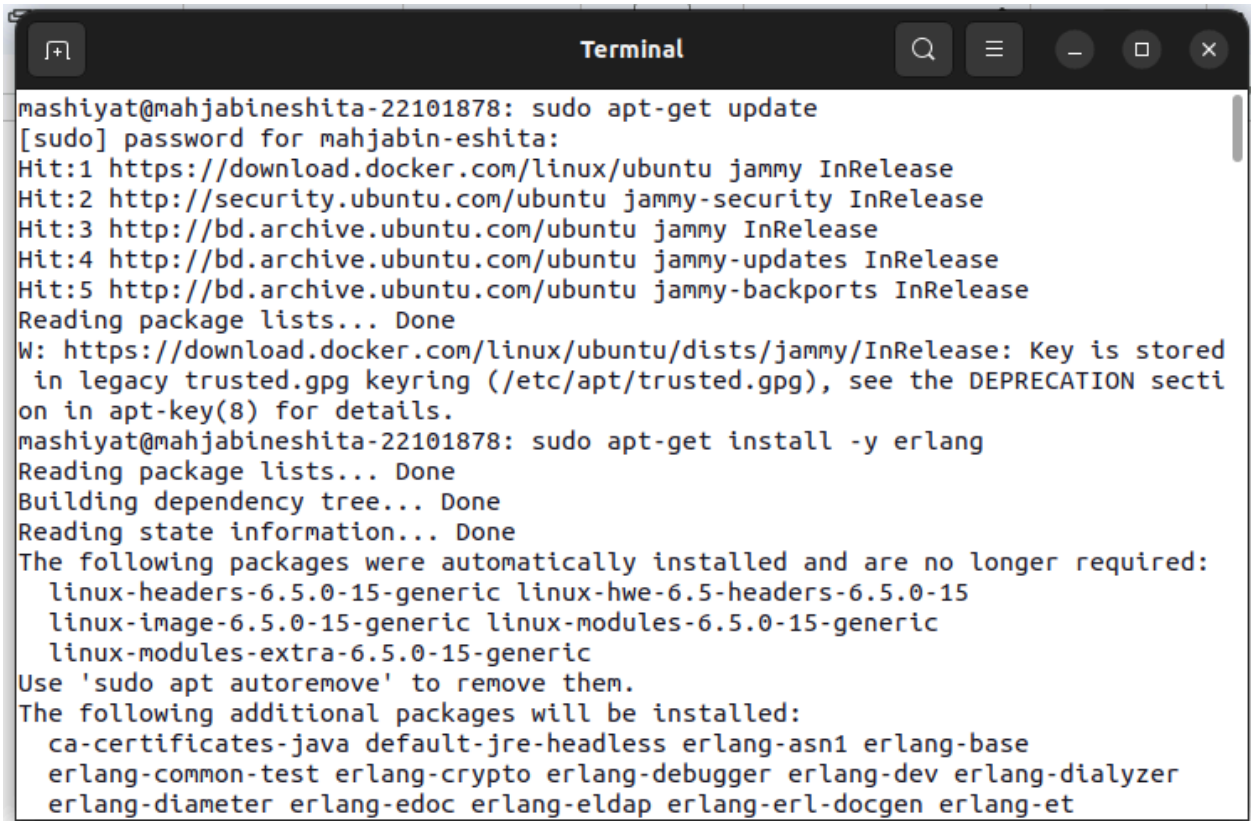
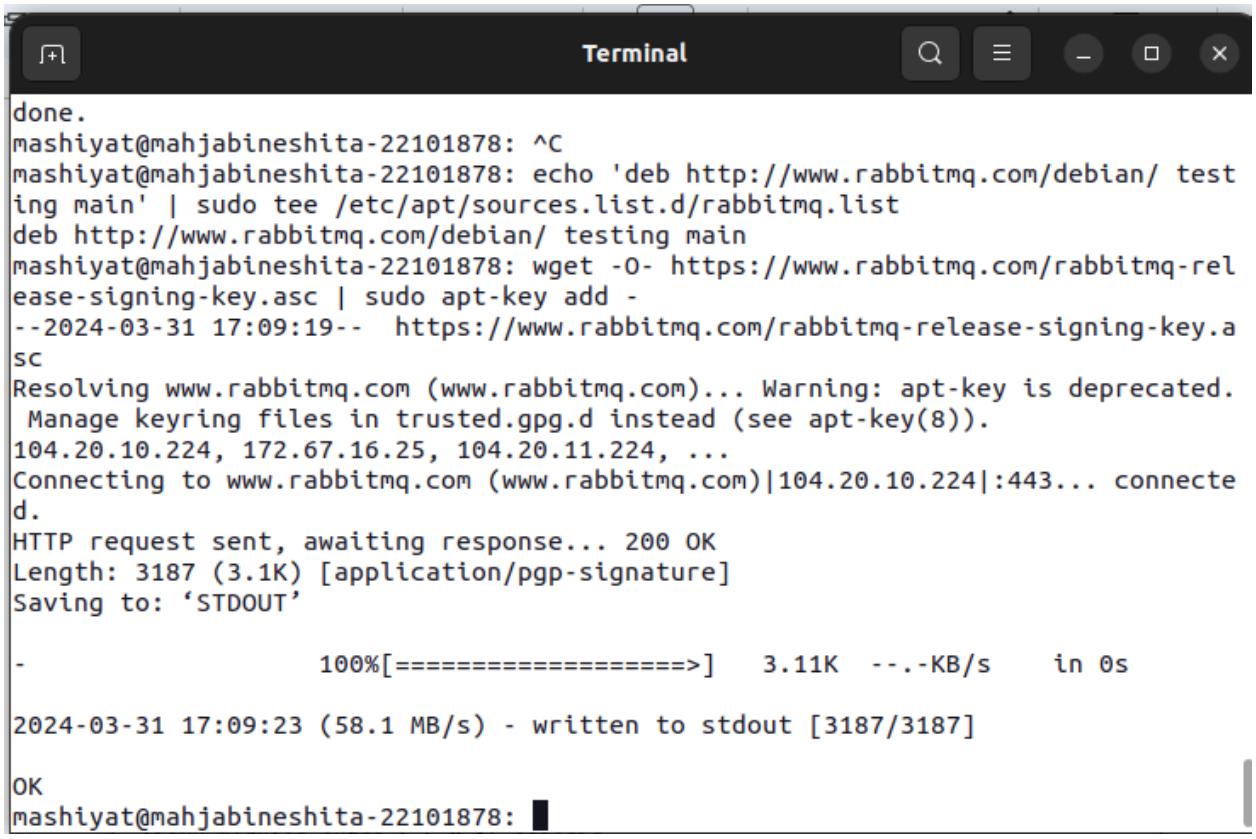
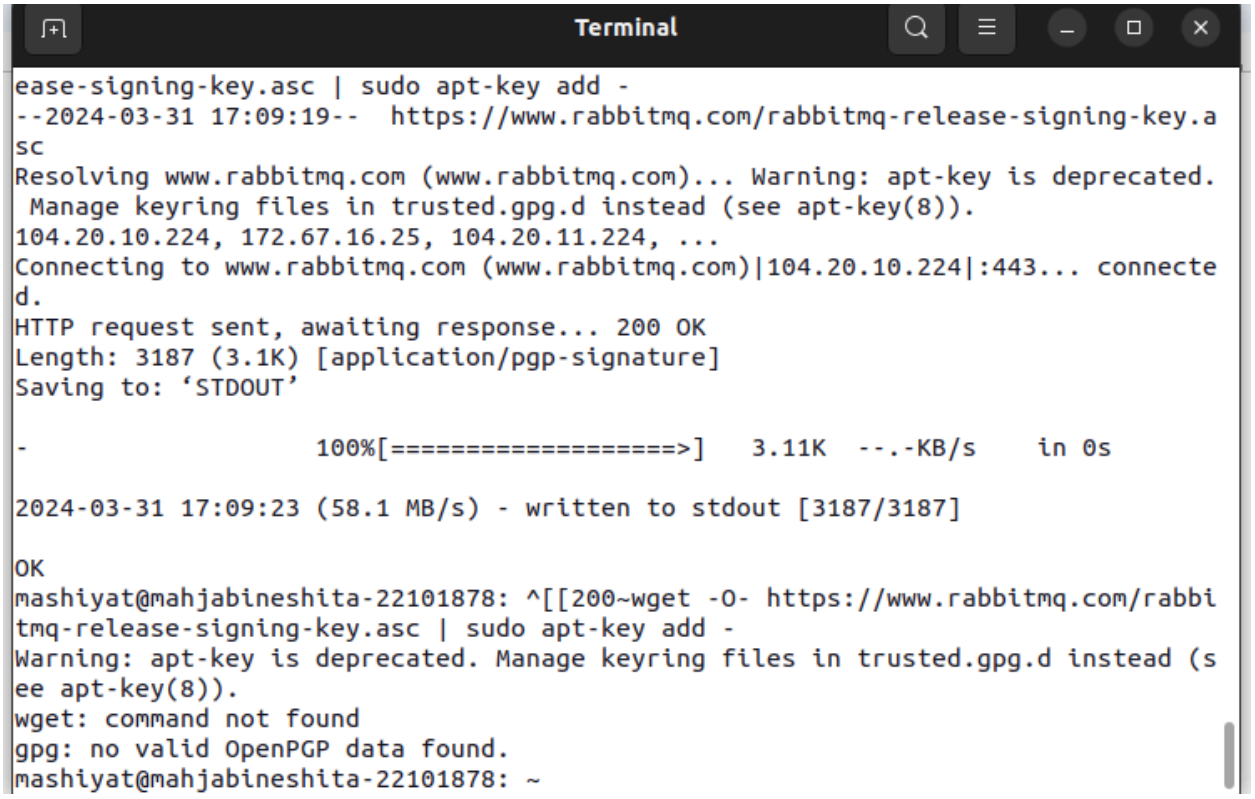
To update my system before starting I used **sudo apt-get update**
Then I used **sudo apt-get install -y erlang** to Install Erlang to install the Erlang programming language on my UNIX system.



