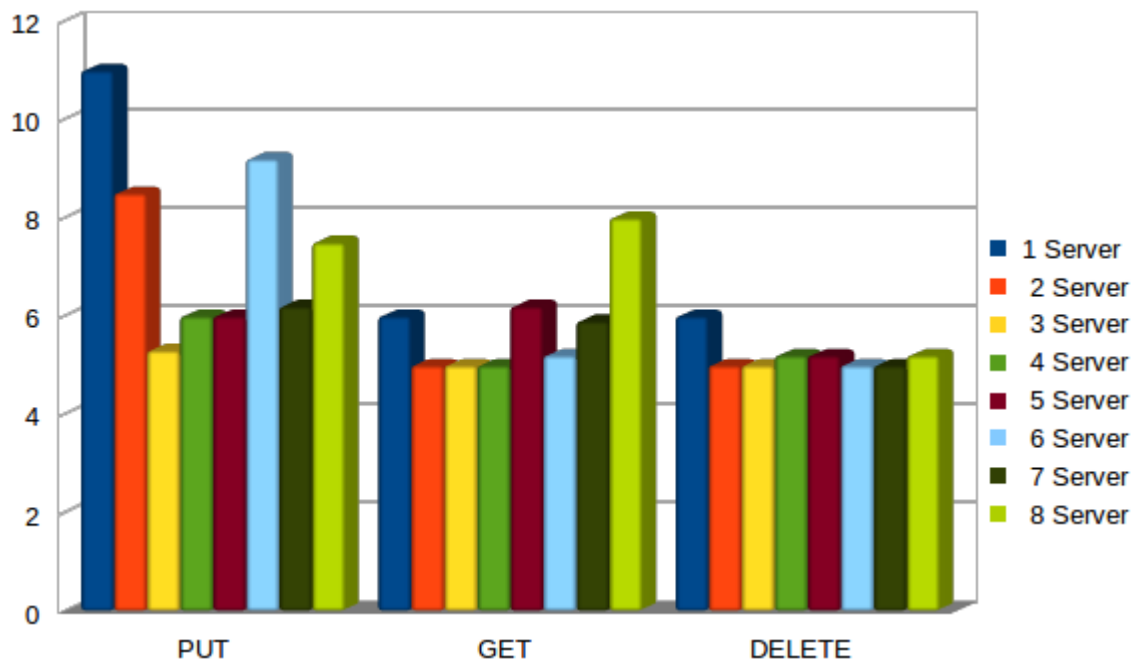


Evaluation Report:

Behavior of the system is evaluated by measuring response time by making 100K sequential requests. The response times is calculated when multiple clients are concurrently making requests. Based on all calculated measurement following graph is plotted.

Following table shows response time of PUT, GET and DELETE request in Seconds. There requests are made by 1 Server, 2 servers concurrently, 3 Servers concurrently and so on.

	1 Server	2 Servers	3 Servers	4 Servers	5 Servers	6 Servers	7 Servers	8 Servers
PUT	11	8.5	5.3	6	6	9.2	6.2	7.5
GET	6	5	5	5	6.2	5.2	5.9	8
DELETE	6	5	5	5.2	5.2	5	5	5.2



Evaluation Measurement Details:

1. Requested By : 1 Server
Total Connected Server : 8

Request =>

Type : PUT
Count : 100000

Time Required =>

Server_1 : 11 Sec

Type : GET

Count : 100000

Time Required =>

Server_1 : 6 Sec

Type : DELETE

Count : 100000

Time Required =>

Server_1 : 6 Sec

```
sachin@sachin-HP-Pavilion-15-Notebook-PC: ~/Docume
1.GET
2.PUT
3.DELETE
Enter choice : 2
Enter key : sachin
Enter Value : ambalkar
Result : Success
Started at: 10852582276083 Ended at: 10864231004016
Time required (NanoSecond) : 11648885608
Time required (Second) : 11.0
1.GET
2.PUT
3.DELETE
Enter choice : 1
Enter key : sachin
Result : ambalkar
Started at: 10876996174579 Ended at: 10883871106585
Time required (NanoSecond) : 6875064195
Time required (Second) : 6.0
1.GET
2.PUT
3.DELETE
Enter choice : 3
Enter key to delete : sachin
Result : Deleted
Started at: 10888923086587 Ended at: 10895136767037
Time required (NanoSecond) : 6213773395
Time required (Second) : 6.0
```

2. Requested By : 2 Servers
Total Connected Server : 8
Request =>

Type : PUT
Count : 100000

Time Required (Sec) =>
Server_1 : 9
Server_2 : 8
Avg : 8.5

Type : GET
Count : 100000

Time Required (Sec) =>
Server_1 : 5
Server_2 : 5
Avg : 5

Type : DELETE
Count : 100000

Time Required =>
Server_1 : 5
Server_2 : 5
Avg : 5

```
Ubuntu Desktop
sachin@sachin-HP-Pavilion-15-Notebook-PC: ~/Documents
1.GET
2.PUT
3.DELETE
Enter choice : 2
Enter key : hello1
Enter Value : world1
Result : Success
Started at: 11091136480765 Ended at: 11100202308178
Time required (NanoSecond) : 9066031381
Time required (Second) : 9.0
1.GET
2.PUT
3.DELETE
Enter choice : 1
Enter key : hello1
Result : world1
Started at: 11119736349774 Ended at: 11125729855187
Time required (NanoSecond) : 5993641700
Time required (Second) : 5.0
1.GET
2.PUT
3.DELETE
Enter choice : 3
Enter key to delete : hello1
Result : Deleted
Started at: 11139212977936 Ended at: 11144507952188
Time required (NanoSecond) : 5295068692
Time required (Second) : 5.0

sachin@sachin-HP-Pavilion-15-Notebook-PC: ~/Documents
1.GET
2.PUT
3.DELETE
Enter choice : 2
Enter key : hello2
Enter Value : world2
Result : Success
Started at: 11091521462206 Ended at: 11100280264120
Time required (NanoSecond) : 8758968631
Time required (Second) : 8.0
1.GET
2.PUT
3.DELETE
Enter choice : 1
Enter key : hello2
Result : world2
Started at: 11120068328680 Ended at: 11125906647711
Time required (NanoSecond) : 5838480783
Time required (Second) : 5.0
1.GET
2.PUT
3.DELETE
Enter choice : 3
Enter key to delete : hello1
Result : Deleted
Started at: 11139598301778 Ended at: 11144742407718
Time required (NanoSecond) : 5144170269
Time required (Second) : 5.0

sachin@sachin-HP-Pavilion-15-Notebook-PC: ~/Documents/cs550/workspace/A2_6/src
Connected to Server 5
Connected to Server 6
Connected to Server 7
Connected to Server 8
1.GET
2.PUT
3.DELETE
Enter choice : 1

sachin@sachin-HP-Pavilion-15-Notebook-PC: ~/Documents/cs550/workspace/A2_6/src
Connected to Server 3
Connected to Server 4
Connected to Server 5
Connected to Server 6
Connected to Server 7
Connected to Server 8
1.GET
2.PUT
3.DELETE
Enter choice : 1

@sachin-HP-Pavilion-15-Notebook-PC: ~/Documents/cs550/workspace/A2_6/src
Server 3
Server 4
Server 5
Server 6
Server 7
Server 8
```

