Quiz 2, CS 202(-001), Spring 2026

Please write your name below and answer all of the questions. The quiz has two sides.

Name: Net ID (@nyu.edu):

1. Consider the following code. What is the value of `b` right before the program exits?

```
void op1(int* x, int* y) {
    *y = *x + *y;
}

void op2(int x, int y) {
    y = x + y;
}

int main() {
    int a = 3, b = 5;
    op1(&a, &b);
    op2(a, b);
    return 0;
}
```

2. Which of the following are motivations for processes that were reviewed in class?

   Circle ALL that apply:

   a To prevent recursive functions from overflowing the stack.

   b To ensure that function calls always return in the correct order.

   c To reduce the number of CPU registers needed by applications.

   d To let the system make progress on more than one task at a time.

   e To make stack frames easier to unwind.

3. After a successful `fork()`, where does execution begin in the child process?

   Circle the BEST answer:

   a At the beginning of the program.

   b At the next `exec()` call.

   c At the instruction immediately following the `fork()` call.

   d The question is undefined, since the child is a different program.

4. Assume that `%rsp` (stack pointer) holds value 0xffc070, `%rbp` (frame pointer) holds value 0xffd010, `%rip` (instruction pointer) holds value 0x2008, `%rax` holds value 6000, `%rcx` holds value 9, memory address 0xffd010 holds value 0xffff00, and then the following lines are executed:

```
movq %rbp, %rsp
popq %rbp
```

What is the effect of the lines above? If the instructions interact with memory, state what values are loaded or stored at what address. If the instructions do not interact with memory, state that.