Then I used **echo 'deb http://www.rabbitmq.com/debian/ testing main' | sudo tee /etc/apt/sources.list.d/rabbitmq.list** to add the RabbitMQ repository to my APT sources list. Mainly it allows me to install RabbitMQ using APT. After running this command I have to run sudo apt-get update to update my package lists with my new repository. Then, I can install RabbitMQ with sudo apt-get install rabbitmq-server.

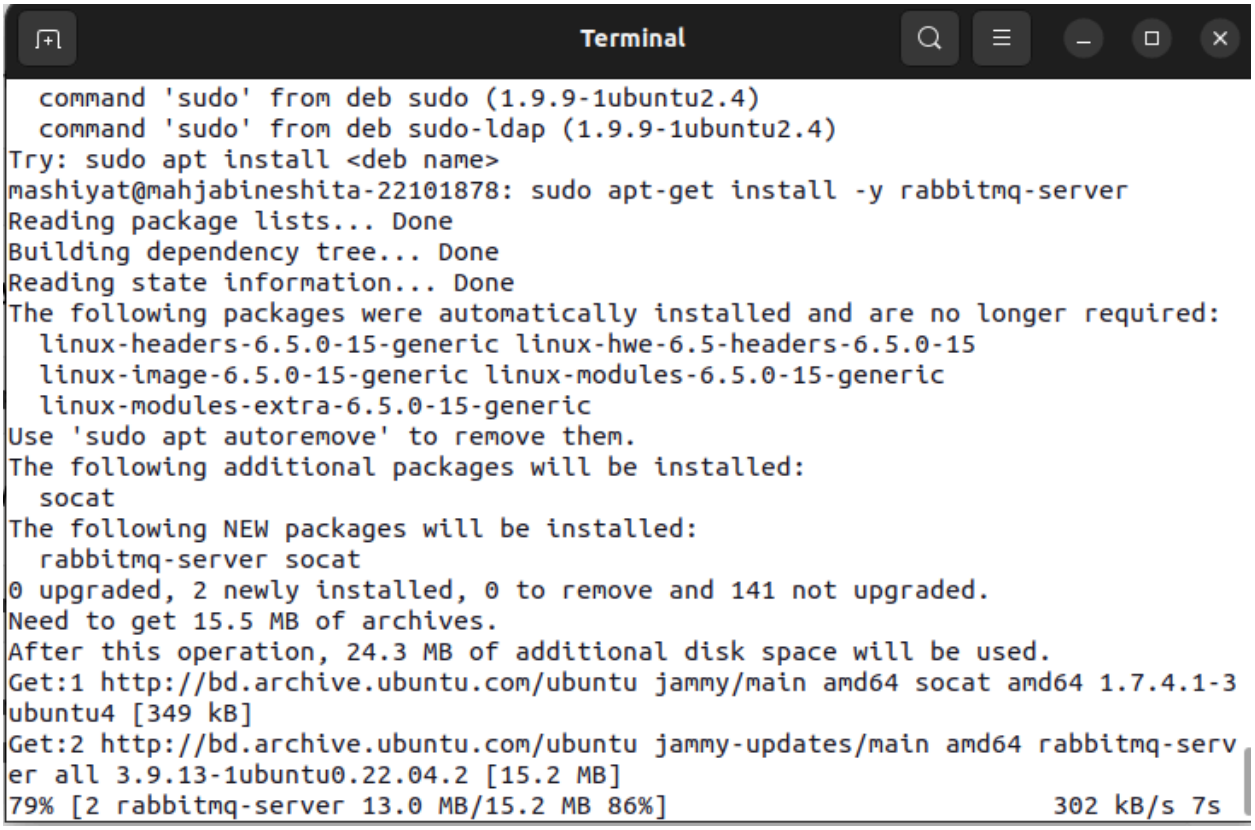


Adding the RabbitMQ public key to the trusted key list to avoid any warnings about unsigned packages using this:
wget -O- https://www.rabbitmq.com/rabbitmq-release-signing-key.asc | sudo apt-key add -


Terminal
ease-signing-key.asc | sudo apt-key add -
--2024-03-31 17:09:19-- https://www.rabbitmq.com/rabbitmq-release-signing-key.asc
Resolving www.rabbitmq.com (www.rabbitmq.com)... Warning: apt-key is deprecated. Manage keyring files in trusted.gpg.d instead (see apt-key(8)).
104.20.10.224, 172.67.16.25, 104.20.11.224, ...
Connecting to www.rabbitmq.com (www.rabbitmq.com)|104.20.10.224|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 3187 (3.1K) [application/pgp-signature]
Saving to: 'STDOUT'
- 100%[==========>] 3.11K --.-KB/s in 0s
2024-03-31 17:09:23 (58.1 MB/s) - written to stdout [3187/3187]
OK
mashiyat@mahjabineshita-22101878: ^[[200~wget -O- https://www.rabbitmq.com/rabbitmq-release-signing-key.asc | sudo apt-key add -
Warning: apt-key is deprecated. Manage keyring files in trusted.gpg.d instead (see apt-key(8)).
wget: command not found
gpg: no valid OpenPGP data found.
mashiyat@mahjabineshita-22101878: ~

```
OK
mashiyat@mahjabineshita-22101878: ^[[200~wget -O- https://www.rabbitmq.com/rabbi
tmq-release-signing-key.asc | sudo apt-key add -
