

CSC406 Problem 2

Chris Stewart

```
1  /**
2   * This program creates a process router that calculates
   the cost and amount of characters sent to the router.
3   * Te program determines which of three branches each
   process came from. Keeping each of the stats for the
   branches.
4   */
5
6  import java.io.File;
7  import java.io.PrintWriter;
8  import java.util.concurrent.ExecutorService;
9  import java.util.concurrent.Executors;
10
11
12  public class Problem2 {
13      static int count = 0; //Number of Characters in total
14      static double total = 0; //Total cost
15      static double PBtotal = 0; //Total cost for PB
16      static int PBcount = 0; //Number of PB characters
17      static double PBdata = 0; //PB data cost
18      static double PBprint = 0; //PB print cost
19      static double FBtotal = 0; //Total FB cost
20      static int FBcount = 0; //Number of FB characters
21      static double FBdata = 0; //FB data cost
22      static double FBprint = 0; //FB print cost
23      static double MBtotal = 0; //Total MB cost
24      static int MBcount = 0; //Number of MB characters
25      static double MBdata = 0; //MB data cost
26      static double MBprint = 0; //MB print cost
27
28      public static void main(String args[]) throws
   Exception {
29
30          PrintWriter out1 = new PrintWriter(new File("out1.
   txt"));
31          Job[] jobs = new Job[9];
32          //Array of task for Router
33          jobs[0] = new Job("PB", 1, 'D', 60000);
34          jobs[1] = new Job("PB", 3, 'P', 100000);
35          jobs[2] = new Job("PB", 2, 'D', 75000);
36          jobs[3] = new Job("FB", 1, 'P', 30000);
37          jobs[4] = new Job("FB", 2, 'D', 150000);
38          jobs[5] = new Job("FB", 3, 'P', 89000);
39          jobs[6] = new Job("MB", 1, 'P', 200000);
```

CSC406 Problem 2

Chris Stewart

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40         jobs[7] = new Job("MB", 2, 'D', 140000);
41         jobs[8] = new Job("MB", 3, 'P', 135000);
42         //Fill Array
43         ExecutorService executor = Executors.
newFixedThreadPool(9);
44         //start executor and give number of task
45
46         for (int i = 0; i <= 8; i++) { //execute each job
47             executor.execute(new Router(jobs[i]));
48         }
49         //Production summary
50         System.out.println("Production:");
51         out1.println("Production:");
52         //PB data summary
53         System.out.println("    Data Connections:");
54         out1.println("    Data Connection:");
55         System.out.println("    Number of Characters: " +
(PBdata/0.008));
56         out1.println("    Number of Characters: " + (
PBdata/0.008));
57         System.out.println("    Cost: " + PBdata);
58         out1.println("    Cost: " + PBdata);
59
60         //PB printer summary
61         System.out.println("    Printer Connections:");
62         out1.println("    Printer Connection:");
63         System.out.println("    Number of Characters: " +
(PBprint/0.007));
64         out1.println("    Number of Characters: " + (
PBprint/0.007));
65         System.out.println("    Cost: " + PBprint);
66         out1.println("    Cost: " + PBprint);
67
68         //PB totals
69         System.out.println("    Total Connections:");
70         out1.println("    Total Connection:");
71         System.out.println("    Number of Characters: " +
((PBprint/0.007)+(PBdata/0.008));
72         out1.println("    Number of Characters: " +
PBcount);
73         System.out.println("    Cost: " + (PBprint +
PBdata)+"\n");
74         out1.println("    Cost: " + PBtotal+"\n");
75
```

CSC406 Problem 2
Chris Stewart

```
76         //Financial summary
77         System.out.println("Financial:");
78         out1.println("Financial:");
79
80         //FB data summary
81         System.out.println("    Data Connections:");
82         out1.println("    Data Connection:");
83         System.out.println("    Number of Characters: " +
84             (FBdata/0.007));
85         out1.println("    Number of Characters: " + (
86             FBdata/0.007));
87
88         System.out.println("    Cost: " + FBdata);
89         out1.println("    Cost: " + FBdata);
90
91         //FB printer summary
92         System.out.println("    Printer Connections:");
93         out1.println("    Printer Connection:");
94         System.out.println("    Number of Characters: " +
95             (FBprint/0.009));
96         out1.println("    Number of Characters: " + (
97             FBprint/0.009));
98
99         System.out.println("    Cost: " + FBprint);
100        out1.println("    Cost: " + FBprint);
101
102        //FB totals
103        System.out.println("    Total Connections:");
104        out1.println("    Total Connection:");
105        System.out.println("    Number of Characters: " +
106            ((FBprint/0.009)+(FBdata/0.007)));
107        out1.println("    Number of Characters: " +
108            FBcount);
109        System.out.println("    Cost: " + (FBprint +
110            FBdata)+"\n");
111        out1.println("    Cost: " + FBtotal+"\n");
112
113        //Marketing summary
114        System.out.println("Marketing:");
115        out1.println("Marketing:");
116
117        //MB data summary
118        System.out.println("    Data Connections:");
119        out1.println("    Data Connection:");
120        System.out.println("    Number of Characters: " +
121            (MBdata/0.0082));
```

CSC406 Problem 2

Chris Stewart

