

## Screen Shots

### 1) Amazon SQS :

- Request Queue and Response Queue Data Transfer :

The screenshot shows the AWS SQS Management Console in Google Chrome. The left sidebar has icons for various AWS services. The main area displays a table of queues:

| Name          | Messages Available | Messages in Flight | Created                       |
|---------------|--------------------|--------------------|-------------------------------|
| RequestQueue  | 1,938              | 25                 | 2016-05-02 16:03:26 GMT-05:00 |
| ResponseQueue | 61                 | 0                  | 2016-05-02 16:03:27 GMT-05:00 |

At the bottom, there's a download bar for 'rpt.odt'.

- DyanamoDB Task-Table (TaskId, Job):

The screenshot shows the AWS DynamoDB Management Console in Google Chrome. The left sidebar has icons for various AWS services. The main area shows the 'Task-Table' table with the following data:

| TaskId                               | Job      |
|--------------------------------------|----------|
| 5f800a7a-cccf-4ffe-88f2-d0e523248ecf | sleep 10 |
| 74d0f8c5-c9e2-4e78-857f-a8d3fcf93278 | sleep 10 |
| afc7cb61-8ac2-4793-bd64-ad7a304489ae | sleep 10 |
| a58c9660-3470-4959-9f32-8ca46db84642 | sleep 10 |
| c1dbe66a-ff1c-43ba-b551-7a52d1466c9e | sleep 10 |
| f2a1331c-2f2a-484e-b967-fae17bc7d73a | sleep 10 |
| 23ff6afb-04d2-4c2c-88f2-12d0c3a1c0b6 | sleep 10 |
| c413e9e9-1cab-4dc4-b6d3-ff56b6a2dbb4 | sleep 10 |
| 551a89fe-bcef-4dad-89a4-25b914697850 | sleep 10 |
| 3ccc6ba0-01d0-40f0-bdf6-48c734a57241 | sleep 10 |

## 2) Remote Worker Throughput :

- 1 Worker Sleep 0

The image shows two terminal windows side-by-side. Both windows have a red header bar with the text "ubuntu@ip-172-31-18-71:~". The left window has a title bar "ubuntu@ip-172-31-18-71:~ 103x57". The right window has a title bar "ubuntu@ip-172-31-18-71:~ 114x61". Both windows show the same command output:

```
Task Completed: 4536
Task Completed: 661
Task Completed: 3362
Task Completed: 5887
Task Completed: 15152
Task Completed: 8961
Task Completed: 7779
Task Completed: 9853
Task Completed: 10539
Task Completed: 3778
Task Completed: 16124
Task Completed: 1612
Task Completed: 15739
Task Completed: 9790
Task Completed: 13168
Task Completed: 1747
Task Completed: 13601
Task Completed: 1596
Task Completed: 14666
Task Completed: 16447
Task Completed: 15372
Task Completed: 962
Task Completed: 16000
Task Completed: 36
Task Completed: 2568
Task Completed: 13485
Task Completed: 10654
Task Completed: 16344
Task Completed: 16268
Task Completed: 15223
Task Completed: 16761
Task Completed: 33
Task Completed: 11367
Task Completed: 398
Task Completed: 17416
Task Completed: 8275
Task Completed: 8843
Task Completed: 17401
Task Completed: 9645
Task Completed: 1877
Task Completed: 15941
Task Completed: 12844
Task Completed: 8647
Task Completed: 6586
Task Completed: 13141
Task Completed: 815
Task Completed: 15144
Task Completed: 3110
Task Completed: 47
Task Completed: 9533
Task Completed: 9100
Task Completed: 2562
Task Completed: 14207
Total Time taken by Remote Worker is 14.3522469997 sec
All results have been retrieved from SQS.
```

- 2 worker sleep 0

The image shows three terminal windows arranged horizontally. Each window has a red header bar with the text "ubuntu@ip-172-31-18-71:~". The windows are titled "ubuntu@ip-172-31-18-71:~ 55x43", "ubuntu@ip-172-31-28-94:~ 64x44", and "ubuntu@ip-172-31-31-56:~ 63x57". All three windows show the same command output:

```
Task Completed: 3639
Task Completed: 10321
Task Completed: 5545
Task Completed: 1952
Task Completed: 1827
Task Completed: 2212
Task Completed: 6958
Task Completed: 17010
Task Completed: 16220
Task Completed: 2814
Task Completed: 12052
Task Completed: 3760
Task Completed: 15809
Task Completed: 10612
Task Completed: 9229
Task Completed: 5904
Task Completed: 9075
Task Completed: 12358
Task Completed: 12915
Task Completed: 15314
Task Completed: 10263
Task Completed: 645
Task Completed: 2669
Task Completed: 15675
Task Completed: 16426
Task Completed: 1191
Task Completed: 13213
Task Completed: 13925
Task Completed: 16130
Task Completed: 41
Task Completed: 85
Task Completed: 13468
Task Completed: 5679
Task Completed: 16938
Total Time taken by Remote Worker is 222.092999935 sec
All results have been retrieved from SQS.
```

