

Examples

1. Consider the source code below, where M and N are constants defined with #define.

```
int array1[M][N];
int array2[N][M];

int copy(int i, int j)
{
    array1[i][j] = array2[i][j];
}
```

Use the following assembly code output to determine M and N.

```
000000000400470 <copy>:
400470: 48 63 ff          movslq %edi,%rdi
400473: 48 63 f6          movslq %esi,%rsi
400476: 48 89 f8          mov    %rdi,%rax
400479: 48 8d 14 ff      lea   (%rdi,%rdi,8),%rdx
40047d: 48 c1 e0 04      shl   $0x4,%rax
400481: 48 29 f8          sub   %rdi,%rax
400484: 48 01 f2          add   %rsi,%rdx
400487: 48 01 f0          add   %rsi,%rax
40048a: 8b 04 85 a0 08 50 00 mov   array2(,%rax,4),%eax
400491: 89 04 95 c0 0a 50 00 mov   %eax,array1(,%rdx,4)
400498: c3              retq
```

M = _____ N = _____

2. Match the following C declarations with the assembly code that is generated for them.

<pre>int winter(int foo[8][12], int i, int j) { return foo[i][j]; } int* spring(int foo[8][12], int i, int j) { return foo[i]; } int summer(int** foo, int i, int j) { return foo[i][j]; } int* fall(int** foo, int i, int j) { return foo[i]; }</pre>	<pre>000000000400490 <A>: 400490: movslq %esi,%rsi 400493: lea (%rsi,%rsi,2),%rsi 400497: shl \$0x4,%rsi 40049b: lea (%rsi,%rdi,1),%rax 40049f: retq 000000000400470 : 400470: movslq %esi,%rsi 400473: movslq %edx,%rdx 400476: lea (%rsi,%rsi,2),%rsi 40047a: lea (%rdx,%rsi,4),%rsi 40047e: mov (%rdi,%rsi,4),%eax 400481: retq 0000000004004b0 <C>: 4004b0: movslq %esi,%rsi 4004b3: mov (%rdi,%rsi,8),%rax 4004b7: retq 0000000004004a0 <D>: 4004a0: movslq %esi,%rsi 4004a3: movslq %edx,%rdx 4004a6: mov (%rdi,%rsi,8),%rax 4004aa: mov (%rax,%rdx,4),%eax 4004ad: retq</pre>
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winter = _____ spring = _____ summer = _____ fall = _____