

# C

SWE110

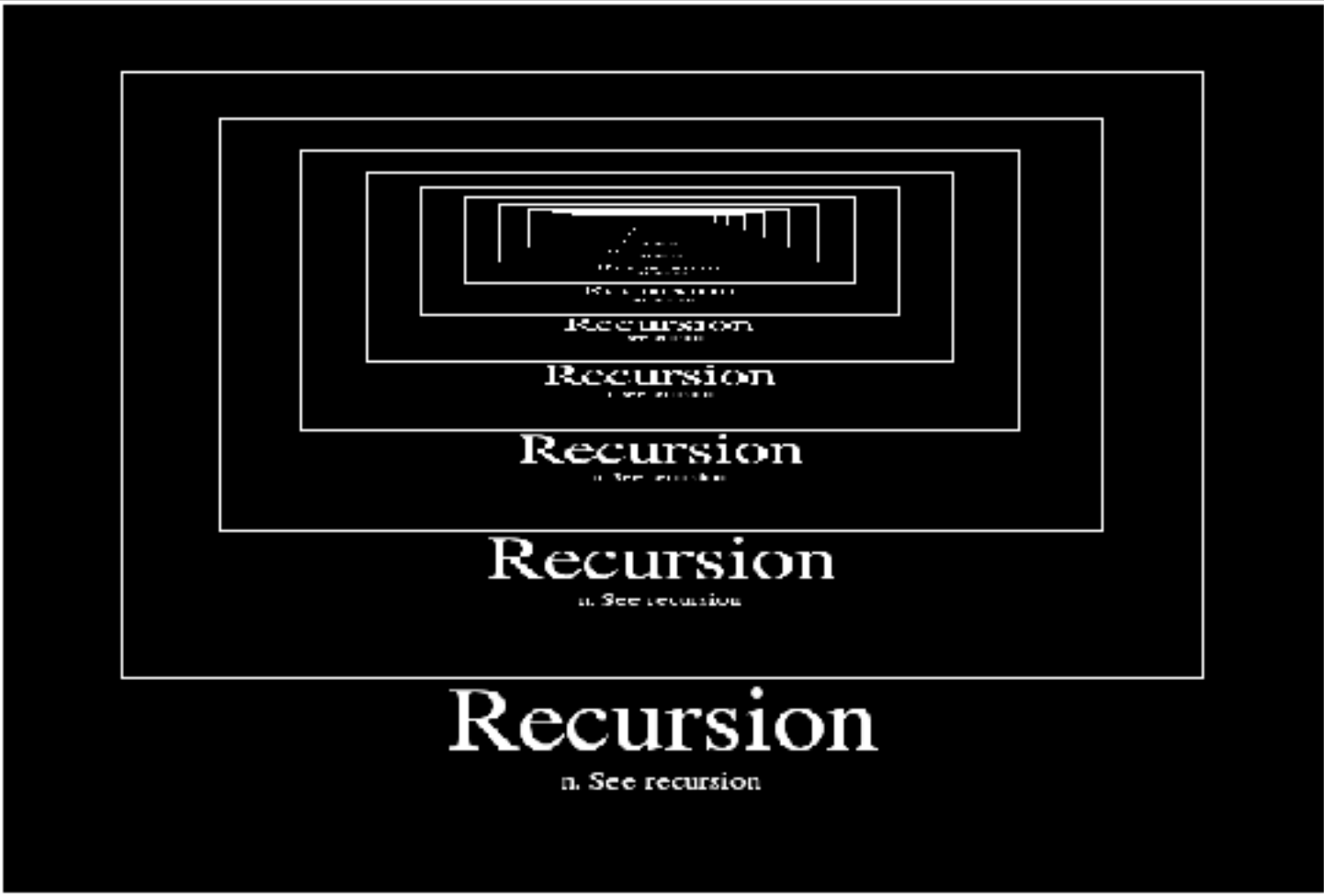
Lesson 6

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# Lesson 6

- In previous lesson:
  - Functions
- **In this lesson:**
  - Recursion, Scope , Debugging!!
    - printf, breakpoints, step, #ifdef
- Next Lesson:
  - Arrays !!
  - And then command line arguments, strings, etc..
- Lab