3. Requested By : 3 Servers
 Total Connected Server : 8
Request =>

Type : PUT
 Count : 100000

Time Required (Sec) =>
 Server_1 : 5
 Server_2 : 5
 Server_3 : 6
 Avg : 5.3

Type : GET
 Count : 100000

Time Required (Sec) =>
 Server_1 : 5
 Server_2 : 5
 Server_3 : 5
 Avg : 5

Type : DELETE
 Count : 100000

Time Required =>
 Server_1 : 5
 Server_2 : 5
 Server_3 : 5
 Avg : 5

```

Ubuntu Desktop
sachin@sachin-HP-Pavilion-15-Notebook-PC: ~
1.GET
2.PUT
3.DELETE
Enter choice : 2
Enter key : hello1
Enter Value : world1
Result : Success
Started at: 11430010490542 Ended at: 1143588
Time required (NanoSecond) : 5869930769
Time required (Second) : 5.0
1.GET
2.PUT
3.DELETE
Enter choice : 1
Enter key : hello1
Result : world1
Started at: 11462695545877 Ended at: 1146806
Time required (NanoSecond) : 5367542138
Time required (Second) : 5.0
1.GET
2.PUT
3.DELETE
Enter choice : 3
Enter key to delete : hello1
Result : Deleted
Started at: 11487892089229 Ended at: 1149300
Time required (NanoSecond) : 5114990220
Time required (Second) : 5.0

sachin@sachin-HP-Pavilion-15-Notebook-PC: ~
1.GET
2.PUT
3.DELETE
Enter choice : 2
Enter key : hello2
Enter Value : world2
Result : Success
Started at: 11430528644372 Ended at: 1143629
Time required (NanoSecond) : 5766955991
Time required (Second) : 5.0
1.GET
2.PUT
3.DELETE
Enter choice : 1
Enter key : hello2
Result : world2
Started at: 11463041238740 Ended at: 1146845
Time required (NanoSecond) : 5410074074
Time required (Second) : 5.0
1.GET
2.PUT
3.DELETE
Enter choice : 3
Enter key to delete : hello1
Result : Deleted
Started at: 11488355991601 Ended at: 1149358
Time required (NanoSecond) : 5228578720
Time required (Second) : 5.0

sachin@sachin-HP-Pavilion-15-Notebook-PC: ~/
1.GET
2.PUT
3.DELETE
Enter choice : 2
Enter key : hello3
Enter Value : world3
Result : Success
Started at: 11431190928414 Ended at: 11437547
Time required (NanoSecond) : 6356437773
Time required (Second) : 6.0
1.GET
2.PUT
3.DELETE
Enter choice : 1
Enter key : hello3
Result : world3
Started at: 11463750420083 Ended at: 11469249
Time required (NanoSecond) : 5499574114
Time required (Second) : 5.0
1.GET
2.PUT
3.DELETE
Enter choice : 3
Enter key to delete : hello2
Result : Deleted
Started at: 11489054728363 Ended at: 11494485
Time required (NanoSecond) : 5430441175
Time required (Second) : 5.0

sachin@sachin-HP-Pavilion-15-Notebook-PC: ~/Documents
Connected to Server 5
Connected to Server 6
Connected to Server 7
Connected to Server 8
1.GET
2.PUT
3.DELETE
Enter choice :

sachin@sachin-HP-Pavilion-15-Notebook-PC: ~/Documents
Connected to Server 5
Connected to Server 6
Connected to Server 7
Connected to Server 8
1.GET
2.PUT
3.DELETE
Enter choice :

sachin@sachin-HP-Pavilion-15-Notebook-PC: ~/Documents
Connected to Server 3
Connected to Server 4
Connected to Server 5
Connected to Server 6
Connected to Server 7
Connected to Server 8
1.GET
2.PUT
3.DELETE
Enter choice :
  
```


4. Requested By : 4 Servers
Total Connected Server : 8
Request =>

Type : PUT
Count : 100000

Time Required (Sec) =>

Server_1 : 6

Server_2 : 6

Server_3 : 6

Server_4 : 6

Avg : 6

Type : GET
Count : 100000

Time Required (Sec) =>

Server_1 : 5

Server_2 : 5

Server_3 : 5

Server_4 : 5

Avg : 5

Type : DELETE
Count : 100000

Time Required =>

Server_1 : 6

Server_2 : 5

Server_3 : 5

Server_4 : 5

Avg : 5.2

Screen-shot PUT & GET =>

The screenshot shows an Ubuntu Desktop environment with three terminal windows open. Each terminal window displays the output of a script that performs a series of operations (1.GET, 2.PUT, 3.DELETE) and then a choice operation (Enter choice : 2, 1, or 3). The results show the time required in NanoSeconds and Seconds for each operation, and the final result of the choice operation (world1, world2, world3, or world4). The terminal windows are titled 'sachin@sachin-HP-Pavilion-15-Notebook-PC: ~/Docum'.

