

# Ricorsione: la Torre di Hanoi



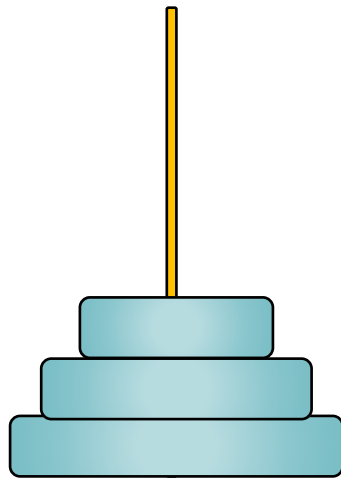
A



B



C



A



B



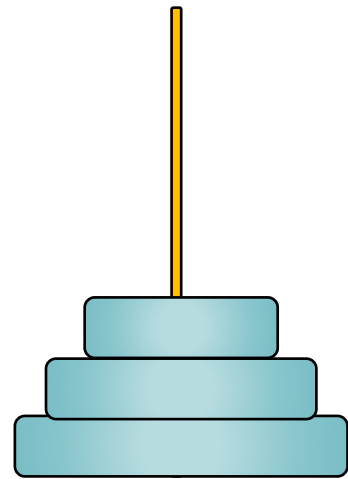
C



A

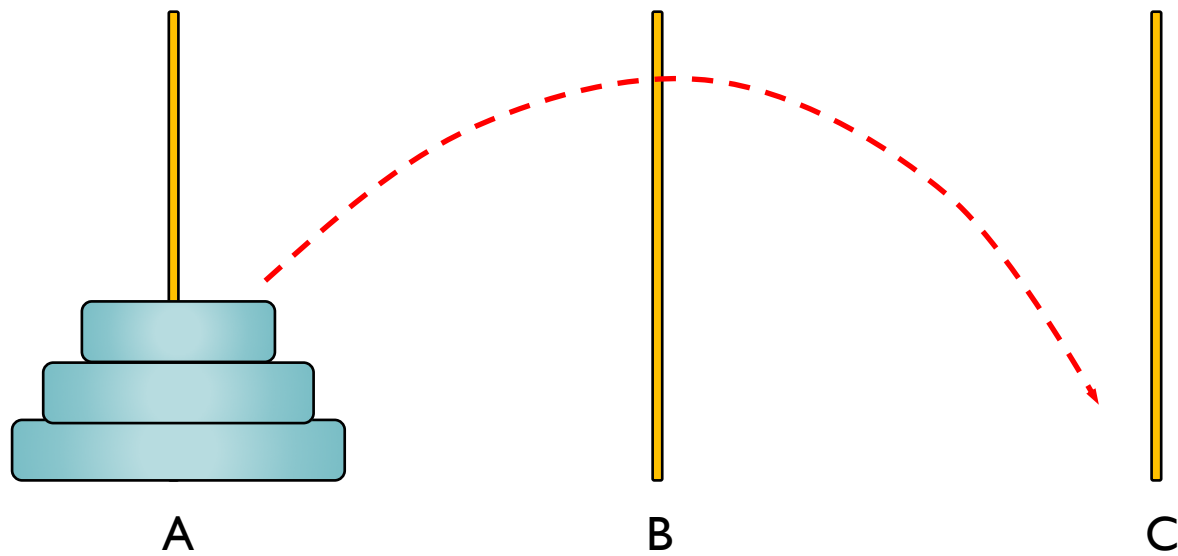


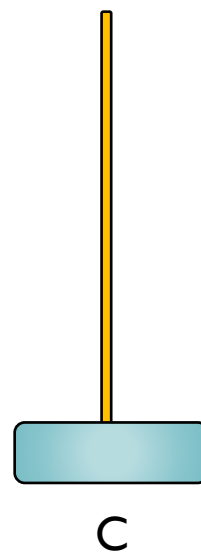
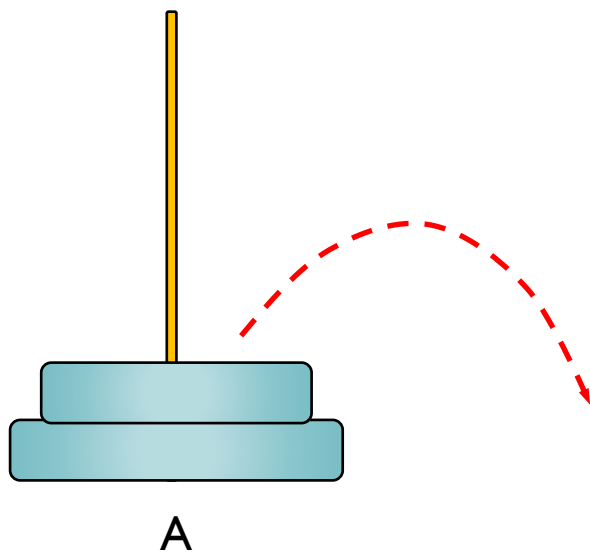
B

