

Ricorsione: la Torre di Hanoi



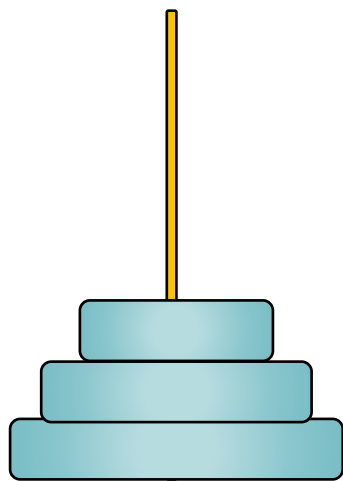
A



B



C



A



B



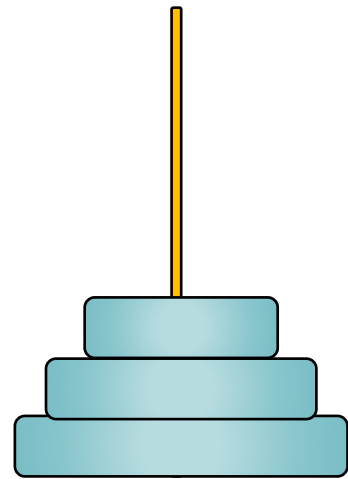
C



A

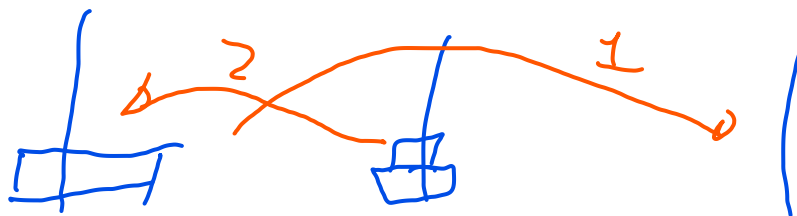
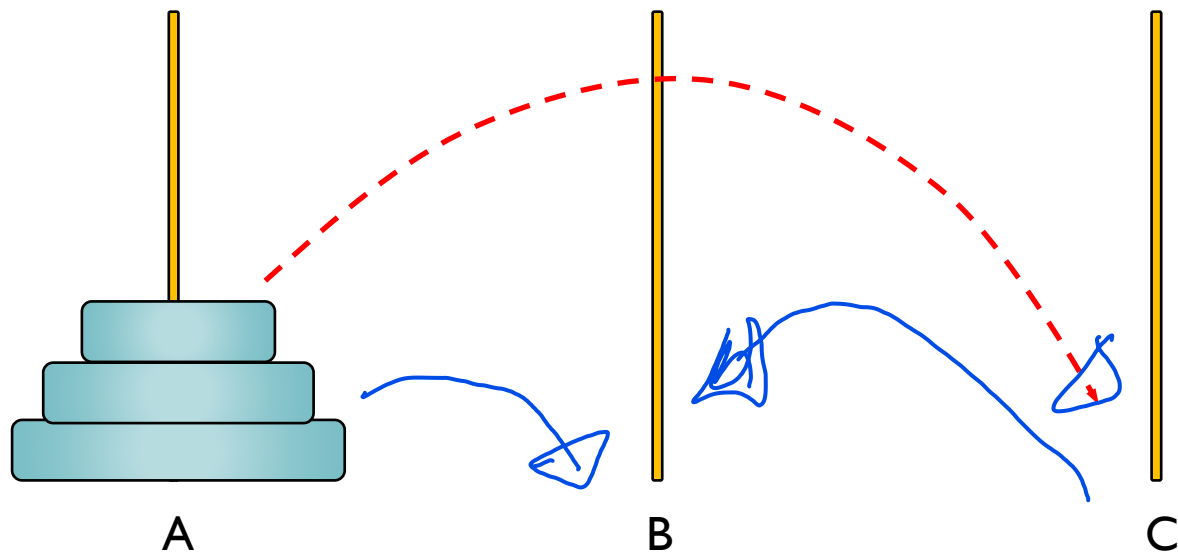


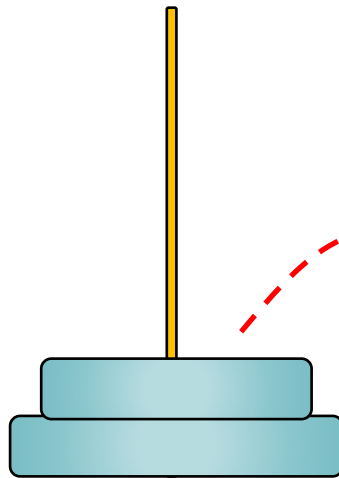
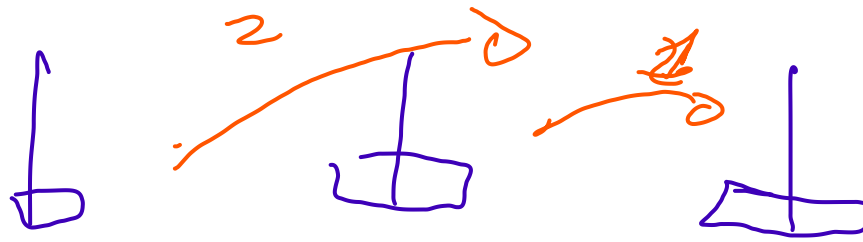
B