- 4 worker sleep 0

#### • 8 Worker sleep 0

- 16 worker sleep 0

```
ubuntu@ip-172-31-18-71:~
```

The screenshot shows a terminal window with several tabs open. The leftmost tab displays a file list titled 'host list' containing numerous entries for Amazon EC2 instances. The other tabs show command-line sessions on different Ubuntu hosts, each with a unique IP address and a specific command or prompt.

| Tab Index | IP Address       | Prompt / Command                 |
|-----------|------------------|----------------------------------|
| 1         | ip-172-31-28-94  | ubuntu@ip-172-31-28-94: ~ 60x11  |
| 2         | ip-172-31-29-73  | ubuntu@ip-172-31-29-73: ~ 54x12  |
| 3         | ip-172-31-21-149 | ubuntu@ip-172-31-21-149: ~ 60x11 |
| 4         | ip-172-31-22-217 | ubuntu@ip-172-31-22-217: ~ 68x14 |
| 5         | ip-172-31-20-78  | ubuntu@ip-172-31-20-78: ~ 75x14  |
| 6         | ip-172-31-20-10  | ubuntu@ip-172-31-20-10: ~ 68x14  |
| 7         | ip-172-31-21-213 | ubuntu@ip-172-31-21-213: ~ 75x14 |
| 8         | ip-172-31-26-22  | ubuntu@ip-172-31-26-22: ~ 68x14  |

### **3) Remote Worker Efficiency :**

1 Worker

```
ubuntu@ip-172-31-18-71: ~
```

Task Completed: 11873  
Task Completed: 1483  
Task Completed: 4578  
Task Completed: 3361  
Task Completed: 2217  
Task Completed: 16344  
Task Completed: 16382  
Task Completed: 17259  
Task Completed: 2047  
Task Completed: 14218  
Task Completed: 2367  
Task Completed: 9331  
Task Completed: 5715  
Task Completed: 10158  
Task Completed: 15098  
Task Completed: 15377  
Task Completed: 12819  
Task Completed: 7180  
Task Completed: 18  
Task Completed: 8185  
Task Completed: 7495  
Task Completed: 11392  
Task Completed: 3522  
Task Completed: 4444  
Task Completed: 17013  
Task Completed: 13966  
Task Completed: 13727  
Task Completed: 6688  
Task Completed: 11939  
Task Completed: 5669  
Task Completed: 3073  
Task Completed: 10381  
Task Completed: 1398  
Task Completed: 664  
Task Completed: 2  
Task Completed: 65  
Task Completed: 10615  
Task Completed: 651  
Task Completed: 5886  
Task Completed: 14847  
Task Completed: 9834  
Task Completed: 16641  
Task Completed: 13167  
Task Completed: 1095  
Task Completed: 12945  
Task Completed: 5829  
Task Completed: 10246  
Task Completed: 2187  
Task Completed: 11584  
Task Completed: 17918  
Task Completed: 15906  
Task Completed: 1113  
Total Time taken by Remote Worker is 109.918511866 sec  
All results have been retrieved from SGS.

```
ubuntu@ip-172-31-18-71: ~
```

```
[1] Executing task (3073)...  
sleep 1.0  
String task (10381) into DynamoDB...  
Executing task (10381)...  
sleep 1.0  
String task (1390) into DynamoDB...  
Executing task (1390)...  
sleep 1.0  
String task (664) into DynamoDB...  
Executing task (664)...  
sleep 1.0  
String Task (4561) into DynamoDB...  
Executing task (4561)...  
sleep 1.0  
String task (69) into DynamoDB...  
Executing task (69)...  
sleep 1.0  
String task (10615) into DynamoDB...  
Executing task (10615)...  
sleep 1.0  
String task (661) into DynamoDB...  
Executing task (661)...  
sleep 1.0  
String task (5880) into DynamoDB...  
Executing task (5886)...  
sleep 1.0  
String task (14847) into DynamoDB...  
Executing task (14847)...  
sleep 1.0  
String task (9034) into DynamoDB...  
Executing task (9034)...  
sleep 1.0  
String task (16641) into DynamoDB...  
Executing task (16641)...  
sleep 1.0  
String task (11317) into DynamoDB...  
Executing task (11317)...  
sleep 1.0  
String task (12945) into DynamoDB...  
Executing task (12945)...  
sleep 1.0  
String task (7895) into DynamoDB...  
Executing task (7895)...  
sleep 1.0  
String Task (2187) into DynamoDB...  
Executing task (2187)...  
sleep 1.0  
String task (10246) into DynamoDB...  
Executing task (10246)...  
sleep 1.0  
String Task (5029) into DynamoDB...  
Executing task (5029)...  
sleep 1.0  
String task (11564) into DynamoDB...  
Executing task (11584)...  
sleep 1.0  
String Task (17918) into DynamoDB...  
Executing task (17918)...  
sleep 1.0  
String task (9121) into DynamoDB...  
Executing task (9121)...
```

```
ubuntu@ip-172-31-18-71: ~
```