Warning: apt-key is deprecated. Manage keyring files in trusted.gpg.d instead (s
ee apt-key(8)).
wget: command not found
gpg: no valid OpenPGP data found.
mashiyat@mahjabineshita-22101878: ~sudo apt-get update
Command '~sudo' not found, did you mean:
  command 'sudo' from deb sudo (1.9.9-1ubuntu2.4)
  command 'sudo' from deb sudo-ldap (1.9.9-1ubuntu2.4)
Try: sudo apt install <deb name>
mashiyat@mahjabineshita-22101878: sudo apt-get install -y rabbitmq-server
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
  linux-headers-6.5.0-15-generic linux-hwe-6.5-headers-6.5.0-15
  linux-image-6.5.0-15-generic linux-modules-6.5.0-15-generic
  linux-modules-extra-6.5.0-15-generic
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  socat
The following NEW packages will be installed:
```

```
tce → /lib/systemd/system/rabbitmq-server.service.
Processing triggers for man-db (2.10.2-1) ...
mashiyat@mahjabineshita-22101878: sudo systemctl status rabbitmq-server
● rabbitmq-server.service - RabbitMQ Messaging Server
     Loaded: loaded (/lib/systemd/system/rabbitmq-server.service; enabled; vend>
     Active: active (running) since Sun 2024-03-31 17:20:33 +06; 1min 6s ago
   Main PID: 8121 (beam.smp)
      Tasks: 23 (limit: 8215)
     Memory: 92.9M
        CPU: 2.323s
     CGroup: /system.slice/rabbitmq-server.service
             ├─8121 /usr/lib/erlang/erts-12.2.1/bin/beam.smp -W w -MBas ageffcb>
             ├─8139 erl_child_setup 65536
             ├─8217 inet_gethost 4
             └─8218 inet_gethost 4

Mar 31 17:20:30 mahjabineshita systemd[1]: Starting RabbitMQ Messaging Server...
Mar 31 17:20:33 mahjabineshita systemd[1]: Started RabbitMQ Messaging Server.
lines 1-15/15 (END)
```



