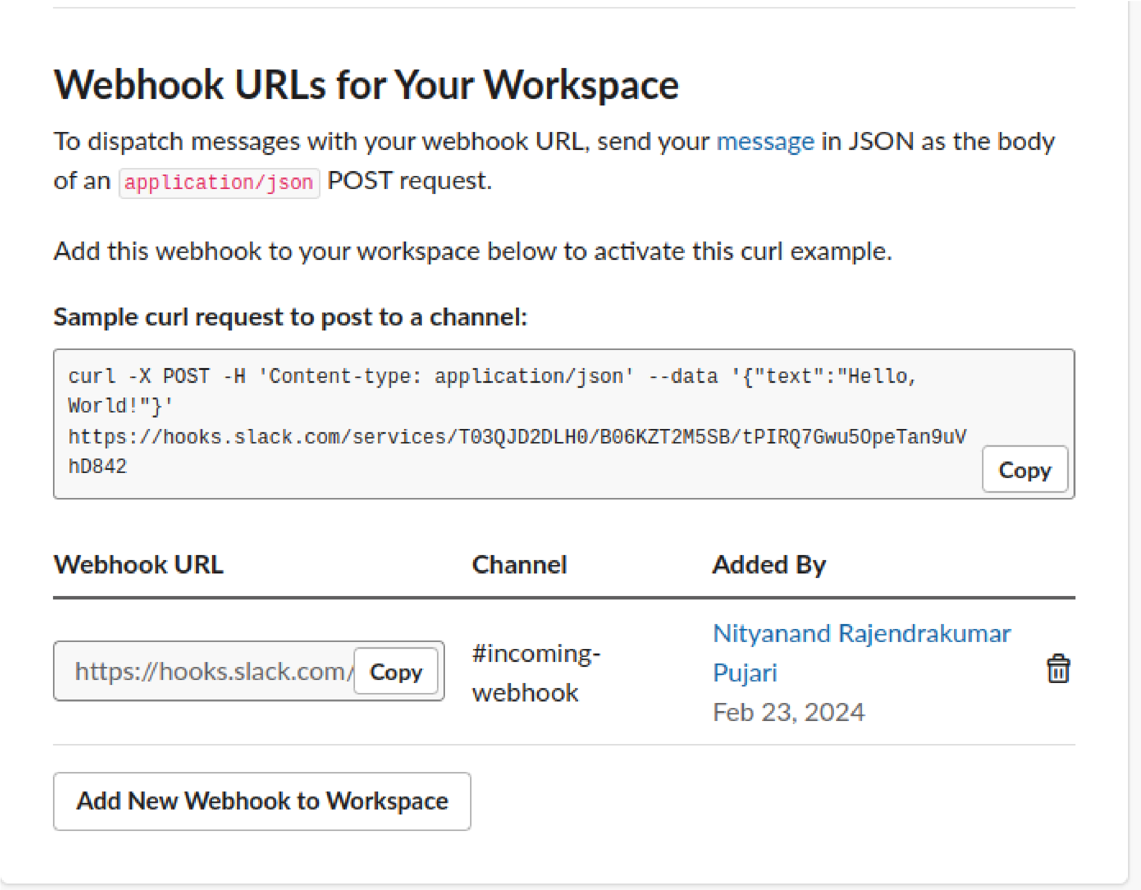


```
ubuntu@faasd:~$ cat chatbot_parallel.py
import concurrent.futures
import requests
import time

# Your chatbot's endpoint
CHATBOT_URL = "http://10.101.54.43:8080/function/chatbot"

def send_request(data):
    """Function to send a single request to the chatbot."""
    try:
        response = requests.post(CHATBOT_URL, data=data)
        return response.status_code
    except Exception as e:
        return str(e)

def fire_requests(requests_per_second, duration_in_seconds=10):
    """Fire requests in parallel aiming for a target rate of requests per second."""
    with concurrent.futures.ThreadPoolExecutor() as executor:
        futures = []
        start_time = time.time()

        while time.time() - start_time < duration_in_seconds:
            for _ in range(requests_per_second):
                # Adjust the request content as needed
                future = executor.submit(send_request, "What is your name?")
                futures.append(future)
            time.sleep(1)  # Wait for a second before firing the next batch of requests

        results = [future.result() for future in futures]

    success_responses = [result for result in results if result == 200]
    print(f"Total requests: {len(results)}")
    print(f"Successful responses: {len(success_responses)}")
    print(f"Success rate: {len(success_responses) / len(results) * 100:.2f}%")

# Example usage:
requests_per_second = 5  # Adjust this to test different load levels
fire_requests(requests_per_second)
```



```
ubuntu@faasd:~$ python3 chatbot_parallel.py
Total requests: 50
Successful responses: 50
Success rate: 100.00%
```

