TASKS

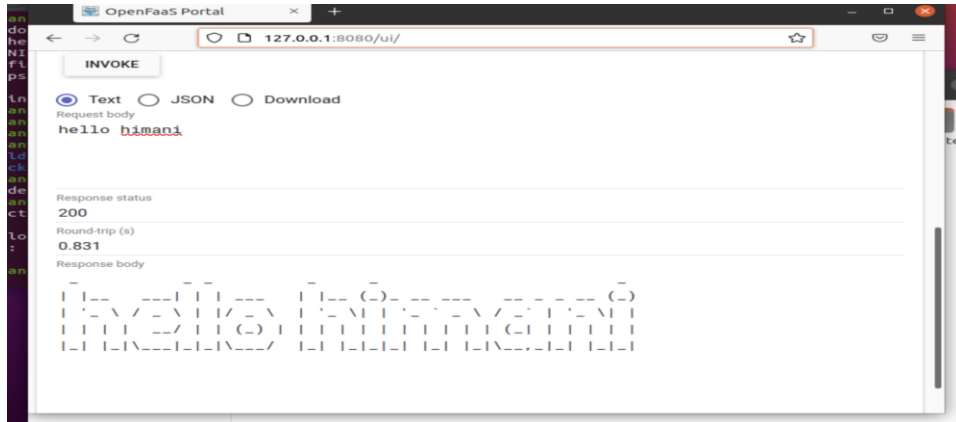**1.FIGLET INVOCATION THROUGH UI**
Below screenshot shows the request body passed while invoking the deployed figlet function accessible/called through openfaas gateway 127.0.0.1:8080 endpoint.
It shows the function output in reponse body .

2. FIGLET INVOCATION THROUGH CMD
Below screenshot shows the request data passed using echo and pipe while invoking the deployed figlet function via cmd, accessible/called through openfaas gateway 127.0.0.1:8080 endpoint.
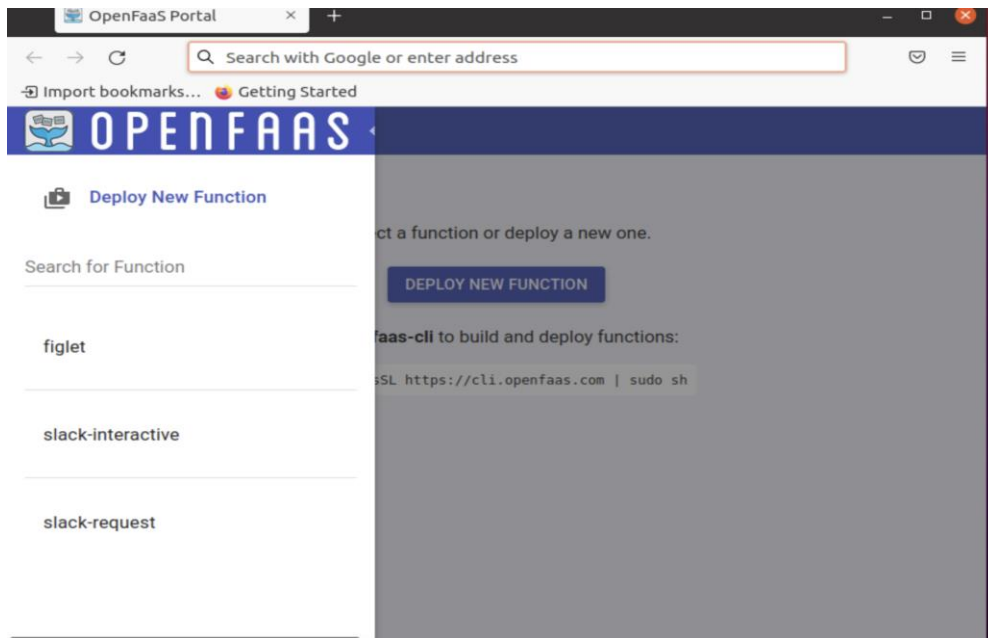It shows the function output.

