read\_mat (n, A)

for i <- 0 to n // O(n)

for j <- 0 to n // O(n^2)

READ A[i][j] // O(n^2)

mat\_addition (n, A, B, C)

for i <- 0 to n // O(n)

for j <- 0 to n // O(n^2)

C[i][j] <- A[i][j] + B[i][j] // O(n^2)

mat\_substraction (n, A, B, C)

for i <- 0 to n // O(n)

for j <- 0 to n // O(n^2)

C[i][j] <- A[i][j] - B[i][j] // O(n^2)

mat\_multiplication (n, A, B, C)

for i <- 0 to n // O(n)

for j <- 0 to n // O(n^2)

for k <- 0 to n // O(n^3)

C[i][j] <- C[i][j] + A[i][k] \* B[k][j] // O(n^3)

scal\_multiplication (n, A, k)

for i <- 0 to n // O(n)

for j <- 0 to n // O(n^2)

A[i][j] <- A[i][j] \* k // O(n^2)

write\_mat (n, A)

for i <- 0 to n // O(n)

WRITE “\n” // O(n)

for j <- 0 to n // O(n^2)

WRITE A[i][j], “ “ // O(n^2)

MAIN ()

INTERGERS n, A[20][20], B[20][20], C[20][20], D[20][20], E[20][20] // O(1)

WRITE “Insert the order number of the matrices: ” // O(1)

READ n // O(1)

for i <- 0 to n // O(n)

for j <-0 to n // O(n^2)

D[i][j] <- E[i][j] <- 0 // O(n^2)

WRITE “Insert matrix B: ”, “\n” // O(1)

read\_mat (n, B) // 2\*O(n^2) + O(n)

WRITE “Insert matrix C: ”, “\n” // O(1)

read\_mat (n, C) // 2\*O(n^2) + O(n)

mat\_multiplication (n, B, C, D) // 2\*O(n^3) + O(n^2) + O(n)

mat\_addition (n, B, C, E) // 2\*O(n^2) + O(n)

scal\_multiplication (n, E, 2) // 2\*O(n^2) + O(n)

mat\_subtraction (n, D, E, A) // 2\*O(n^2) + O(n)

write\_mat (n, A) // 2\*O(n^2) + 2\*O(n)

RETURN 0 // O(1)

The total runtime is: 2 \* O(n^3) + 15 \* O(n^2) + 8 \* O(n) + 6 \* O(1)