P2 - Preforked Server

Submitted By : Abdul Kadir Khimani, Ayush Singh, Nayan Khanna
Submitted for : IS F462, Network Programming.
IC : Dr. Hari Babu

Design Decisions :

We implement a preforked server model as described in the problem statement.

Assumptions :

1. It is a dummy server model and sends only dummy replies.

Implementation :

It is implemented as a preforked model. The main program initially creates maxIdleServers number of children, each child communicates to the parent using UNIX domain socket pair. The parent saves the fd for communicating with the child and then enters an infinite loop using select I/O multiplexing on the parent end of the socket pair waiting to be notified about the actions taken by the child.
The parent performs the necessary recycling and load balancing as mentioned in the problem statement.

Execution flow :

Parent :

1. The parent creates children and handles the load balancing.
2. It maintains an array of structures where each structure contains information about the child.
3. The parent updates this array as per the communication received from the children and prints it.
4. On pressing control-C, the parent prints the child's details.
5. The parent balances the load as mentioned in the problem statement by continuously monitoring the number of idle children.

Child :

1. The child accepts maxRequestsPerChild number of connections and then after handling these many requests, it exits.
2. On accepting a new connection, it informs the parent through its end of socket pair that it is now busy.
3. It handles the request and then again informs the parent that it is free.

Usage :

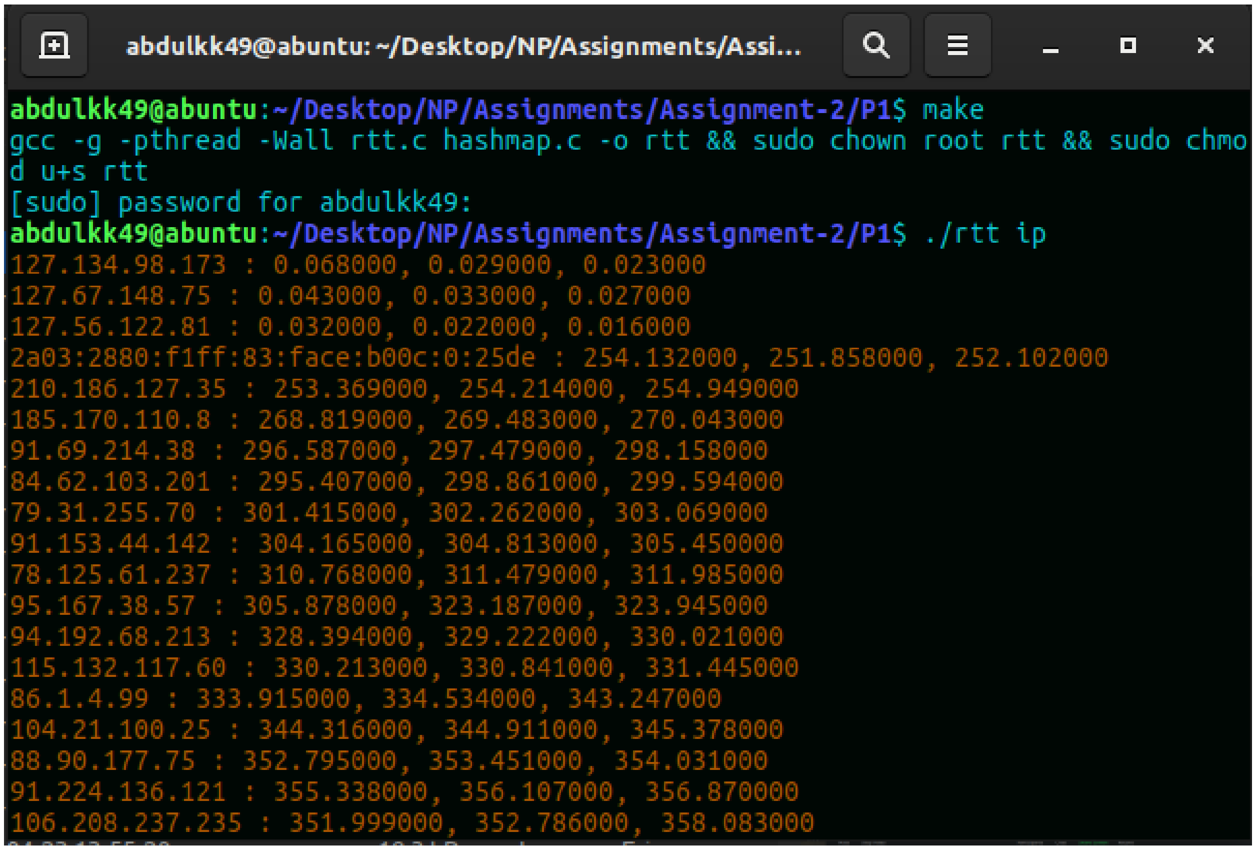
Change to the directory in which the source code is present, then

<u>Compile</u> :

In the bash terminal, issue command: **make** or **make prefork**

<u>Run</u> :

In the bash terminal, issue command: **./prefork <maxIdleServers> <minIdleServers> <maxRequestsPerChild>**



```
abdulkk49@abuntu:~/Desktop/NP/Assignments/Assignment-2/P1$ make
gcc -g -pthread -Wall rtt.c hashmap.c -o rtt && sudo chown root rtt && sudo chmo
d u+s rtt
[sudo] password for abdulkk49:
abdulkk49@abuntu:~/Desktop/NP/Assignments/Assignment-2/P1$ ./rtt ip
127.134.98.173 : 0.068000, 0.029000, 0.023000
127.67.148.75 : 0.043000, 0.033000, 0.027000
127.56.122.81 : 0.032000, 0.022000, 0.016000
2a03:2880:f1ff:83:face:b00c:0:25de : 254.132000, 251.858000, 252.102000
210.186.127.35 : 253.369000, 254.214000, 254.949000
185.170.110.8 : 268.819000, 269.483000, 270.043000
91.69.214.38 : 296.587000, 297.479000, 298.158000
84.62.103.201 : 295.407000, 298.861000, 299.594000
79.31.255.70 : 301.415000, 302.262000, 303.069000
91.153.44.142 : 304.165000, 304.813000, 305.450000
78.125.61.237 : 310.768000, 311.479000, 311.985000
95.167.38.57 : 305.878000, 323.187000, 323.945000
94.192.68.213 : 328.394000, 329.222000, 330.021000
115.132.117.60 : 330.213000, 330.841000, 331.445000
86.1.4.99 : 333.915000, 334.534000, 343.247000
104.21.100.25 : 344.316000, 344.911000, 345.378000
88.90.177.75 : 352.795000, 353.451000, 354.031000
91.224.136.121 : 355.338000, 356.107000, 356.870000
106.208.237.235 : 351.999000, 352.786000, 358.083000
```