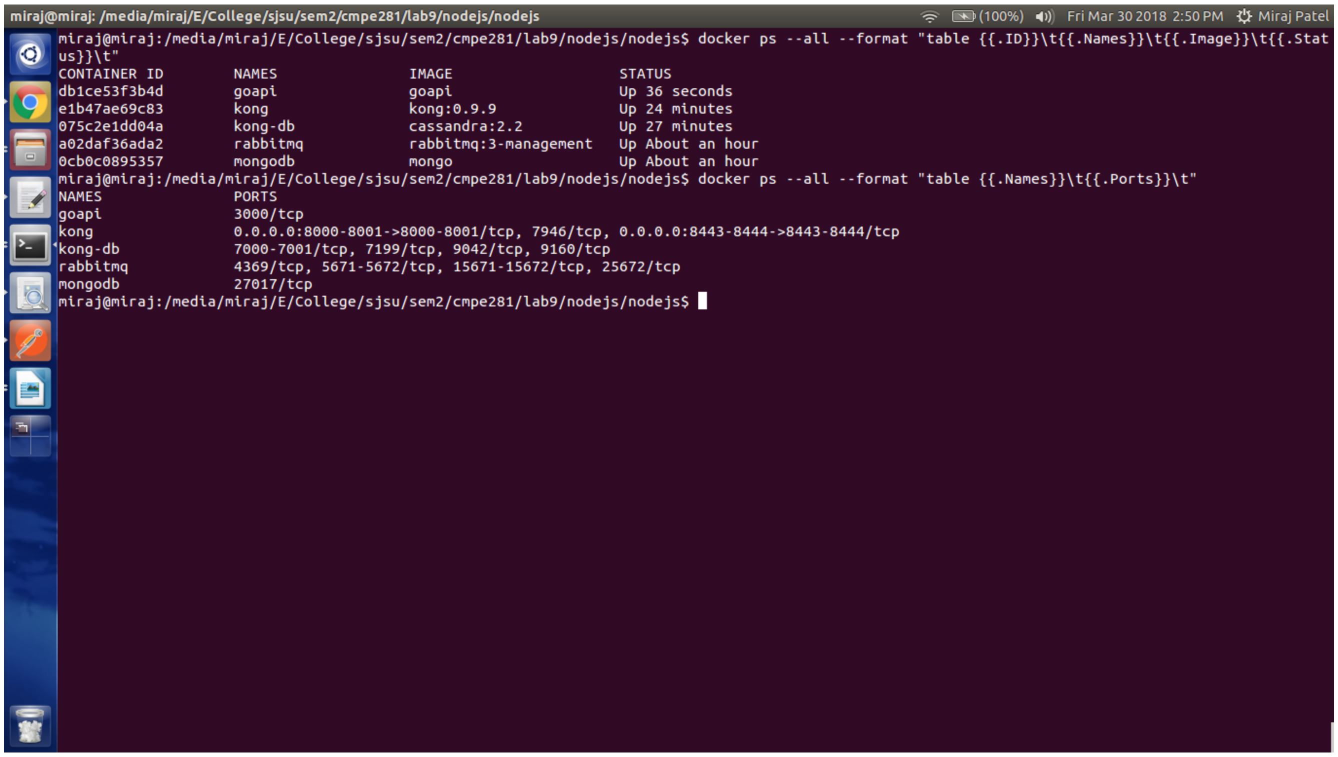
Question 4:

I used docker network to link the containers. Only kong container has published ports

```
docker network create lab9

docker run -d --hostname my-rabbit --name rabbitmq --network lab9 rabbitmq:3-management
docker run --name mongodb --network lab9 -d mongo
docker run --name goapi --network lab9 -td goapi

//cassandra
docker run -d --name kong-db --network lab9 cassandra:2.2

//kong migrations
docker run --rm --network lab9 -e "KONG_DATABASE=cassandra" -e
"KONG_CASSANDRA_CONTACT_POINTS=kong-db" kong:0.9.9 kong migrations up

//kong
docker run -d --name kong \
--network lab9 \
-e "KONG_DATABASE=cassandra" \
-e "KONG_CASSANDRA_CONTACT_POINTS=kong-db" \
-e "KONG_PROXY_ACCESS_LOG=/dev/stdout" \
-e "KONG_ADMIN_ACCESS_LOG=/dev/stdout" \
-e "KONG_PROXY_ERROR_LOG=/dev/stderr" \
-e "KONG_ADMIN_ERROR_LOG=/dev/stderr" \
-e "KONG_ADMIN_LISTEN=0.0.0.0:8001" \
-e "KONG_ADMIN_LISTEN_SSL=0.0.0.0:8444" \
-p 8000:8000 \
-p 8443:8443 \
-p 8001:8001 \
-p 8444:8444 \
kong:0.9.9
```

docker ps commands



miraj@miraj: /media/miraj/E/College/sjsu/sem2/cmpe281/lab9/nodejs/nodejs
(100%)
Fri Mar 30 2018 2:50 PM
Miraj Patel

```
miraj@miraj:/media/miraj/E/College/sjsu/sem2/cmpe281/lab9/nodejs/nodejs$ docker ps --all --format "table {{.ID}}\t{{.Names}}\t{{.Image}}\t{{.Stat
us}}\t"
CONTAINER ID        NAMES               IMAGE                    STATUS
db1ce53f3b4d        goapi               goapi                    Up 36 seconds
e1b47ae69c83        kong                kong:0.9.9               Up 24 minutes
075c2e1dd04a        kong-db             cassandra:2.2            Up 27 minutes
a02daf36ada2        rabbitmq            rabbitmq:3-management    Up About an hour
0cb0c0895357        mongodb             mongo                    Up About an hour
miraj@miraj:/media/miraj/E/College/sjsu/sem2/cmpe281/lab9/nodejs/nodejs$ docker ps --all --format "table {{.Names}}\t{{.Ports}}\t"
NAMES               PORTS
goapi               3000/tcp
kong                0.0.0.0:8000-8001->8000-8001/tcp, 7946/tcp, 0.0.0.0:8443-8444->8443-8444/tcp
kong-db             7000-7001/tcp, 7199/tcp, 9042/tcp, 9160/tcp
rabbitmq            4369/tcp, 5671-5672/tcp, 15671-15672/tcp, 25672/tcp
mongodb             27017/tcp
miraj@miraj:/media/miraj/E/College/sjsu/sem2/cmpe281/lab9/nodejs/nodejs$ 
```

code changes in app.js

//172.20.0.6 is the container ip the kong container

```
var machine = "http://172.20.0.6:8000/goapi/gumball";
var endpoint = "http://172.20.0.6:8000/goapi/order";
```

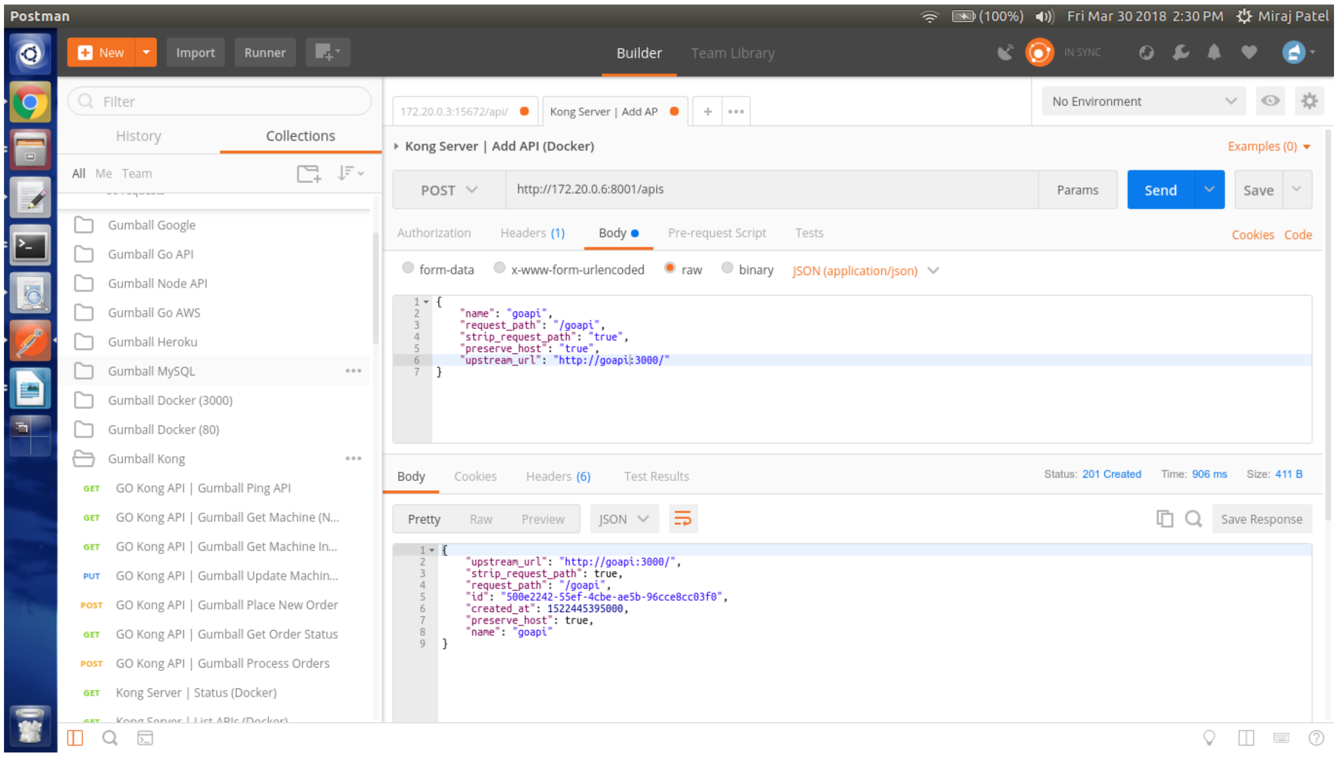
//added api key in header of post api call to the GoApi server

```
var args = {
        headers: { "apikey": "9ef6f41f62fe40a7ab07953e896b6222" }
    };
    var client = new Client();
            var count = 0;
            client.post( endpoint,
                args,
                function(data, response_raw) {
                    //rest of function
            });
```

