

```

1 #include "IntList.h"
2 #include <iostream>
3
4 IntList::IntList() {
5     this->count = 0;
6     this->first = 0;
7 };
8
9 IntList::IntList(const IntList &other) {
10     this->count = 0;
11     this->first = 0;
12
13     IntListElem *el;
14     el = other.first;
15     while (el) {
16         this->insert(el->value, -1);
17         el = el->next;
18     }
19 };
20
21 IntList &IntList::operator=(const IntList &other) {
22     if (this != &other) {
23         while (this->getCount()) {
24             this->remove(0);
25         }
26
27         IntListElem *el;
28         el = other.first;
29         while (el) {
30             this->insert(el->value, -1);
31             el = el->next;
32         }
33     }
34     return *this;
35 };
36
37 IntList::~IntList() {
38     if (this->getCount() > 0 && this->first != 0) {
39         IntListElem *cur = this->first;
40         IntListElem *next = cur->next;
41         while (next) {
42             cur->value = 0;
43             delete cur;
44             cur = next;
45             next = cur->next;
46         }
47     }
48 };
49
50 int IntList::getCount() {
51     return this->count;
52 };
53
54 bool IntList::isEmpty() {
55     return this->getCount() > 0;
56 };
57
58
59 void IntList::print() {
60     if (this->getCount()) {
61         IntListElem *el = this->first;
62         std::cout << "[" << el->value;
63         el = el->next;
64         while (el) {
65             std::cout << "," << el->value;
66             el = el->next;
67         }
68         std::cout << "]" << std::endl;
69     } else {
70         std::cout << "empty list" << std::endl;
71     }
72 };
73
74 void IntList::insert(int element, int position) {
75     if (position > 0 && position < this->getCount()) {
76         IntListElem *elmToMod = this->first;
77         for (int i = 0; i < position; i++) {
78             elmToMod = elmToMod->next;
79         }
80         elmToMod->value = element;
81     } else if (position == this->getCount()) {
82         IntListElem *elmToInsert = new IntListElem;
83         elmToInsert->value = element;
84         elmToInsert->next = 0;
85         IntListElem *elmAfter = this->first;
86         if (position == 0) {
87             this->first = elmToInsert;
88         } else {
89             while (elmAfter->next) {
90                 elmAfter = elmAfter->next;
91             }
92             elmAfter->next = elmToInsert;

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93     }
94     this->count++;
95 } else if (position == -1) {
96     this->insert(element, this->getCount());
97 }
98 };
99
100 void IntList::remove(int position) {
101     IntListElem *elToDel, *elPrev;
102     elToDel = findElement(position);
103     if (position == 0) {
104         if (elToDel) {
105             this->first = elToDel->next;
106             this->count--;
107         }
108     } else if (position > 0 && position < this->getCount()) {
109         findElement(position - 1)->next = elToDel->next;
110         this->count--;
111     }
112     delete elToDel;
113 }
114
115 };
116
117 int IntList::getElement(int position) {
118     IntListElem *el = findElement(position);
119     return el ? el->value : 0;
120 };
121
122 IntList::IntListElem *IntList::findElement(int position) {
123     IntListElem *el = this->first;
124     for (int i = 0; i < position && el; i++) {
125         el = el->next;
126     }
127     return el;
128 };
129
```