Delete:

The screenshot shows an Ubuntu Desktop environment with three terminal windows open. Each terminal window displays the output of a script that performs a series of operations (1.GET, 2.PUT, 3.DELETE) and then a choice operation (Enter choice : 1, 2, or 3). The results show the time required in NanoSeconds and Seconds for each operation, and the final result of the choice operation (Deleted). The terminal windows are titled 'sachin@sachin-HP-Pavilion-15-Notebook-PC: ~/Docum'.

- Requested By : **5 Servers**
Total Connected Server : 8
Request =>

Type : PUT
Count : 100000

Time Required (Sec) =>

```
Server_1 : 6
Server_2 : 6
Server_3 : 6
Server_4 : 6
Server_5 : 6
    Avg : 6
```

```
Type : GET
Count : 100000
```

Time Required(Sec) =>

```
Server_1 : 6
Server_2 : 7
Server_3 : 6
Server_4 : 6
Server_5 : 6
Avg : 6.2
```

Type : DELETE
Count : 100000

Time Required =>

Server_1 : 5
Server_2 : 5
Server_3 : 5
Server_4 : 6
Server_5 : 5
Avg : 5.2

Screen-shot for PUT & GET=>

The screenshot shows a Linux desktop environment. On the left is a sidebar with application icons: Dash, Home, Files, Firefox, LibreOffice, GIMP, VLC, and a dock with various utility icons. The main window is a terminal titled 'Ubuntu Desktop'. It shows a file manager window displaying a file named 'RESUME_SACHIN_AMBALKAR.pdf'. Below the file manager, a terminal window is open, showing the execution of a program. The program interacts with a database, performing operations like GET, PUT, and DELETE. The terminal output shows the commands entered, the results, and the time taken for each operation. For example, a GET operation for 'world1' took 6967140129 NanoSeconds. A PUT operation for 'hello1' took 6777835938 NanoSeconds. A DELETE operation for 'world1' took 6777835938 NanoSeconds. The program also shows the time taken for each operation in seconds, which is 6.0 for all operations. The terminal also shows the execution of a program that interacts with a database, showing commands like GET, PUT, DELETE, and the resulting data. The file manager shows a file named 'RESUME_SACHIN_AMBALKAR.pdf'. The web browser shows a YouTube video player.

Delete =>

The image shows a Ubuntu Desktop environment. In the background, a file manager window is open, displaying a file named 'RESUME_SACHIN_AMBALKAR.pdf'. In the foreground, a terminal window is open, showing the execution of a C program. The terminal output is as follows:

```
sachin@sachin-HP-Pavilion-15-Notebook-PC: ~/Documents
Enter choice : 1
Enter key : hello2
Result : world2
Started at: 12833498428683 Ended at: 1284025382398
Time required (NanoSecond) : 6755447736
Time required (Second) : 6.0
1.GET
2.PUT
3.DELETE
Enter choice : 3
Enter key to delete : hello2
Result : Deleted
Started at: 12887681625996 Ended at: 1289276764780
Time required (NanoSecond) : 5086092438
Time required (Second) : 5.0
1.GET
2.PUT
3.DELETE
Enter choice : 
n
Enter choice : 1
Enter key : hello4
Result : world4
Started at: 12835611473249 Ended at: 12841728612298
Time required (NanoSecond) : 6117214600
Time required (Second) : 6.0
1.GET
2.PUT
3.DELETE
Enter choice : 3
Enter key to delete : hello4
Result : Deleted
Conn1Started at: 12880314392745 Ended at: 12893835493610
Conn1Time required (NanoSecond) : 5521169140
Conn1Time required (Second) : 5.0
Conn11.GET
1.GET2.PUT
2.PUT3.DELETE
Enter choice : 
n
Enter choice : 1
Enter key : hello3
Result : world3
Started at: 12834218388083 Ended at: 1284127902294
Time required (NanoSecond) : 7060684520
Time required (Second) : 7.0
1.GET
2.PUT
3.DELETE
Enter choice : 3
Enter key to delete : hello3
Result : Deleted
Started at: 12889646093267 Ended at: 12895422293077
Time required (NanoSecond) : 5776278003
Time required (Second) : 5.0
1.GET
2.PUT
3.DELETE
Enter choice : 
n
Enter choice : 1
Enter key : hello5
Result : world5
Started at: 12834942822225 Ended at: 12841596933560
Time required (NanoSecond) : 6654168025
Time required (Second) : 6.0
1.GET
2.PUT
3.DELETE
Enter choice : 3
Enter key to delete : hello5
Result : Deleted
Conn2Started at: 12888993850160 Ended at: 12895181358197
Conn2Time required (NanoSecond) : 6187571268
Conn2Time required (Second) : 6.0
Conn21.GET
1.GET
2.PUT
3.DELETE
Enter choice : 
n
```


