

MORE RECURSION



Problem Solving with Computers-I

C++

```
#include <iostream>
using namespace std;

int main(){
    cout<<"Hola Facebook!n";
    return 0;
}
```

GitHub



Review: Iterating through sequences

name	'B'	'o'	'n'	'd'	'0'	'0'	'7'
------	-----	-----	-----	-----	-----	-----	-----

```
void printElements(char *arr, int len){
    for(int i=0; i<len; i++)
        cout<<arr[i];
    cout<<endl;
}
```

```
int main(){
    char name[]={'B','o','n','d','0','0','7'};
    printElements(name, 7);
}
```

Recursion

name

'B'	'o'	'n'	'd'	'0'	'0'	'7'
-----	-----	-----	-----	-----	-----	-----

```
void printElementsRecursive(char *arr, int len){
```

```
}
```

```
int main(){
```

```
    char name[]={ 'B', 'o', 'n', 'd', '0', '0', '7' };
```

```
    printElementsRecursive(name, 7);
```

```
}
```

Print Backwards

name

\B'	\o'	\n'	\d'	\0'	\0'	\7'
-----	-----	-----	-----	-----	-----	-----

```
void printElementsBackwards(char *arr, int len){
```

```
    if(len<=0){  
        _____(1)_____
```

```
        return;
```

```
    }
```

```
    _____(2)_____
```

```
    _____(3)_____
```

```
}
```

* Print=>printElementsBackwards(arr+1, len-1);

Choose the correct order of statements

	(1)	(2)	(3)
A.	cout<<endl;	cout<<*arr;	Print*
B.	(do nothing)	cout<<*arr;	Print*
C.	cout<<endl;	Print*	cout<<*arr;
D.	cout<<*arr;	Print*	cout<<endl;

Under the hood of recursion

name

'B'	'o'	'n'	'd'	'0'	'0'	'7'
-----	-----	-----	-----	-----	-----	-----

```
void printElementsBackwards(char *arr, int len){  
  
    if(len<=0){ // Base case  
        cout << endl;  
        return;  
    }  
  
    printElementsBackwards(arr+1, len-1);  
    cout << *arr;  
}
```

What happens with the following code?

```
// precondition: n is positive
int f(int n) {
    if (is_even(n))
        return f(n/2);
    else // n is odd
        return f(3*n + 1);
}
```

- A. It terminates
- B. It doesn't terminate (gets into an infinite loop of recursive calls)
- C. Not sure