## Extra Credit



### Webhook URLs for Your Workspace

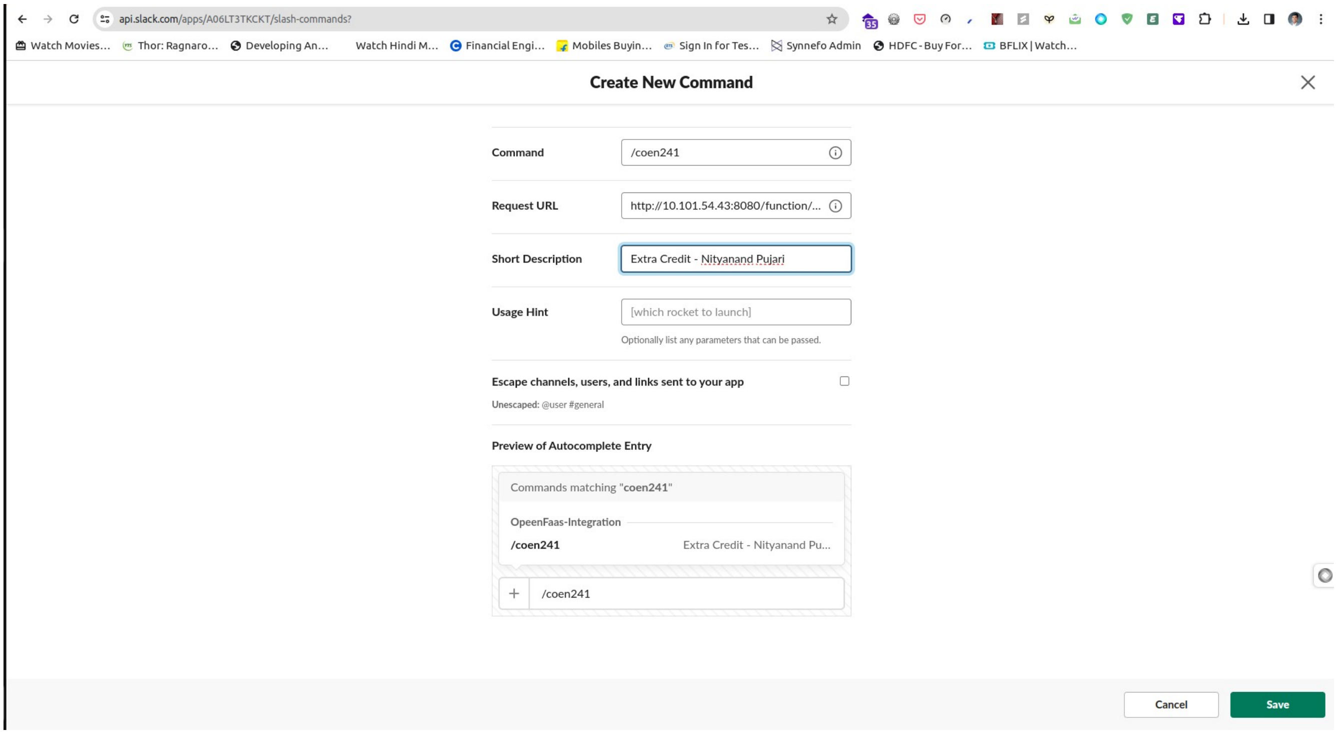
To dispatch messages with your webhook URL, send your message in JSON as the body of an `application/json` POST request.

