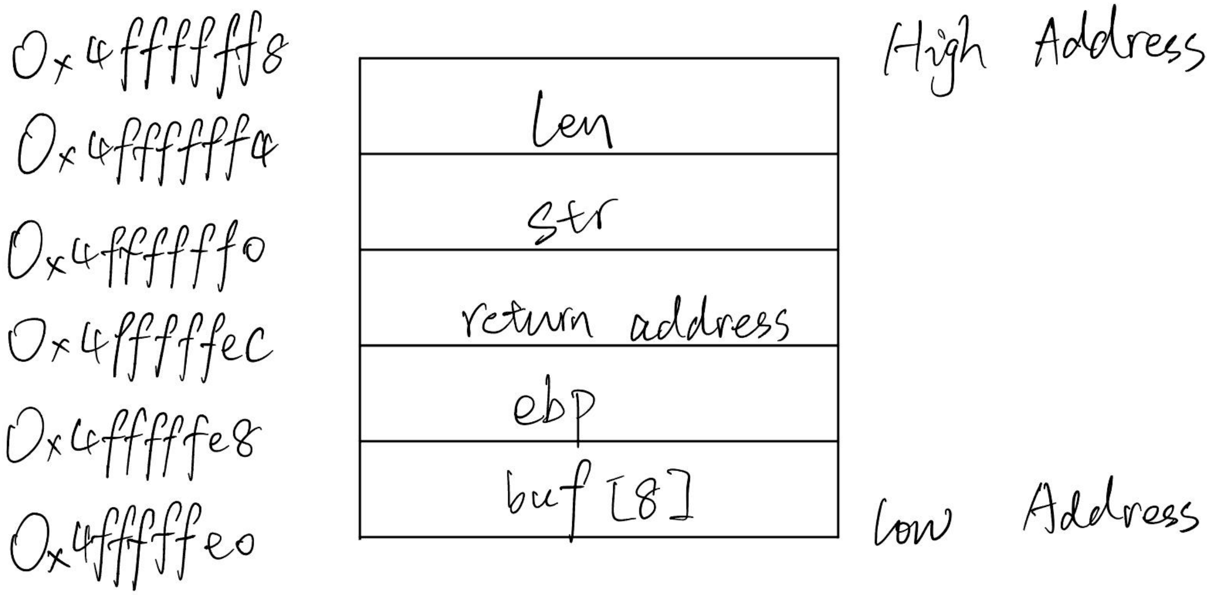
Task 1: Understanding Buffer Overflow
The stack layout of foo should be like:



If we start at address 0xffff0, the stack grows from Low Address to High Address shall be like above. If we want to exploit it, we can put 12 random characters plus the address that the attacker wants to return behind it to the second argument which is argv[1]. For example, if we want to exploit the foo and return to address 0x6fffffa4, we can write the argv[1] as AAAAAAAAAAAA0x6fffffa4 which we have 12 A plus 0x6fffffa4. In this way, because return address of foo is 12 bytes away from the address of buf[0], we can add 12 A to let the buffer overflow to return address, and the 0x6fffffa4 shall buffer overflow return address of foo to the address of where the attacker wants.