6 Requested By : 6 Servers
Total Connected Server : 8
Request =>

Type : PUT
Count : 100000

Time Required (Sec) =>

Server_1 : 10
Server_2 : 10
Server_3 : 10
Server_4 : 9
Server_5 : 8
Server_6 : 8

Avg : 9.2

Type : GET
Count : 100000

Time Required (Sec) =>

Server_1 : 6
Server_2 : 5
Server_3 : 6
Server_4 : 4
Server_5 : 5
Server_6 : 6

Avg : 5.2

Type : DELETE
Count : 100000

Time Required =>

Server_1 : 5
Server_2 : 5
Server_3 : 6
Server_4 : 5
Server_5 : 5
Server_6 : 4

Avg : 5

PUT =>

```
Ubuntu Desktop
sachin@sachin-HP-Pavillon-15-Not: Connected to Server 4
sachin@sachin-HP-Pavillon-15-Not: Connected to Server 5
sachin@sachin-HP-Pavillon-15-Not: Connected to Server 6
sachin@sachin-HP-Pavillon-15-Not: Connected to Server 7
sachin@sachin-HP-Pavillon-15-Not: Connected to Server 8
sachin@sachin-HP-Pavillon-15-Not: 1.GET
sachin@sachin-HP-Pavillon-15-Not: 2.PUT
sachin@sachin-HP-Pavillon-15-Not: 3.DELETE
sachin@sachin-HP-Pavillon-15-Not: Enter choice : 2
sachin@sachin-HP-Pavillon-15-Not: Enter key : hello1
sachin@sachin-HP-Pavillon-15-Not: Enter Value : world1
sachin@sachin-HP-Pavillon-15-Not: Result : Success
sachin@sachin-HP-Pavillon-15-Not: Started at: 652857379364 Ended at: 663341770353
sachin@sachin-HP-Pavillon-15-Not: Time required (NanoSecond) : 10484662209
sachin@sachin-HP-Pavillon-15-Not: Time required (Second) : 10.0
sachin@sachin-HP-Pavillon-15-Not: Connected to Server 2
sachin@sachin-HP-Pavillon-15-Not: Connected to Server 3
sachin@sachin-HP-Pavillon-15-Not: Connected to Server 4
sachin@sachin-HP-Pavillon-15-Not: Connected to Server 5
sachin@sachin-HP-Pavillon-15-Not: Connected to Server 6
sachin@sachin-HP-Pavillon-15-Not: Connected to Server 7
sachin@sachin-HP-Pavillon-15-Not: Connected to Server 8
sachin@sachin-HP-Pavillon-15-Not: 1.GET
sachin@sachin-HP-Pavillon-15-Not: 2.PUT
sachin@sachin-HP-Pavillon-15-Not: 3.DELETE
sachin@sachin-HP-Pavillon-15-Not: Enter choice : 2
sachin@sachin-HP-Pavillon-15-Not: Enter key : hello5
sachin@sachin-HP-Pavillon-15-Not: Enter Value : world5
sachin@sachin-HP-Pavillon-15-Not: Result : Success
sachin@sachin-HP-Pavillon-15-Not: Started at: 656724471974 Ended at: 664749929751
sachin@sachin-HP-Pavillon-15-Not: Time required (NanoSecond) : 8025611229
sachin@sachin-HP-Pavillon-15-Not: Time required (Second) : 8.0
sachin@sachin-HP-Pavillon-15-Not: Connected to Server 4
sachin@sachin-HP-Pavillon-15-Not: Connected to Server 5
sachin@sachin-HP-Pavillon-15-Not: Connected to Server 6
sachin@sachin-HP-Pavillon-15-Not: Connected to Server 7
sachin@sachin-HP-Pavillon-15-Not: Connected to Server 8
sachin@sachin-HP-Pavillon-15-Not: 1.GET
sachin@sachin-HP-Pavillon-15-Not: 2.PUT
sachin@sachin-HP-Pavillon-15-Not: 3.DELETE
sachin@sachin-HP-Pavillon-15-Not: Enter choice : 2
sachin@sachin-HP-Pavillon-15-Not: Enter key : hello2
sachin@sachin-HP-Pavillon-15-Not: Enter Value : world2
sachin@sachin-HP-Pavillon-15-Not: Result : Success
sachin@sachin-HP-Pavillon-15-Not: Started at: 653280518315 Ended at: 663749514707
sachin@sachin-HP-Pavillon-15-Not: Time required (NanoSecond) : 10469214253
sachin@sachin-HP-Pavillon-15-Not: Time required (Second) : 10.0
sachin@sachin-HP-Pavillon-15-Not: Connected to Server 5
sachin@sachin-HP-Pavillon-15-Not: Connected to Server 6
sachin@sachin-HP-Pavillon-15-Not: Connected to Server 7
sachin@sachin-HP-Pavillon-15-Not: Connected to Server 8
sachin@sachin-HP-Pavillon-15-Not: 1.GET
sachin@sachin-HP-Pavillon-15-Not: 2.PUT
sachin@sachin-HP-Pavillon-15-Not: 3.DELETE
sachin@sachin-HP-Pavillon-15-Not: Enter choice : 2
sachin@sachin-HP-Pavillon-15-Not: Enter key : hello3
sachin@sachin-HP-Pavillon-15-Not: Enter Value : world3
sachin@sachin-HP-Pavillon-15-Not: Result : Success
sachin@sachin-HP-Pavillon-15-Not: Started at: 653907722909 Ended at: 663988569401
sachin@sachin-HP-Pavillon-15-Not: Time required (NanoSecond) : 10081025632
sachin@sachin-HP-Pavillon-15-Not: Time required (Second) : 10.0
sachin@sachin-HP-Pavillon-15-Not: Connected to Server 3
sachin@sachin-HP-Pavillon-15-Not: Connected to Server 4
sachin@sachin-HP-Pavillon-15-Not: Connected to Server 5
sachin@sachin-HP-Pavillon-15-Not: Connected to Server 6
sachin@sachin-HP-Pavillon-15-Not: Connected to Server 7
sachin@sachin-HP-Pavillon-15-Not: Connected to Server 8
sachin@sachin-HP-Pavillon-15-Not: 1.GET
sachin@sachin-HP-Pavillon-15-Not: 2.PUT
sachin@sachin-HP-Pavillon-15-Not: 3.DELETE
sachin@sachin-HP-Pavillon-15-Not: Enter choice : 2
sachin@sachin-HP-Pavillon-15-Not: Enter key : hello4
sachin@sachin-HP-Pavillon-15-Not: Enter Value : world4
sachin@sachin-HP-Pavillon-15-Not: Result : Success
sachin@sachin-HP-Pavillon-15-Not: Started at: 654577695554 Ended at: 664506431736
sachin@sachin-HP-Pavillon-15-Not: Time required (NanoSecond) : 9928950538
sachin@sachin-HP-Pavillon-15-Not: Time required (Second) : 9.0
```

