ASSIGNMENT NO.3

TITLE: Load Balancing

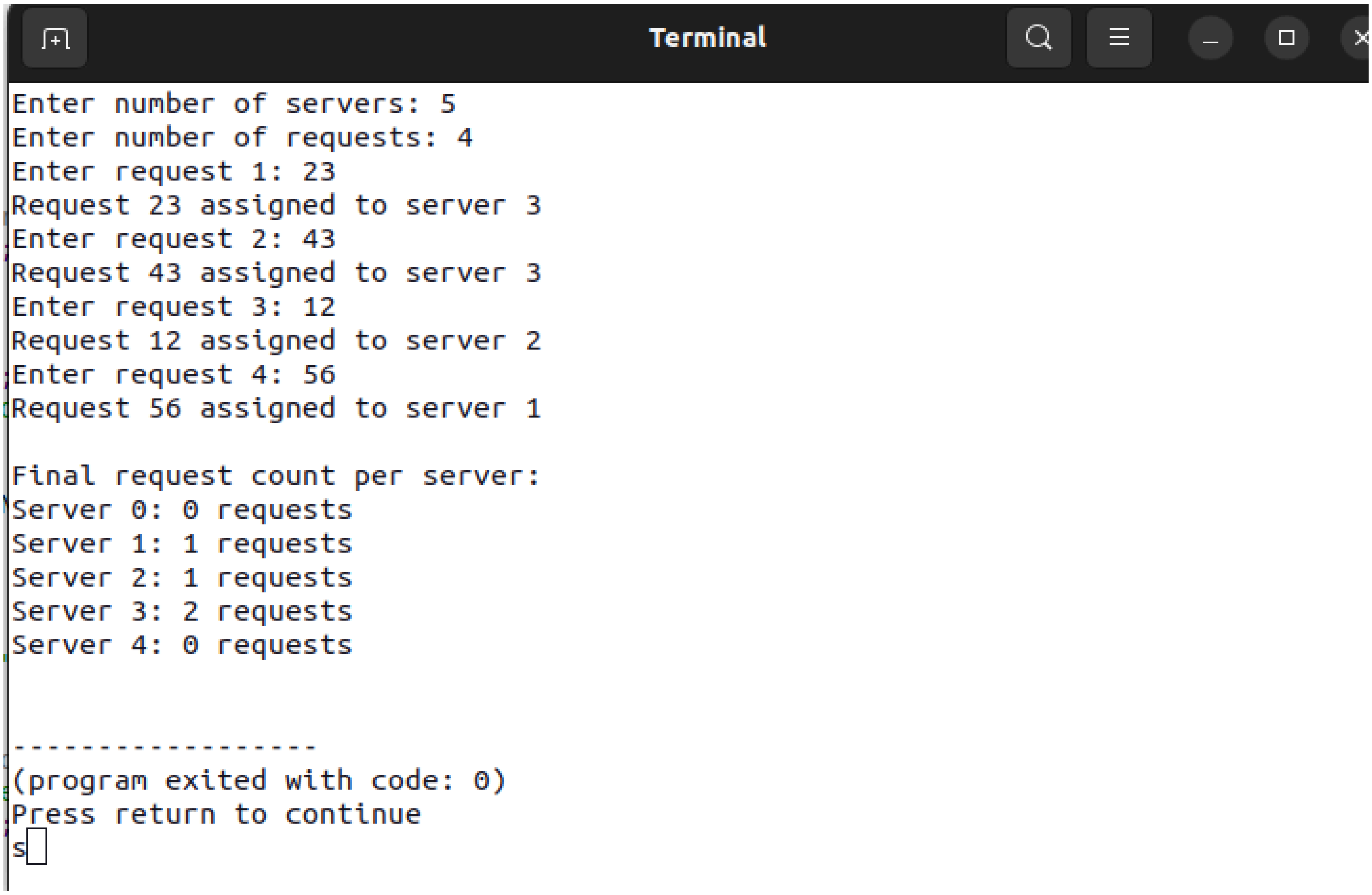
OBJECTIVE: To implement hashing techniques

PROBLEM STATEMENT:

