

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
    
```

esi <= edi
 eax = esi
 if (esi <= edi) {
 eax = esi
 }

(c) 0000000004004f0 <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
    
```

(d) 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
    
```

int64 *
 rax = rdi

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
    
```

int32 *

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
    
```

(e) 0000000004004f0 <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
```