

## Assignment – 4

- **Code :**

```
import java.util.List;
import java.util.ArrayList;

class TimeServer {
    private List<Integer> clocks;

    public TimeServer(List<Integer> clocks) {
        this.clocks = clocks;
    }

    /**
     * The function synchronizes all clocks in a list by adjusting each clock to the average time.
     */
    public void synchronizeClocks() {
        int sum = 0;
        int average;

        // Calculate the sum of all clocks
        for (int clock : clocks) {
            sum += clock;
        }

        // Calculate the average clock time
        average = sum / clocks.size();

        // Adjust each clock to the average time
        for (int i = 0; i < clocks.size(); i++) {
            clocks.set(i, average);
        }
    }

    public List<Integer> getClocks() {
        return clocks;
    }

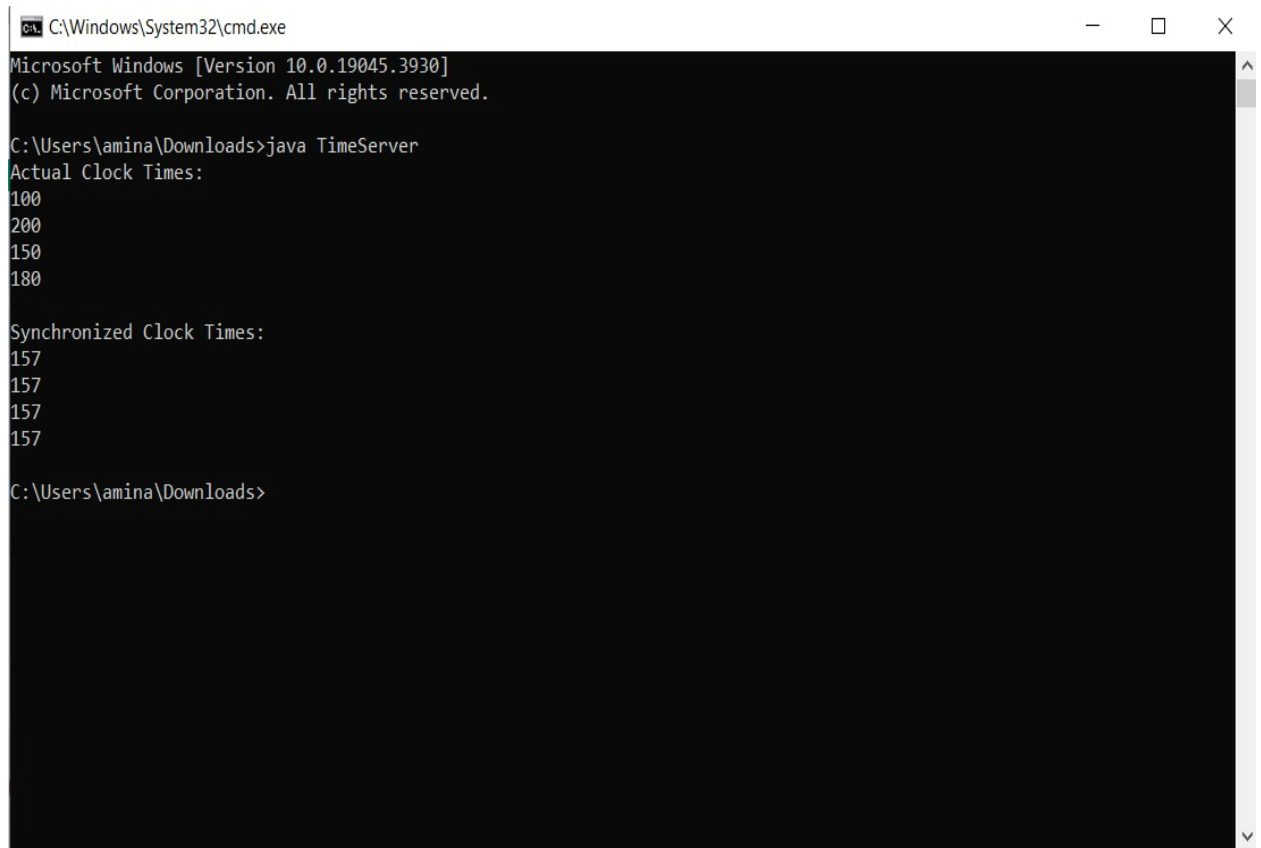
    // Entry point of the program
    /**
```

\* The function creates a list of clocks with their initial times, synchronizes them using the  
\* Berkeley algorithm, and prints the actual and synchronized clock times.

\*/

```
public static void main(String[] args) {  
    // Create a list of clocks with their initial times  
    List<Integer> clocks = new ArrayList<>();  
    clocks.add(100);  
    clocks.add(200);  
    clocks.add(150);  
    clocks.add(180);  
  
    // Create a time server with the clocks  
    TimeServer timeServer = new TimeServer(clocks);  
  
    // Print the actual clock times before synchronization  
    System.out.println("Actual Clock Times:");  
    for (int clock : clocks) {  
        System.out.println(clock);  
    }  
  
    System.out.println("");  
  
    // Synchronize the clocks using the Berkeley algorithm  
    timeServer.synchronizeClocks();  
  
    // Get the synchronized clocks  
    List<Integer> synchronizedClocks = timeServer.getClocks();  
  
    // Print the synchronized clocks  
    System.out.println("Synchronized Clock Times:");  
    for (int clock : synchronizedClocks) {  
        System.out.println(clock);  
    }  
}
```

- **Output:**



```
C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.19045.3930]
(c) Microsoft Corporation. All rights reserved.

C:\Users\amina\Downloads>java TimeServer
Actual Clock Times:
100
200
150
180

Synchronized Clock Times:
157
157
157
157

C:\Users\amina\Downloads>
```