



Assignment 1 (Running Time Computation)

Solve for the running time $T(n)$ of the following algorithms. Determine how many times the instructions in each line of the pseudocode will be executed, then compute the total running time, as much possible express it in the simplest term. Be prepared to share and explain to the class your answers to this assignment.

1.
procedure A(N)

 i := 1
 while (i<=n)
 print("CS111")
 i=i+3

2.
procedure A(n)

 for (i=1; i<=n; i++)
 for(j=i; j<=n; j++)
 for(k=1; k<=50; k++)
 print("CS111");

3.
Assume $n \geq 2$:

procedure A(n)

 while(n>1)
 n=n/2;
 print("CS111");

4.
procedure A(n)

 for (i=1; i<=n; i++)
 for(j=1; j<=n; j=j+i)
 print("CS111");

5.
procedure A(n)

 for(i=1; i<=n; i=i*3)
 if(x > y)
 print("CS111");
 x = y;
 else
 y =x

6.
procedure A(N)

 i := 1
 while (i<=n)
 print("CS111")
 i=i*2

7.
procedure A(N)

 for i=1 to n
 for j=1 to i^2
 print("CS111")

8.
procedure A(n)

 for (i=1; i<=n; i++)
 for(j=1; j<=i²; j++)
 for(k=1; k<=n/2; k++)
 print("CS111");