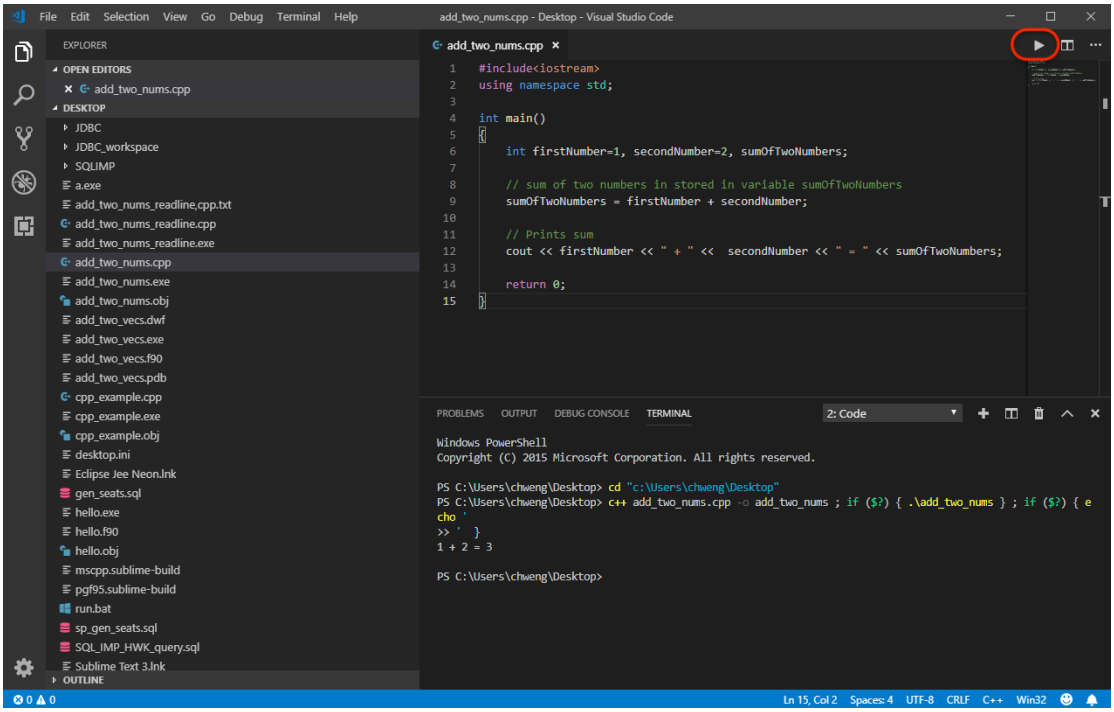
Homework 2 (Deadline 13:00, March 18, submit your files to TronClass)

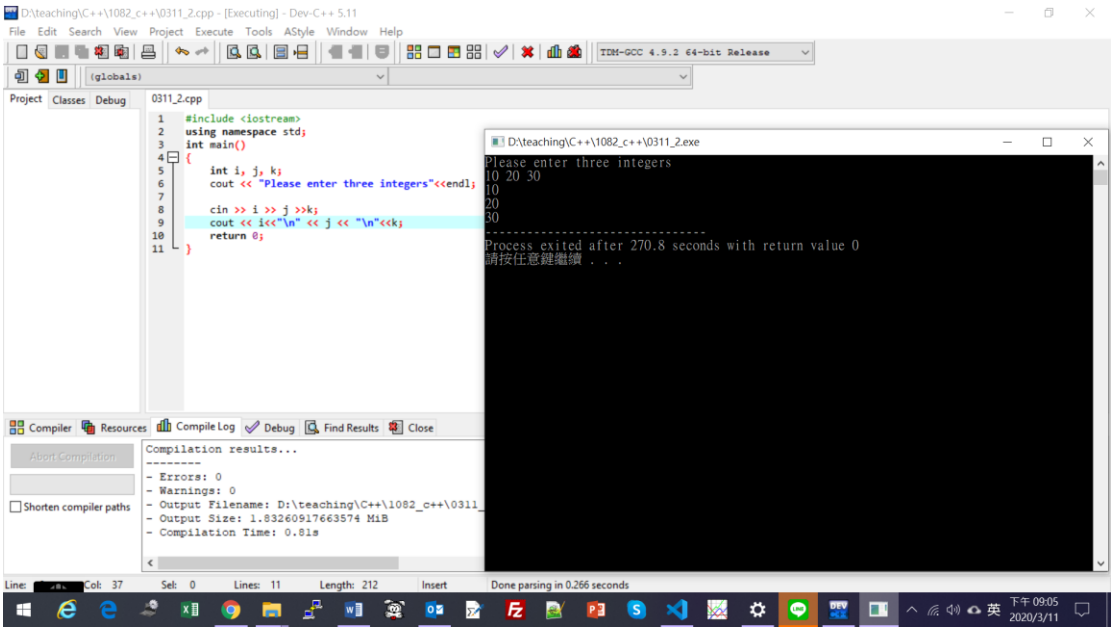
Read the following information carefully!! Homework problems are given on Page 2 and 3.

Please submit the source code only. The file name should include your student ID number. For example, if your ID number is 406290123, then the file names for problems 1 and 2 should be 406290123_1.cpp and 406290123_2.cpp, respectively.

Additional information: The setting of Visual Studio Code as described in the installation guide should be correct. You can use the key on the upper right corner (indicated in the red circle in the figure below) to compile and run the code. If the code has any syntax error, error message would appear in the command window below. **If you still have problem in installing Visual Studio Code, you should ask for help as quickly as possible.**



An alternative is to install Dev C++ on your computer. Dev C++ is free and its installation is almost automatic. After you edit the code, save it as a C++ source code (myprogram.cpp) and click Execute → Compile & Run, then an execution window would appear. (See the image attached below). We had problems today using Dev C++ in the class. I suspect there are some unknown setting problems. I will get this fixed before next lecture.



The followings are three homework problems.

1. Integer division
   Integer division in C++ drops any fractions and returns an integer value. For example, the result of 7 / 4 is 1 because the fraction is dropped. Note that integer division does not round.

   Write a program to print the outcome of these integer division:

   1101/10000
   1101/1000
   1101/100
   101/100

2. Factorial

   Write a program to compute $N!$ for $N = 10 - 15$. **The result should be calculated by your program. You should not just print out a constant.**

   The output of your program should looks like the following.

   10! = 3628800
   11! = 39916800
   ……..
   15! =

   What's the maximum N such that $N!$ does not exceed the range of integer that can be stored? Answer this question by writing a comment in your program.

3. Extra point problem:

   Converting a binary number to its corresponding decimal number

   - Task Description

     Write a program to read a binary integer number x with no more than **4** digits, then print the corresponding decimal integer number y. You don't have to check if the input is a valid binary number or if the input exceeds **4** digits. Use integer division to find each digit in the input number.

   - Input Format

     There is one line in the input. The line has a number x.

   - Output Format

     There is one line in the output as the following.

     For example, if x=1001, y=9, then the output should be

     The decimal number corresponding to 1001 is 9.