Name: _____
Score: _____ / _____

Homework - parameter passing

Part 1

Which of the following are true about **passing by value** as opposed to passing by reference? [Select all that apply.]

- [ ] A. the parameter that gets passed into the function gets copied from memory
- [ ] B. any manipulations that the function makes to that variable WILL result in the variable being changed globally in memory
- [ ] C. any manipulations that the function makes to that variable will NOT result in the variable being changed globally in memory
- [ ] D. typically, more memory is used
- [ ] E. the parameter that gets passed into the function is a memory address that refers to the value we want to use
- [ ] F. typically, less memory is used

Answer Point Value: 12.0 points
Answer Key: A,C,D

Which of the following are true about passing by reference as opposed to passing by value? [Select all that apply.]

- [ ] A.
the parameter that gets passed into the function is a memory address that refers to the value we want to use

- [ ] B.
typically, more memory is used

- [ ] C.
any manipulations that the function makes to that variable WILL result in the variable being changed globally in memory

- [ ] D.
any manipulations that the function makes to that variable will NOT result in the variable being changed globally in memory

- [ ] E.
the parameter that gets passed into the function gets copied from memory

- [ ] F.
typically, less memory is used

Answer Point Value: 12.0 points
Answer Key: A,C,F

Take a look at the code below.

```
#include <iostream>
 #include <string.h>
 #include <time.h>
 using namespace std;

string scramble1(string word) {     // <-- this line is important
    int word_length = word.length();
    for (int i = word_length; i >0; i--) {
        int position = rand() % word_length;
        char temporary = word[i-1];
        word[i-1] = word[position];
        word[position] = temporary;
    }
    return word;     // returns the scrambled word
 }

string scramble2(string &word) {     // <-- this line is important
    int word_length = word.length();
    for (int i = word_length; i >0; i--) {
        int position = rand() % word_length;
        char temporary = word[i-1];
        word[i-1] = word[position];
        word[position] = temporary;
    }
    return word;     // returns the scrambled word
 }

int main() {
    string to_be_scrambled1 = "Hello, World";
    string *to_be_scrambled2 = &to_be_scrambled1;
    string output1 = scramble1(to_be_scrambled1);
    cout <<output1 <<endl;     // prints output1
    cout <<to_be_scrambled1 <<endl;     // prints to_be_scrambled1
    string output2 = scramble2(*to_be_scrambled2);
    cout <<output2 <<endl;     // prints output2
    cout <<to_be_scrambled1 <<endl;     // prints to_be_scrambled1
    cout <<to_be_scrambled2 <<endl;     // prints to_be_scrambled2
    cout <<*to_be_scrambled2 <<endl;     // prints *to_be_scrambled2
    return 0;
 }
```

Please note that how this code works is not important. You only need to know that scramble1 and scramble2 are functions that take in a string and return a scrambled version of the string.

[Select "true" to indicate that you understand.]

- True
- False

Answer Point Value: 41.0 points
Answer Key: True

What is the difference between the two functions **scramble1** and **scramble2**?

A.
- scramble1 uses a parameter that's passed by reference, while scramble2 uses a parameter that's passed by value

B.
- scramble1 and scramble2 both use a parameter that's passed by reference

C.
- scramble1 and scramble2 both use a parameter that's passed by value

D.
- scramble1 uses a parameter that's passed by value, while scramble2 uses a parameter that's passed by reference

Answer Point Value: 16.0 points
Answer Key: D

Accepted characters: numbers, decimal point markers (period or comma), sign indicators (-), spaces (e.g., as thousands separator, 5 000), "E" or "e" (used in scientific notation). **NOTE:** For scientific notation, a period MUST be used as the decimal point marker.

How many things are printed in the code? (*Hint: Look at the **cout** lines in the main function.)* ____

Answer Point Value: 2.0 points
Answer Key: 6

output1 = _____

A.
a scrambled version of the string Hello, World!

B.
the memory address where Hello, World! is stored/located

C.
the string Hello, World!

Answer Point Value: 12.0 points
Answer Key: A

to_be_scrambled1 = _____

A.
a scrambled version of the string Hello, World!

B.
the memory address where Hello, World! is stored/located

C.
the string Hello, World!

Answer Point Value: 1.0 points
Answer Key: C

output2 = _____

A.
the memory address where Hello, World! is stored/located

B.
a scrambled version of the string Hello, World!

C.
the string Hello, World!

Answer Point Value: 1.0 points
Answer Key: B

to_be_scrambled1 = _____

A.
a scrambled version of the string Hello, World!

B.
the memory address where Hello, World! is stored/located

C.
the string Hello, World!

Answer Point Value: 1.0 points
Answer Key: A

to_be_scrambled2 = _____

A.
a scrambled version of the string Hello, World!

B.
the memory address where Hello, World! is stored/located

C.
the string Hello, World!

Answer Point Value: 1.0 points
Answer Key: B

*to_be_scrambled2 = _____

A.
a scrambled version of the string Hello, World!

B.
the memory address where Hello, World! is stored/located

C.
the string Hello, World!

Answer Point Value: 1.0 points
Answer Key: A