Practical Exercise 1

Questions:

1. Experiment with different (also large) values for the parameter n. Why does the program fail to run correctly until its end beginning with a certain value of n? What is this value on your computer?

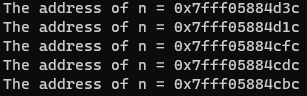
* The program starts to show negative integers when the number becomes to high. This is because an int can only store 4 bytes of data (numbers from -2,147,483,648 to 2,147,483,647). The rusults becomes negative when the result becomes higher then 2,147,483,647 . 65536 was the highest integer we used before the results became negative. 2147450880 was the highest positive number, and -2147450880 was the first negative number.

1. Which distance (in bytes) do the addresses of two variables have that are declared one after the other in main()? Explain, why the distance is the one you see.

* The address of c = 0x55d9f2509010
* The address of a = 0x7fff2d65c364
* The address of sum = 0x55d9f2509014

We see that c and sum is in the same segment because its global variables. When the recursive call is ran its local variables, but it gets added to a local variable which gives it that address.

For 1 to 5 this is the addresses:



We can see that it skips every other, ands because it want to make room for error

1. Why is a global int variable located at a completely different address?

* Because they are stored in different segments:
  + Global variables are store in data
  + Local variables are stored in a stack

1. Why does the address of a local variable in the recursive function decrease the higher the level of recursion is?

* This happens because the local variables are stored in a stack, and the stack grows towards lover level addresses.