//added api key in header of get api call to the GoApi server

```
var args = {
        headers: { "apikey": "9ef6f41f62fe40a7ab07953e896b6222" }
    };
            client.get( machine,
                args,
                function(data, response_raw){
                    //res of function
            });
```

add api to kong



Kong Server | Add API (Docker)

POST http://172.20.0.6:8001/apis

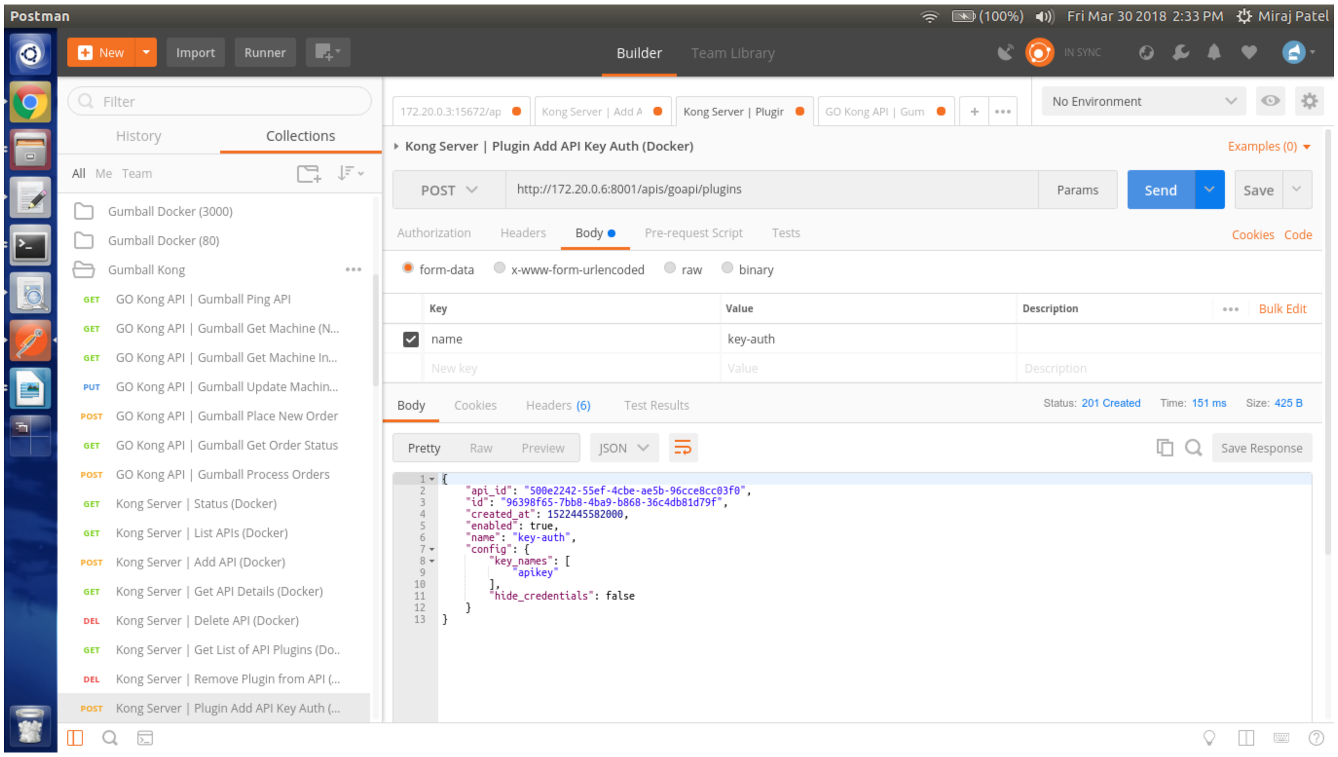
Body: raw, JSON (application/json)

```
{
    "name": "goapi",
    "request_path": "/goapi",
    "strip_request_path": "true",
    "preserve_host": "true",
    "upstream_url": "http://goapi:3000/"
}
```

Status: 201 Created Time: 906 ms Size: 411 B

```
{
    "upstream_url": "http://goapi:3000/",
    "strip_request_path": true,
    "request_path": "/goapi",
    "id": "500e2242-55ef-4cbe-ae5b-96cce8cc03f0",
    "created_at": 1522445395000,
    "preserve_host": true,
    "name": "goapi"
}
```

add key auth plugin



Kong Server | Plugin Add API Key Auth (Docker)

POST http://172.20.0.6:8001/apis/goapi/plugins

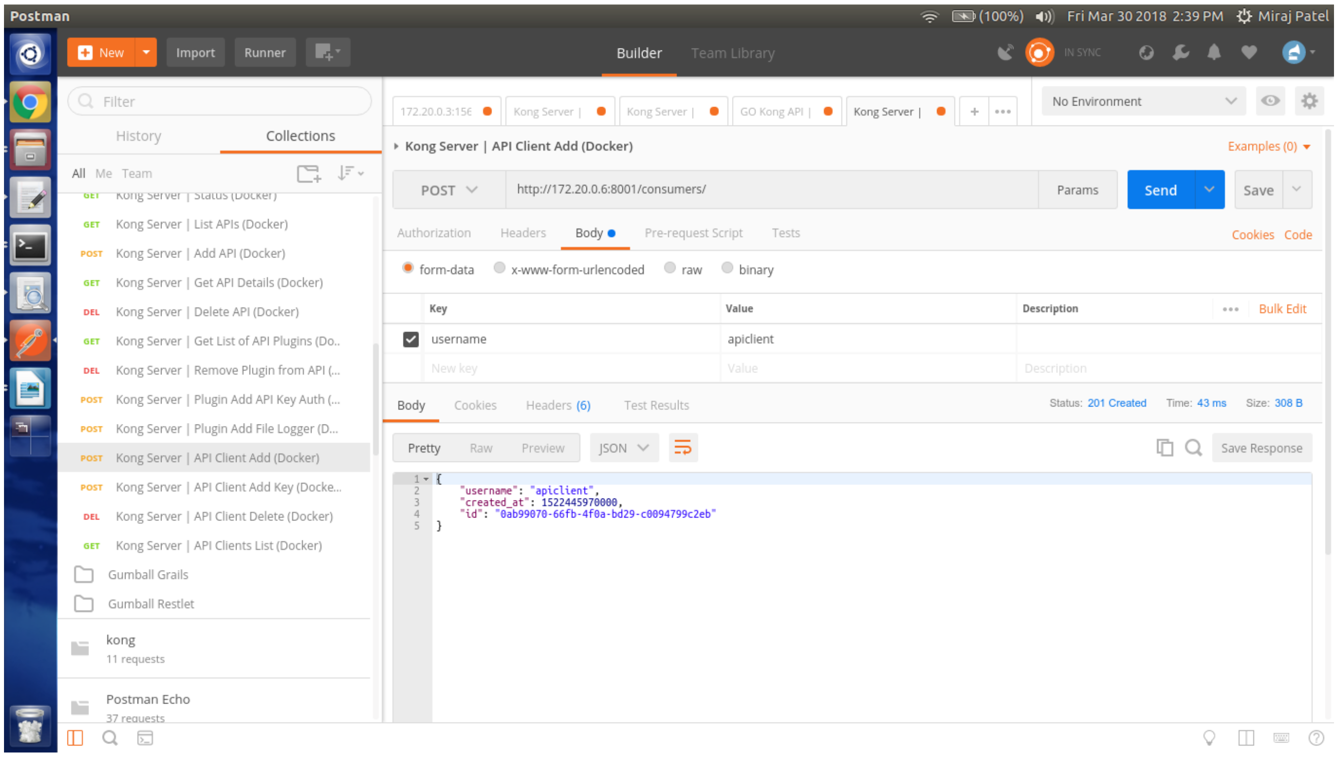
Body: form-data

Key	Value	Description
name	key-auth	

Status: 201 Created Time: 151 ms Size: 425 B

```
{
    "api_id": "500e2242-55ef-4cbe-ae5b-96cce8cc03f0",
    "id": "96398f65-7bb8-4ba9-b868-36c4db81d79f",
    "created_at": 1522445582000,
    "enabled": true,
    "name": "key-auth",
    "config": {
        "key_names": [
            "apikey"
        ],
        "hide_credentials": false
    }
}
```

add consumer



Kong Server | API Client Add (Docker)

