CS 2400 Midterm 1

Solutions

September 20, 2017

1

Answer key:
1)– d)
2)– a)

2

Give +2 to all blanks.
x = 10
y = -7

Expression	Decimal Representation	Hex Representation	Overflow?
x	10	**0x0a**	No
x+7	**-15**	0x11	Yes
y-9	TMin	**0x10**	No
x+y	**3**	**0x03**	No
y + TMax	**8**	**0x08**	**No**
y + TMin	9	0x09	**Yes**

3

omitted

4

```
mysteryFunction:
push    %rbp
mov     %rsp,%rbp
mov     %edi,-0x14(%rbp)
mov     %esi,%eax
mov     %al,-0x18(%rbp)
movl    $0x0,-0x4(%rbp)
movw    $0x1,-0x6(%rbp)
[jmp]   L5


.L2
movsbl -0x18(%rbp),%eax
[sub]     $0x61,%eax
test    %eax,%eax
[js]      L3
movzwl -0x6(%rbp),%edx
movzwl -0x6(%rbp),%eax
[imul]    %edx,%eax
add     %eax,-0x4(%rbp)
jmp     L4


.L3
movzwl -0x6(%rbp),%eax
add     %eax,-0x4([%rbp])
jmp     L4
```

```
.L4
movzwl -0x6(%rbp),%eax
[lea]     -0x1(%rax),%ecx
mov     -0x4(%rbp),%eax
add     $0x61,[%eax]
mov     %eax,%edx
movslq %ecx,%rax
mov     %dl,-0x10([%rbp],%rax,1)
movzwl -0x6(%rbp),%eax
[add]     $0x1,%eax
mov     %ax,-0x6(%rbp)
jmp     L5


.L5
movzwl -0x6(%rbp),%eax
cmp     -0x14(%rbp),%eax
[jle]     L2
mov     -0x4(%rbp),%eax
pop      %rbp
retq
```