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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();
}
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]);
}
}

```

```

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 -27011 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.