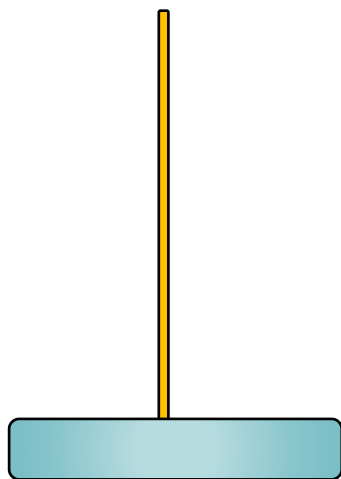


C

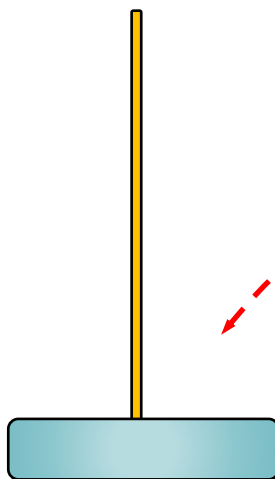
Spostare la torre di Hanoi di 3 dischi dal piolo A al piolo C  
muovendo un solo disco per volta (da un piolo ad un altro)  
e non sovrapponendo mai un disco più grande ad uno più  
piccolo



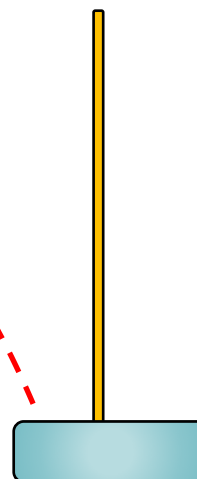
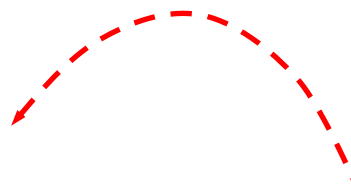