```
112         out1.println("    Number of Characters: " + (
            MBdata/0.0082));
113         System.out.println("    Cost: " + MBdata);
114         out1.println("    Cost: " + MBdata);
115
116         //MB printer summary
117         System.out.println("    Printer Connections:");
118         out1.println("    Printer Connection:");
119         System.out.println("    Number of Characters: " +
            (MBprint/0.0095));
120         out1.println("    Number of Characters: " + (
            MBprint/0.0095));
121         System.out.println("    Cost: " + MBprint);
122         out1.println("    Cost: " + MBprint);
123
124         //MB totals
125         System.out.println("    Total Connections:");
126         out1.println("    Total Connection:");
127         System.out.println("    Number of Characters: " +
            ((MBprint/0.0095)+(MBdata/0.0082)));
128         out1.println("    Number of Characters: " +
            MBcount);
129         System.out.println("    Cost: " + (MBprint +
            MBdata)+"\n");
130         out1.println("    Cost: " + MBtotal+"\n");
131
132         //Totals
133         System.out.println("Total Characters:"+ count);
134         out1.println("Total Characters:"+ count);
135         System.out.println("Total Cost:"+ total);
136         out1.println("Total Cost:"+ total);
137
138
139     }
140
141     static class Job { //Start of Job Class
142         String branch;
143         int thread;
144         char type;
145         int value;
146
147         //Constructor for Job
148         public Job(String a, int b, char c, int d) {
149             branch = a;
```

CSC406 Problem 2
Chris Stewart

```
150         thread = b;
151         type = c;
152         value = d;
153     }
154 } //End of job class
155
156 static class Router implements Runnable { //Start of
Router class
157     private Job job;
158
159
160     public Router(Job a) { //Router constructor
161         job = a;
162
163     }
164
165     public void run() {
166         if (job.type == 'D') { //If job is of data
type
167             if (job.branch == "PB") { //If is from PB
168                 PBtotal = PBtotal + (0.008 * job.
value); //Add to total cost of PB
169                 PBdata = PBdata + (0.008 * job.value)
; //Add to PB data characters
170                 PBcount = PBcount + job.value; //Add
to PB characters
171                 count = count + job.value; //Add to
total Characters
172                 total = total + (0.008 * job.value);
//Add to total cost
173             }
174             if (job.branch == "FB") { //If is from FB
175                 FBtotal = FBtotal + (0.007 * job.
value); //Add to total cost of FB
176                 FBdata = FBdata + (0.007 * job.value)
; //Add to FB data characters
177                 FBcount = FBcount + job.value; //Add
to FB characters
178                 count = count + job.value; //Add to
total Characters
179                 total = total + (0.007 * job.value);
//Add to total cost
180             } else { //If is from MB
181                 MBtotal = MBtotal + (0.0082 * job.
```

CSC406 Problem 2

Chris Stewart

```
181 value);//Add to total cost of MB
182             MBdata = MBdata + (0.0082 * job.value
183 );//Add to MB data characters
184             MBcount = MBcount + job.value;//Add
185 to MB characters
186             count = count + job.value;//Add to
187 total Characters
188             total = total + (0.0082 * job.value);
189 //Add to total cost
190         }
191     }//End of if is Data
192     else {//If job is of print type
193         if (job.branch == "PB") {//If is from PB
194             PBtotal = PBtotal + (0.007 * job.
195 value);//Add to total cost of PB
196             PBprint = PBprint + (0.007 * job.
197 value);//Add to PB print characters
198             PBcount = PBcount + job.value;//Add
199 to PB characters
200             count = count + job.value;//Add to
201 total Characters
202             total = total + (0.007 * job.value);
203 //Add to total cost
204         }
205         if (job.branch == "FB") {//If is from FB
206             FBtotal = FBtotal + (0.009 * job.
207 value);//Add to total cost of FB
208             FBprint = FBprint + (0.009 * job.
209 value);//Add to FB print characters
210             FBcount = FBcount + job.value;//Add
211 to FB characters
212             count = count + job.value;//Add to
213 total Characters
214             total = total + (0.009 * job.value);
215 //Add to total cost
216         } else {//If is from MB
217             MBtotal = MBtotal + (0.0095 * job.
218 value);//Add to total cost of MB
219             MBprint = MBprint + (0.0095 * job.
220 value);//Add to MB print characters
221             MBcount = MBcount + job.value;//Add
222 to MB characters
223             count = count + job.value;//Add to
224 total Characters
```

CSC406 Problem 2
Chris Stewart

```
207             total = total + (0.0095 * job.value);  
        //Add to total cost  
208    }  
209  
210    }//End of If is Printer  
211  
212    }//end of run  
213    }//End of router class  
214 }//End of Problem 2  
215
```