## 2 worker

## 4 worker

8 Worker

## 16 worker sleep 0

#### **4) Local Worker Throughput:**

- 1 worker sleep 0

- 2 worker sleep 0

## ● 4 worker sleep 0

```

ubuntu@ip-172-31-18-71:~ [1] ubuntu@ip-172-31-18-71: ~ 57x43
Task Completed: 17956
Task Completed: 16654
Task Completed: 13596
Task Completed: 4588
Task Completed: 5205
Task Completed: 2879
Task Completed: 14305
Task Completed: 17408
Task Completed: 9734
Task Completed: 9448
Task Completed: 12026
Task Completed: 3871
Task Completed: 14868
Task Completed: 9258
Task Completed: 16907
Task Completed: 4007
Task Completed: 15144
Task Completed: 4415
Task Completed: 4246
Task Completed: 17139
Task Completed: 16309
Task Completed: 17418
Task Completed: 6353
Task Completed: 9105
Task Completed: 2866
Task Completed: 3469
Task Completed: nV
Task Completed: 17634
Task Completed: 10845
Task Completed: 7730
Task Completed: 4652
Task Completed: 253
Task Completed: 14733
Task Completed: 55

Total Time taken by Remote Worker is 90.4784901142 sec

All results have been retrieved from SQS.

ubuntu@ip-172-31-18-71:~$ [1] ubuntu@ip-172-31-28-94: ~ 60x23
Storing task (3469) into DynamoDB...
Executing task (3469)...
sleep 0.01
Storing task (917) into DynamoDB...
Executing task (917)...
sleep 0.01
Storing task (15672) into DynamoDB...
Executing task (15672)...
sleep 0.01
Storing task (2854) into DynamoDB...
Executing task (2854)...
sleep 0.01
Storing task (14565) into DynamoDB...
Executing task (14565)...
sleep 0.01
Storing task (14733) into DynamoDB...
Executing task (14733)...
sleep 0.01
Storing task (850) into DynamoDB...
Executing task (850)...
sleep 0.01
Storing task (5677) into DynamoDB...
Executing task (5677)...
sleep 0.01
Waiting for Client.....
Waiting for Client.....
Waiting for Client.....
Waiting for Client.....
[1] ubuntu@ip-172-31-21-149: ~ 60x22
Storing task (12328) into DynamoDB...
Executing task (12328)...
sleep 0.01
Storing task (4652) into DynamoDB...
Executing task (4652)...
sleep 0.01
Storing task (253) into DynamoDB...
Executing task (253)...
sleep 0.01
Storing task (17707) into DynamoDB...
Executing task (17707)...
sleep 0.01
Storing task (8814) into DynamoDB...
Executing task (8814)...
sleep 0.01
Storing task (17956) into DynamoDB...
Executing task (17956)...
sleep 0.01
Waiting for Client.....
Waiting for Client.....
Waiting for Client.....
Waiting for Client.....
[1] ubuntu@ip-172-31-22-217: ~ 68x29
sleep 0.01
Storing task (7730) into DynamoDB...
Executing task (7730)...
sleep 0.01
Storing task (7504) into DynamoDB...
Executing task (7504)...
sleep 0.01
Storing task (4708) into DynamoDB...
Executing task (4708)...
sleep 0.01
Storing task (14585) into DynamoDB...
Executing task (14585)...
sleep 0.01
Storing task (13628) into DynamoDB...
Executing task (13628)...
sleep 0.01
Storing task (10416) into DynamoDB...
Executing task (10416)...
sleep 0.01
Waiting for Client.....
Waiting for Client.....
Waiting for Client.....
Waiting for Client.....
[1] ubuntu@ip-172-31-29-73: ~ 54x26
sleep 0.01
Storing task (7601) into DynamoDB...
Executing task (7601)...
sleep 0.01
Storing task (7504) into DynamoDB...
Executing task (7504)...
sleep 0.01
Storing task (4708) into DynamoDB...
Executing task (4708)...
sleep 0.01
Storing task (14585) into DynamoDB...
Executing task (14585)...
sleep 0.01
Storing task (13628) into DynamoDB...
Executing task (13628)...
sleep 0.01
Storing task (10416) into DynamoDB...
Executing task (10416)...
sleep 0.01
Waiting for Client.....
Waiting for Client.....
Waiting for Client.....
Waiting for Client.....