POST http://172.20.0.6:8001/consumers/

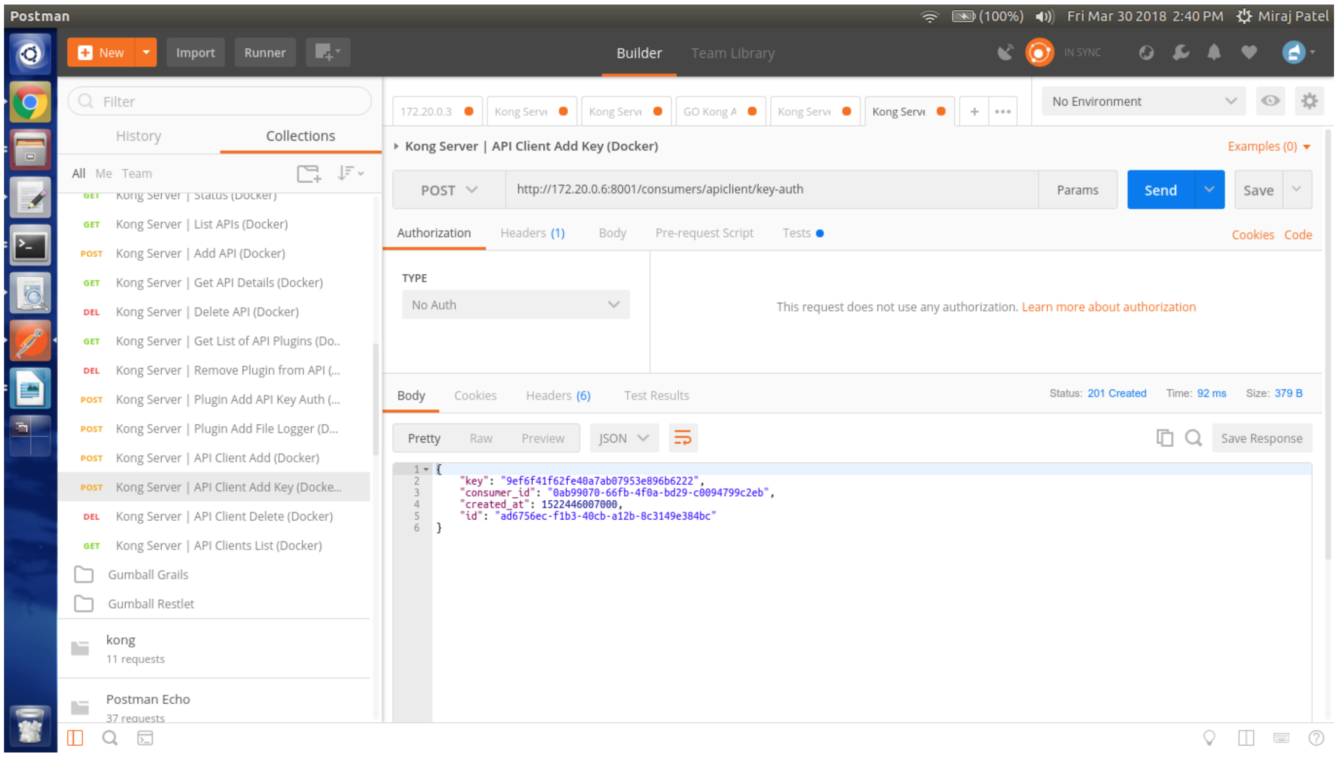
Body: form-data

Key	Value	Description
username	apiclient	

Status: 201 Created Time: 43 ms Size: 308 B

```
{
    "username": "apiclient",
    "created_at": 1522445970000,
    "id": "0ab99070-66fb-4f0a-bd29-c0094799c2eb"
}
```

add api key


Kong Server | API Client Add Key (Docker)

POST http://172.20.0.6:8001/consumers/apiclient/key-auth

Authorization TYPE: No Auth

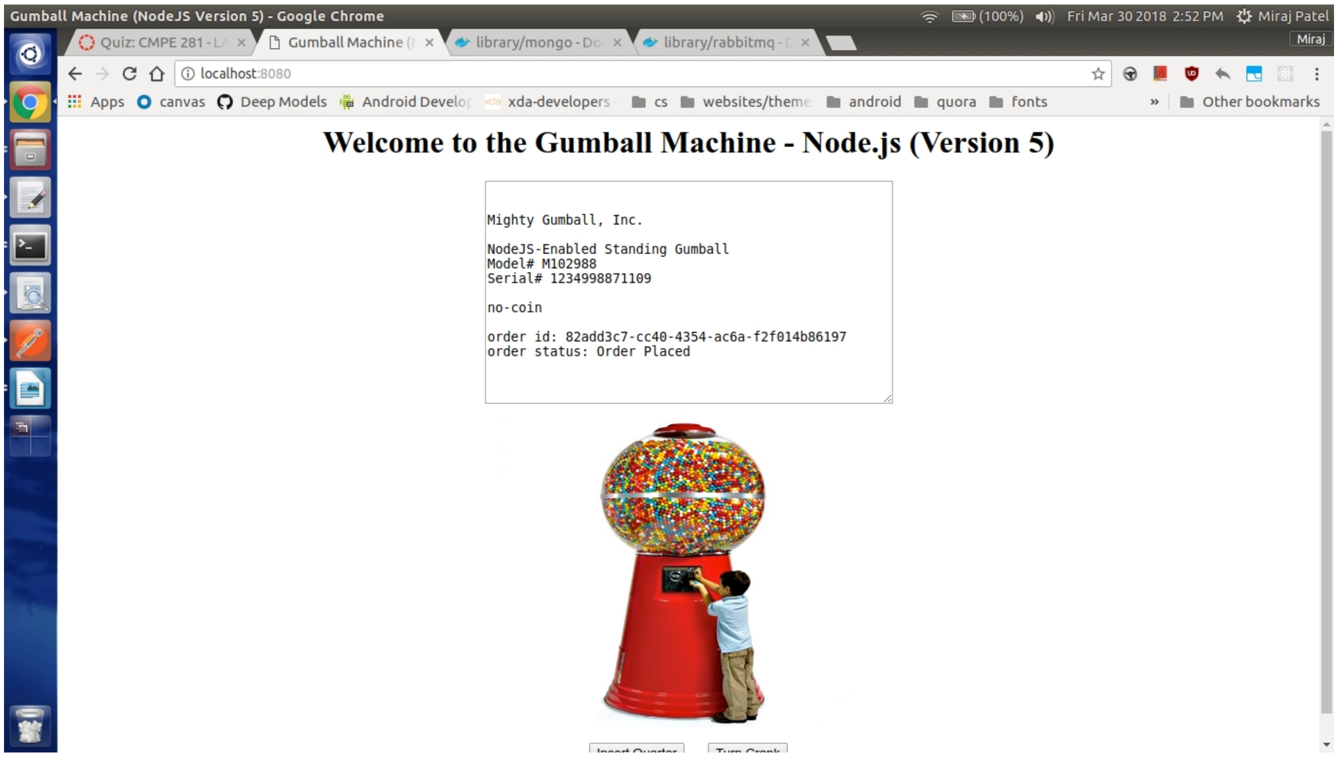
This request does not use any authorization. Learn more about authorization

Status: 201 Created Time: 92 ms Size: 379 B

```
{
    "key": "9ef6f41f62fe40a7ab07953e896b6222",
    "consumer_id": "0ab99070-66fb-4f0a-bd29-c0094799c2eb",
    "created_at": 1522446007000,
    "id": "ad6756ec-f1b3-40cb-a12b-8c3149e384bc"
}
```

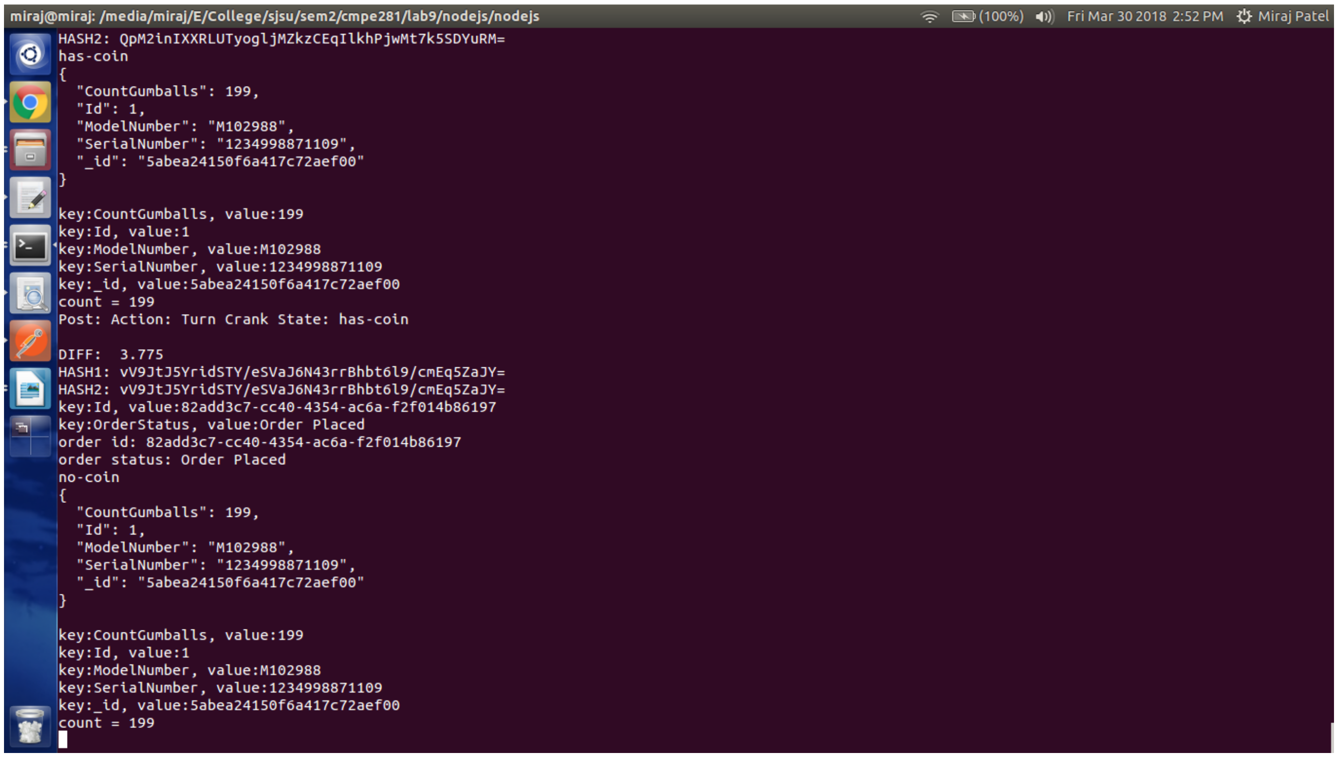
Postman
Fri Mar 30 2018 2:40 PM
Miraj Patel
New
Import
Runner
Builder
Team Library
No Environment
History
Collections
GET Kong Server | Status (Docker)
GET Kong Server | List APIs (Docker)
POST Kong Server | Add API (Docker)
GET Kong Server | Get API Details (Docker)
DEL Kong Server | Delete API (Docker)
GET Kong Server | Get List of API Plugins (Do...
DEL Kong Server | Remove Plugin from API (...
POST Kong Server | Plugin Add API Key Auth (...
POST Kong Server | Plugin Add File Logger (D...
POST Kong Server | API Client Add (Docker)
POST Kong Server | API Client Add Key (Docke...
DEL Kong Server | API Client Delete (Docker)
GET Kong Server | API Clients List (Docker)
Gumball Grails
Gumball Restlet
kong
11 requests
Postman Echo
37 requests
Params
Send
Save
Headers (1)
Body
Pre-request Script
Tests
Cookies
Code
Headers (6)
Test Results
Pretty
Raw
Preview
JSON
Save Response

order 1



Welcome to the Gumball Machine - Node.js (Version 5)

