CS 24: Introduction to Computing Systems

Lecture 4 Exercises

Name:

(a) 0000000000000000 <mystery>:

```
0: 31 c9                xor    %ecx,%ecx
2: 85 ff                test   %edi,%edi
4: 0f 95 c1             setne  %cl
7: b8 ff ff ff ff       mov    $0xffffffff,%eax
c: 0f 49 c1             cmovns %ecx,%eax
f: c3                   retq
```

(b) 0000000000000000 <mystery>:

```
0: 39 fe                cmp    %edi,%esi
2: 89 f8                mov    %edi,%eax
4: 0f 4e c6             cmovle %esi,%eax
7: c3                   retq
```

(c) 0000000000400507 <mystery>:

```
400507: 48 83 ec 08           sub    $0x8,%rsp
40050b: 39 f7                 cmp    %esi,%edi
40050d: 7c 0f                 jl     40051e <mystery+0x17>
40050f: bf eb 05 40 00        mov    $0x4005eb,%edi
400514: e8 07 ff ff ff        callq  400420 <puts@plt>
400519: 48 83 c4 08           add    $0x8,%rsp
40051d: c3                    retq
40051e: bf e4 05 40 00        mov    $0x4005e4,%edi
400523: e8 f8 fe ff ff        callq  400420 <puts@plt>
400528: eb ef                 jmp    400519 <mystery+0x12>
```

(d) 00000000004004f0 <mystery>:

```
4004f0: 85 ff                 test   %edi,%edi
4004f2: 74 08                 je     4004fc <mystery+0x0c>
4004f4: 0f af f7              imul   %edi,%esi
4004f7: 83 c7 ff              add    $0xffffffff,%edi
4004fa: 75 f8                 jne    4004f4 <mystery+0x04>
4004fc: 89 f0                 mov    %esi,%eax
4004fe: c3                    retq
```

(e)
```
0000000000000000 <mystery>:
   0: 48 8b 07              mov    (%rdi),%rax
   3: 48 8b 16              mov    (%rsi),%rdx
   6: 48 89 17              mov    %rdx,(%rdi)
   9: 48 89 06              mov    %rax,(%rsi)
   c: c3                    retq
```

```
0000000000000000 <mystery>:
   0: 8b 07                 mov    (%rdi),%eax
   2: 8b 16                 mov    (%rsi),%edx
   4: 89 17                 mov    %edx,(%rdi)
   6: 89 06                 mov    %eax,(%rsi)
   8: c3                    retq
```

```
0000000000000000 <mystery>:
   0: 0f b7 07              movzwl (%rdi),%eax
   3: 0f b7 16              movzwl (%rsi),%edx
   6: 66 89 17              mov    %dx,(%rdi)
   9: 66 89 06              mov    %ax,(%rsi)
   c: c3                    retq
```

(f)
```
00000000004004f0 <mystery>:
  4004f0: 83 ff 03              cmp    $0x3,%edi
  4004f3: 72 1e                 jb     400513 <mystery+0x23>
  4004f5: b1 01                 mov    $0x1,%cl
  4004f7: 7c 17                 jl     400510 <mystery+0x20>
  4004f9: 89 fe                 mov    %edi,%esi
  4004fb: bf 02 00 00 00        mov    $0x2,%edi
  400500: 89 f0                 mov    %esi,%eax
  400502: 99                    cltd
  400503: f7 ff                 idiv   %edi
  400505: 85 d2                 test   %edx,%edx
  400507: 74 0a                 je     400513 <mystery+0x23>
  400509: 83 c7 01              add    $0x1,%edi
  40050c: 39 f7                 cmp    %esi,%edi
  40050e: 7c f0                 jl     400500 <mystery+0x10>
  400510: 89 c8                 mov    %ecx,%eax
  400512: c3                    retq
  400513: 31 c9                 xor    %ecx,%ecx
  400515: 89 c8                 mov    %ecx,%eax
  400517: c3                    retq
```