

Yakshita B Rakholiya  
yr92282n@pace.edu  
Student ID: U01875270  
Course: CS-610-22756  
Project-4

## PROGRAMMING PROJECTS

### 2. BUCKET SORT

```
C:\parallel\cstar.exe
*open Parallel_Bucket_Sort.c

Program Successfully Compiled

To View a Complete Program Listing, See File LISTFILE.TXT

*view
1 /*
2  Pace University CS610
3  Yakshita Rakholiya
4  Project-4 @Dr.Lixin Tao @Kai Wang
5  */
6
7 #include <stdlib.h>
8 #define n 100;
9 int arrBefore[n + 1];
10 int arrAfter[n + 1];
11 int bucket_list[n + 1];
12 spinlock K[n + 1];
13 spinlock K2;
14 int i, j;
15
16 main () {
17
18     int index = 1;
19     forall i = 1 to n grouping 10 do
20         arrBefore[i] = rand() % 100 + 1;
21
22     forall i = 1 to n grouping 10 do
23         bucket_list[i] = 0;
24
25     for(i = 1; i<=n; i++) {
26         Lock(K[arrBefore[i]]);
27         bucket_list[arrBefore[i]] += 1;
28         Unlock(K[arrBefore[i]]);
29     }
30
31     for(i = 1; i<=n; i++) {
32         Lock(K2);
33         int x = bucket_list[i];
34         for(j = 1; i<=n; j++) {
35             index += bucket_list[j];
```

```
C:\parallel\cstar.exe
43     }
44
45     for(i = 1; i<=n; i++) {
46         cout << arrBefore[i];
47         if(i % 10 == 0) cout << endl;
48     }
49
50     cout << "Sorting Array";
51     cout << endl;
52
53     for(i=1; i<=n; i++) {
54         cout << arrAfter[i];
55         if(i % 10 == 0) cout << endl;
56     }
57 }

*run
12 68 13 3 54 83 98 58 31 25
88 95 51 66 91 57 68 84 37 66
31 31 44 75 49 6 77 58 3 97
1 18 61 52 27 46 80 57 78 14
39 4 36 93 20 40 88 32 63 59
50 95 21 35 29 25 34 15 17 19
68 24 95 17 71 75 65 92 78 66
74 75 72 64 25 63 66 3 32 8
70 28 24 47 64 51 100 1 9 49
46 84 97 23 45 15 6 76 34 90

Sorting Array
1 1 3 3 3 4 6 6 8 9
12 13 14 15 15 17 17 18 19 20
21 23 24 24 25 25 25 27 28 29
31 31 31 32 32 34 34 35 36 37
39 40 44 45 46 46 47 49 49 50
51 51 52 54 57 57 58 58 59 61
63 63 64 64 65 66 66 66 66 68
68 68 70 71 72 74 75 75 75 76
77 78 78 80 83 84 84 88 88 90
91 92 93 95 95 95 97 97 98 100

SEQUENTIAL EXECUTION TIME: 16952
PARALLEL EXECUTION TIME: 15415
SPEEDUP: 1.10
```