The screenshot displays a terminal window with a dark background and light-colored text. The terminal shows the execution of a benchmarking script four times, each time with different input values. The script performs three operations: GET, PUT, and DELETE. It prompts the user for a choice (1, 2, or 3) and a key to use. The results show the time taken for each operation in both NanoSeconds and Seconds. The terminal output is as follows:

```
sachin@sachin-HP-Pavilion-15-Not: ~$ ./benchmark.sh
1.GET
2.PUT
3.DELETE
Enter choice : 1
Enter key : hello1
Result : world1
Started at: 700738219405 Ended at: 706770903739
Time required (NanoSecond) : 6033165402
Time required (Second) : 6.0

1.GET
2.PUT
3.DELETE
Enter choice : 3
Enter key to delete : hello1
Result : Deleted
Started at: 704053494950 Ended at: 710035253415
Time required (NanoSecond) : 5981922057
Time required (Second) : 5.0

1.GET
2.PUT
3.DELETE
Enter choice : 1
Enter key : hello5
Result : world5
Started at: 703249323827 Ended at: 709570122581
Time required (NanoSecond) : 6320990591
Time required (Second) : 6.0

1.GET
2.PUT
3.DELETE
Enter choice : 3
Enter key to delete : hello5
Result : Deleted
Started at: 751048833505 Ended at: 756534025145
Time required (NanoSecond) : 5402
Time required (Second) : 6.0

sachin@sachin-HP-Pavilion-15-Not: ~$ ./benchmark.sh
1.GET
2.PUT
3.DELETE
Enter choice : 1
Enter key : hello2
Result : world2
Started at: 701118151116 Ended at: 706217349459
Time required (NanoSecond) : 5099461500
Time required (Second) : 5.0

1.GET
2.PUT
3.DELETE
Enter choice : 3
Enter key to delete : hello2
Result : Deleted
Started at: 704053494950 Ended at: 710035253415
Time required (NanoSecond) : 5981922057
Time required (Second) : 5.0

sachin@sachin-HP-Pavilion-15-Not: ~$ ./benchmark.sh
1.GET
2.PUT
3.DELETE
Enter choice : 1
Enter key : hello3
Result : world3
Started at: 701837545289 Ended at: 707875975204
Time required (NanoSecond) : 6038599711
Time required (Second) : 6.0

1.GET
2.PUT
3.DELETE
Enter choice : 3
Enter key to delete : hello3
Result : Deleted
Started at: 749689026591 Ended at: 755000536590
Time required (NanoSecond) : 5402
Time required (Second) : 6.0

sachin@sachin-HP-Pavilion-15-Not: ~$ ./benchmark.sh
1.GET
2.PUT
3.DELETE
Enter choice : 1
Enter key : hello4
Result : world4
Started at: 702530793646 Ended at: 706900412903
Time required (NanoSecond) : 4369877169
Time required (Second) : 4.0

1.GET
2.PUT
3.DELETE
Enter choice : 3
Enter key to delete : hello4
Result : Deleted
Started at: 749689026591 Ended at: 755000536590
Time required (NanoSecond) : 5402
Time required (Second) : 6.0
```

[illegible]

7. Requested By : **6 Servers**
 Total Connected Server : 8
Request =>

Type : PUT
 Count : 100000

Time Required (Sec) =>

Server_1 : 7
 Server_2 : 6
 Server_3 : 6
 Server_4 : 7
 Server_5 : 6
 Server_6 : 6
 Server_7 : 6

Avg : 6.2

Type : GET
 Count : 100000

Time Required(Sec) =>

Server_1 : 6
 Server_2 : 6
 Server_3 : 6
 Server_4 : 5
 Server_5 : 6
 Server_6 : 5
 Server_7 : 6

Avg : 5.9

Type : DELETE
 Count : 100000

Time Required =>

Server_1 : 5
 Server_2 : 5
 Server_3 : 5
 Server_4 : 5
 Server_5 : 5
 Server_6 : 5
 Server_7 : 5

Avg : 5

PUT=>

```

sachin@sachin-HP-Pavilion-15-Not: Time required (Second) : 5.0
1.GET
2.PUT
3.DELETE
Enter choice : 2
Enter key : hello1
Enter Value : world1
Result : Success
Started at: 1302456969565 Ended at: 1309459870085
Time required (NanoSecond) : 7003098377
Time required (Second) : 7.0
1.GET
2.PUT
3.DELETE
Enter choice : 1

sachin@sachin-HP-Pavilion-15-Not: Time required (Second) : 5.0
1.GET
2.PUT
3.DELETE
Enter choice : 2
Enter key : hello2
Enter Value : world2
Result : Success
Started at: 1303217297545 Ended at: 1310029511884
Time required (NanoSecond) : 6812374383
Time required (Second) : 6.0
1.GET
2.PUT
3.DELETE
Enter choice : 1

sachin@sachin-HP-Pavilion-15-Not: 1.GET
2.PUT
3.DELETE
Enter choice : 2
Enter key : hello3
Enter Value : world3
Result : Success
Started at: 1303807170000 Ended at: 1310780076760
Time required (NanoSecond) : 6972955590
Time required (Second) : 6.0
1.GET
2.PUT
3.DELETE
Enter choice : 1

sachin@sachin-HP-Pavilion-15-Not: 9934
Time required (Second) : 5.0
1.GET
2.PUT
3.DELETE
Enter choice : 2
Enter key : hello4
Enter Value : world4
Result : Success
Started at: 1304387167317 Ended at: 1311773495863
Time required (NanoSecond) : 7386396936
Time required (Second) : 7.0
1.GET
2.PUT
3.DELETE
Enter choice : 1

sachin@sachin-HP-Pavilion-15-Not: Time required (NanoSecond) : 5485253924
Time required (Second) : 5.0
1.GET
2.PUT
3.DELETE
Enter choice : 2
Enter key : hello5
Enter Value : world5
Result : Success
Started at: 1306416096623 Ended at: 1313376378499
Time required (NanoSecond) : 6960358613
Time required (Second) : 6.0
1.GET
2.PUT
3.DELETE
Enter choice : 1

sachin@sachin-HP-Pavilion-15-Not: Time required (NanoSecond) : 4502874522
Time required (Second) : 4.0
1.GET
2.PUT
3.DELETE
Enter choice : 2
Enter key : hello6
Enter Value : world6
Result : Success
Started at: 1305818237525 Ended at: 1312645605066
Time required (NanoSecond) : 6827453241
Time required (Second) : 6.0
1.GET
2.PUT
3.DELETE
Enter choice : 1

sachin@sachin-HP-Pavilion-15-Not: Connected to Server 5
Connected to Server 6
Connected to Server 7
Connected to Server 8
1.GET
2.PUT
3.DELETE
Enter choice : 2
Enter key : hello7
Enter Value : world7
Result : Success
Started at: 1305247082580 Ended at: 1312056763381
Time required (NanoSecond) : 6809817846
Time required (Second) : 6.0
1.GET
2.PUT
3.DELETE
Enter choice : 1
  
