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CS 224 HW4

1. long decode2(long x, long y, long z) {

```
y -= z;
x *= y;
long rax = y;
rax <<= 63;
rax >>= 63;
rax ^= x;
return rax;
}
```

F.
```
long result = 0
long mask;
for(mask = 1; mask; mask = mask << 1) {
    result |= x & mask
}
return result;
```

2. A. rdi = x
rsi = n
result = rax
mask = rdx

B. result = 0
mask = 1

C. Test %rdx, %rdx ZF is set when %rdx is 0.

D. sal r %cl, %rdx
cl holds n and rdx is shifted n changing the mask.

E. x is &'d with the mask then or'd res |= x & mask.

3. A %rdx
B. %rax
C. 15

4. NR(v) (3 x (v))
NC(v) (4 x (v) + 1)

5. A

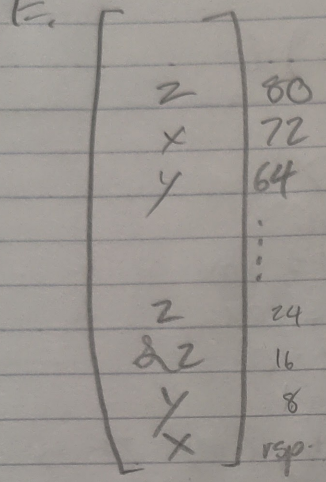
	104
	⋮
	64 → %rdi
	⋮
z	24
&z	16
y	8
x	0

D. The %rsp pointer

C. It uses the offset of rsp

D. process store struct r in rdi where r's members can be accessed with rdi + offset.

E.



F. Structure Values are passed to functions using a pointer like system with allocated memory. When structs are returned they require extra memory in the original function to be allocated before the returning function is called.

6. A = 9
B = 5

7.
A. &A[i][j][k] = A + sizeof(***A)*(T*(S*i+J)+k)

B. R=7 S=5 T=13