Recitation Exercises #2
Solutions

CSCI 2400 Systems
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1

1.1

Each call moves the stack pointer 0x18 (24 bytes) as well as pushing the stack base pointer (4 bytes) and the return address when calling factorial (4 bytes). This is a grand total of 32 bytes for a generic iteration of the function.

1.2

The recursive function gets called a total of 8 times (7 down to 0).
However, the last recursive call does not call the factorial again, hence no return address is pushed onto the stack in the last frame. Instead, the procedure exits. As a result, the last frame only moves the stack pointer 24+4 = 28 bytes. So the distance traveled by the stack pointer is actually 7*32 + 28 = 252 bytes.

2

```
quiz1(char a, int x)
{
signed int z[3];
signed short y = 43;
unsigned char q = 0;
do {
y = y - z[q];
z[q] = a + q;
q++;
} while ( q < x );
return a + y;
}
```