PIC-10A: Homework 5

Due 11/10/21 11:59pm via CCLE

Problem 1

Write a function

```
long long Fibonacci(int num)
```

that computes the Fibonacci number. The Fibonacci numbers are defined by the sequence:

$$f_1 = 1$$
$$f_2 = 1$$
$$f_n = f_{n-1} + f_{n-2}$$

Reformulate that as:

```
fold1 = 1;
fold2 = 1;
fnew = fold1 + fold2;
```

After that, discard `fold2`, which is no longer needed, and set `fold2` to `fold1` and `fold1` to `fnew`. Repeat `fnew` an appropriate number of times.

You can assume that the user always enters a small enough integer to avoid overflow, but not necessarily a positive one. Hence, your function needs to check the parameter `num`. If `num>=1`, compute the Fibonacci number and return the value; otherwise return 0.

Download the attached file *hw5_1.cpp* and implement the function. Then submit your file as *hw5_1.cpp*

Problem 2:

Write a function:

```
void sort5(double &x1, double &x2, double &x3, double &x4, double &x5)
```

That swaps its five inputs to arrange them in increasing order. Hint: you will need 10 if statements for comparison to determine the order.

Download the file *hw5_2.cpp*, write your function in this file. Save and submit your file as *hw5_2.cpp*

Problem 2:

Write a function:

```
bool same_set( int a[], int a_size, int b[], int b_size )
```

That checks whether two arrays have the same elements in some order, ignoring duplicates. For example, the two arrays

1 4 9 16 9 7 4 9 11

And

11 11 7 9 16 4 1

Would be considered identical. You will probably need one or more helper functions

Download the file *hw5_3.cpp*, write your function in this file. Save and submit your file as *hw5_3.cpp*