Add this webhook to your workspace below to activate this curl example.

**Sample curl request to post to a channel:**

```
curl -X POST -H 'Content-type: application/json' --data '{"text":"Hello,
World!"}'
https://hooks.slack.com/services/T03QJD2DLH0/B06KZT2M5SB/tPIRQ7Gwu5OpeTan9uV
hD842
```

| Webhook URL | Channel | Added By |
|---|---|---|
| https://hooks.slack.com/ Copy | #incoming-webhook | Nityanand Rajendrakumar Pujari<br>Feb 23, 2024 |



api.slack.com/apps/A06LT3TKCKT/slash-commands?

Create New Command

Command: /coen241

Request URL: http://10.101.54.43:8080/function/...

Short Description: Extra Credit - Nityanand Pujari

Usage Hint: [which rocket to launch]

Optionally list any parameters that can be passed.

Escape channels, users, and links sent to your app □

Unescaped: @user #general

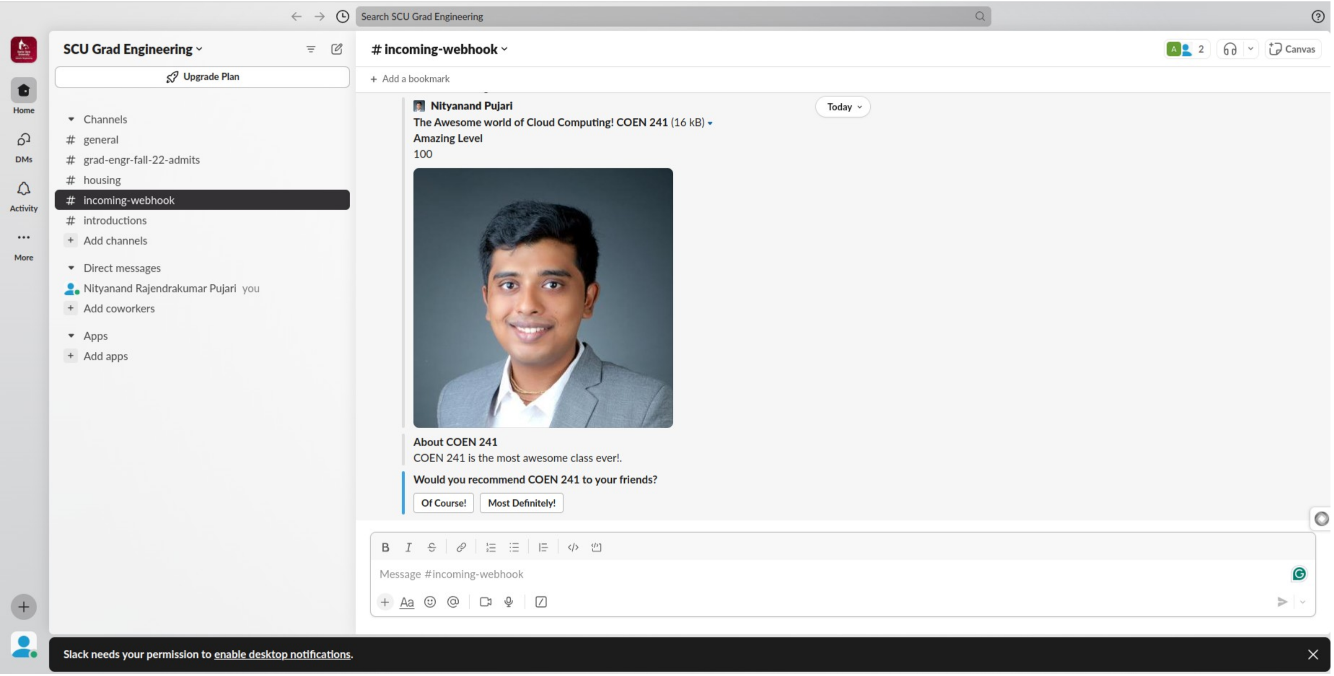
Preview of Autocomplete Entry

Commands matching "**coen241**"