Used command: **sudo systemctl status rabbitmq-server** ; here I used this command to check if my server is running properly or not but from my photo we can see that my server is working properly.

```
~
~
lines 1-15/15 (END)
mashiyat@mahjabineshita-22101878: sudo systemctl status rabbitmq-server
● rabbitmq-server.service - RabbitMQ Messaging Server
     Loaded: loaded (/lib/systemd/system/rabbitmq-server.service; enabled; vend>
     Active: active (running) since Sun 2024-03-31 17:20:33 +06; 2min 44s ago
   Main PID: 8121 (beam.smp)
      Tasks: 23 (limit: 8215)
     Memory: 92.9M
        CPU: 2.636s
     CGroup: /system.slice/rabbitmq-server.service
             ├─8121 /usr/lib/erlang/erts-12.2.1/bin/beam.smp -W w -MBas ageffcb>
             ├─8139 erl_child_setup 65536
             ├─8217 inet_gethost 4
             └─8218 inet_gethost 4

Mar 31 17:20:30 mahjabineshita systemd[1]: Starting RabbitMQ Messaging Server...
Mar 31 17:20:33 mahjabineshita systemd[1]: Started RabbitMQ Messaging Server.
lines 1-15/15 (END)
```

Initial set up done, checked the server is working

TASK 1: "Hello World!"

```
Terminal
Mar 31 17:20:33 mahjabineshita systemd[1]: Started RabbitMQ Messaging Server.

mashiyat@mahjabineshita-22101878: python -m pip install pika --upgrade
Command 'python' not found, did you mean:
  command 'python3' from deb python3
  command 'python' from deb python-is-python3
mashiyat@mahjabineshita-22101878: sudo python3 -m pip install pika --upgrade
/usr/bin/python3: No module named pip
mashiyat@mahjabineshita-22101878: sudo python3 -m pip install pika --upgrade
/usr/bin/python3: No module named pip
mashiyat@mahjabineshita-22101878: sudo python3-pip install pika --upgrade
sudo: python3-pip: command not found
mashiyat@mahjabineshita-22101878: sudo python3 -m pip install pika --upgrade
/usr/bin/python3: No module named pip
mashiyat@mahjabineshita-22101878: sudo python3 -m pip install pika --upgrade
Collecting pika
  Downloading pika-1.3.2-py3-none-any.whl (155 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 155.4/155.4 KB 550.2 kB/s eta 0:00:00
Installing collected packages: pika
Successfully installed pika-1.3.2
WARNING: Running pip as the 'root' user can result in broken permissions and con
flicting behaviour with the system package manager. It is recommended to use a v
irtual environment instead: https://pip.pypa.io/warnings/venv
mashiyat@mahjabineshita-22101878:
```

Now I used **sudo apt-get install python3-pip** for further work then used **sudo python3 -m pip install pika --upgrade**
Here I have installed Pika's latest version
Now I am writing the **producer.py** file using this code
Here I have written the code that I have taken from RabbitMQ website and this code uses a channel to connect with pika.

```
import pika

connection = pika.BlockingConnection(pika.ConnectionParameters('localhost'))
channel = connection.channel()

channel.queue_declare(queue='hello')

channel.basic_publish(exchange='', routing_key='hello', body='Hello World!')
print(" Producer Sent 'Hello World!'")

connection.close()
```

