

Homework #16_2

以 c++ 程式編寫，使其具以下功能

1. 利用運算子多載方式，執行向量乘法與相加，乘法與加法符號 $*$, $+$ 之定義如下

2. 例如： $A = [a_{11} \ a_{12}]$, $B = [b_{11} \ b_{12}]$,

$$A * 2 = [a_{11} * 2 \ a_{12} * 2]$$

$$B * 3 = [b_{11} * 3 \ b_{12} * 3]$$

$$A * 2 + B * 3 = [a_{11} * 2 + b_{11} * 3 \ a_{12} * 2 + b_{12} * 3]$$

3. 運算子多載方式請參考 [子目錄 t15_7\(Point2D\)](#)

參考案：共計三個程式及一個專案

Vector.h, Vector.cpp, hw16_2_3.cpp, Vector.dev



Vector.h

Vector.cpp

Vector.h

hw16_2_3.cpp

```
1 class Vector {
2     public:
3         Vector();
4         Vector(double, double);
5         double a() {return _a;}
6         double b() {return _b;}
7         Vector operator+(const Vector&); // 重載+運算子
8         Vector operator*(const double);
9
10    protected:
11        double _a, _b;
12 };
```

Vector.cpp

```
Vector.cpp  Vector.h  hw16_2_3.cpp
1  #include "Vector.h"
2
3  Vector::Vector() {
4      _a = 0;
5      _b = 0;
6  }
7
8  Vector::Vector(double a, double b) {
9      _a = a;
10     _b = b;
11 }
12
13 Vector Vector::operator+(const Vector &p) {
14     Vector tmp(_a + p._a, _b + p._b);
15     return tmp;
16 }
17
18 Vector Vector::operator*(const double A) {
19     Vector tmp(_a*A, _b*A);
20     return tmp;
21 }
22
```

hw16_2_3.cpp

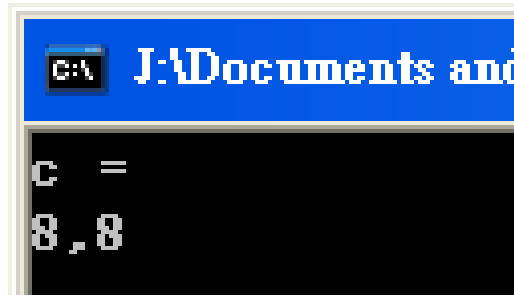
Vector.cpp

Vector.h

hw16_2_3.cpp

```
1  #include <iostream>
2  #include "Vector.h"
3  using namespace std;
4
5  int main() {
6
7      Vector a(1,1), b(2,2), c;
8
9      c = a*2.0 + b*3.0;
10     cout << "c =" << endl;
11     cout << c.a() << "," << c.b() << endl;
12     cout << endl;
13
14     return 0;
15 }
16
```

執行結果



```
cmd J:\Documents and Settings\user\My Documents>
C =
8,8
```