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1  /* SplayTest.c */
2  #include <stdio.h>
3  #include <string.h>
4  #include <malloc.h>
5  #include <stdlib.h>
6  #include "Splay.h"
7
8  static int IntCmp(const void *keyAddr, const void *dataAddr)
9  {
10     int *p1 = (int *)keyAddr;
11     int *p2 = (int *)dataAddr;
12     return (*p1 - *p2);
13 }
14
15 static void IntTraverse(void *dataAddr)
16 {
17     int *p = (int *)dataAddr;
18     printf("%d\n", *p);
19 }
20
21 static int StringCmp(const void *keyAddr, const void *dataAddr)
22 {
23     char *p1 = *(char **)keyAddr;
24     char *p2 = *(char **)dataAddr;
25     return strcmp(p1, p2);
26 }
27
28 static void StringTraverse(void *dataAddr)
29 {
30     char *p = *(char **)dataAddr;
31     printf("%s\n", p);
32 }
33
34 static void StringFree(void *dataAddr)
35 {
36     char *p = *(char **)dataAddr;
37     free(p);
38 }
39
40 int main()
41 {
42     SPLAYTREE intSplay;
43     SplayNew(&intSplay, sizeof(int), IntCmp, NULL);
44     int i = 0;
45     for (; i < 10; i++)
46     {
47         SplayInsert(&intSplay, &i);
48     }
49     if (!SplayEmpty(&intSplay))
50     {
51         printf("size of intSplay is %d\n", SplaySize(&intSplay));
52         SplayTravIn(&intSplay, IntTraverse);
53     }
54
55     int intRemve = 1;
56     if (0 == SplayRemove(&intSplay, &intRemve))
57     {
58         printf("intSplay remove key %d success\n", intRemve);
59     }
60     else
61     {
62         printf("intSplay remove key %d fail\n", intRemve);
63     }
64     if (0 == SplayRemove(&intSplay, &intRemve))
65     {
66         printf("intSplay remove key %d success\n", intRemve);
67     }
68     else
69     {
70         printf("intSplay remove key %d fail\n", intRemve);
71     }
72     if (!SplayEmpty(&intSplay))
73     {

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74     printf("size of intSplay is %d\n", SplaySize(&intSplay));
75     SplayTravInRec(&intSplay, IntTraverse);
76 }
77
78 int intSearch = 2;
79 SPLAYNODE *node = SplaySearch(&intSplay, &intSearch);
80 if (SplayFind(&intSplay, node, &intSearch))
81 {
82     printf("data %d is in intSplay\n", intSearch);
83 }
84 else
85 {
86     printf("data %d is not in intSplay\n", intSearch);
87 }
88 intSearch = 12;
89 node = SplaySearch(&intSplay, &intSearch);
90 if (SplayFind(&intSplay, node, &intSearch))
91 {
92     printf("data %d is in intSplay\n", intSearch);
93 }
94 else
95 {
96     printf("data %d is not in intSplay\n", intSearch);
97 }
98 SplayDispose(&intSplay);
99
100 printf("\n\n");
101
102 SPLAYTREE stringSplay;
103 SplayNew(&stringSplay, sizeof(char *), StringCmp, StringFree);
104
105 char *name1 = strdup("pc");
106 char *name2 = strdup("pcwl513");
107 char *name3 = strdup("pcpc");
108 char *name4 = strdup("jerry");
109 char *name5 = strdup("jerry.peng");
110 char *name6 = strdup("yanglupu");
111 char *name7 = strdup("zhanglei");
112 char *name8 = strdup("lishanke");
113 SplayInsert(&stringSplay, &name1);
114 SplayInsert(&stringSplay, &name2);
115 SplayInsert(&stringSplay, &name3);
116 SplayInsert(&stringSplay, &name4);
117 SplayInsert(&stringSplay, &name5);
118 SplayInsert(&stringSplay, &name6);
119 SplayInsert(&stringSplay, &name7);
120 SplayInsert(&stringSplay, &name8);
121 if (!SplayEmpty(&stringSplay))
122 {
123     printf("size of stringSplay is %d\n", SplaySize(&stringSplay));
124     SplayTravIn(&stringSplay, StringTraverse);
125 }
126
127 char *strRemove = "pcpc";
128 if (0 == SplayRemove(&stringSplay, &strRemove))
129 {
130     printf("stringSplay remove key %s success\n", strRemove);
131 }
132 else
133 {
134     printf("stringSplay remove key %s fail\n", strRemove);
135 }
136 if (0 == SplayRemove(&stringSplay, &strRemove))
137 {
138     printf("stringSplay remove key %s success\n", strRemove);
139 }
140 else
141 {
142     printf("stringSplay remove key %s fail\n", strRemove);
143 }
144 if (!SplayEmpty(&stringSplay))
145 {
146     printf("size of stringSplay is %d\n", SplaySize(&stringSplay));

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147         SplayTravInRec(&stringSplay, StringTraverse);
148     }
149
150     char *strSearch = "yanglupu";
151     node = SplaySearch(&stringSplay, &strSearch);
152     if (SplayFind(&stringSplay, node, &strSearch))
153     {
154         printf("data %s is in intSplay\n", strSearch);
155     }
156     else
157     {
158         printf("data %s is not in intSplay\n", strSearch);
159     }
160     strSearch = "123";
161     node = SplaySearch(&stringSplay, &strSearch);
162     if (SplayFind(&stringSplay, node, &strSearch))
163     {
164         printf("data %s is in intSplay\n", strSearch);
165     }
166     else
167     {
168         printf("data %s is not in intSplay\n", strSearch);
169     }
170     SplayDispose(&stringSplay);
171     return 0;
172 }
```