A

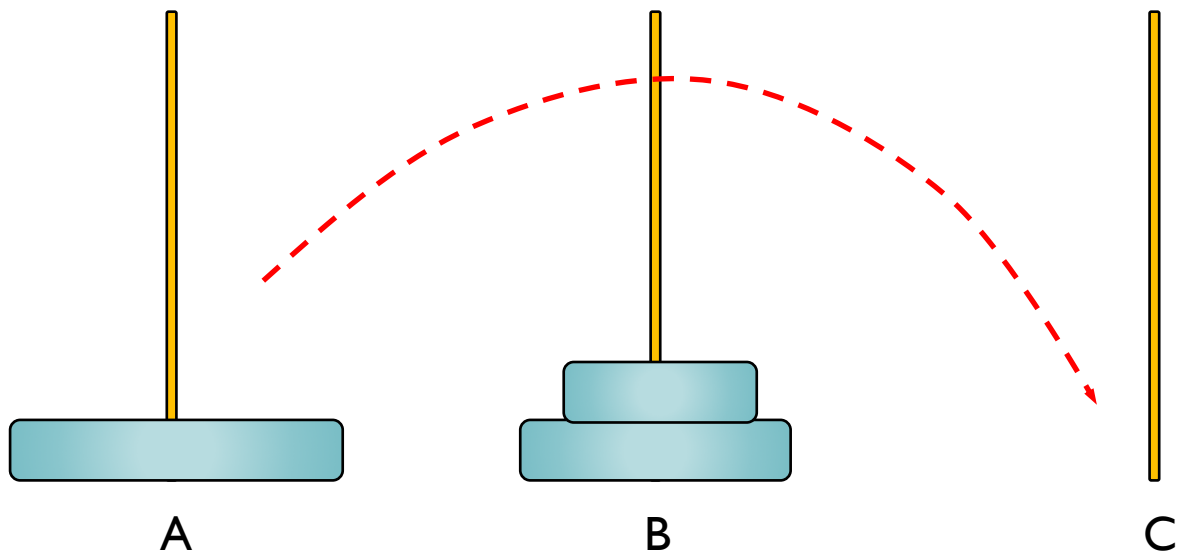


B



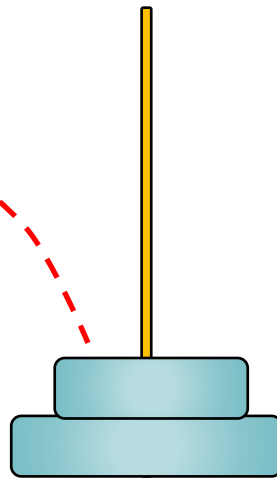
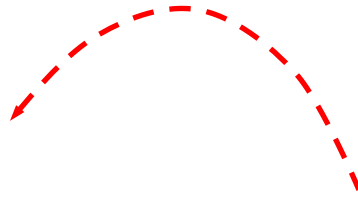
C