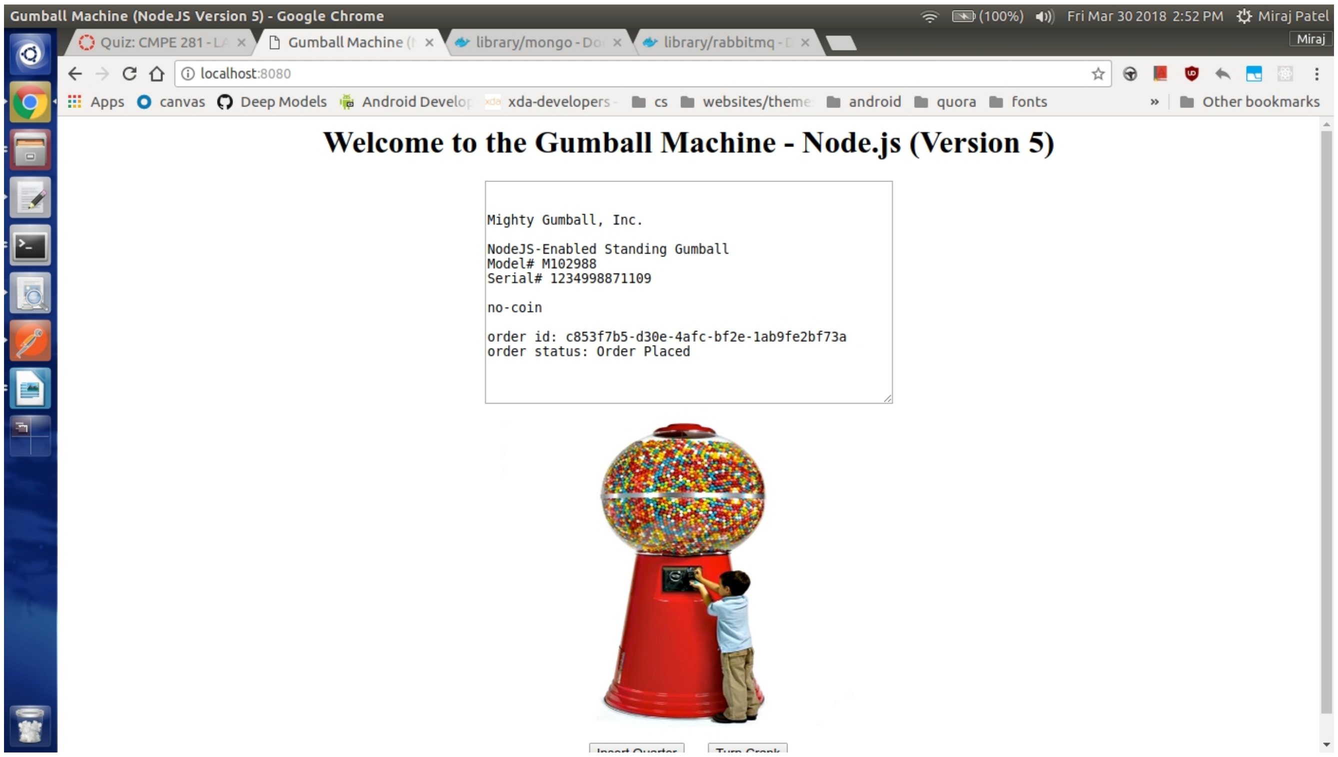
```
Mighty Gumball, Inc.

NodeJS-Enabled Standing Gumball
Model# M102988
Serial# 1234998871109

no-coin

order id: 82add3c7-cc40-4354-ac6a-f2f014b86197
order status: Order Placed
```



miraj@miraj: /media/miraj/E/College/sjsu/sem2/cmpe281/lab9/nodejs/nodejs

```
HASH2: QpM2inIXXRLUTyogljMZkzCEqIlkhPjwMt7k5SDYuRM=
has-coin
{
  "CountGumballs": 199,
  "Id": 1,
  "ModelNumber": "M102988",
  "SerialNumber": "1234998871109",
  "_id": "5abea24150f6a417c72aef00"
}

key:CountGumballs, value:199
key:Id, value:1
key:ModelNumber, value:M102988
key:SerialNumber, value:1234998871109
key:_id, value:5abea24150f6a417c72aef00
count = 199
Post: Action: Turn Crank State: has-coin

DIFF:  3.775
HASH1: vV9JtJ5YridSTY/eSVaJ6N43rrBhbt6l9/cmEq5ZaJY=
HASH2: vV9JtJ5YridSTY/eSVaJ6N43rrBhbt6l9/cmEq5ZaJY=
key:Id, value:82add3c7-cc40-4354-ac6a-f2f014b86197
key:OrderStatus, value:Order Placed
order id: 82add3c7-cc40-4354-ac6a-f2f014b86197
order status: Order Placed
no-coin
{
  "CountGumballs": 199,
  "Id": 1,
  "ModelNumber": "M102988",
  "SerialNumber": "1234998871109",
  "_id": "5abea24150f6a417c72aef00"
}

key:CountGumballs, value:199
key:Id, value:1
key:ModelNumber, value:M102988
key:SerialNumber, value:1234998871109
key:_id, value:5abea24150f6a417c72aef00
count = 199
```

