

```

1  #include <iostream>
2  #include <deque>
3  #include <string>
4  #include "Ex02.h"
5
6
7
8  //////////////////////////////////////
9  // Caller functions:
10  //////////////////////////////////////
11
12 void experimentParentNodes(Node * n) {
13     //std::set<std::string> parents;
14     std::deque<std::string> parents;
15     computeParentNodes(n , parents);
16     std::cout << "The nodes with children starting from "
17         << n->name << " are:\n";
18     //printSet(parents);
19     printTree(parents);
20 }
21
22
23 void experimentSubtree(Node * n) {
24     //std::set<std::string> members;
25     std::deque<std::string> members;
26     computeMembersOfSubTree(n , members);
27     std::cout << "The sub-tree with root in " << n->name
28         << " contains:\n";
29     //printSet(members);
30     printTree(members);
31 }
32
33
34  //////////////////////////////////////
35
36
37 int main() {
38     /* Bob's family tree from text */
39     Node * Alice = new Node;
40     Alice->name = "Alice";
41
42     Node * Bob = new Node;
43     Bob->name = "Bob";
44
45     Node * Carl = new Node;
46     Carl->name = "Carl";
47
48     Node * Daisy = new Node;
49     Daisy->name = "Daisy";
50
51     Node * Emma = new Node;
52     Emma->name = "Emma";
53
54     Node * Bob1 = new Node;
55     Bob1->name = "Bob";
56
57     Node * Joe = new Node;
58     Joe->name = "Joe";

```

```
59
60     Alice->left   = Bob;
61     Alice->right  = Carl;
62
63     Bob->left     = Daisy;
64     Bob->right    = nullptr;
65
66     Carl->right   = Emma;
67     Carl->left    = Bob1;
68
69     Bob1->left    = Joe;
70     Bob1->right   = nullptr;
71
72     Joe->left     = nullptr;
73     Joe->right    = nullptr;
74
75     Daisy->left   = nullptr;
76     Daisy->right  = nullptr;
77
78     Emma->left    = nullptr;
79     Emma->right   = nullptr;
80
81     std::cout << "Experiments about parent nodes\n";
82     experimentParentNodes(Alice);
83     experimentParentNodes(Bob);
84     experimentParentNodes(Carl);
85     experimentParentNodes(Bob1);
86     experimentParentNodes(Joe);
87     experimentParentNodes(Daisy);
88     experimentParentNodes(Emma);
89
90     std::cout << "Experiment about sub-tree\n";
91     experimentSubtree(Alice);
92     experimentSubtree(Bob);
93     experimentSubtree(Carl);
94     experimentSubtree(Bob1);
95     experimentSubtree(Joe);
96     experimentSubtree(Daisy);
97     experimentSubtree(Emma);
98
99     return 0;
100 }
```