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Aim : To Implement the Berkeley Algorithm.

Code:
Berkeley.java

```
import java.util.*;
public class Berkeley
{
public static int getTime(String time)
{
String[] temp = time.split(":");
int rtime = Integer.parseInt(temp[2]) + Integer.parseInt(temp[1])*60 +
Integer.parseInt(temp[0])*60*60;
return rtime;
}
public static String setTime(int time)
{
String rtime = new String();
for(int i=0;i<2;i++)
{
int power = (int)(Math.pow(60,2- i));
if((time/power)/10>0)
rtime = rtime + time/power;
else
rtime = rtime + "0" + time/power;
time = time%power;
rtime = rtime + ":";
}
if(time/10>0)
rtime = rtime + time;
else
rtime = rtime + "0" + time;
return rtime;
```

```
}
public static void main (String args[])
{
Scanner sc = new Scanner(System.in);
System.out.print("Enter number of machines: ");
int n = sc.nextInt();
String times[] = new String[n];
System.out.println("\nEnter current time of machines (HH:mm:ss) : ");
for(int i=0;i<n;i++)
{
System.out.print("Machine " + i + ": ");
times[i] = new String();
times[i] = sc.next();
}
System.out.println("\nStarting Simulation!\nMachine 0 is assumed as server and starts
synchronization process.");
int st = getTime(times[0]);
int tot=0;
for(int i=0;i<n;i++)
{
System.out.println("Machine 0 sends TIME = " + times[0] + " to Machine " + i);
int diff = getTime(times[i])-st;
System.out.println("Machine " + i + " replies " + diff + " to Machine 0");
tot+=diff;
}
int avg = tot/n;
times[0] = setTime(st+avg);
System.out.println("\nMachine 0 sets new TIME = " + times[0] + " and sends it to all other
machines.");
System.out.println("All machines set their time to "+ times[0]);
}
}
```

```
A:\Users\Sohail Sayyed\Desktop\Desktop 1\college files\Sem VIII\DC\DC Lab>java Berkeley
Enter number of machines: 3
```

```
Enter current time of machines (HH:mm:ss)
Machine 0: 12:05:11
Machine 1: 1:00:00
Machine 2: 4:25:00

Starting Simulation!
Machine 0 is assumed as server and starts synchronization process.
Machine 0 sends TIME = 12:05:11 to Machine 0
Machine 0 replies 0 to Machine 0
Machine 0 sends TIME = 12:05:11 to Machine 1
Machine 1 replies -39911 to Machine 0
Machine 0 sends TIME = 12:05:11 to Machine 2
Machine 2 replies -27611 to Machine 0

Machine 0 sets new TIME = 05:50:04 and sends it to all other machines.
All machines set their time to 05:50:04
```

Conclusion:

Berkeley Algorithm has been executed successfully and gives the required output.