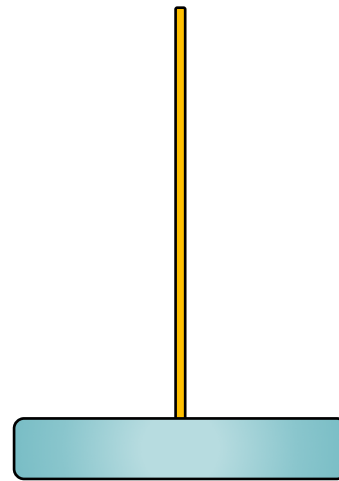




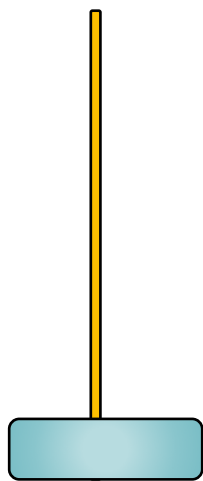
A



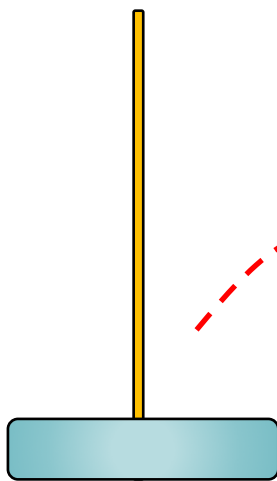
B



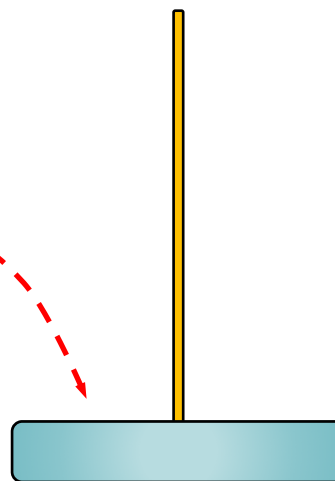
C



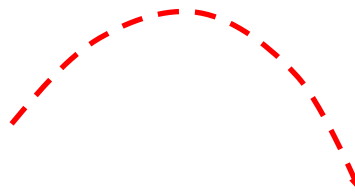
A

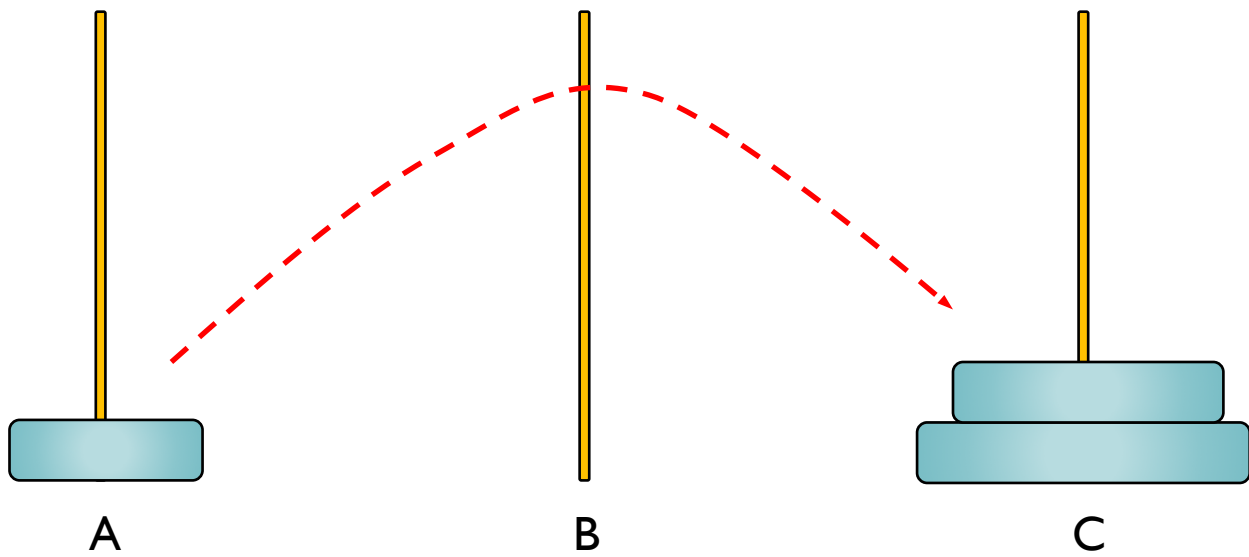


B



C



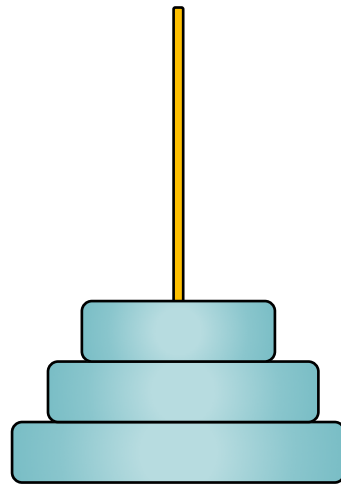




A



B



C

# Astrazione

Basta indicare piolo di partenza e piolo di arrivo:

$A \rightarrow C$

$A \rightarrow B$

$C \rightarrow B$

$A \rightarrow C$

$B \rightarrow A$

$B \rightarrow C$

$A \rightarrow C$

**A → C**

**A → B**

**C → B**

**A → C**

**B → A**

**B → C**

**A → C**

sposta la torre di 2 dischi da A  
a B usando C come supporto

sposta la torre di 2 dischi da B  
a C usando A come supporto

$A \rightarrow C$

$A \rightarrow B$

$C \rightarrow B$

$A \rightarrow C$

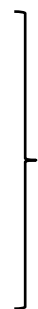
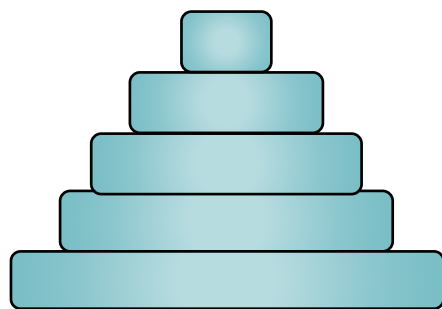
$B \rightarrow A$

$B \rightarrow C$

$A \rightarrow C$

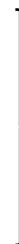
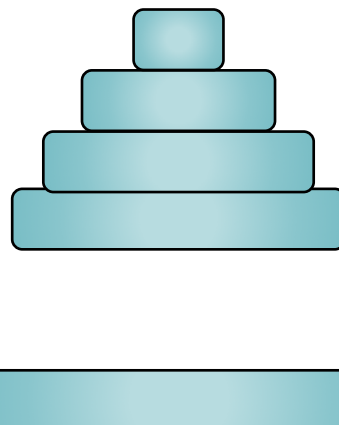
sposta la torre di 3 dischi da A  
a C usando B come supporto





torre<sub>1</sub>

=



torre<sub>2</sub>

## Torre di Hanoi: pseudo-codice

```
muoviTorre(noDischi){  
    se(noDischi = 1)  
        sposta il disco  
    altrimenti  
        muoviTorre(noDischi – 1)  
        sposta il disco  
        muoviTorre(noDischi – 1)
```

per avere una procedura ricorsiva basta aggiungere informazione su punto di partenza, punto di arrivo del movimento e piolo di appoggio.