```

## ● 8 worker sleep 0

```

ubuntu@ip-172-31-28-94:~ [1] ubuntu@ip-172-31-18-71: ~ 57x43
Task Completed: 2293
Task Completed: 16038
Task Completed: 3078
Task Completed: 7447
Task Completed: 6122
Task Completed: 9452
Task Completed: 13334
Task Completed: 8861
Task Completed: 8048
Task Completed: 15379
Task Completed: 8389
Task Completed: 15578
Task Completed: 2261
Task Completed: 55
Task Completed: 10219
Task Completed: 2773
Task Completed: 7682
Task Completed: 16931
Task Completed: 17773
Task Completed: 6995
Task Completed: 15174
Task Completed: 3467
Task Completed: 7254
Task Completed: 17238
Task Completed: 8617
Task Completed: 9228
Task Completed: 12491
Task Completed: 15110
Task Completed: 17005
Task Completed: 5154
Task Completed: 6375
Task Completed: 10829
Task Completed: 8876

Total Time taken by Remote Worker is 96.45657897 sec

All results have been retrieved from SQS.

ubuntu@ip-172-31-18-71:~$ [1] ubuntu@ip-172-31-28-94: ~ 60x11
sleep 10.0
Storing task (7682) into DynamoDB...
Executing task (7682)...
sleep 10.0
Storing task (7254) into DynamoDB...
Executing task (7254)...
sleep 10.0
Storing task (15110) into DynamoDB...
Executing task (15110)...
sleep 10.0
Waiting for Client.....
[1] ubuntu@ip-172-31-21-213: ~ 75x14
sleep 10.0
Storing task (447) into DynamoDB...
Executing task (447)...
sleep 10.0
Storing task (10219) into DynamoDB...
Executing task (10219)...
sleep 10.0
Storing task (3773) into DynamoDB...
Executing task (3773)...
sleep 10.0
Storing task (5154) into DynamoDB...
Executing task (5154)...
sleep 10.0
Waiting for Client.....
[1] ubuntu@ip-172-31-21-149: ~ 60x11
sleep 10.0
Storing task (8389) into DynamoDB...
Executing task (8389)...
sleep 10.0
Storing task (16931) into DynamoDB...
Executing task (16931)...
sleep 10.0
Storing task (6995) into DynamoDB...
Executing task (6995)...
sleep 10.0
Storing task (10829) into DynamoDB...
Executing task (10829)...
sleep 10.0
Executing task (6122)...
sleep 10.0
Storing task (2773) into DynamoDB...
Executing task (2773)...
sleep 10.0
Storing task (9228) into DynamoDB...
Executing task (9228)...
sleep 10.0
Storing task (4863) into DynamoDB...
Executing task (4863)...
sleep 10.0
^Z
[4]+ stopped python Worker.py -s myqueue
countu@ip-172-31-20-78:~$ [1] ubuntu@ip-172-31-29-73: ~ 54x26
sleep 10.0
Storing task (2261) into DynamoDB...
Executing task (2261)...
sleep 10.0
Storing task (8617) into DynamoDB...
Executing task (8617)...
sleep 10.0
Storing task (6375) into DynamoDB...
Executing task (6375)...
sleep 10.0
Waiting for Client.....
Waiting for Client.....
Waiting for Client.....
Waiting for Client.....
[1] ubuntu@ip-172-31-26-22: ~ 68x29
sleep 10.0
Storing task (15174) into DynamoDB...
Executing task (15174)...
sleep 10.0
Storing task (15174) into DynamoDB...
Executing task (15174)...
sleep 10.0
Sleeping task (15174)...
sleep 10.0
Storing task (8876) into DynamoDB...
Executing task (8876)...
sleep 10.0
Waiting for Client.....
Waiting for Client.....
Waiting for Client.....
Waiting for Client.....
[1] ubuntu@ip-172-31-21-217: ~ 68x29
sleep 10.0
Storing task (15579) into DynamoDB...
Executing task (15579)...
sleep 10.0
Storing task (15579) into DynamoDB...
Executing task (15579)...
sleep 10.0
Sleeping task (15579)...
sleep 10.0
Storing task (3467) into DynamoDB...
Executing task (3467)...
sleep 10.0
Storing task (17085) into DynamoDB...
Executing task (17085)...
sleep 10.0
Waiting for Client.....
Waiting for Client.....
Waiting for Client.....
Waiting for Client.....
[1] ubuntu@ip-172-31-20-78: ~ 75x14
sleep 10.0
Storing task (3703) into DynamoDB...
Executing task (3703)...
sleep 10.0
Storing task (17238) into DynamoDB...
Executing task (17238)...
sleep 10.0
Sleeping task (17238)...
sleep 10.0
Storing task (12491) into DynamoDB...
Executing task (12491)...
sleep 10.0
Waiting for Client.....
Waiting for Client.....
Waiting for Client.....
Waiting for Client.....
[1] ubuntu@ip-172-31-20-10: ~ 68x14
sleep 10.0
Storing task (3703) into DynamoDB...
Executing task (3703)...
sleep 10.0
Sleeping task (3703)...
sleep 10.0
Waiting for Client.....
Waiting for Client.....
Waiting for Client.....
Waiting for Client.....

