C++ Programming
Operator Overloading
Homework 1

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Teaching, Training and Coaching since more than a decade!

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Homework 1: Adding vectors

```
31  int main() {
32      vector<int> a = {1, 2, 3, 4};
33      vector<int> b = {10, 20};
34
35      vector<int> c = a + b;
36
37      for (int i = 0; i < (int)c.size(); ++i)
38          cout<<c[i]<<" ";      // 11 22 3 4
```

- Extend the functionality of vector<int> to allows adding 2 vectors.
- The smaller vector in length is added to the large vector
  - Large[i] += small[i]

Homework 2: Multiplying string

```
14⊖ int main() {
15      string a = "bad";
16      string b = "I am " + a * 3 + ", right?";
17
18      cout<<b;    // I am badbadbad, right?
19
20
```

- Extend the functionality of string to allow multiplying with a number
  - A.g. "hi" * 2 ⇒ "hihi"

Homework 3: Ordering pairs

```cpp
39 int main() {
40     vector<MyPair> vec;
41     vec.push_back(MyPair(10, 20));
42     vec.push_back(MyPair(10, 7));
43     vec.push_back(MyPair(1, 200));
44
45     sort(vec.begin(), vec.end());
46
47     for (auto &pair : vec)
48         pair.print();
49     // (1,200)  (10,7)  (10,20)
50 }
```

- To be able to sort a vector of objects as in right code, the operator < must be supported on class type
- Add operator < as member function in the MyPair class to allow such code

Homework 4: Ordering named pairs

```
61⊝ int main() {
62      vector<NamedPair> vec;
63      vec.push_back(NamedPair("A", 10, 20));
64      vec.push_back(NamedPair("B", 10, 7));
65      vec.push_back(NamedPair("B", 1, 200));
66
67      sort(vec.begin(), vec.end());
68
69      for (auto &pair : vec)
70          pair.print();
71      // ((A: 10,20) (B: 1,200) (B: 10,7)
72
```

- Define class NamedPair that inherits from the previous class
  - It has now extra param for string name
- Define operator <
  - It should utilize parent operator <
  - Don't duplicate effort
- Override function print to print new variable

"Acquire knowledge and impart it to the people."

"Seek knowledge from the Cradle to the Grave."