```

GET:

```

Ubuntu Desktop
sachin@sachin-HP-Pavilion-15-Not 8377
Time required (Second) : 7.0
1.GET
2.PUT
3.DELETE
Enter choice : 1
Enter key : hello1
Result : world1
Started at: 1462275094482 Ended at: 1468823587882
Time required (NanoSecond) : 6548679271
Time required (Second) : 6.0
1.GET
2.PUT
3.DELETE
Enter choice : 1

sachin@sachin-HP-Pavilion-15-Not 383
Time required (Second) : 6.0
1.GET
2.PUT
3.DELETE
Enter choice : 1
Enter key : hello2
Result : world2
Started at: 1462709929440 Ended at: 1469448172110
Time required (NanoSecond) : 6738309541
Time required (Second) : 6.0
1.GET
2.PUT
3.DELETE
Enter choice : 1

sachin@sachin-HP-Pavilion-15-Not Time required (Second) : 6.0
1.GET
2.PUT
3.DELETE
Enter choice : 1
Enter key : hello3
Result : world3
Started at: 1463716607701 Ended at: 1470341612821
Time required (NanoSecond) : 6625253589
Time required (Second) : 6.0
1.GET
2.PUT
3.DELETE
Enter choice : 1

sachin@sachin-HP-Pavilion-15-Not Time required (NanoSecond) : 7386396936
Time required (Second) : 7.0
1.GET
2.PUT
3.DELETE
Enter choice : 1
Enter key : hello4
Result : world4
Started at: 1464943165779 Ended at: 1470368247139
Time required (NanoSecond) : 5425146321
Time required (Second) : 5.0
1.GET
2.PUT
3.DELETE
Enter choice : 1

sachin@sachin-HP-Pavilion-15-Not 1313376378499
Time required (NanoSecond) : 6960358613
Time required (Second) : 6.0
1.GET
2.PUT
3.DELETE
Enter choice : 1
Enter key : hello5
Result : world5
Started at: 1466862289804 Ended at: 1473080108964
Time required (NanoSecond) : 6217914223
Time required (Second) : 6.0
1.GET
2.PUT
3.DELETE
Enter choice : 1

sachin@sachin-HP-Pavilion-15-Not 1312645605066
Time required (NanoSecond) : 6827453241
Time required (Second) : 6.0
1.GET
2.PUT
3.DELETE
Enter choice : 1
Enter key : hello6
Result : world6
Started at: 1466272926574 Ended at: 1471923203437
Time required (NanoSecond) : 5650324476
Time required (Second) : 5.0
1.GET
2.PUT
3.DELETE
Enter choice : 1

sachin@sachin-HP-Pavilion-15-Not Started at: 1305247082580 Ended at: 1312056763381
Time required (NanoSecond) : 6809817846
Time required (Second) : 6.0
1.GET
2.PUT
3.DELETE
Enter choice : 1
Enter key : hello7
Result : world7
Started at: 1465646624709 Ended at: 1472173875104
Time required (NanoSecond) : 6527386230
Time required (Second) : 6.0
1.GET
2.PUT
3.DELETE
Enter choice : 1

```

Delete:

```

Ubuntu Desktop
sachin@sachin-HP-Pavilion-15-Not 9271
Time required (Second) : 6.0
1.GET
2.PUT
3.DELETE
Enter choice : 3
Enter key to delete : hello1
Result : Deleted
Started at: 1571116206721 Ended at: 1576530440051
Time required (NanoSecond) : 5414457336
Time required (Second) : 5.0
1.GET
2.PUT
3.DELETE
Enter choice : 3

sachin@sachin-HP-Pavilion-15-Not 541
Time required (Second) : 6.0
1.GET
2.PUT
3.DELETE
Enter choice : 3
Enter key to delete : hello2
Result : Deleted
Started at: 1571478992250 Ended at: 1576896448532
Time required (NanoSecond) : 5417614448
Time required (Second) : 5.0
1.GET
2.PUT
3.DELETE
Enter choice : 3

sachin@sachin-HP-Pavilion-15-Not Time required (Second) : 6.0
1.GET
2.PUT
3.DELETE
Enter choice : 3
Enter key to delete : hello3
Result : Deleted
Started at: 1572062182388 Ended at: 1577630936093
Time required (NanoSecond) : 5568850286
Time required (Second) : 5.0
1.GET
2.PUT
3.DELETE
Enter choice : 3

sachin@sachin-HP-Pavilion-15-Not Time required (NanoSecond) : 5425146321
Time required (Second) : 5.0
1.GET
2.PUT
3.DELETE
Enter choice : 3
Enter key to delete : hello4
Result : Deleted
Started at: 1572689484190 Ended at: 1578432892291
Time required (NanoSecond) : 5743477726
Time required (Second) : 5.0
1.GET
2.PUT
3.DELETE
Enter choice : 3

sachin@sachin-HP-Pavilion-15-Not 1473080108964
Time required (NanoSecond) : 6217914223
Time required (Second) : 6.0
1.GET
2.PUT
3.DELETE
Enter choice : 3
Enter key to delete : hello5
Result : Deleted
Started at: 1575174093598 Ended at: 1580321035928
Time required (NanoSecond) : 5147017658
Time required (Second) : 5.0
1.GET
2.PUT
3.DELETE
Enter choice : 3

sachin@sachin-HP-Pavilion-15-Not 1471923203437
Time required (NanoSecond) : 5650324476
Time required (Second) : 5.0
1.GET
2.PUT
3.DELETE
Enter choice : 3
Enter key to delete : hello6
Result : Deleted
Started at: 1574459494899 Ended at: 1579864837060
Time required (NanoSecond) : 5405405710
Time required (Second) : 5.0
1.GET
2.PUT
3.DELETE
Enter choice : 3

sachin@sachin-HP-Pavilion-15-Not at: 1472173875104
Time required (NanoSecond) : 6527386230
Time required (Second) : 6.0
1.GET
2.PUT
3.DELETE
Enter choice : 3
Enter key to delete : hello7
Result : Deleted
Started at: 1573343347744 Ended at: 1579139153419
Time required (NanoSecond) : 5795837023
Time required (Second) : 5.0
1.GET
2.PUT
3.DELETE
Enter choice : 3

