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1  /*
2   * Connor Petri
3   * CIS 22C
4   * 2023-10-24
5   */
6
7  #include "ExtendableArray.h"
8
9  template <class T>
10 class Deque
11 {
12 protected:
13     ExtendableArray<T> *arr;
14
15 public:
16     Deque(unsigned int size = 0)
17     {
18         this->arr = new ExtendableArray<T>(size);
19     }
20
21     DequeDeque &d)
22     {
23         this->arr = new ExtendableArray<T>(d.getSize());
24         for (int i = 0; i < d.getSize(); i++)
25         {
26             this->arr->set(d.get(i), i);
27         }
28     }
29
30     ~Deque()
31     {
32         delete this->arr;
33     }
34
35     int getSize()
36     {
37         return this->arr->getSize();
38     }
39
40     bool isEmpty()
41     {
42         return this->arr->getSize() == 0;
43     }
44
45     int pushFront(T *ptr)
46     {
47         return this->arr->prepend(ptr);
48     }
49
50     T * popFront()
51     {
52         T *temp = this->arr->get(0);
53         this->arr->remove(0);
54         return temp;
55     }
56
57     T * lookFront()
58     {
59         return this->arr->get(0);
60     }
61
62     int pushBack(T *ptr)
63     {
64         return this->arr->append(ptr);
65     }

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66
67     T * popBack()
68     {
69         T *temp = this->arr->get(this->arr->getSize() - 1);
70         this->arr->remove(this->arr->getSize() - 1);
71         return temp;
72     }
73
74     T * lookBack()
75     {
76         return this->arr->get(this->arr->getSize() - 1);
77     }
78
79 };
80
81 /* OUTPUT:
82 Read Array size 400   Read # commands 20
83 Command: Z  -1  -1
84 Empty : 1
85 Command: F  12345  KleinmanRonald
86 Pushed Front 12345  KleinmanRonald
87 Command: Z  -1  -1
88 Empty : 0
89 Command: B  87654  SmithMary
90 Pushed Back 87654  SmithMary
91 Command: B  54321  BerraYogi
92 Pushed Back 54321  BerraYogi
93 Command: S  -1  -1
94 Size: 3
95 Command: B  67890  RizzutoPhil
96 Pushed Back 67890  RizzutoPhil
97 Command: G  -1  -1
98 Pop Front 12345  KleinmanRonald
99 Command: G  -1  -1
100 Pop Front 87654  SmithMary
101 Command: Z  -1  -1
102 Empty : 0
103 Command: H  -1  -1
104 Look Front 54321  BerraYogi
105 Command: D  -1  -1
106 Look Back 67890  RizzutoPhil
107 Command: S  -1  -1
108 Size: 2
109 Command: F  67890  MantleMickey
110 Pushed Front 67890  MantleMickey
111 Command: B  89300  KoufaxSandy
112 Pushed Back 89300  KoufaxSandy
113 Command: B  89012  KoufaxSandy
114 Pushed Back 89012  KoufaxSandy
115 Command: F  99887  MarisRoger
116 Pushed Front 99887  MarisRoger
117 Command: S  -1  -1
118 Size: 6
119 Command: F  62109  FordWhitey
120 Pushed Front 62109  FordWhitey
121 Command: B  10200  SkowronMoose
122 Pushed Back 10200  SkowronMoose
123 -----
124 Start Popping from bottom 8 Elements queued
125
126 Student: ID = 10200   Name = SkowronMoose
127 Student: ID = 89012   Name = KoufaxSandy
128 Student: ID = 89300   Name = KoufaxSandy
129 Student: ID = 67890   Name = RizzutoPhil
130 Student: ID = 54321   Name = BerraYogi

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131 Student: ID = 67890 Name = MantleMickey  
132 Student: ID = 99887 Name = MarisRoger  
133 Student: ID = 62109 Name = FordWhitey  
134 \*/  
135