3. OPENFAAS GATEWAY AFTER DEPLOYING FIGLET/SLACK-INTERACTIVE/SLACK-REQUEST
Screenshot shows the deployed functions on docker registry which are accessible and called by end-user through openfaas gateway 127:0.0.1:8080 endpoint.

4. SCREENSHOT OF "sudo journalctl -u faasd –lines 40" command
Screenshot below is the log of openfaas process. Logs clearly shows starting of each background service(container) in openfaas infrastructure like
NATS, PROMETHUS, QUEUE-WORKER, GATEWAY, AUTHENTICATION PLUGIN when openfaas is installed and started.
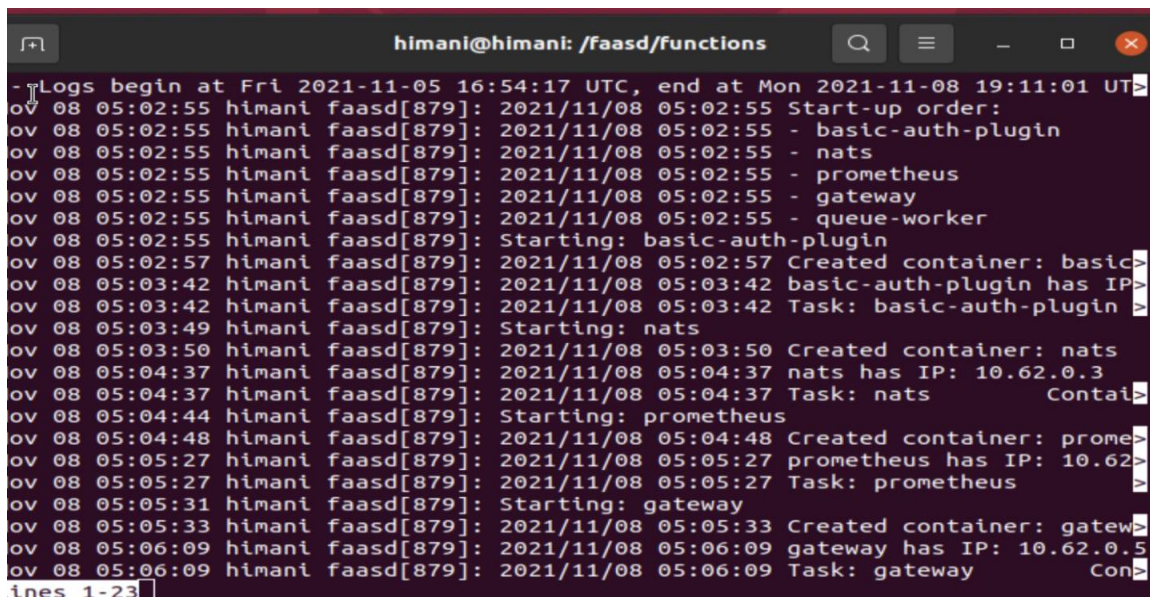
```
himani@himani: /faasd/functions
Nov 08 05:04:48 himani faasd[879]: 2021/11/08 05:04:48 Created container: prome>
Nov 08 05:05:27 himani faasd[879]: 2021/11/08 05:05:27 prometheus has IP: 10.62>
Nov 08 05:05:27 himani faasd[879]: 2021/11/08 05:05:27 Task: prometheus         >
Nov 08 05:05:31 himani faasd[879]: Starting: gateway
Nov 08 05:05:33 himani faasd[879]: 2021/11/08 05:05:33 Created container: gatew>
Nov 08 05:06:09 himani faasd[879]: 2021/11/08 05:06:09 gateway has IP: 10.62.0.5
Nov 08 05:06:09 himani faasd[879]: 2021/11/08 05:06:09 Task: gateway        Con>
Nov 08 05:06:16 himani faasd[879]: Starting: queue-worker
Nov 08 05:06:19 himani faasd[879]: 2021/11/08 05:06:19 Created container: queue>
Nov 08 05:06:43 himani faasd[879]: 2021/11/08 05:06:43 queue-worker has IP: 10.>
Nov 08 05:06:43 himani faasd[879]: 2021/11/08 05:06:43 Task: queue-worker      >
Nov 08 05:06:45 himani faasd[879]: 2021/11/08 05:06:45 Supervisor init done in:>
Nov 08 05:06:45 himani faasd[879]: 2021/11/08 05:06:45 Looking up IP for: "gate>
Nov 08 05:06:45 himani faasd[879]: 2021/11/08 05:06:45 Resolver rebuilding map
Nov 08 05:06:45 himani faasd[879]: 2021/11/08 05:06:45 Resolver: "localhost"="1>
Nov 08 05:06:45 himani faasd[879]: 2021/11/08 05:06:45 Resolver: "faasd-provide>
Nov 08 05:06:45 himani faasd[879]: 2021/11/08 05:06:45 Resolver: "basic-auth-pl>
Nov 08 05:06:45 himani faasd[879]: 2021/11/08 05:06:45 Resolver: "nats"="10.62.>
Nov 08 05:06:45 himani faasd[879]: 2021/11/08 05:06:45 Resolver: "prometheus"=">
Nov 08 05:06:45 himani faasd[879]: 2021/11/08 05:06:45 Resolver: "gateway"="10.>
Nov 08 05:06:45 himani faasd[879]: 2021/11/08 05:06:45 Resolver: "queue-worker">