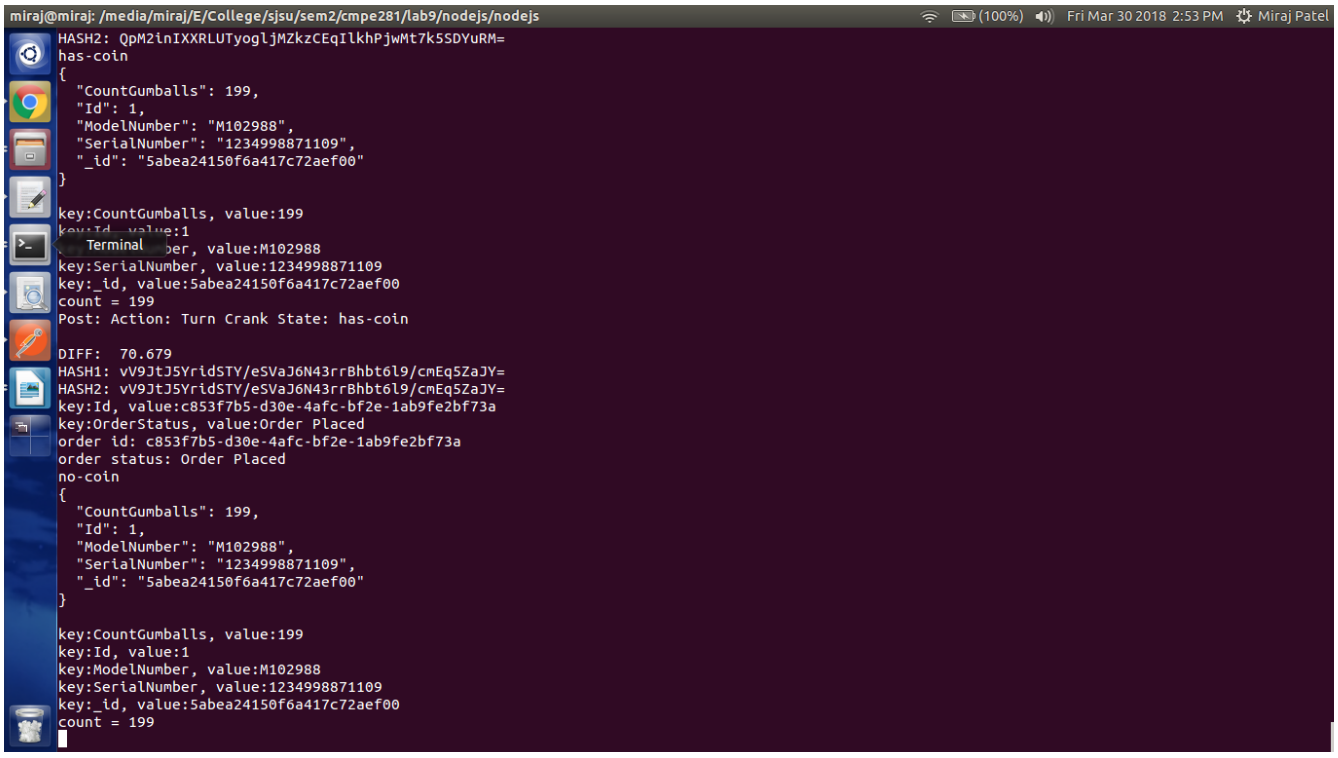
order 2


Gumball Machine (NodeJS Version 5) - Google Chrome

localhost:8080

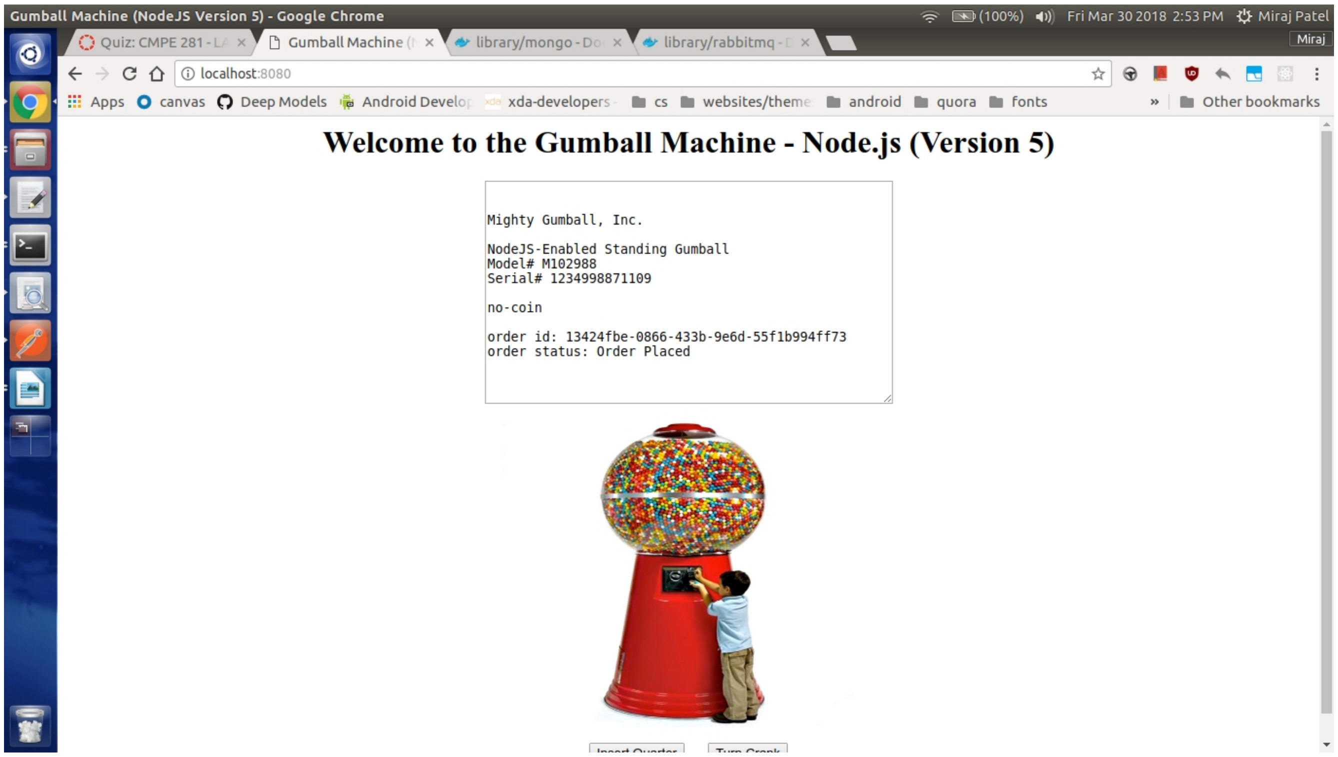
Welcome to the Gumball Machine - Node.js (Version 5)

```
Mighty Gumball, Inc.

NodeJS-Enabled Standing Gumball
Model# M102988
Serial# 1234998871109

no-coin

order id: c853f7b5-d30e-4afc-bf2e-1ab9fe2bf73a
order status: Order Placed
```


miraj@miraj: /media/miraj/E/College/sjsu/sem2/cmpe281/lab9/nodejs/nodejs

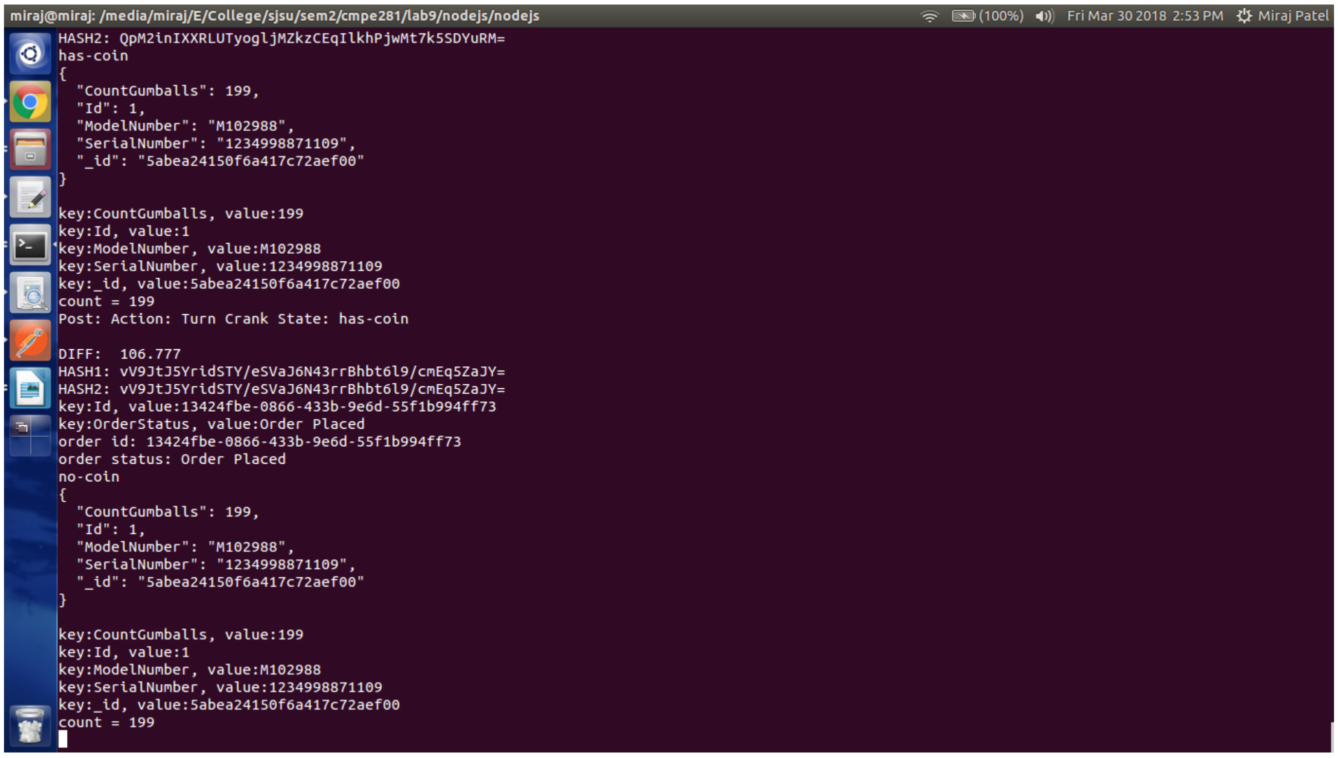
```
HASH2: QpM2inIXXRLUTyogljMZkzCEqIlkhPjwMt7k5SDYuRM=
has-coin
{
  "CountGumballs": 199,
  "Id": 1,
  "ModelNumber": "M102988",
  "SerialNumber": "1234998871109",
  "_id": "5abea24150f6a417c72aef00"
}

key:CountGumballs, value:199
key:Id, value:1
key:ModelNumber, value:M102988
key:SerialNumber, value:1234998871109
key:_id, value:5abea24150f6a417c72aef00
count = 199
Post: Action: Turn Crank State: has-coin

DIFF:  70.679
HASH1: vV9JtJ5YridSTY/eSVaJ6N43rrBhbt6l9/cmEq5ZaJY=
HASH2: vV9JtJ5YridSTY/eSVaJ6N43rrBhbt6l9/cmEq5ZaJY=
key:Id, value:c853f7b5-d30e-4afc-bf2e-1ab9fe2bf73a
key:OrderStatus, value:Order Placed
order id: c853f7b5-d30e-4afc-bf2e-1ab9fe2bf73a
order status: Order Placed
no-coin
{
  "CountGumballs": 199,
  "Id": 1,
  "ModelNumber": "M102988",
  "SerialNumber": "1234998871109",
  "_id": "5abea24150f6a417c72aef00"
}

key:CountGumballs, value:199
key:Id, value:1
key:ModelNumber, value:M102988
key:SerialNumber, value:1234998871109
key:_id, value:5abea24150f6a417c72aef00
count = 199
```

