TDT4205 Practical Exercise 1

Group 13

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1 Exercise

The goal of this assignment was to write a short C program to compute the sum of the integers from 1 to a given number n using a recursive function.

The choice was made to return -1 for input numbers less or equal to 0.

To use the program, simply compile using gcc (minimalistic command line: $gcc \quad rec\_sum.c \quad -o \quad rec\_sum$) and then run the program with $./rec\_sum \quad n$ where n is your input number.

1.1 Questions

1. We get a segfault (on one of our machines at around 260000), because everytime the function recursively calls itself, it allocates some stack space, and when it runs out of stack space, it causes a Segmentation fault (it tries to allocate stack space in an area that is out of bounds).

2. The distance is 4 bytes for an int. This is because the size of an int when compiling on our systems is 4 bytes, and the variables are stored consecutively in memory.

3. Local variables are stored on the stack, while global variables are stored in the bss or data segment.

4. Local variables are stored on the stack, and the stack is grown "downward" from the high memory addresses (the heap for example is grown upward from the low addresses).