Nov 08 05:06:45 himani faasd[879]: 2021/11/08 05:06:45 Looking up IP for: "prom>
Nov 08 05:06:45 himani faasd[879]: 2021/11/08 05:06:45 Proxy from: 127.0.0.1:90>
lines 17-39
```



```
himani@himani: /faasd/functions
ov 08 05:05:27 himani faasd[879]: 2021/11/08 05:05:27 Task: prometheus        Container: prometheus
ov 08 05:05:31 himani faasd[879]: Starting: gateway
ov 08 05:05:33 himani faasd[879]: 2021/11/08 05:05:33 Created container: gateway
ov 08 05:06:09 himani faasd[879]: 2021/11/08 05:06:09 gateway has IP: 10.62.0.5
ov 08 05:06:09 himani faasd[879]: 2021/11/08 05:06:09 Task: gateway        Container: gateway
ov 08 05:06:16 himani faasd[879]: Starting: queue-worker
ov 08 05:06:19 himani faasd[879]: 2021/11/08 05:06:19 Created container: queue-worker
ov 08 05:06:43 himani faasd[879]: 2021/11/08 05:06:43 queue-worker has IP: 10.62.0.6
ov 08 05:06:43 himani faasd[879]: 2021/11/08 05:06:43 Task: queue-worker        Container: queue-worker
ov 08 05:06:45 himani faasd[879]: 2021/11/08 05:06:45 Supervisor init done in: 3m53.356421506s
ov 08 05:06:45 himani faasd[879]: 2021/11/08 05:06:45 Looking up IP for: "gateway"
ov 08 05:06:45 himani faasd[879]: 2021/11/08 05:06:45 Resolver rebuilding map
ov 08 05:06:45 himani faasd[879]: 2021/11/08 05:06:45 Resolver: "localhost"="127.0.0.1"
ov 08 05:06:45 himani faasd[879]: 2021/11/08 05:06:45 Resolver: "faasd-provider"="10.62.0.1"
ov 08 05:06:45 himani faasd[879]: 2021/11/08 05:06:45 Resolver: "basic-auth-plugin"="10.62.0.2"
ov 08 05:06:45 himani faasd[879]: 2021/11/08 05:06:45 Resolver: "nats"="10.62.0.3"
ov 08 05:06:45 himani faasd[879]: 2021/11/08 05:06:45 Resolver: "prometheus"="10.62.0.4"
ov 08 05:06:45 himani faasd[879]: 2021/11/08 05:06:45 Resolver: "gateway"="10.62.0.5"
ov 08 05:06:45 himani faasd[879]: 2021/11/08 05:06:45 Resolver: "queue-worker"="10.62.0.6"
ov 08 05:06:45 himani faasd[879]: 2021/11/08 05:06:45 Looking up IP for: "prometheus"
ov 08 05:06:45 himani faasd[879]: 2021/11/08 05:06:45 Proxy from: 127.0.0.1:9090, to: prometheus:9090 >
ov 08 05:06:45 himani faasd[879]: 2021/11/08 05:06:45 faasd: waiting for SIGTERM or SIGINT
ov 08 05:06:45 himani faasd[879]: 2021/11/08 05:06:45 Proxy from: 0.0.0.0:8080, to: gateway:8080 (10.6>
```