```

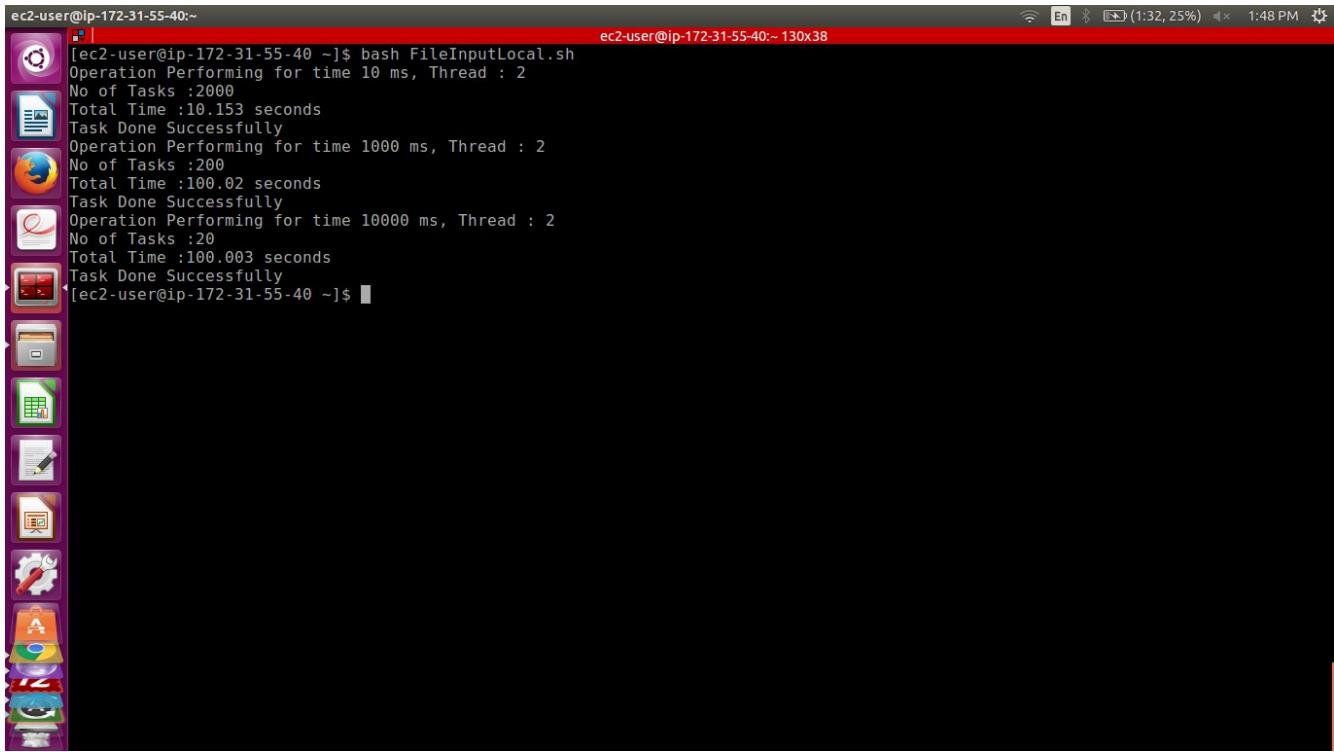
- 16 worker sleep 0

### **5) Local Worker Throughput:**

- 1 Thread :

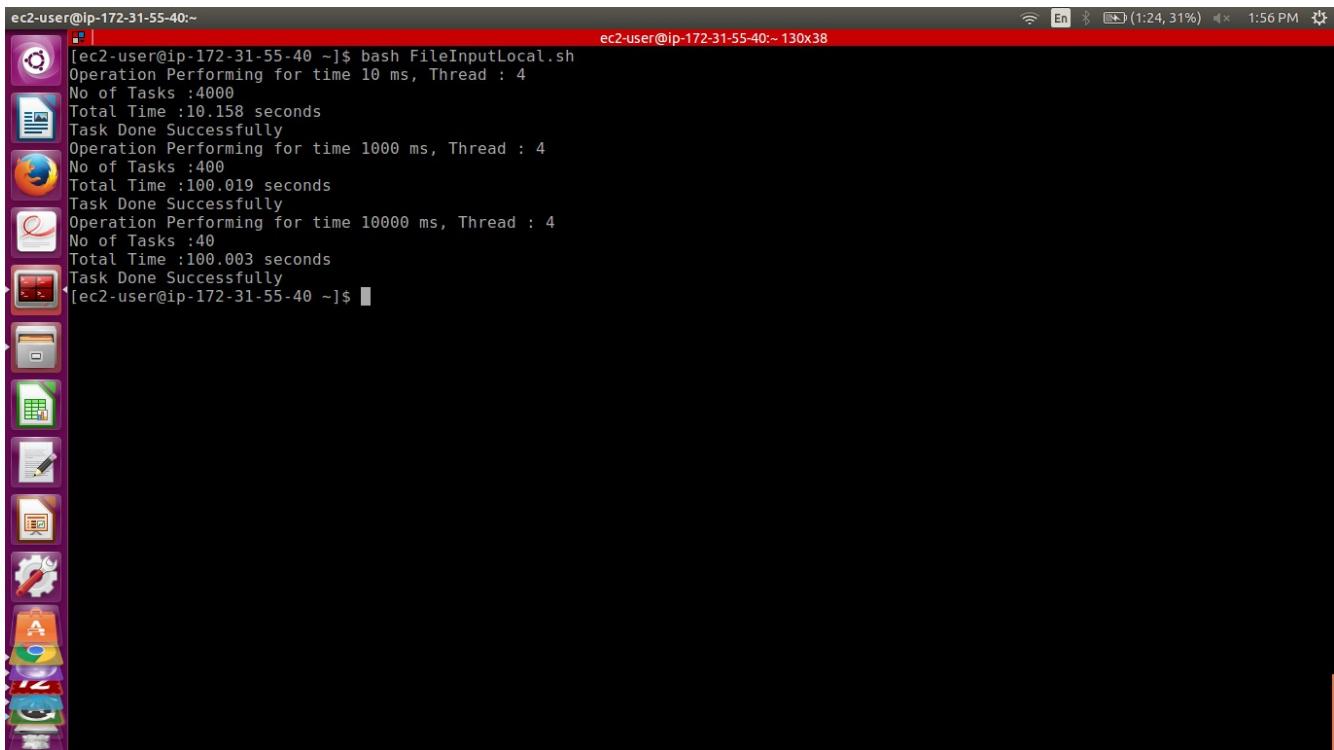
```
ec2-user@ip-172-31-55-40:~$ bash FileInputLocal.sh
Operation Performing for time 10 ms, Thread : 1
No of Tasks :1000
Total Time :10.162 seconds
Operation Performing for time 1000 ms, Thread : 1
No of Tasks :100
Total Time :100.02 seconds
Operation Performing for time 10000 ms, Thread : 1
No of Tasks :10
Total Time :100.002 seconds
[ec2-user@ip-172-31-55-40 ~]$
```