Then I wrote **consumer.py** code in a text file then I saved it using .py.

```
import pika

connection = pika.BlockingConnection(pika.ConnectionParameters('localhost'))
channel = connection.channel()
```

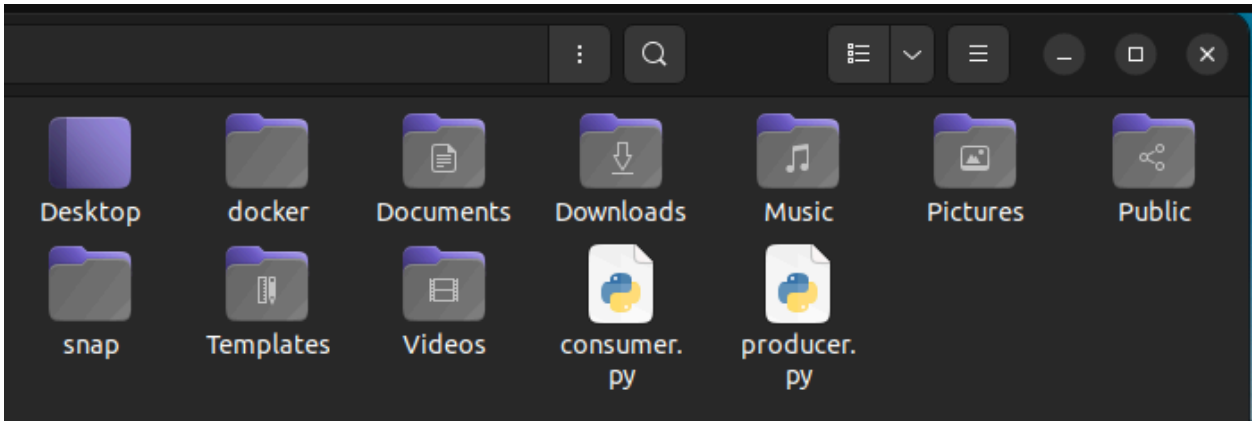
channel.queue_declare(queue='hello')

def callback(ch, method, properties, body):
    print("Consumer Received %r" % body)

channel.basic_consume(queue='hello', on_message_callback=callback, auto_ack=True)

print(' Consumer Waiting for messages. To exit press CTRL+C')
channel.start_consuming()

```
import pika

connection = pika.BlockingConnection(pika.ConnectionParameters('localhost'))
channel = connection.channel()

channel.queue_declare(queue='hello')

def callback(ch, method, properties, body):
    print(" Consumer Received %r" % body)

channel.basic_consume(queue='hello', on_message_callback=callback, auto_ack=True)

print(' Consumer Waiting for messages. To exit press CTRL+C')
channel.start_consuming()
```



Now I am running the Python scripts using,
python3 producer.py then I used **python3 consumer.py**

```
mashiyat@mahjabineshita-22101878: python3 producer.py
 Producer Sent 'Hello World!'
mashiyat@mahjabineshita-22101878: python3 consumer.py
 Consumer Waiting for messages. To exit press CTRL+C
 Consumer Received b'Hello World!'
```

Here, In my terminal, the output is clearly shown. So, it is fully working.

TASK 2: "Work queues"- Distributing tasks among workers

For doing "Work queues"- Distributing tasks among workers, I am writing the producer code python script on the console. The code:

```
import sys
import pika

connection = pika.BlockingConnection(pika.ConnectionParameters('localhost'))
channel = connection.channel()

channel.queue_declare(queue='task_queue', durable=True)

message = ' '.join(sys.argv[1:]) or "Hello World!"
channel.basic_publish(
        exchange='',
        routing_key='task_queue',
        body=message,
        properties=pika.BasicProperties(
        delivery_mode = 2, # make message persistent
        ))
print("producer Sent %r" % message)

connection.close()
```