5. SCREENSHOT OF INVOKING SLACK-REQUEST AND SLACK-INTERACTIVE.

a. slack-interactive cmd
Below screenshot shows command for invoking the function with json string as request data passed using echo and pipe to the function and output of the function.

himani@himani:/faasd/functions$ echo '{"name":"slackinteractive"}' | sudo faas-c
li invoke slack-interactive
{"attachments": [{"author_link": "https://github.com/hvaidya14", "color": "#36a6
4f", "tittle_link": "https://www.scu.edu/engineering/academic-programs/departmen
t-of-computer-engineering/graduate/course-descriptions/", "footer": "slack apps
built on openfaas", "request": "slackinteractive", "ts": 123456789, "author_name
": "himani vaidya", "image_url": "https://www.scu.edu/media/offices/umc/scu-bran
d-guidelines/visual-identity-amp-photography/visual-identity-toolkit/logos-amp-s
eals/Mission-Dont3.png", "response_type": "ephemeral", "replace_original": true,
 "text": "head over coen 241", "footer_icon": "https://a.slack-edge.com/45901/ma
rketing/img/_rebrand/meta/slack_hash_256.png", "pretext": " COEN 241 is amazing!
!", "fallback": "Required plain-text summary of the attachment.", "thumb_url": "
https://www.scu.edu/engineering/academics-programs/department-of-computer-engine
ering/graduate/course-descriptions/", "author_icon": "https://github.com/havidya
14", "tittle": "COEN 241"}]}

b. slack-interactive UI

Below screenshot shows the request body which is json string passed while invoking the deployed slack-interactive function accessible/called through openfaas gateway 127.0.0.1:8080 endpoint.
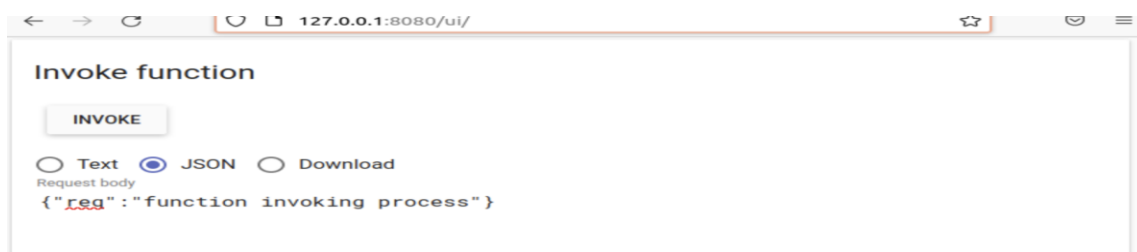
c. slack-request cmd

Below screenshot shows the request data passed using echo and pipe as a json string or text string while invoking the deployed slack-request function accessible/called through openfaas gateway 127.0.0.1:8080 endpoint and it shows the function output.