```


8. Requested By : 8 Servers
 Total Server : 8
 Request =>

Type : PUT
 Count : 100000

Time Required (Sec) =>

Server_1 : 7
 Server_2 : 8
 Server_3 : 8
 Server_4 : 8
 Server_5 : 7
 Server_6 : 7
 Server_7 : 8
 Server_8 : 7

Avg : 7.5

Type : GET
 Count : 100000

Time Required (Sec) =>

Server_1 : 7
 Server_2 : 7
 Server_3 : 8
 Server_4 : 9
 Server_5 : 7
 Server_6 : 8
 Server_7 : 8
 Server_8 : 9

Avg : 8

Type : DELETE
 Count : 100000

Time Required =>

Server_1 : 5
 Server_2 : 5
 Server_3 : 6
 Server_4 : 5
 Server_5 : 5
 Server_6 : 5
 Server_7 : 6
 Server_8 : 5

Avg : 5.2

PUT=>

The screenshot shows an Ubuntu Desktop environment with several terminal windows open. The windows display the results of a distributed test across 8 servers. The tests include PUT, GET, and DELETE operations, with metrics such as time required in seconds and nanoseconds, and success/failure status. The terminal windows are titled 'sachin@sachin-HP-Pavilion-15-Not'.

```

sachin@sachin-HP-Pavilion-15-Not:~$ time required (Second) : 5.0
1.GET
2.PUT
3.DELETE
Enter choice : 2
Enter key : hello1
Enter Value : world1
Result : Success
Started at: 1888518230033 Ended at: 1896307907412
Time required (NanoSecond) : 7790072174
Time required (Second) : 7.0
1.GET
2.PUT
3.DELETE
Enter choice : 1

sachin@sachin-HP-Pavilion-15-Not:~$ time required (NanoSecond) : 5147017658
Time required (Second) : 5.0
1.GET
2.PUT
3.DELETE
Enter choice : 2
Enter key : hello5
Enter Value : world5
Result : Success
Started at: 1892563912884 Ended at: 1900111775723
Time required (NanoSecond) : 7547937236
Time required (Second) : 7.0
1.GET
2.PUT
3.DELETE
Enter choice : 1

sachin@sachin-HP-Pavilion-15-Not:~$ time required (Second) : 5.0
1.GET
2.PUT
3.DELETE
Enter choice : 2
Enter key : hello2
Enter Value : world2
Result : Success
Started at: 1888901278974 Ended at: 1896903069560
Time required (NanoSecond) : 8001840069
Time required (Second) : 8.0
1.GET
2.PUT
3.DELETE
Enter choice : 1

sachin@sachin-HP-Pavilion-15-Not:~$ time required (NanoSecond) : 5405405710
Time required (Second) : 5.0
1.GET
2.PUT
3.DELETE
Enter choice : 2
Enter key : hello6
Enter Value : world6
Result : Success
Started at: 1891964060697 Ended at: 1899351176765
Time required (NanoSecond) : 7387198697
Time required (Second) : 7.0
1.GET
2.PUT
3.DELETE
Enter choice : 1

sachin@sachin-HP-Pavilion-15-Not:~$ 1.GET
2.PUT
3.DELETE
Enter choice : 2
Enter key : hello3
Enter Value : world3
Result : Success
Started at: 1889518430117 Ended at: 1897684789633
Time required (NanoSecond) : 8166393862
Time required (Second) : 8.0
1.GET
2.PUT
3.DELETE
Enter choice : 1

sachin@sachin-HP-Pavilion-15-Not:~$ at: 1863128102000
Time required (NanoSecond) : 5834879277
Time required (Second) : 5.0
1.GET
2.PUT
3.DELETE
Enter choice : 2
Enter key : hello7
Enter Value : world7
Result : Success
Started at: 1891419759420 Ended at: 1899704333396
Time required (NanoSecond) : 8284659098
Time required (Second) : 8.0
1.GET
2.PUT
3.DELETE
Enter choice : 1

sachin@sachin-HP-Pavilion-15-Not:~$ 7726
Time required (Second) : 5.0
1.GET
2.PUT
3.DELETE
Enter choice : 2
Enter key : hello4
Enter Value : world4
Result : Success
Started at: 1890143543756 Ended at: 1898651186191
Time required (NanoSecond) : 8507709400
Time required (Second) : 8.0
1.GET
2.PUT
3.DELETE
Enter choice : 1

sachin@sachin-HP-Pavilion-15-Not:~$ 8343
Time required (Second) : 5.0
1.GET
2.PUT
3.DELETE
Enter choice : 2
Enter key : hello8
Enter Value : world8
Result : Success
Started at: 1890749547728 Ended at: 1898511112578
Time required (NanoSecond) : 7761689892
Time required (Second) : 7.0
1.GET
2.PUT
3.DELETE
Enter choice : 1
  