OpeenFaas-Integration

**/coen241** Extra Credit - Nityanand Pu...

/coen241



**Nityanand Pujari**

The Awesome world of Cloud Computing! COEN 241 (16 kB)

**Amazing Level**

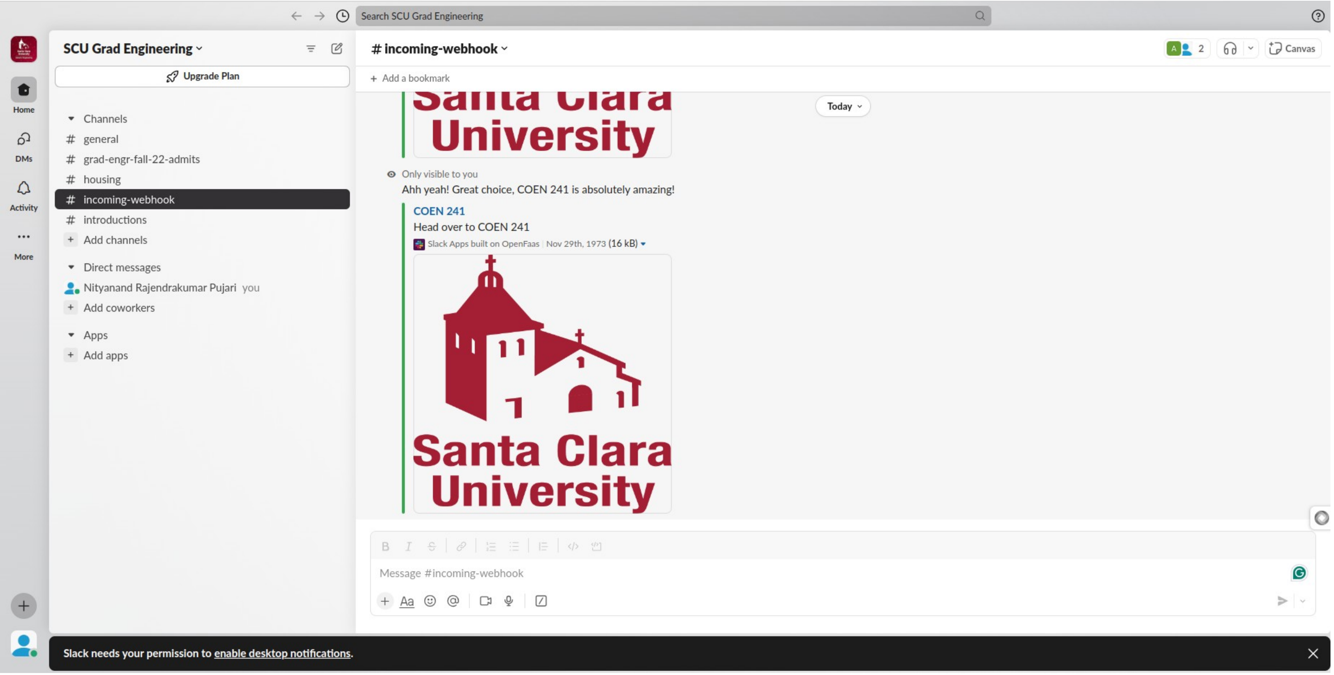
100

**About COEN 241**

COEN 241 is the most awesome class ever!.

**Would you recommend COEN 241 to your friends?**

Slack needs your permission to enable desktop notifications.