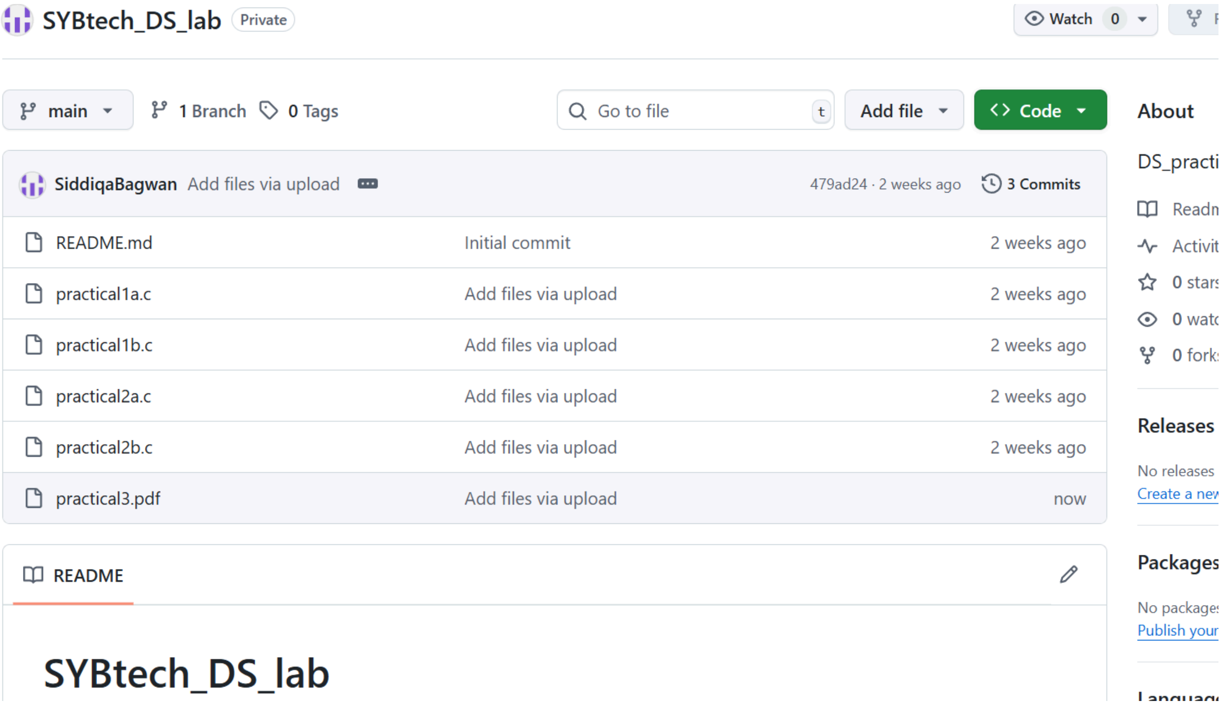
Load Balancing:

For example, imagine you have a set of servers that handle requests for a web application. The key to load balancing is using the hash value of a client's IP address or a request ID to determine which server should handle the request. The hash function is typically designed so that the data is evenly distributed across the servers, ensuring that no single server is overloaded. Write a program of a load balancing system

```
#include <iostream>
using namespace std;

int main() {
    int N, R, val, hash_val;

    cout << "Enter number of servers: ";
    cin >> N;

    cout << "Enter number of requests: ";
    cin >> R;

    int arr[N]; // To store request count per server
    for (int m = 0; m < N; m++) {
        arr[m] = 0;
    }

    for (int i = 0; i < R; i++) {
        cout << "Enter request " << i + 1 << ": ";
        cin >> val;

        hash_val = val % N;

        // Assign request directly to the hashed server
        arr[hash_val]++;
        cout << "Request " << val << " assigned to server " << hash_val << endl;
    }

    // Print final state of each server
    cout << "\nFinal request count per server:\n";
    for (int j = 0; j < N; j++) {
        cout << "Server " << j << ": " << arr[j] << " requests\n";
    }

    return 0;
}
```



```
Enter number of servers: 5
Enter number of requests: 4
Enter request 1: 23
Request 23 assigned to server 3
Enter request 2: 43
Request 43 assigned to server 3
Enter request 3: 12
Request 12 assigned to server 2
Enter request 4: 56
Request 56 assigned to server 1

Final request count per server:
Server 0: 0 requests
Server 1: 1 requests
Server 2: 1 requests
Server 3: 2 requests
Server 4: 0 requests


------------------
(program exited with code: 0)
Press return to continue
s
```



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