imani@himani:/faasd/functions$ echo "himani vaidya" | sudo faas-cli invoke ./slack-request
"text": "serverless message", "attachments": [{"fields": [{"tittle": "amazing level", "short": true, "value": "100"}], "tittle"
"cloud computing is awesome", "author_icon": "https://github.com/hvaidya14", "image_url": "https://www.scu.edu/media/offices/u
c/scu-brand-guidelines/visual-identity-amp-photography/visual-identity-toolkit/logos-amp-seals/Mission-Dont3.png", "author_name
: "himani vaidya"}, {"text": "cloud computing rocks", "tittle": "COEN 241"}, {"color": "#3AA3E3", "actions": [{"text": "of cour
e", "type": "button", "name": "recommend", "value": "recommend"}, {"text": "most definitely", "type": "button", "name": "defini
ely", "value": "definitely"}], "attachment_type": "default", "callback_id": "response123", "fallback": "i would recommend coen
41 to my friends", "tittle": "coen 241 subject"}]}

d. slack-request UI

Below screenshot shows the request body passed using echo and pipe as a json string or text string while invoking the deployed slack-request function accessible/called through openfaas gateway 127.0.0.1:8080 endpoint .

Invoke function

INVOKE

◯ Text ⦿ JSON ◯ Download
Request body
{"req":"invoking function"}

QUESTIONS&ANSWERS

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

a. curl localhost:8080/function/slack-request -d "hello himani"
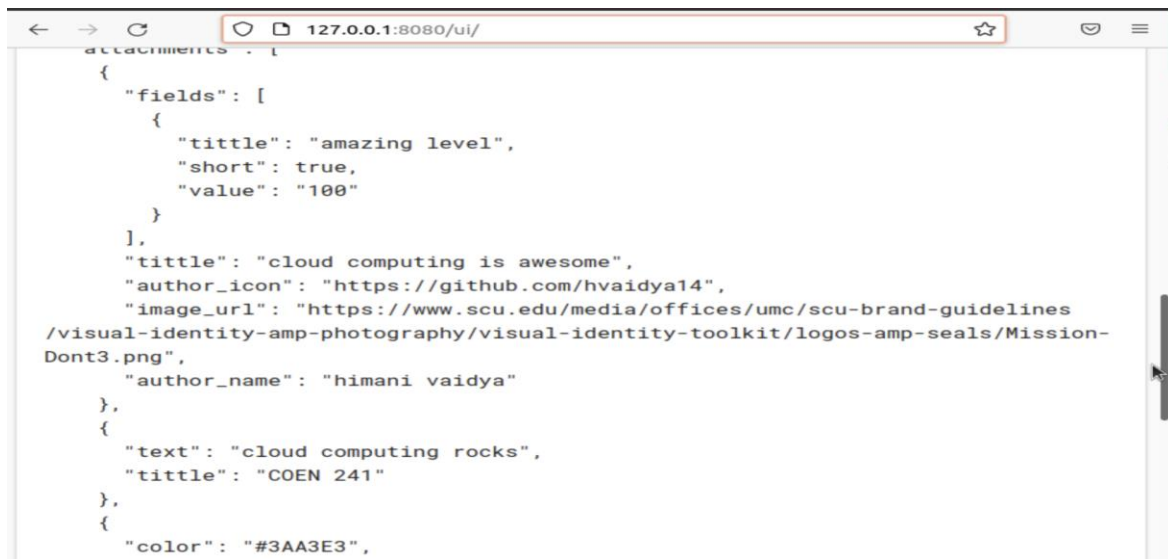b. echo "hello himani" | sudo faas-cli invoke slack-request.

