Write an algo to swap 2 numbers.

Algo Swap (a, b)
begin { temp = a ;
a = b ;
end } b = temp ;

:= assignment Pascal

temp ← a
a ← b
b ← temp.

1. Time : Time function
   f(n) T(n)
2. Space : figure out memory space.
3. N/w consumption
4. Power consumption.
5. CPU register consumption.

Time function f(n) = 3

x = 5*a + 6*b → 1 unit time.

Space : Variables
a
b
temp. } 3 variable
constant

S(n) = O(1)

3000 its const
O(1)

Frequency count :

Algo Sum (A, n)
{ s = 0 — 1 ✓
for (i = 0 — 1 time ; i<n — n+1 ; i++ — n times.) — n+1
{ s = s + A[i] → n times
}
return s; — 1 ✓
}

n=5
i<0
i<1
i<2
i<3
i<4
i<5
5+1 : n+1

A: | 8 | 3 | 9 | 7 | 2 |
0 1 2 3 4
n = 5

f(n) = 1+n+1+n+1
= 2n+3
degree = 1
O(n)

Space : Variables
A — n words
n — 1 S(n) = n+3
s — 1
i — 1 S(n) = O(n)

Algo to find sum of 2 matrices. n×n

Algo Add (A, B, n)
{ for (i=0 ; i<n ; i++) — n+1
{ for (j=0 ; j<n ; j++) — n(n+1)
{ C[i,j] = A[i,j] + B[i,j] } — n*n
}
}

f(n) = n+1 + n(n+1) + n^2
= n+1 + n^2 + n + n^2
= 3n^2 + 2n + 1

degree = 2
f(n) = O(n^2)

Space : variables
A
B
C } n×n = n^2
n — 1
i — 1
j — 1

3n^2 + 3
degree = 2
S(n) = O(n^2)

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* Write an ~~algo~~ prog to multiply 2 matrices. and analyze time complexity and space complexity.