Name and ID#:

MIDTERM 1 EXAM

Date:	Tuesday, October 18 2016	8/21
Starting time:	09:00	
Duration:	1 hour 15 min	
Attention:	**ANY TYPE OF COMMUNICATION IS STRICTLY PROHIBITED**	

Please write down your name and ID# at the top of all used pages

Problem 1: Consider below two recursive expressions:

$$a_n = 1 + a_1*b_1 + a_2*b_2 + a_3*b_3 + \ldots + a_{n-1}*b_{n-1}$$
$$b_n = 1 + 2*b_1 + 2*b_2 + 2*b_3 + \ldots + 2*b_{n-1} - b_{n-1}*b_{n-1}$$

$a_2 = 2 \quad 8$

The base cases are: $a_1 = b_1 = 1$.

$b_2 = 3 \quad 9 \quad 27$

Write an optimal C++ function or Java method that takes as its argument an int index *int n* and returns a_n.

```
recursive (int n)
{ int a, b;
  if (n == 1)
      return 1;
  else.
    b = 1 + (2)(n-1)
    a = n . b

      return a;
      return b; ?
int main
```

$a_2 = 2 \quad a_3 = 8$

$b_2 = 3 \quad b_3 = 9 \quad b_4 = 27$

almost correct

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