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

Screenshot of slack-request invocation through cmd and UI accessible /called through openfaas gateway 127.0.0.1:8080 endpoint and its response.

```
imani@himani:/faasd/functions$ echo "himani vaidya" | sudo faas-cli invoke ./slack-request
"text": "serverless message", "attachments": [{"fields": [{"tittle": "amazing level", "short": true, "value": "100"}], "tittle"
"cloud computing is awesome", "author_icon": "https://github.com/hvaidya14", "image_url": "https://www.scu.edu/media/offices/u
c/scu-brand-guidelines/visual-identity-amp-photography/visual-identity-toolkit/logos-amp-seals/Mission-Dont3.png", "author_name
: "himani vaidya"}, {"text": "cloud computing rocks", "tittle": "COEN 241"}, {"color": "#3AA3E3", "actions": [{"text": "of cour
e", "type": "button", "name": "recommend", "value": "recommend"}, {"text": "most definitely", "type": "button", "name": "defini
ely", "value": "definitely"}], "attachment_type": "default", "callback_id": "response123", "fallback": "i would recommend coen
41 to my friends", "tittle": "coen 241 subject"}]}
```

```
                127.0.0.1:8080/ui/
attachments : [
  {
    "fields": [
      {
        "tittle": "amazing level",
        "short": true,
        "value": "100"
      }
    ],
    "tittle": "cloud computing is awesome",
    "author_icon": "https://github.com/hvaidya14",
    "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": "himani vaidya"
  },
  {
    "text": "cloud computing rocks",
    "tittle": "COEN 241"
  },
  {
    "color": "#3AA3E3",
```

```
                127.0.0.1:8080/ui/
    "actions": [
      {
        "text": "of course",
        "type": "button",
        "name": "recommend",
        "value": "recommend"
      },
      {
        "text": "most definitely",
        "type": "button",
        "name": "definitely",
        "value": "definitely"
      }
    ],
    "attachment_type": "default",
    "callback_id": "response123",
    "fallback": "i would recommend coen 241 to my friends",
    "tittle": "coen 241 subject"
  }
 ]
}
```

3. What is the command to invoke the slack-interactive function?
a. Via curl
b. Via faas-cli

a. curl localhost:8080/function/slack-interactive –data-binary '{"name":"slack-interactive function"}'
b. echo '{"name":"slack-interactive"}' | sudo faas-cli invoke slack-interactive

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

Screenshot of slack-interactive invocation through cmd and UI accessible/called through openfaas gateway 127.0.0.1:8080 endpoint and its response

himani@himani:/faasd/functions$ echo 'payload="{\"hello\":\"cloud\"}"' | faas-cli invoke slack-interactive
{"attachments": [{"author_link": "https://github.com/hvaidya14", "color": "#36a64f", "text": "head over coen 241", "footer": "sl
ack apps built on openfaas", "tittle_link": "https://www.scu.edu/engineering/academic-programs/department-of-computer-engineerin
g/graduate/course-descriptions/", "ts": 123456789, "author_name": "himani vaidya", "image_url": "https://www.scu.edu/media/offic
es/umc/scu-brand-guidelines/visual-identity-amp-photography/visual-identity-toolkit/logos-amp-seals/Mission-Dont3.png", "respons
e_type": "ephemeral", "replace_original": true, "footer_icon": "https://a.slack-edge.com/45901/marketing/img/_rebrand/meta/slack
_hash_256.png", "pretext": " COEN 241 is amazing!!", "fallback": "Required plain-text summary of the attachment.", "thumb_url":
"https://www.scu.edu/engineering/academics-programs/department-of-computer-engineering/graduate/course-descriptions/", "author_i
con": "https://github.com/havidya14", "tittle": "COEN 241"}]}
himani@himani:/faasd/functions$ echo '{"hello":"cloud"}' | faas-cli invoke slack-interactive
{"attachments": [{"author_link": "https://github.com/hvaidya14", "color": "#36a64f", "text": "head over coen 241", "footer": "sl
ack apps built on openfaas", "tittle_link": "https://www.scu.edu/engineering/academic-programs/department-of-computer-engineerin
g/graduate/course-descriptions/", "ts": 123456789, "author_name": "himani vaidya", "image_url": "https://www.scu.edu/media/offic
es/umc/scu-brand-guidelines/visual-identity-amp-photography/visual-identity-toolkit/logos-amp-seals/Mission-Dont3.png", "respons
e_type": "ephemeral", "replace_original": true, "footer_icon": "https://a.slack-edge.com/45901/marketing/img/_rebrand/meta/slack
_hash_256.png", "pretext": " COEN 241 is amazing!!", "fallback": "Required plain-text summary of the attachment.", "thumb_url":
"https://www.scu.edu/engineering/academics-programs/department-of-computer-engineering/graduate/course-descriptions/", "author_i
con": "https://github.com/havidya14", "tittle": "COEN 241"}]}