order 3



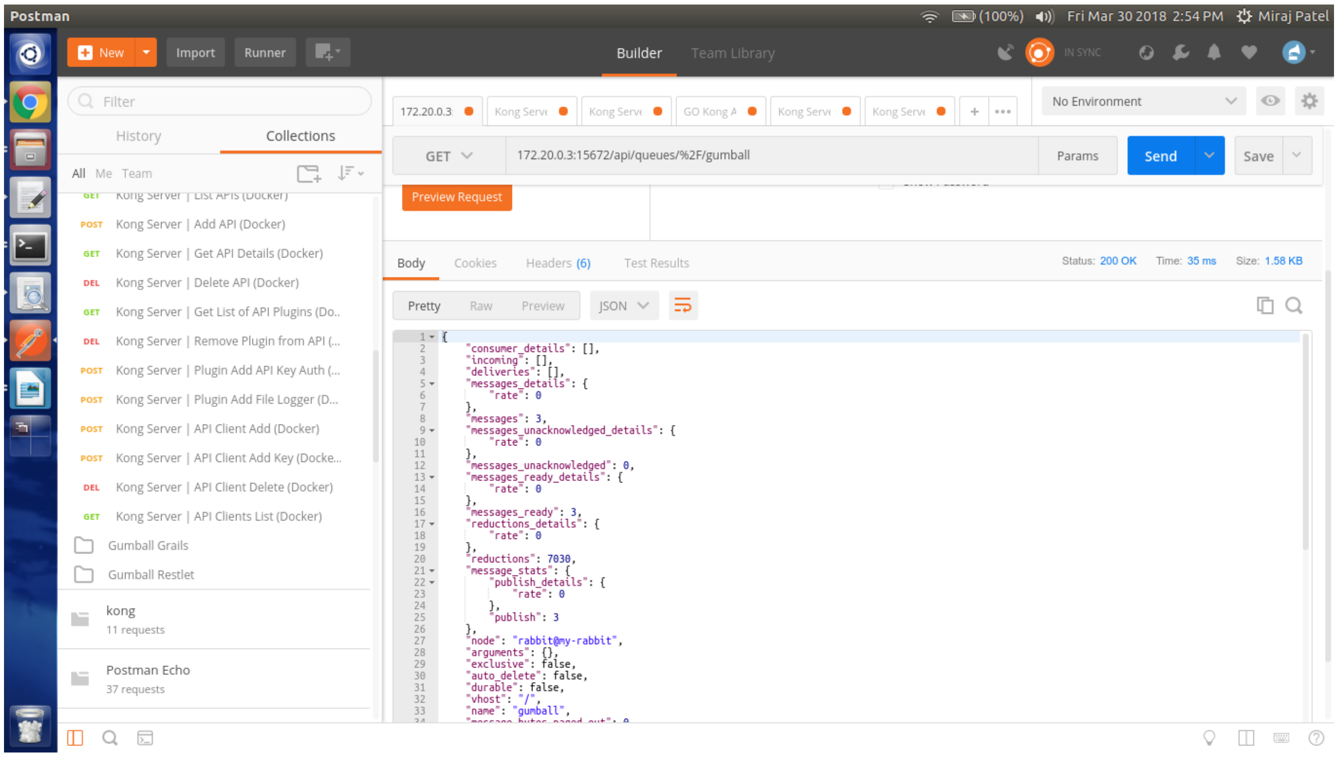
Welcome to the Gumball Machine - Node.js (Version 5)

```
Mighty Gumball, Inc.

NodeJS-Enabled Standing Gumball
Model# M102988
Serial# 1234998871109

no-coin

order id: 13424fbe-0866-433b-9e6d-55f1b994ff73
order status: Order Placed
```


miraj@miraj: /media/miraj/E/College/sjsu/sem2/cmpe281/lab9/nodejs/nodejs

```
HASH2: QpM2inIXXRLUTyogljMZkzCEqIlkhPjwMt7k5SDYuRM=
has-coin
{
  "CountGumballs": 199,
  "Id": 1,
  "ModelNumber": "M102988",
  "SerialNumber": "1234998871109",
  "_id": "5abea24150f6a417c72aef00"
}

key:CountGumballs, value:199
key:Id, value:1
key:ModelNumber, value:M102988
key:SerialNumber, value:1234998871109
key:_id, value:5abea24150f6a417c72aef00
count = 199
Post: Action: Turn Crank State: has-coin

DIFF:  106.777
HASH1: vV9JtJ5YridSTY/eSVaJ6N43rrBhbt6l9/cmEq5ZaJY=
HASH2: vV9JtJ5YridSTY/eSVaJ6N43rrBhbt6l9/cmEq5ZaJY=
key:Id, value:13424fbe-0866-433b-9e6d-55f1b994ff73
key:OrderStatus, value:Order Placed
order id: 13424fbe-0866-433b-9e6d-55f1b994ff73
order status: Order Placed
no-coin
{
  "CountGumballs": 199,
  "Id": 1,
  "ModelNumber": "M102988",
  "SerialNumber": "1234998871109",
  "_id": "5abea24150f6a417c72aef00"
}

key:CountGumballs, value:199
key:Id, value:1
key:ModelNumber, value:M102988
key:SerialNumber, value:1234998871109
key:_id, value:5abea24150f6a417c72aef00
count = 199
```

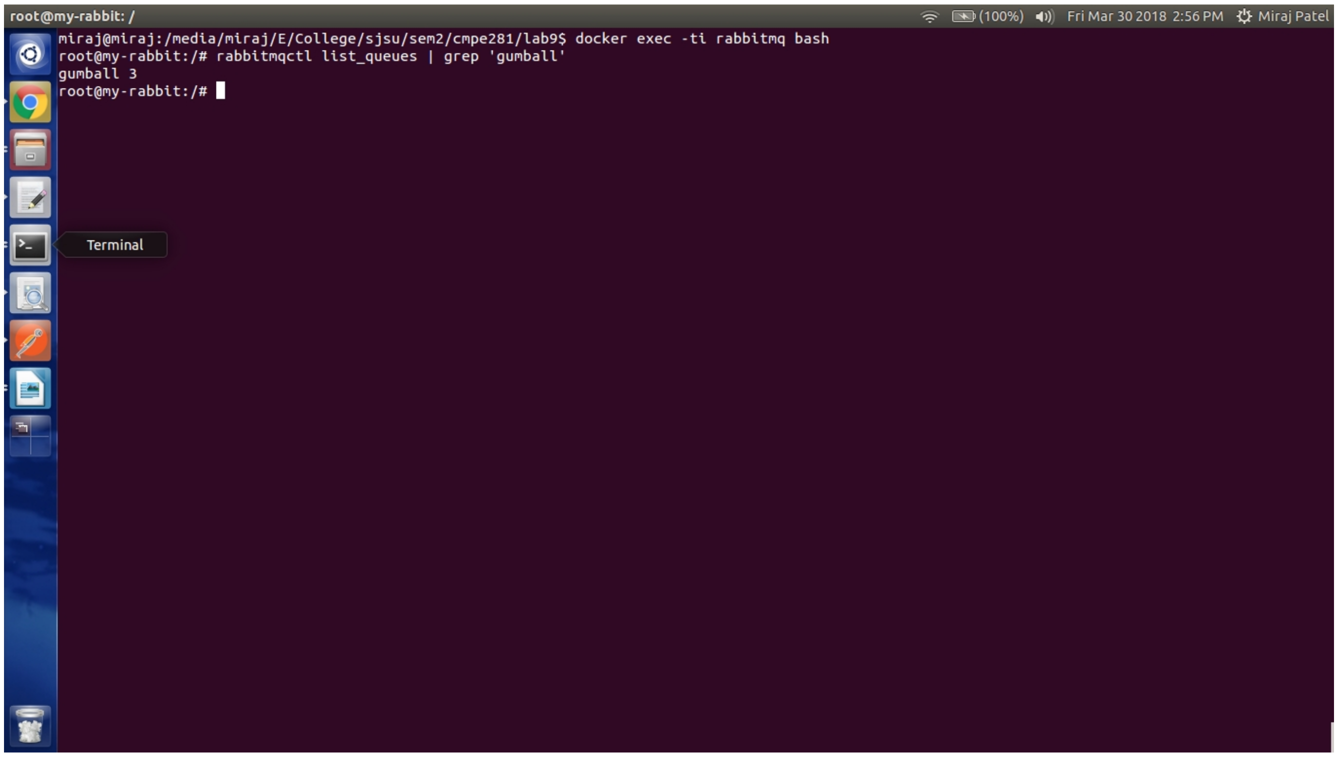
rabbit mq queue count - 3 messages for 3 orders


Postman
Fri Mar 30 2018 2:54 PM
Miraj Patel
New
Import
Runner
Builder
Team Library
IN SYNC
No Environment
History
Collections
GET Kong Server | List APIs (Docker)
POST Kong Server | Add API (Docker)
GET Kong Server | Get API Details (Docker)
DEL Kong Server | Delete API (Docker)
GET Kong Server | Get List of API Plugins (Do...
DEL Kong Server | Remove Plugin from API (...
POST Kong Server | Plugin Add API Key Auth (...
POST Kong Server | Plugin Add File Logger (D...
POST Kong Server | API Client Add (Docker)
POST Kong Server | API Client Add Key (Docke...
DEL Kong Server | API Client Delete (Docker)
GET Kong Server | API Clients List (Docker)
Gumball Grails
Gumball Restlet
kong
11 requests
Postman Echo
37 requests
Preview Request
Params
Send
Save
Body
Cookies
Headers (6)
Test Results
Pretty
Raw
Preview
JSON

GET 172.20.0.3:15672/api/queues/%2F/gumball

Status: 200 OK Time: 35 ms Size: 1.58 KB

```
{
    "consumer_details": [],
    "incoming": [],
    "deliveries": [],
    "messages_details": {
        "rate": 0
    },
    "messages": 3,
    "messages_unacknowledged_details": {
        "rate": 0
    },
    "messages_unacknowledged": 0,
    "messages_ready_details": {
        "rate": 0
    },
    "messages_ready": 3,
    "reductions_details": {
        "rate": 0
    },
    "reductions": 7030,
    "message_stats": {
        "publish_details": {
            "rate": 0
        },
        "publish": 3
    },
    "node": "rabbit@my-rabbit",
    "arguments": {},
    "exclusive": false,
    "auto_delete": false,
    "durable": false,
    "vhost": "/",
    "name": "gumball",
```

