

Recursive method tracing
Stack based approach to
2004 AP CS AB Multiple Choice #31

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Method `mystery` makes 2 recursive calls.

Label the first Call 1 and the second Call 2.

The initial call is `mystery(arr, 0, 7, 14)`.

```
m(arr, 0, 7, 14)
```

```
m(arr, 0, 7, 14) mid = 3
```

`m(arr, 0, 2, 14)`

`m(arr, 0, 7, 14)2 mid = 3`

`m(arr, 0, 2, 14) mid = 1`

`m(arr, 0, 7, 14)2 mid = 3`

`m(arr, 2, 2, 14)`

`m(arr, 0, 2, 14)1 mid = 1`

`m(arr, 0, 7, 14)2 mid = 3`

`m(arr, 2, 2, 14) mid = 2`

`m(arr, 0, 2, 14)1 mid = 1`

`m(arr, 0, 7, 14)2 mid = 3`

`m(arr, 2, 1, 14)`

`m(arr, 2, 2, 14)2 mid = 2`

`m(arr, 0, 2, 14)1 mid = 1`

`m(arr, 0, 7, 14)2 mid = 3`

~~m(arr, 2, 1, 14)~~ mid = 1 returns 2

m(arr, 2, 2, 14)₂ mid = 2

m(arr, 0, 2, 14)₁ mid = 1

m(arr, 0, 7, 14)₂ mid = 3

~~m(arr, 2, 1, 14)~~ mid = 1 returns 2

~~m(arr, 2, 2, 14)~~₂ mid = 2 returns 2

m(arr, 0, 2, 14)₁ mid = 1

m(arr, 0, 7, 14)₂ mid = 3

~~m(arr, 2, 1, 14)~~ mid = 1 returns 2

~~m(arr, 2, 2, 14)~~₂ mid = 2 returns 2

~~m(arr, 0, 2, 14)~~₁ mid = 1 returns 2

m(arr, 0, 7, 14)₂ mid = 3

~~m(arr, 2, 1, 14)~~ mid = 1 returns 2

~~m(arr, 2, 2, 14)~~₂ mid = 2 returns 2

~~m(arr, 0, 2, 14)~~₁ mid = 1 returns 2

~~m(arr, 0, 7, 14)~~₂ mid = 3 returns 2