University of the People

Writing Assignment Unit 6

CS 2401 - Software Engineering 1

March 8 ,2023

Quicksort sorting algorithm:

QUICKSORT(A, p, r)

if p < r

then q ← PARTITION(A, p, r)

QUICKSORT(A, p, q − 1)
QUICKSORT(A, q + 1, sr)

where the PARTITION procedure is as follows:
PARTITION(A, p, r)

x ← A[r]
i ← p − 1
for j ← p to r − 1

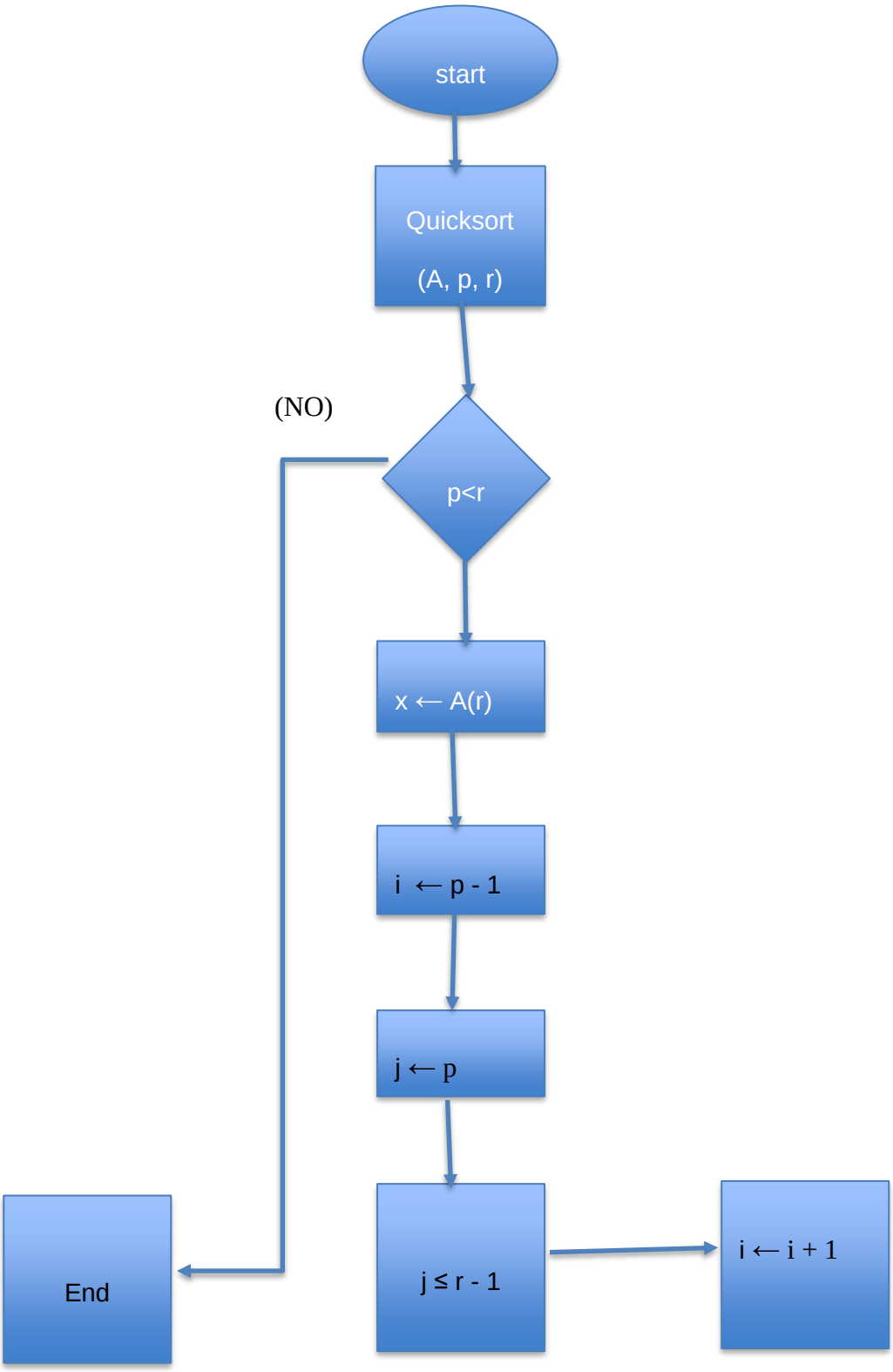
do if A[j] ≤ x

then i ← i + 1

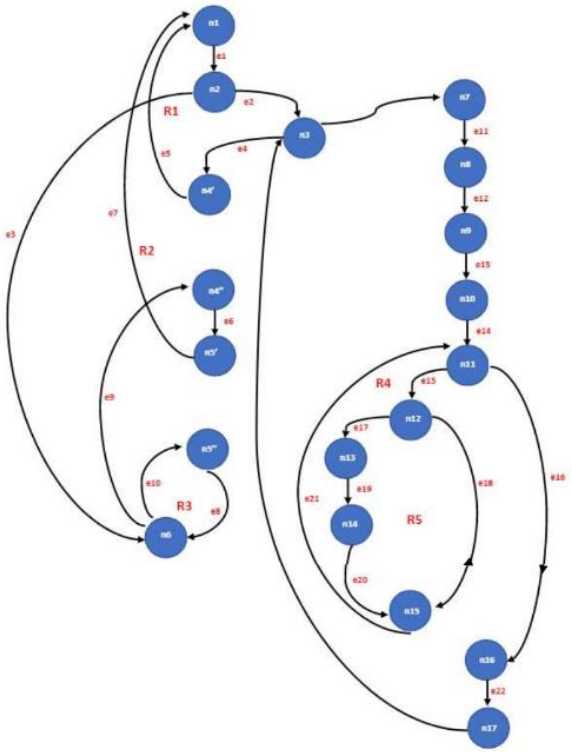
exchange A[i] ↔ A[j]

exchange A[i + 1] ↔ A[r]
return i + 1

- The flowchart of the above algorithm



- The corresponding graph and with the nodes as n1, n2, … and edges as e1, e2, …



- Calculation of the cyclomatic complexity of the above algorithm

closed regions = 5

$V_{LI}(G) = (22 – 19) + (2+1)$

$V_{LI}(G) = (3) + (3)$

$V_{LI}(G) = 6$

$V_{LI}(G)$ = number of closed regions + 1

$V_{LI}(G) = 5 + 1$

$V_{LI}(G) = \mathbf{6}$

References

Marsic, I. (2012). *Software engineering.* Rutgers Unversity. **http://www.ece.rutgers.edu/~marsic/books/SE/book-SE_marsic.pdf**.