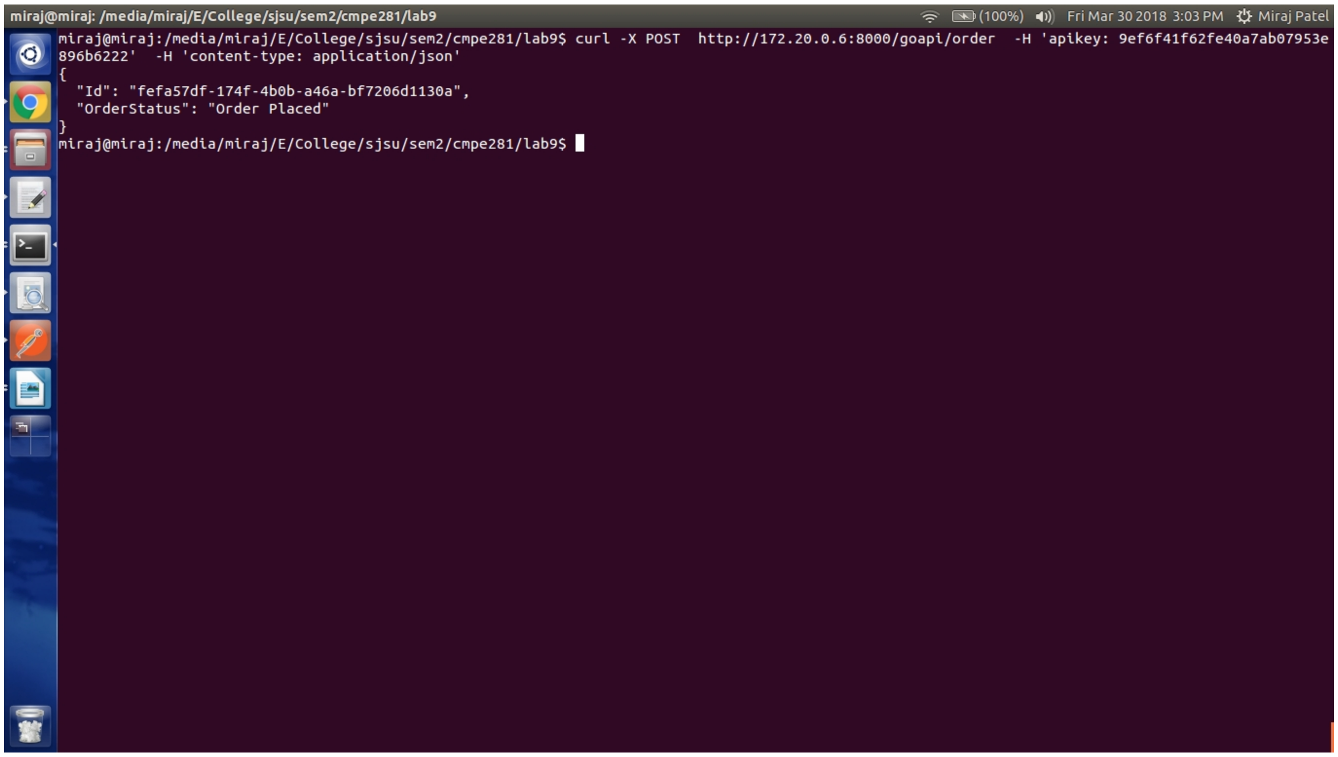


```
miraj@miraj:/media/miraj/E/College/sjsu/sem2/cmpe281/lab9$ docker exec -ti rabbitmq bash
root@my-rabbit:/# rabbitmqctl list_queues | grep 'gumball'
gumball 3
root@my-rabbit:/# 
```

placing order using curl

curl -X POST http://172.20.0.6:8000/goapi/order -H 'apikey: 9ef6f41f62fe40a7ab07953e896b6222' -H 'content-type: application/json'

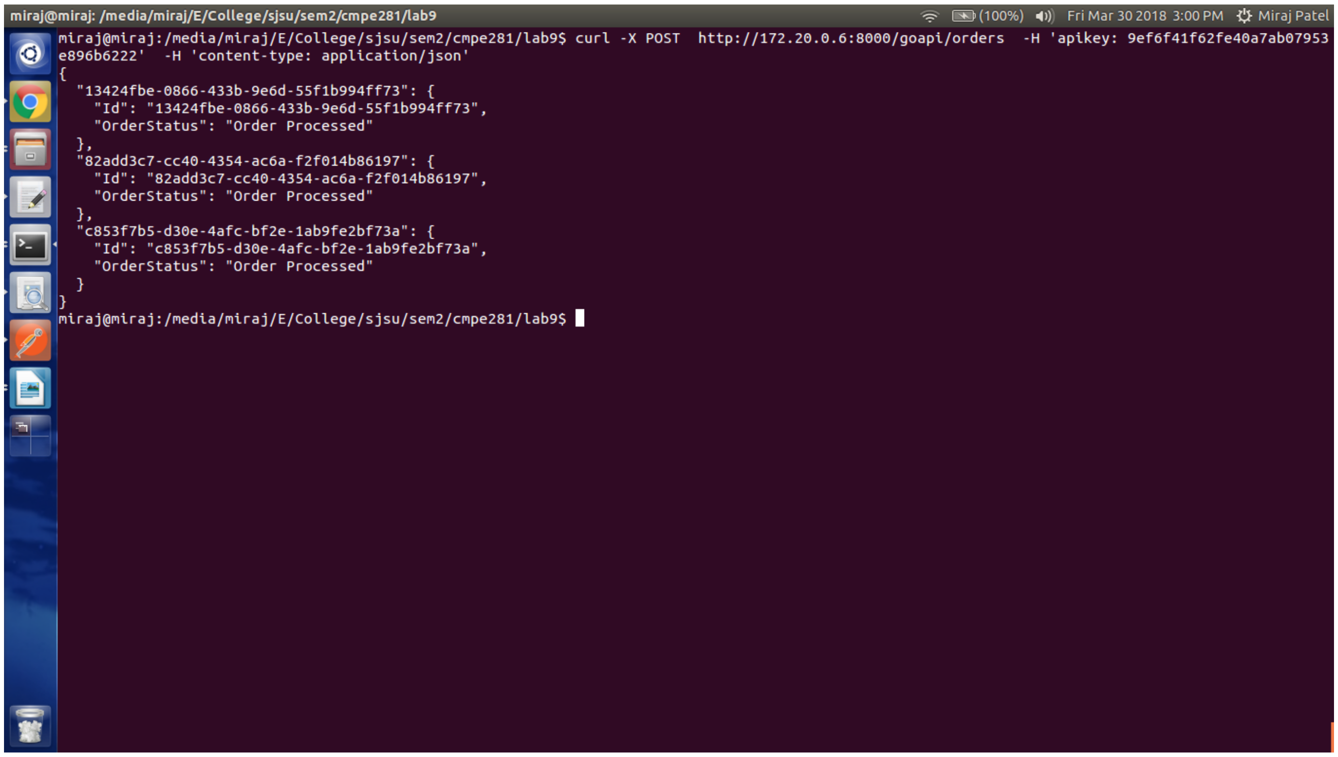
(I was not sure if you wanted to post to /order or /orders as in question 3, so I did both. The canvas question states to post on /order)



```
miraj@miraj:/media/miraj/E/College/sjsu/sem2/cmpe281/lab9$ curl -X POST  http://172.20.0.6:8000/goapi/order  -H 'apikey: 9ef6f41f62fe40a7ab07953e
896b6222'  -H 'content-type: application/json'
{
  "Id": "fefa57df-174f-4b0b-a46a-bf7206d1130a",
  "OrderStatus": "Order Placed"
}
miraj@miraj:/media/miraj/E/College/sjsu/sem2/cmpe281/lab9$
```

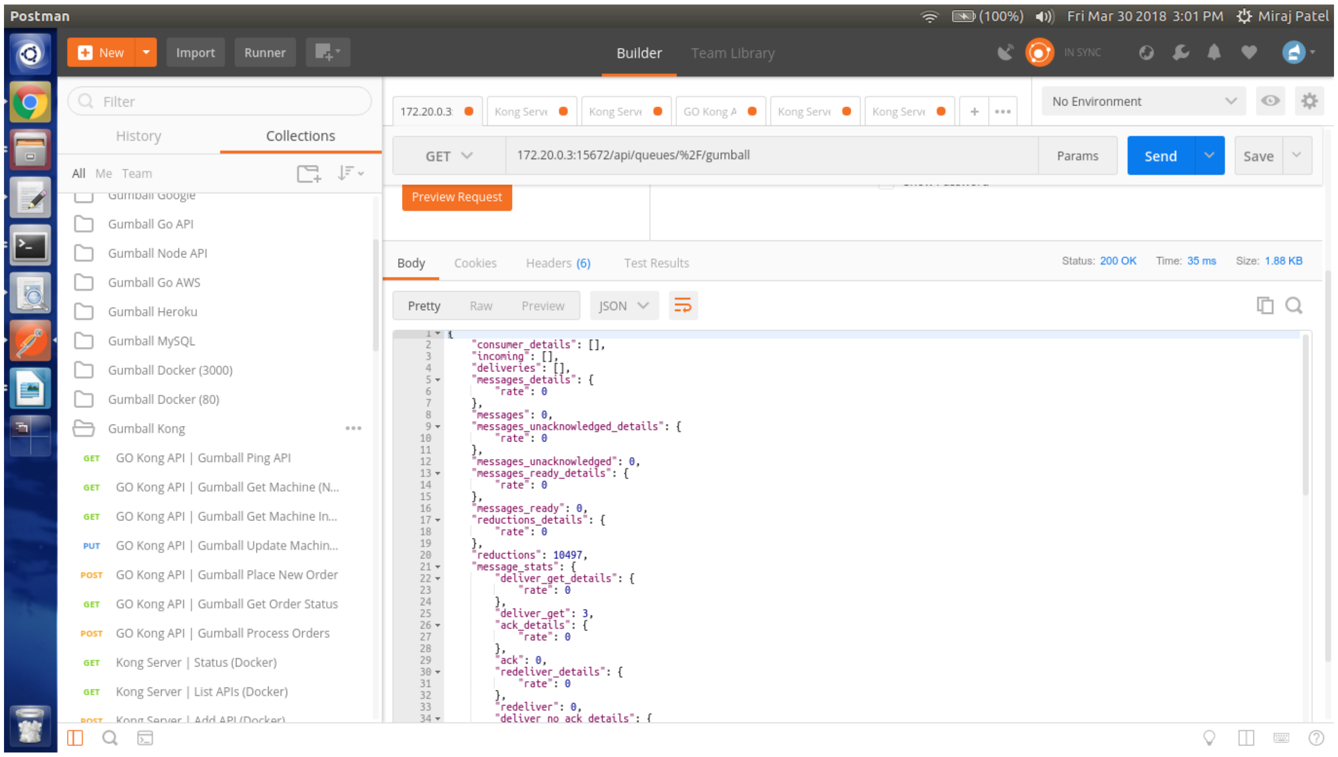
curl -X POST http://172.20.0.6:8000/goapi/orders -H 'apikey: 9ef6f41f62fe40a7ab07953e896b6222' -H 'content-type: application/json'

processing orders



```
miraj@miraj:/media/miraj/E/College/sjsu/sem2/cmpe281/lab9$ curl -X POST  http://172.20.0.6:8000/goapi/orders  -H 'apikey: 9ef6f41f62fe40a7ab07953
e896b6222'  -H 'content-type: application/json'
{
  "13424fbe-0866-433b-9e6d-55f1b994ff73": {
    "Id": "13424fbe-0866-433b-9e6d-55f1b994ff73",
    "OrderStatus": "Order Processed"
  },
  "82add3c7-cc40-4354-ac6a-f2f014b86197": {
    "Id": "82add3c7-cc40-4354-ac6a-f2f014b86197",
    "OrderStatus": "Order Processed"
  },
  "c853f7b5-d30e-4afc-bf2e-1ab9fe2bf73a": {
    "Id": "c853f7b5-d30e-4afc-bf2e-1ab9fe2bf73a",
    "OrderStatus": "Order Processed"
  }
}
miraj@miraj:/media/miraj/E/College/sjsu/sem2/cmpe281/lab9$
```

