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2 * PROGRAMMED BY : Nick Reardon
3 * CLASS       : CS1D
4 * SECTION     : MW - 2:30p
5 * Assignment #6 : Priority Queues
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8             Assignment #6 - Priority Queues
9
10 Implement two priority queues to simulate an afternoon in an
11 emergency room. Your software should NOT be dependent on
12 the given data.
13
14     1. Priority Queue 1
15     Develop software or use the author's priority queue ADT to
16     implement a priority queue based on a heap.
17
18
19     2. Priority Queue 2
20     Use the STL priority_queue
21
22     Test both priority queues with the following data assuming
23     that the priority queue is built at noon and Doctor DoGood is
24     the only doctor on duty. Each patient requires 25 minutes of
25     care. The patient who waited the longest has the highest
26     priority unless there is a life-threatening scenario. Determine
27     the order in which the patients will be treated. You will need
28     to create a timer. Output the time each appointment starts
29     and ends.
30     Assumptions:
31         1. When a patient's care is interrupted, they still only get
32            25 minutes of care total
33         2. If a patient's treatment starts at 1:00 and is not
34            interrupted, then the next patient's treatment will
35            start at 1:25
36         3. Waiting time is wait time before noon
37
38 |-----|-----|-----|
39 | Name           | Waiting Time (hours) | End       |
40 |-----|-----|-----|
41 | Bob Bleeding   | 5                     |           |
42 |-----|-----|-----|
43 | Frank Feelingbad | 3                     |           |
44 |-----|-----|-----|
45 | Cathy Coughing  | 2                     |           |
46 |-----|-----|-----|
47 | Sam Sneezing    | Life threatening at 1:14 PM |         |
48 |-----|-----|-----|
49 | Paula Pain      | 4                     |           |
50 |-----|-----|-----|
51 | Sid Sickly      | Life threatening at 3:01 PM |         |
52 |-----|-----|-----|

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53	Alice Ailment	7	
54	-----	-----	-----
55	Irene Ill	1	
56	-----	-----	-----
57	Tom Temperature	6	
58	-----	-----	-----

59
60
61 Due February 26th
62
63
64
65 *****
66
67
68 Now doing written Priority Queue based on a heap
69
70
71 -- 12::00 --
72 Creating priority queue of waiting patients...
73
74 Patient Admitted:
75 Name: Alice Ailment
76 Care began at 12:00
77
78 Patient Discharge:
79 Name: Alice Ailment
80 Care ended at 12:25
81
82 Patient Admitted:
83 Name: Tom Temperature
84 Care began at 12:25
85
86 Patient Discharge:
87 Name: Tom Temperature
88 Care ended at 12:50
89
90 Patient Admitted:
91 Name: Bob Bleeding
92 Care began at 12:50
93
94 Patient Care Interrupted:
95 Name: Sam Sneezing
96 Care interrupted at 01:14
97 Minutes in visit remaining: 1
98
99 High Priority Patient Recieved
100 Immediate attention administered:
101 Name: Sam Sneezing
102 Care began at 01:14
103
104 Patient Discharge:

105 Name: Sam Sneezing
106 Care ended at 01:39
107
108 Patient Care Resumed:
109 Name: Bob Bleeding
110 Care resumed at 01:39
111 Minutes in visit remaining: 1
112
113 Patient Discharge:
114 Name: Bob Bleeding
115 Care ended at 01:40
116
117 Patient Admitted:
118 Name: Paula Pain
119 Care began at 01:40
120
121 Patient Discharge:
122 Name: Paula Pain
123 Care ended at 02:05
124
125 Patient Admitted:
126 Name: Frank Feelingbad
127 Care began at 02:05
128
129 Patient Discharge:
130 Name: Frank Feelingbad
131 Care ended at 02:30
132
133 Patient Admitted:
134 Name: Cathy Coughing
135 Care began at 02:30
136
137 Patient Discharge:
138 Name: Cathy Coughing
139 Care ended at 02:55
140
141 Patient Admitted:
142 Name: Irene Ill
143 Care began at 02:55
144
145 Patient Care Interrupted:
146 Name: Sid Sickly
147 Care interrupted at 03:01
148 Minutes in visit remaining: 19
149
150 High Priority Patient Recieved
151 Immediate attention administered:
152 Name: Sid Sickly
153 Care began at 03:01
154
155 Patient Discharge:
156 Name: Sid Sickly

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157 Care ended at 03:26
158
159 Patient Care Resumed:
160 Name: Irene Ill
161 Care resumed at 03:26
162 Minutes in visit remaining: 19
163
164 Patient Discharge:
165 Name: Irene Ill
166 Care ended at 03:45
167
168
169 --- END OF DAY 05:00 ----
170
171
172
173 Now doing STL Priority Queue
174
175
176 -- 12::00 --
177 Creating priority queue of waiting patients...
178
179 Patient Admitted:
180 Name: Alice Ailment
181 Care began at 12:00
182
183 Patient Discharge:
184 Name: Alice Ailment
185 Care ended at 12:25
186
187 Patient Admitted:
188 Name: Tom Temperature
189 Care began at 12:25
190
191 Patient Discharge:
192 Name: Tom Temperature
193 Care ended at 12:50
194
195 Patient Admitted:
196 Name: Bob Bleeding
197 Care began at 12:50
198
199 Patient Care Interrupted:
200 Name: Sam Sneezing
201 Care interrupted at 01:14
202 Minutes in visit remaining: 1
203
204 High Priority Patient Recieved
205 Immediate attention administered:
206 Name: Sam Sneezing
207 Care began at 01:14
208
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209 Patient Discharge:
210 Name: Sam Sneezing
211 Care ended at 01:39
212
213 Patient Care Resumed:
214 Name: Bob Bleeding
215 Care resumed at 01:39
216 Minutes in visit remaining: 1
217
218 Patient Discharge:
219 Name: Bob Bleeding
220 Care ended at 01:40
221
222 Patient Admitted:
223 Name: Paula Pain
224 Care began at 01:40
225
226 Patient Discharge:
227 Name: Paula Pain
228 Care ended at 02:05
229
230 Patient Admitted:
231 Name: Frank Feelingbad
232 Care began at 02:05
233
234 Patient Discharge:
235 Name: Frank Feelingbad
236 Care ended at 02:30
237
238 Patient Admitted:
239 Name: Cathy Coughing
240 Care began at 02:30
241
242 Patient Discharge:
243 Name: Cathy Coughing
244 Care ended at 02:55
245
246 Patient Admitted:
247 Name: Irene Ill
248 Care began at 02:55
249
250 Patient Care Interrupted:
251 Name: Sid Sickly
252 Care interrupted at 03:01
253 Minutes in visit remaining: 19
254
255 High Priority Patient Recieved
256 Immediate attention administered:
257 Name: Sid Sickly
258 Care began at 03:01
259
260 Patient Discharge:

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261 Name: Sid Sickly
262 Care ended at 03:26
263
264 Patient Care Resumed:
265 Name: Irene Ill
266 Care resumed at 03:26
267 Minutes in visit remaining: 19
268
269 Patient Discharge:
270 Name: Irene Ill
271 Care ended at 03:45
272
273
274 --- END OF DAY 05:00 ----
275
276 Press any key to continue . . .
```