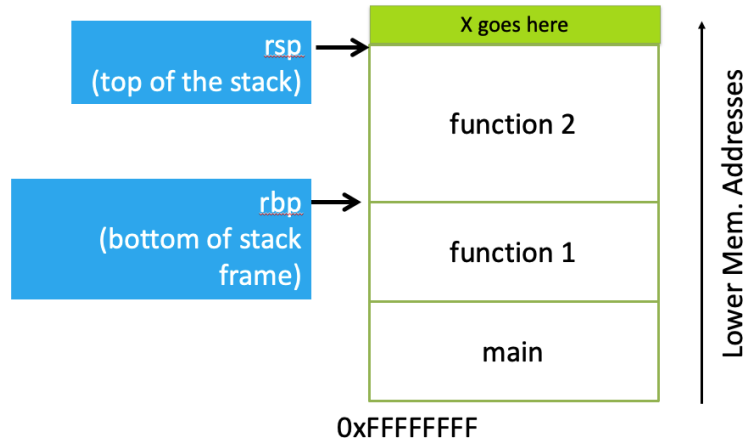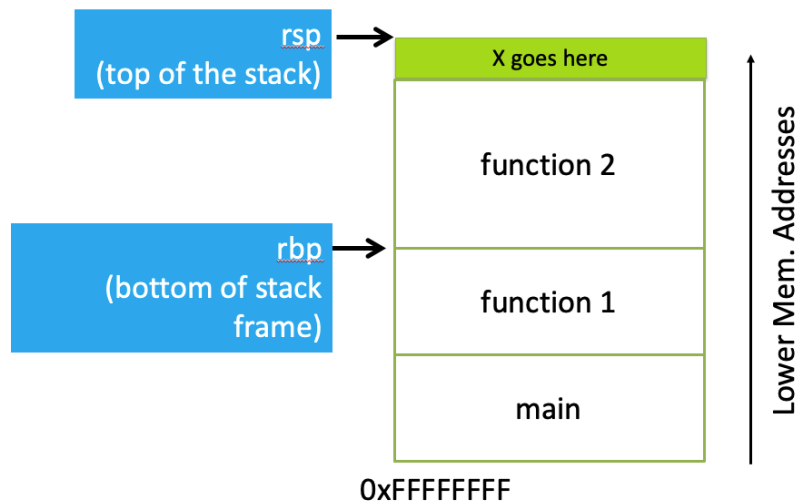# CS31 Worksheet: Week 6: Functions and the Stack

How would we implement pushing a new variable (x) to the top of the stack in x86_64?
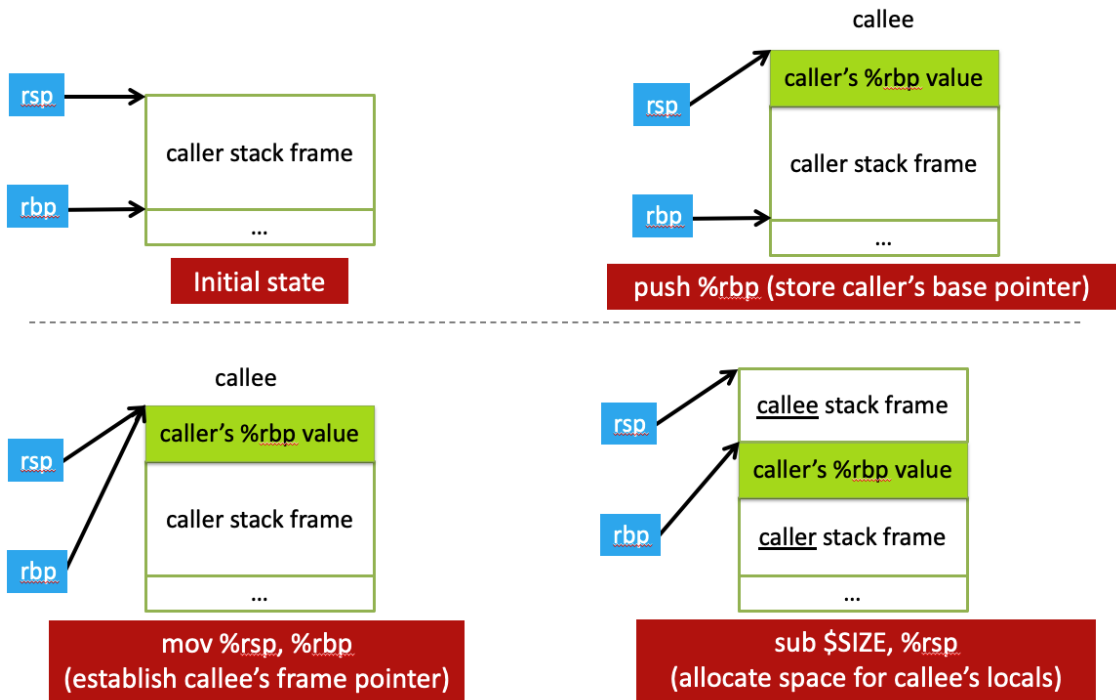
A. Increment rsp
   Store x at (rsp)

B. Store x at (rsp)
   Increment rsp

C. Decrement rsp
   Store x at (rsp)

D. Store x at (rsp)
   Decrement rsp

E. Copy rsp to rbp
   Store x at rbp

rsp
(top of the stack)

rbp
(bottom of stack frame)

X goes here
function 2
function 1
main

0xFFFFFFFF

Lower Mem. Addresses

How would we implement popping a new variable (x) off the top of the stack in x86_64?

rsp
(top of the stack)

rbp
(bottom of stack frame)

X goes here
function 2
function 1
main

0xFFFFFFFF

Lower Mem. Addresses

x86 Calling Conventions: Function Call

Given the figure above, can you describe in figures, and words the sequence of instructions to return from a function call?