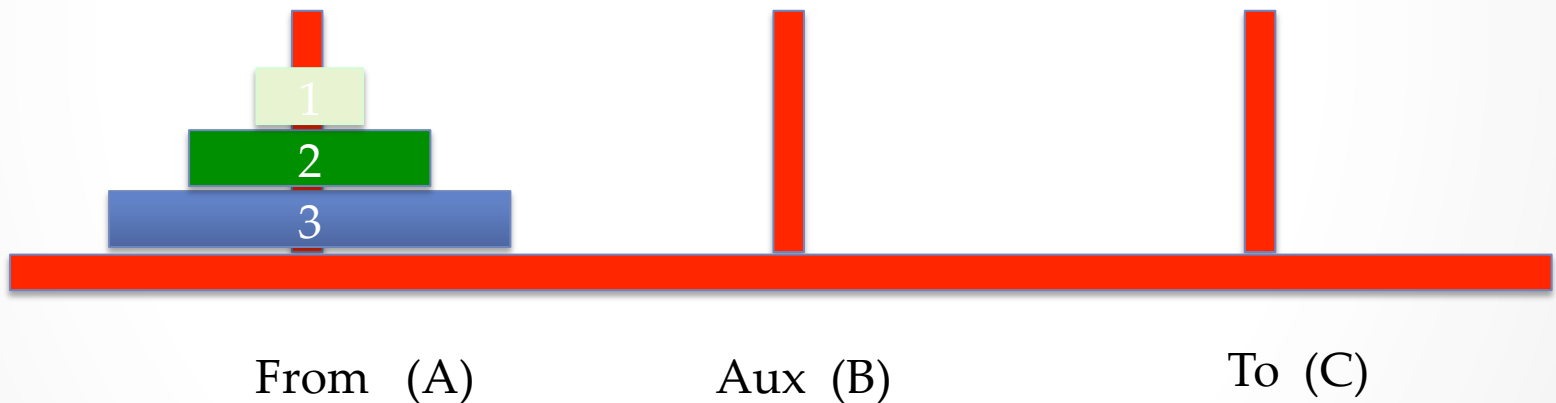
# Recursion

n. See recursion

# Recursion

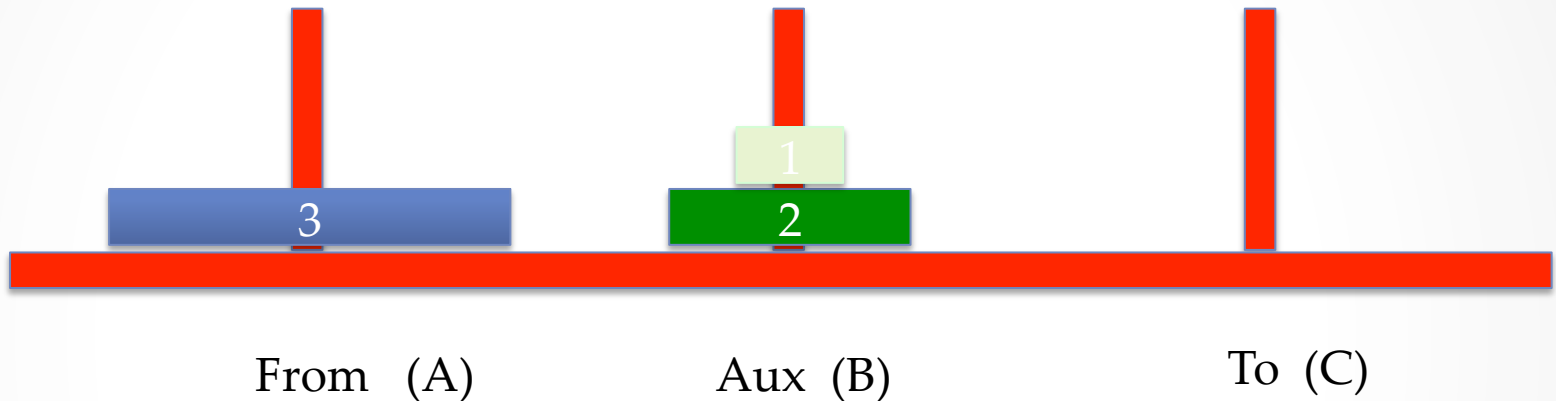
- Factorial ::  $n! = n * (n-1) * (n-2) * (n-3) * \dots$
- Towers of Hanoi
  - <http://www.dynamicdrive.com/dynamicindex12/towerhanoi.htm>
  - Just in case: <http://www.coolmath-games.com/0-tower-of-hanoi/>