- **2 Thread :**



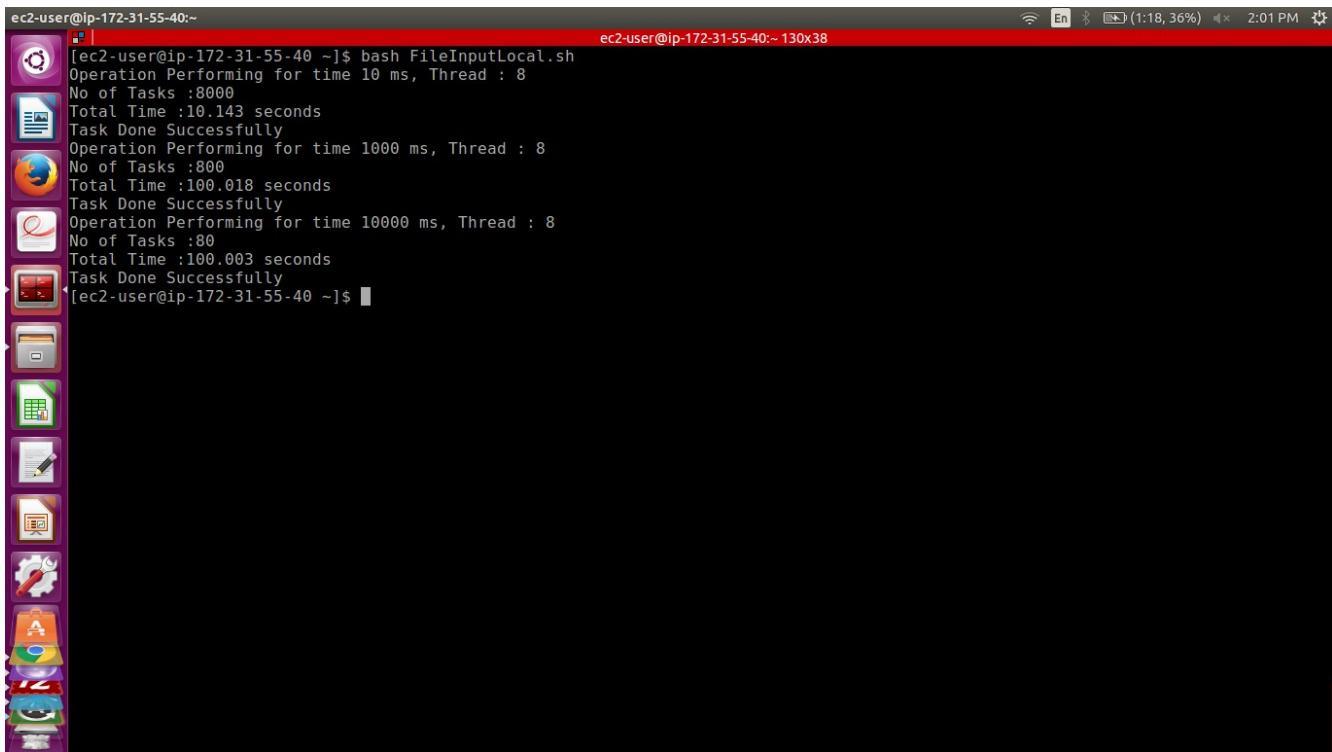
```
ec2-user@ip-172-31-55-40:~$ [ec2-user@ip-172-31-55-40 ~]$ bash FileInputLocal.sh
Operation Performing for time 10 ms, Thread : 2
No of Tasks :200
Total Time :10.153 seconds
Task Done Successfully
Operation Performing for time 1000 ms, Thread : 2
No of Tasks :200
Total Time :100.02 seconds
Task Done Successfully
Operation Performing for time 10000 ms, Thread : 2
No of Tasks :20
Total Time :100.003 seconds
Task Done Successfully
[ec2-user@ip-172-31-55-40 ~]$
```