Only visible to you

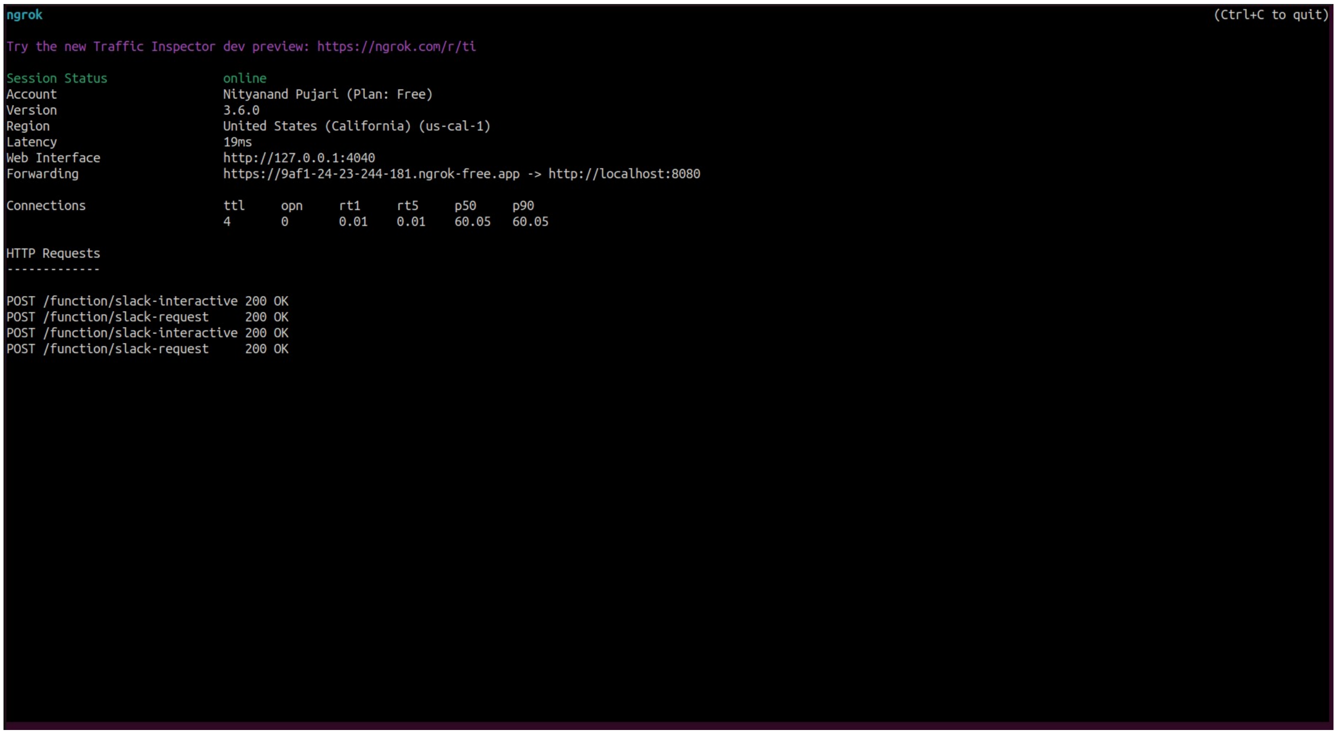
Ahh yeah! Great choice, COEN 241 is absolutely amazing!

COEN 241

Head over to COEN 241

Slack Apps built on OpenFaas | Nov 29th, 1973 (16 kB)

Slack needs your permission to enable desktop notifications.



```
ngrok                                                                                                                                                                              (Ctrl+C to quit)

Try the new Traffic Inspector dev preview: https://ngrok.com/r/ti

Session Status                online
Account                       Nityanand Pujari (Plan: Free)
Version                       3.6.0
Region                        United States (California) (us-cal-1)
Latency                       19ms
Web Interface                 http://127.0.0.1:4040
Forwarding                    https://9af1-24-23-244-181.ngrok-free.app -> http://localhost:8080

Connections                   ttl     opn     rt1     rt5     p50     p90
                              4       0       0.01    0.01    60.05   60.05

HTTP Requests
-------------

POST /function/slack-interactive 200 OK
POST /function/slack-request     200 OK
POST /function/slack-interactive 200 OK
POST /function/slack-request     200 OK
```