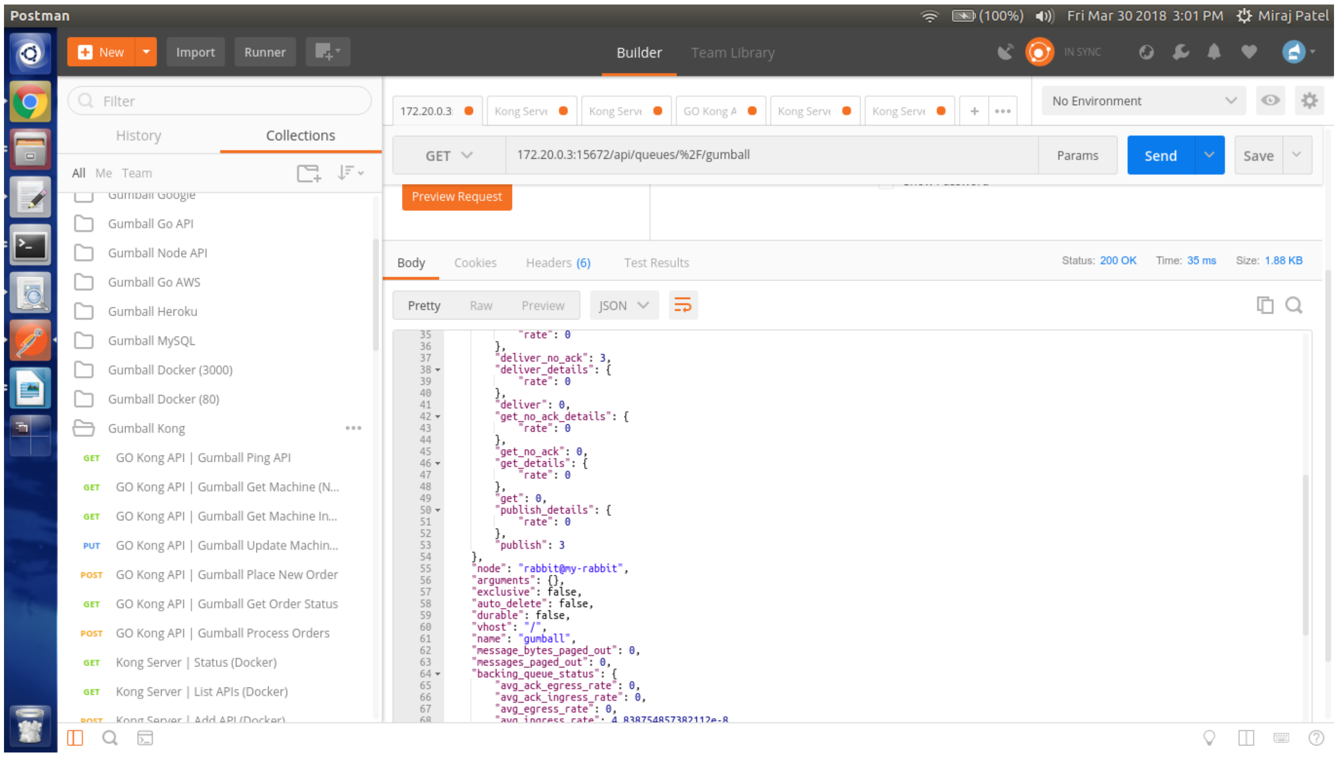
rabbit mq queue – 0 messages after processing orders



GET 172.20.0.3:15672/api/queues/%2F/gumball

Status: 200 OK Time: 35 ms Size: 1.88 KB

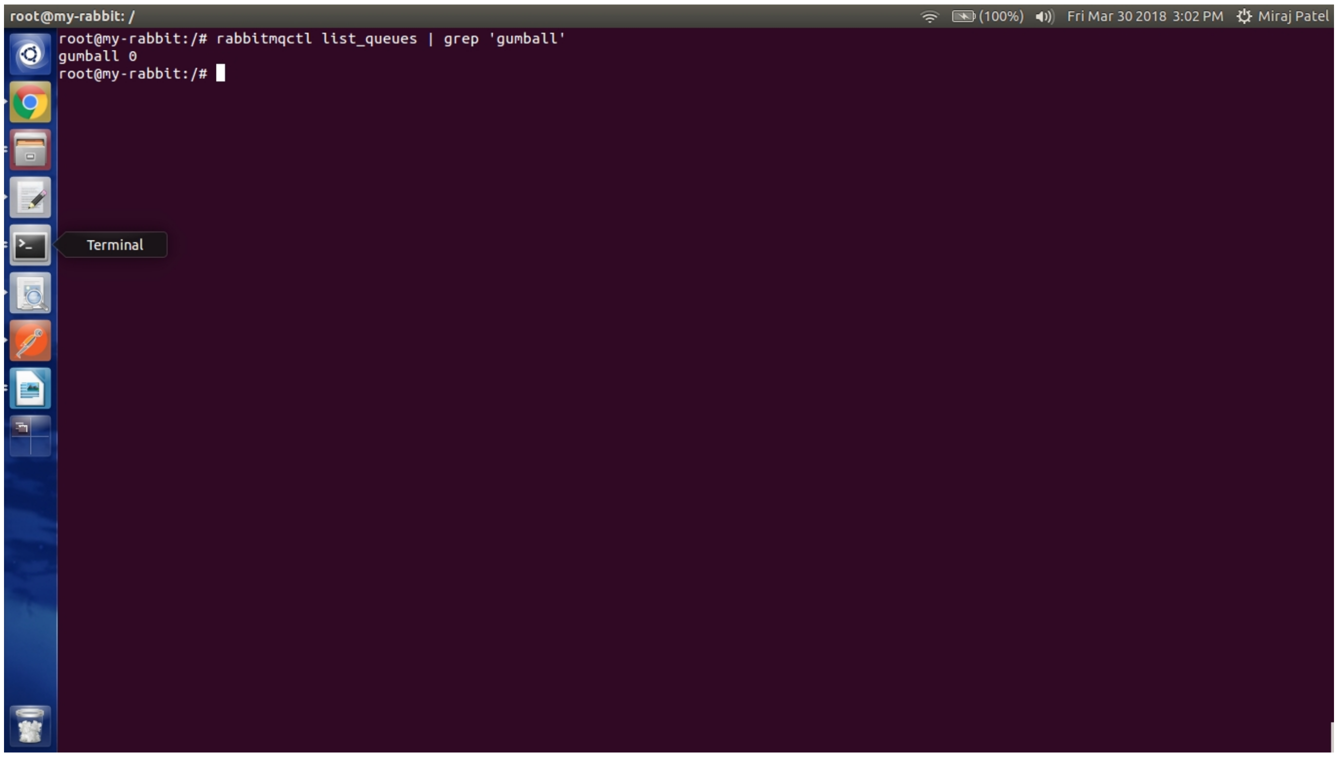
```
{
    "consumer_details": [],
    "incoming": [],
    "deliveries": [],
    "messages_details": {
        "rate": 0
    },
    "messages": 0,
    "messages_unacknowledged_details": {
        "rate": 0
    },
    "messages_unacknowledged": 0,
    "messages_ready_details": {
        "rate": 0
    },
    "messages_ready": 0,
    "reductions_details": {
        "rate": 0
    },
    "reductions": 10497,
    "message_stats": {
        "deliver_get_details": {
            "rate": 0
        },
        "deliver_get": 3,
        "ack_details": {
            "rate": 0
        },
        "ack": 0,
        "redeliver_details": {
            "rate": 0
        },
        "redeliver": 0,
        "deliver_no_ack_details": {
```



GET 172.20.0.3:15672/api/queues/%2F/gumball

Status: 200 OK Time: 35 ms Size: 1.88 KB

```
            "rate": 0
        },
        "deliver_no_ack": 3,
        "deliver_details": {
            "rate": 0
        },
        "deliver": 0,
        "get_no_ack_details": {
            "rate": 0
        },
        "get_no_ack": 0,
        "get_details": {
            "rate": 0
        },
        "get": 0,
        "publish_details": {
            "rate": 0
        },
        "publish": 3
    },
    "node": "rabbit@my-rabbit",
    "arguments": {},
    "exclusive": false,
    "auto_delete": false,
    "durable": false,
    "vhost": "/",
    "name": "gumball",
    "message_bytes_paged_out": 0,
    "messages_paged_out": 0,
    "backing_queue_status": {
        "avg_ack_egress_rate": 0,
        "avg_ack_ingress_rate": 0,
        "avg_egress_rate": 0,
        "avg_ingress_rate": 4.838754857382112e-8
```



```
root@my-rabbit:/# rabbitmqctl list_queues | grep 'gumball'
gumball 0
root@my-rabbit:/#
```