

lab03

```
$ gcc lab03.c
```

```
Sol 1: 7 + 1 2 = 2 3
```

```
Sol 2: 4 + 2 2 = 2 3
```

```
Sol 3: 26 + 1 2 = 3 3
```

```
.....
```

```
Sol 1469: 3404 + 4811 2 = 285 3
```

```
Sol 1470: 859 + 4862 2 = 287 3
```

```
Sol 1471: 875 + 4964 2 = 291 3
```

```
Number of solutions found: 1471
```

```
CPU time: 0.00879602 sec
```

score: 93.0

- o. [Output] Program output is correct, good.
- o. [Format] Program format can be improved.
- o. [Efficiency] can still be improved.

lab03.c

```
1 // EE231002 Lab03. Solving a Diophantine Equation
2 // 110060007, 黃俊穎
3 // 2021/10/25
4
5 #include <stdio.h>                // I/O library
6
7 int main(void)                    // start the main function
8 {
9     int a, b, c;                  // variables of the equation
10    int cMax;                      // the upper bound of the variable c
11    int nas = 0;                   // the number of the answer
12
13                                // start finding the c's valid limit
14    for(c = 1; c * c * c - 5000 * 5000 - 5000 < 0; c++) {
15        cMax = c;                  // find the maximum of c value
16    }
17
18                                // find the solutions of the equation
19    for(c = 2; c <= cMax; c++) {
20        for (c = 2; c <= cMax; c++) {
21            // c starts from 2 because a + b * b is always greater than 1
22            for(b = 1; b <= 5000; b++) {
23                for (b = 1; b <= 5000; b++) {
24                    a = c * c * c - b * b; // calculate a for next determination
25                    if(a > 0 && a <= 5000) { // detect if a is in the range
26                        if (a > 0 && a <= 5000) { // detect if a is in the range
27                            printf("Sol %d: %d + %d 2 = %d 3\n", ++nas, a, b, c);
28                            // show the results of all valid sets of solution
29                            // show the results of all valid sets of solution
30                        }
31                    }
32                }
33            }
34        }
35    }
36
37    printf("Number of solutions found: %d\n", nas);
38    // show the total number of solutions
39
40    return 0;                       // finish the main function
41 }
```