consumer.py | producer.py | producer1.py

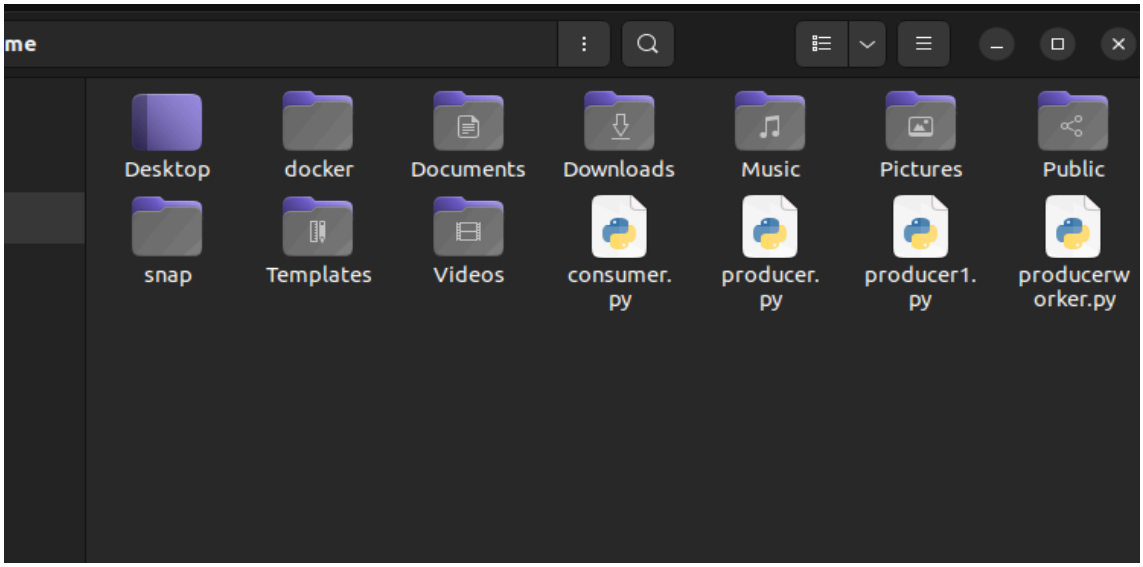
```python
import sys
import pika

connection = pika.BlockingConnection(pika.ConnectionParameters('localhost'))
channel = connection.channel()

channel.queue_declare(queue='task_queue', durable=True)

message = ' '.join(sys.argv[1:]) or "Hello World!"
channel.basic_publish(
        exchange='',
        routing_key='task_queue',
        body=message,
        properties=pika.BasicProperties(
        delivery_mode = 2, # make message persistent
        ))
print("producer Sent %r" % message)

connection.close()
```

The worker code::

```
import time
import pika

def callback(ch, method, properties, body):
        print(" worker Received %r" % body)
        time.sleep(body.count(b'.'))
        print(" worker Done")
        ch.basic_ack(delivery_tag = method.delivery_tag)

connection = pika.BlockingConnection(pika.ConnectionParameters('localhost'))
channel = connection.channel()

channel.queue_declare(queue='task_queue', durable=True)
print('worker Waiting for messages. To exit press CTRL+C')

channel.basic_qos(prefetch_count=1)
channel.basic_consume(queue='task_queue', on_message_callback=callback)

channel.start_consuming()
```

producerworker.py

```python
import time
import pika

def callback(ch, method, properties, body):
        print(" worker Received %r" % body)
        time.sleep(body.count(b'.'))
        print(" worker Done")
        ch.basic_ack(delivery_tag = method.delivery_tag)

connection = pika.BlockingConnection(pika.ConnectionParameters('localhos
channel = connection.channel()

channel.queue_declare(queue='task_queue', durable=True)
print('worker Waiting for messages. To exit press CTRL+C')

channel.basic_qos(prefetch_count=1)
channel.basic_consume(queue='task_queue', on_message_callback=callback)

channel.start_consuming()
```



Then writing the scripts:

```
mashiyat@mahjabineshita-22101878: python3 producer1.py
producer Sent 'Hello World!'
mashiyat@mahjabineshita-22101878: python3 producerworker.py
worker Waiting for messages. To exit press CTRL+C
 worker Received b'Hello World!'
 worker Done
```

Here, we can see the output so yes, this is fully working.