```


GET=>

```
Ubuntu Desktop
sachin@sachin-HP-Pavilion-15-Not: ~$ curl -X GET http://localhost:8080/
2174
Time required (Second) : 7.0
1.GET
2.PUT
3.DELETE
Enter choice : 1
Enter key : hello1
Result : world1
Started at: 2029909033053 Ended at: 2037609423567
Time required (NanoSecond) : 770060
6780
Time required (Second) : 7.0
1.GET
2.PUT
3.DELETE
Enter choice : 1
1900111775723
Time required (NanoSecond) : 7547937
236
Time required (Second) : 7.0
1.GET
2.PUT
3.DELETE
Enter choice : 1
Enter key : hello5
Result : world5
Started at: 2034616538394 Ended at: 2042531578794
Time required (NanoSecond) : 7915116
003
Time required (Second) : 7.0
1.GET
2.PUT
3.DELETE
Enter choice : 1
sachin@sachin-HP-Pavilion-15-Not: ~$ curl -X PUT http://localhost:8080/
069
Time required (Second) : 8.0
1.GET
2.PUT
3.DELETE
Enter choice : 1
Enter key : hello2
Result : world2
Started at: 2030360802653 Ended at: 2038043499429
Time required (NanoSecond) : 7682881
530
Time required (Second) : 7.0
1.GET
2.PUT
3.DELETE
Enter choice : 1
1899351176765
Time required (NanoSecond) : 7387198
697
Time required (Second) : 7.0
1.GET
2.PUT
3.DELETE
Enter choice : 1
Enter key : hello6
Result : world6
Started at: 2033621987801 Ended at: 2041867042247
Time required (NanoSecond) : 8245115
971
Time required (Second) : 8.0
1.GET
2.PUT
3.DELETE
Enter choice : 1
sachin@sachin-HP-Pavilion-15-Not: ~$ curl -X DELETE http://localhost:8080/
Time required (Second) : 8.0
1.GET
2.PUT
3.DELETE
Enter choice : 1
Started at: 1891419759420 Ended at: 1899704333396
Time required (NanoSecond) : 8284
659098
Time required (Second) : 8.0
1.GET
2.PUT
3.DELETE
Enter choice : 1
Enter key : hello7
Result : world7
Started at: 2033014069423 Ended at: 2041544326937
Time required (NanoSecond) : 8530
345195
Time required (Second) : 8.0
1.GET
2.PUT
3.DELETE
Enter choice : 1
sachin@sachin-HP-Pavilion-15-Not: ~$ curl -X GET http://localhost:8080/
Time required (NanoSecond) : 850770
9400
Time required (Second) : 8.0
1.GET
2.PUT
3.DELETE
Enter choice : 1
Enter key : hello4
Result : world4
Started at: 2031622949763 Ended at: 2040974325740
Time required (NanoSecond) : 935156
0939
Time required (Second) : 9.0
1.GET
2.PUT
3.DELETE
Enter choice : 1
Time required (NanoSecond) : 776168
9892
Time required (Second) : 7.0
1.GET
2.PUT
3.DELETE
Enter choice : 1
Enter key : hello8
Result : world8
Started at: 2032266749661 Ended at: 2041383439368
Time required (NanoSecond) : 911674
9905
Time required (Second) : 9.0
1.GET
2.PUT
3.DELETE
Enter choice : 1
```

Delete=>

```
Ubuntu Desktop
sachin@sachin-HP-Pavilion-15-Not: ~$ curl -X GET http://localhost:8080/
6780
Time required (Second) : 7.0
1.GET
2.PUT
3.DELETE
Enter choice : 3
Enter key to delete : hello1
Result : Deleted
Started at: 2320749374560 Ended at: 2326228770490
Time required (NanoSecond) : 547948
5333
Time required (Second) : 5.0
1.GET
2.PUT
3.DELETE
Enter choice : 3
2042531578794
Time required (NanoSecond) : 7915116
003
Time required (Second) : 7.0
1.GET
2.PUT
3.DELETE
Enter choice : 3
Enter key to delete : hello5
Result : Deleted
Started at: 2320112553035 Ended at: 2325857156543
Time required (NanoSecond) : 5744691
856
Time required (Second) : 5.0
1.GET
2.PUT
3.DELETE
Enter choice : 3
sachin@sachin-HP-Pavilion-15-Not: ~$ curl -X PUT http://localhost:8080/
530
Time required (Second) : 7.0
1.GET
2.PUT
3.DELETE
Enter choice : 3
Enter key to delete : hello2
Result : Deleted
Started at: 2316420130423 Ended at: 2322160516973
Time required (NanoSecond) : 5740634
944
Time required (Second) : 5.0
1.GET
2.PUT
3.DELETE
Enter choice : 3
2041867042247
Time required (NanoSecond) : 8245115
971
Time required (Second) : 8.0
1.GET
2.PUT
3.DELETE
Enter choice : 3
Enter key to delete : hello6
Result : Deleted
Started at: 2319593786595 Ended at: 2325040823608
Time required (NanoSecond) : 5447096
278
Time required (Second) : 5.0
1.GET
2.PUT
3.DELETE
Enter choice : 3
sachin@sachin-HP-Pavilion-15-Not: ~$ curl -X DELETE http://localhost:8080/
Time required (Second) : 8.0
1.GET
2.PUT
3.DELETE
Enter choice : 3
Enter key to delete : hello3
Result : Deleted
Started at: 2317627229510 Ended at: 2324283587869
Time required (NanoSecond) : 6656484
090
Time required (Second) : 6.0
1.GET
2.PUT
3.DELETE
Enter choice : 3
sachin@sachin-HP-Pavilion-15-Not: ~$ curl -X GET http://localhost:8080/
Time required (NanoSecond) : 935156
0939
Time required (Second) : 9.0
1.GET
2.PUT
3.DELETE
Enter choice : 3
Enter key to delete : hello4
Result : Deleted
Started at: 2318290448186 Ended at: 2324218072877
Time required (NanoSecond) : 592769
8445
Time required (Second) : 5.0
1.GET
2.PUT
3.DELETE
Enter choice : 3
Time required (NanoSecond) : 911674
9905
Time required (Second) : 9.0
1.GET
2.PUT
3.DELETE
Enter choice : 3
Enter key to delete : hello8
Result : Deleted
Started at: 2315372819289 Ended at: 2321112199721
Time required (NanoSecond) : 573976
0752
Time required (Second) : 5.0
1.GET
2.PUT
3.DELETE
Enter choice : 3
```