# TOH



```
void towers(int num, char frompeg, char topeg, char auxpeg);  
void towers( 3 , 'A' , 'C' , 'B' );
```

# TOH

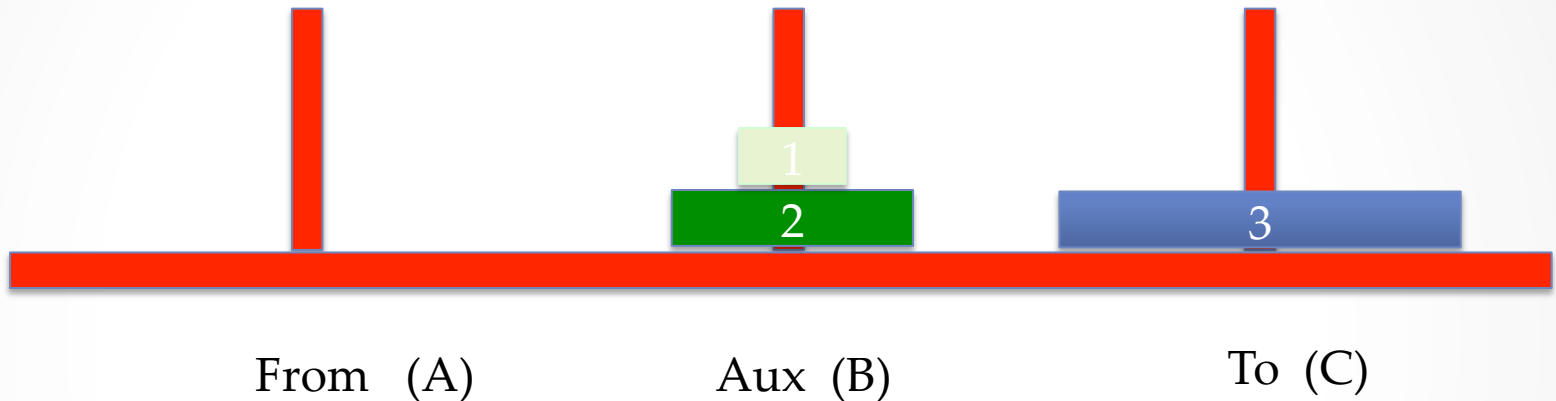


```
void towers(int num, char frompeg, char topeg, char auxpeg);  
void towers( 3 , 'A' , 'C' , 'B' );
```

**How to do it?**

```
void towers( 2 , 'A' , 'B' , 'C' );
```

# TOH



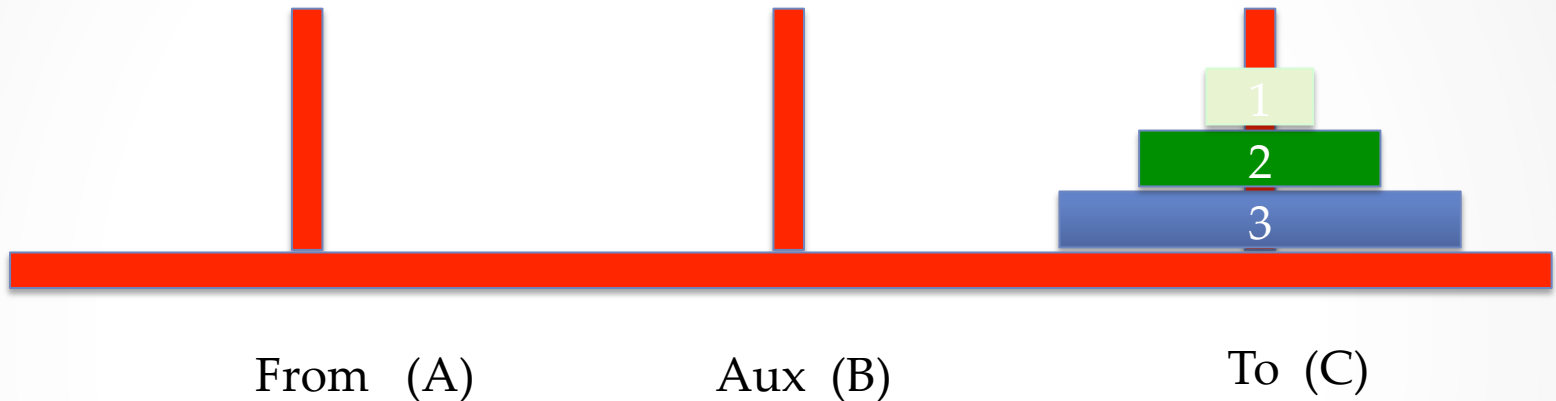
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void towers(int num, char frompeg, char topeg, char auxpeg);  
void towers( 3 , 'A' , 'C' , 'B' );
```

**How to do it?**

