

MO417 - Ata do exercício 7.1-2[1]

Fabian van 't Hooft - RA089083

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a What value of q does PARTITION[2] return when all elements in the array $A[p..r]$ have the same value?
 r is returned.

b Modify PARTITION[2] so that $q = \lfloor (p + r) / 2 \rfloor$ when all elements in the array $A[p..r]$ have the same value.

```
PARTITION(A,p,r)
01 x <- A[r]
02 equal <- 0
03 do if A[p] = x
04     then equal <- equal + 1
05 i <- p - 1
06 for j <- p to r - 1
07     do if A[j] = A[p]
08         equal <- equal + 1
09     do if A[j] <= x
10         then i <- j + 1
11             exchange A[i] <--> A[j]
12 exchange A[i+1] <--> A[r]
13 do if equal = r - p + 1
14     return floor(( p + r ) / 2 )
15 return i + 1
```

References

[1] Introduction to Algorithms, Second Edition, 11th printing, Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, McGraw-Hill Higher Education, 2002

[2] See page 146, of [1]