

Name: Shorena K. Anzhilov  
Email: anzhilov.s@northeastern.edu  
Spring, 2025

1. **Instruction Address:** 0x300. **Instruction:** **PUSH 0x800**
  - a. The stack pointer (SP) moves from 0x118 to 0x114 (decreasing by 4 bytes).
  - b. The value 0x800 is stored at memory address 0x114.
  - c. The program counter (PC) changes to 0x304 for the next instruction.
2. **Instruction Address:** 0x304. **Instruction:** **PUSH \*(0x804)**
  - a. The stack pointer (SP) moves from 0x114 to 0x110.
  - b. The value at address 0x804 (which is 200) is pushed onto the stack at address 0x110.
  - c. The program counter (PC) updates to 0x308.
3. **Instruction Address:** 0x308. **Instruction:** **CALL 0x400**
  - a. The instruction pushes the return address 0x30C onto the stack, moving SP to 0x10C.
  - b. The program counter (PC) jumps to 0x400.
4. **Instruction Address:** 0x400. **Instruction:** **MOV \*(SP+8) → EAX**
  - a. The value at 0x114 (which is 0x800) is moved into the EAX register.
  - b. The program counter (PC) moves to 0x404.
5. **Instruction Address:** 0x404. **Instruction:** **MOV SP → \*EAX**
  - a. The value of SP (0x10C) is stored at address 0x800, saving the old stack pointer.
  - b. The program counter (PC) moves to 0x408.
6. **Instruction Address:** 0x408. **Instruction:** **MOV \*(SP+4) → EAX**
  - a. The value at 0x110 (which is 200) is moved into EAX.
  - b. The program counter (PC) moves to 0x40C.
7. **Instruction Address:** 0x40C. **Instruction:** **MOV EAX → SP**
  - a. The stack pointer (SP) is updated to 0x200 (switching to the new stack).
  - b. The program counter (PC) moves to 0x410.
8. **Instruction Address:** 0x410. **Instruction:** **RET**
  - a. The return address 0x30C is popped from the stack and loaded into the program counter (PC).
  - b. The stack pointer (SP) updates to 0x204.
  - c. The program counter (PC) goes back to 0x30C.
9. **Instruction Address:** 0x30C. **Instruction:** **ADD 8 → SP**
  - a. The stack pointer (SP) increases by 8, changing from 0x204 to 0x20C.
  - b. The program counter (PC) moves to 0x500.
10. **Instruction Address:** 0x500. **Instruction:** **POP EAX**
  - a. The value 50 is popped from the stack and stored in EAX.
  - b. The stack pointer (SP) updates from 0x20C to 0x208.
  - c. The program counter (PC) moves to 0x504.
11. **Instruction Address:** 0x504. **Instruction:** **POP EBX**
  - a. The value 70 is popped from the stack and stored in EBX.
  - b. The stack pointer (SP) updates from 0x208 to 0x20C.
  - c. Execution reaches the final point marked as **DONE**.