- **4 Thread :**



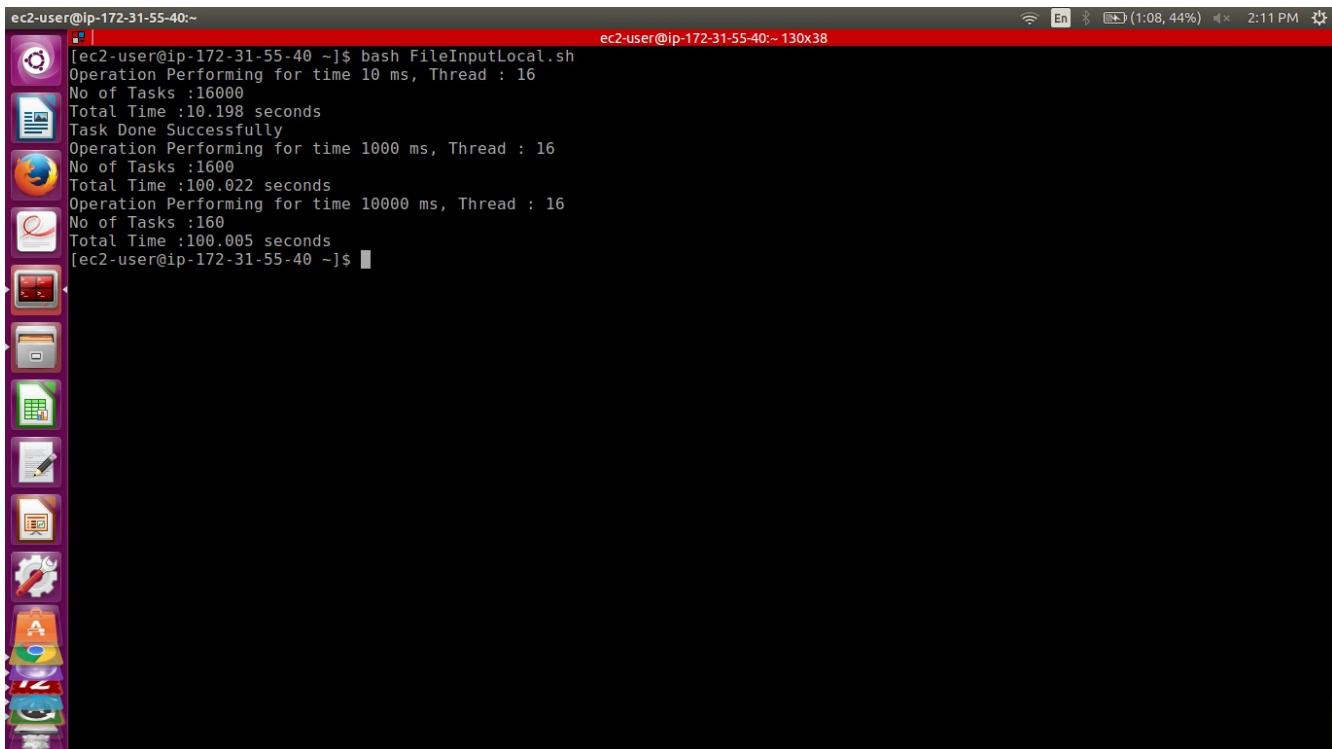
```
ec2-user@ip-172-31-55-40:~$ [ec2-user@ip-172-31-55-40 ~]$ bash FileInputLocal.sh
Operation Performing for time 10 ms, Thread : 4
No of Tasks :400
Total Time :10.158 seconds
Task Done Successfully
Operation Performing for time 1000 ms, Thread : 4
No of Tasks :400
Total Time :100.019 seconds
Task Done Successfully
Operation Performing for time 10000 ms, Thread : 4
No of Tasks :40
Total Time :100.003 seconds
Task Done Successfully
[ec2-user@ip-172-31-55-40 ~]$
```

- **8 Thread :**



ec2-user@ip-172-31-55-40:~\$ bash FileInputLocal.sh  
Operation Performing for time 10 ms, Thread : 8  
No of Tasks :800  
Total Time :10.143 seconds  
Task Done Successfully  
Operation Performing for time 1000 ms, Thread : 8  
No of Tasks :800  
Total Time :100.018 seconds  
Task Done Successfully  
Operation Performing for time 10000 ms, Thread : 8  
No of Tasks :80  
Total Time :100.003 seconds  
Task Done Successfully  
[ec2-user@ip-172-31-55-40 ~]\$

- **16 Thread :**



ec2-user@ip-172-31-55-40:~\$ bash FileInputLocal.sh  
Operation Performing for time 10 ms, Thread : 16  
No of Tasks :1600  
Total Time :10.198 seconds  
Task Done Successfully  
Operation Performing for time 1000 ms, Thread : 16  
No of Tasks :1600  
Total Time :100.022 seconds  
Operation Performing for time 10000 ms, Thread : 16  
No of Tasks :160  
Total Time :100.005 seconds  
[ec2-user@ip-172-31-55-40 ~]\$