

# Recursion problem set

#5 C

☆ #7 ~~C (16)~~ D 32

#14 A

#8 B

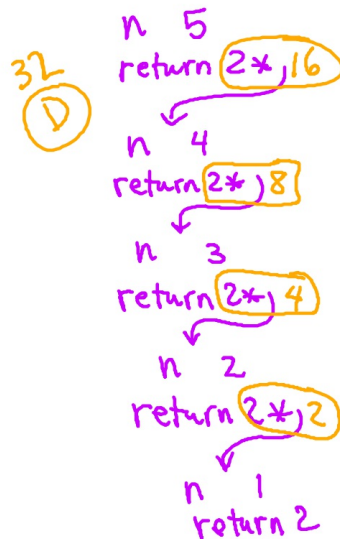
#15 D

#9 D

#11 D

#12 A

#13 C



```
public int answer (int n)
{
    if (n == 1)
        return 2;
    else
        return 2 * answer(n-1);
}
```

7. What value does `answer(5)` return?

- (A) 2
- (B) 8
- (C) 10
- (D) 32
- (E) 120

8. If  $n$  is a positive integer, how many times will `answer` be called to evaluate `answer(n)` (including the initial call)?

- (A) 2
- (B)  $n$
- (C)  $2n$
- (D)  $n^2$
- (E)  $2^n$

11. Given the input line **ABCD** followed by an end-of-line, what does the following method print?

```
public void processLine(String str, int pos)
//precondition: str = "ABCD", pos=0
{
    if (pos < str.length)
    {
        int i;
        → for (i=0; i<=pos; i++)
            System.out.println( str.substring(pos, pos+1) );
        processLine(str, pos + 1);
        → for (i=0; i<=pos; i++)
            System.out.println( str.substring(pos, pos+1) );
    }
}
```

str ABCD  
pos 0  
|  
str ABCD  
pos 1

out AABABCABCD  
ABCDABCABA

- (A) ABCDCBA
- (B) ABBCCDDDD
- (C) ABBCCDDDDDDDDCCCBBA
- (D) AABABCABCDABCABABA
- (E) ABBCCDDDDDDDDCCCBBBBAAAA

15. Consider the following method.

```
public void print(int count)
{
    if ( count > 0 )
    {
        int k = IO.readInt(); // reads an integer
        print( count - 1 );
        System.out.println( k );
    }
}
```

count 10  
k ~  
|  
count 9  
k ~  
|  
count 8  
k ~

Of the following, which text best describes what is printed as a result of the call Print (10)?

- (a) Nothing is printed because a run-time error occurs.
- (b) Nothing is printed because the if condition never evaluates to true.
- (c) Ten integers are printed in the same order in which they were read.
- (d) Ten integers are printed in the reverse order in which they were read.
- (e) Only the non-zero values that were read are printed: they are printed in the same order in which they were read