Response body
{
  "attachments": [
    {
      "author_link": "https://github.com/hvaidya14",
      "color": "#36a64f",
      "text": "head over coen 241",
      "footer": "slack apps built on openfaas",
      "tittle_link": "https://www.scu.edu/engineering/academic-programs
/department-of-computer-engineering/graduate/course-descriptions/",
      "ts": 123456789,
      "author_name": "himani vaidya",
      "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": " COEN 241 is amazing!!",
      "fallback": "Required plain-text summary of the attachment.",

127.0.0.1:8080/ui/

      "footer": "slack apps built on openfaas",
      "tittle_link": "https://www.scu.edu/engineering/academic-programs
/department-of-computer-engineering/graduate/course-descriptions/",
      "ts": 123456789,
      "author_name": "himani vaidya",
      "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": " COEN 241 is amazing!!",
      "fallback": "Required plain-text summary of the attachment.",
      "thumb_url": "https://www.scu.edu/engineering/academics-programs
/department-of-computer-engineering/graduate/course-descriptions/",
      "author_icon": "https://github.com/havidya14",
      "tittle": "COEN 241"
    }
  ]
}

5. How would you pass different arguments to the functions

Different ways are as follows:-

Using -d or –data-binary option in curl command
   a. curl localhost:8080/function/slack-interactive –data-binary '{"name":"slack-interactive function"}'
   b. curl localhost:8080/function/slack-request -d "hello himani"

Using echo command and data to be passed enclosed in single or double quotes and pipe in command
   a. echo '{"name":"slack-interactive"}' | sudo faas-cli invoke slack-interactive
   b. echo "hello himani" | sudo faas-cli invoke slack-request.

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

Screenshot of code change to react to different inputs/request body passed to function.
We are parsing the key from json string passed as request to function and assigning its value to one of the key:value pair here it is "request" key in attachments json object.

```
def handle(req):
    """handle a request to the function
    Args:
        req (str): request body
    """
    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": [
            {
                "request": response[key],
                "replace_original": True,
                "response_type":"ephemeral",
                "fallback":"Required plain-text summary of the attachment.",
                "color":"#36a64f",
                "pretext":" COEN 241 is amazing!!",
                "author_name":"himani vaidya",
"slack-interactive/handler.py" 39L, 1680C                    13,8              Top
```

Screenshot of slack-interactive invocation from cmd and response
It can be seen in reponse that request body passed to function is parsed and value of its json string key "name" is assigned to key-value pair "request" here of json object "attachments" here . Value assigned is slack-interactive which is same as passed to request body using echo and pipe in cmd.

```
himani@himani:/faasd/functions$ echo '{"name":"slackinteractive"}' | sudo faas-c
li invoke slack-interactive
```
```
{"attachments": [{"author_link": "https://github.com/hvaidya14", "color": "#36a6
4f", "tittle_link": "https://www.scu.edu/engineering/academic-programs/departmen
t-of-computer-engineering/graduate/course-descriptions/", "footer": "slack apps
built on openfaas", "request": "slackinteractive", "ts": 123456789, "author_name
": "himani vaidya", "image_url": "https://www.scu.edu/media/offices/umc/scu-bran
d-guidelines/visual-identity-amp-photography/visual-identity-toolkit/logos-amp-s
eals/Mission-Dont3.png", "response_type": "ephemeral", "replace_original": true,
 "text": "head over coen 241", "footer_icon": "https://a.slack-edge.com/45901/ma
rketing/img/_rebrand/meta/slack_hash_256.png", "pretext": " COEN 241 is amazing!
!", "fallback": "Required plain-text summary of the attachment.", "thumb_url": "
https://www.scu.edu/engineering/academics-programs/department-of-computer-engine
ering/graduate/course-descriptions/", "author_icon": "https://github.com/havidya
14", "tittle": "COEN 241"}]}
```