```
void towers( 2 , 'A' , 'B' , 'C' );
```

Move 3 From A to C

# TOH



```
void towers(int num, char frompeg, char topeg, char auxpeg);  
void towers( 3 , 'A' , 'C' , 'B' );
```

**How to do it?**

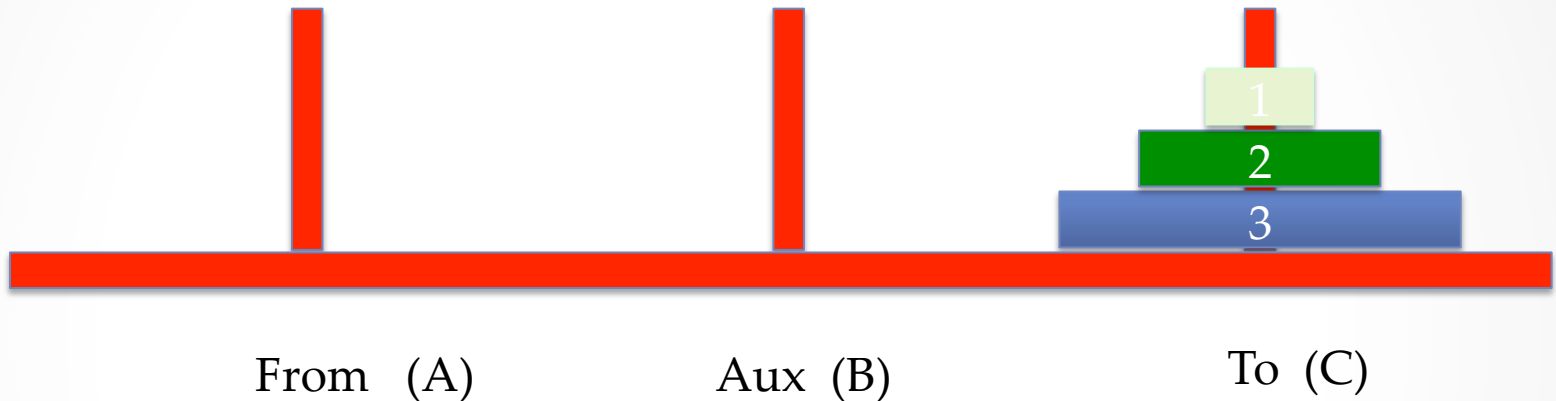
```
void towers( 2 , 'A' , 'B' , 'C' );
```

Move 3 From A to C

```
void towers( 2 , 'B' , 'C' , 'A' );
```



# TOH



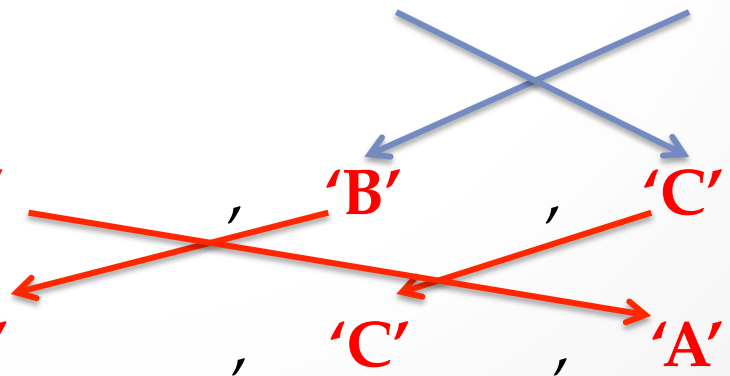
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void towers(int num, char frompeg, char topeg, char auxpeg);
void towers( 3 , 'A' , 'C' , 'B' );
```

**How to do it?**

```
void towers( 2 , 'A' , 'B' , 'C' );
```

Move 3 From A to C

```
void towers( 2 , 'B' , 'C' , 'A' );
```



Time to program!!

...

END