Download the W4\_Student.cpp and begin your work. You are only required to submit the modified W4\_Student.cpp back to Moodle. DO NOT change the main() method.

1. Create a function called W4\_Q1, adopting *pass-by-reference* fashion, which swaps two characters and returns void. Ensure that your function swaps the original variables and does not create copies. Call this function from the main function to make sure it works.
2. Create a function called W4\_Q2 takes 2 integer parameters and returns the sum of the 2 integers. The function also adds 1 to the first integer parameter and subtracts 1 from the second integer parameter. The summation and subtraction effect should last even outside the function.
3. Create two functions called int W4\_Q3\_Cypher(…) and int W4\_Q3\_Decypher(…) performs the following tasks:

W4\_Q3\_Cypher(…) takes a string reference and shifts each character in the string by 20 backward. For example, ‘h’ (104) becomes ‘T’ (84) and ‘9’ (57) becomes ‘%’ (37) and the function returns the number of characters processed.

W4\_Q3\_Decypher(…) takes a string reference and shifts each character in the string by 20 forward. For example, ‘F’ (70) becomes ‘F’ (90) and ‘9’ (37) becomes ‘%’ (57) and the function returns the number of characters processed.

Note:

* 1. Beware the range of values (decimal) in ASCII is from 0 to 127. You have to take care scenarios of characters ranged from 0 to 19. For example, the horizontal tab character (9) should be converted to ‘t’ (116).
  2. You may need a <string> library for additional functions.

1. The following function is problematic and produces unexpected result:

int& W4\_Q4(int a){

int temp = a + 3 \* 8;

return temp;

}

Rewrite the function so that it can produce accurate result. Note that you may only rewrite the function but not the way of calling in the main() method.

Note: Hardcoding will receive in zero marks.

Submission:

Submit W4\_Student.cpp to Moodle dropbox by the deadline. Provide appropriate comments and indentation to maintain high readability or marks will be deducted.

Sample Result: (Note that your work may also be tested on other test sets)

==============Start of W4\_Q1====================

Before swapping: x = 5 and y = 10

After swapping: x = 10 and y = 5

==============Start of W4\_Q1====================

==============Start of W4\_Q2====================

Total of p and q 8

Values of p and q after summing: p = 2 and q = 6

==============Start of W4\_Q2====================

==============Start of W4\_Q3====================

Encrpyted message: 4QXX[t4[cKM^QKe[at:UOQK`[KYQQ`Ke[aKMXX (# of character changed: 38)

Decrpyted message: Hello How\_are\_you Nice\_to\_meet\_you\_all (# of character changed: 38)

==============End of W4\_Q3====================

==============Start of W4\_Q4====================

Value produced by W4\_Q4(...): 29

==============Start of W4\_Q4====================