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

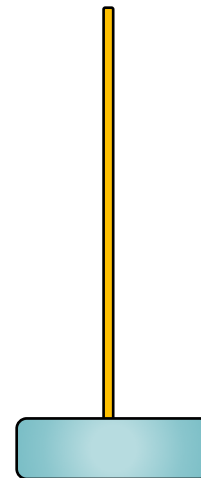




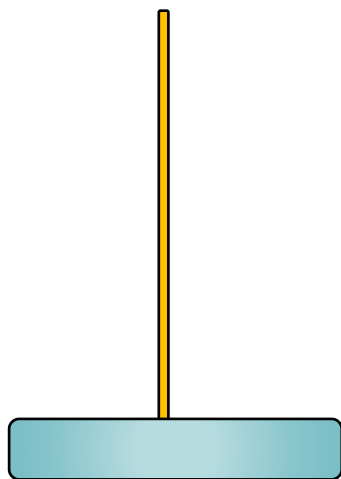
A



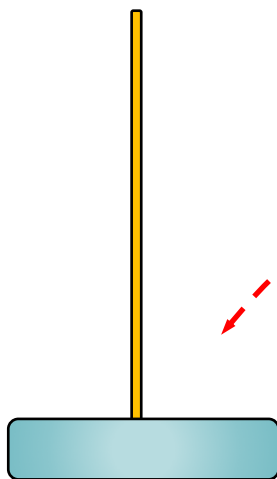
B



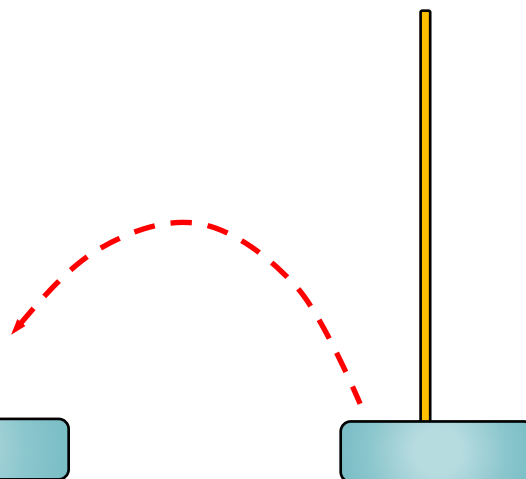
C



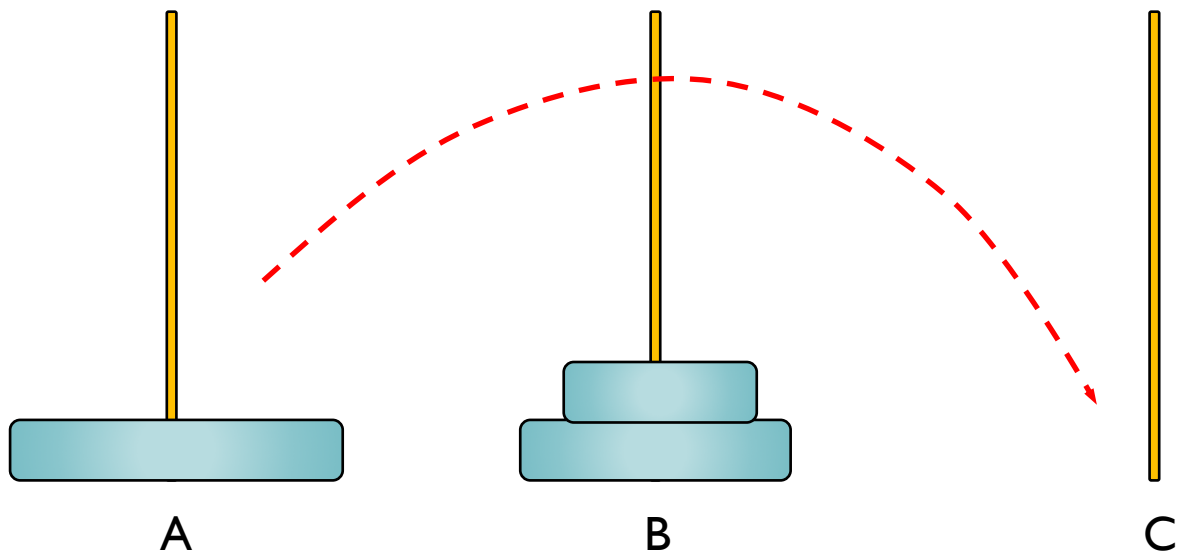
A



B

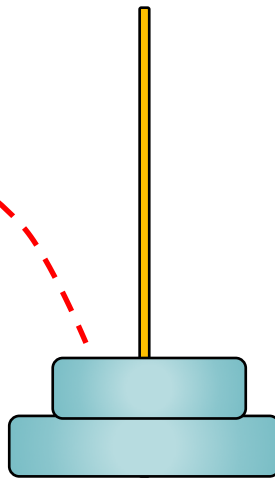
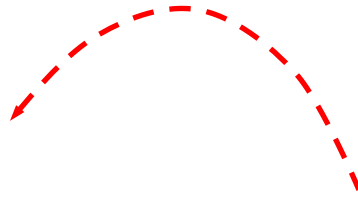


C

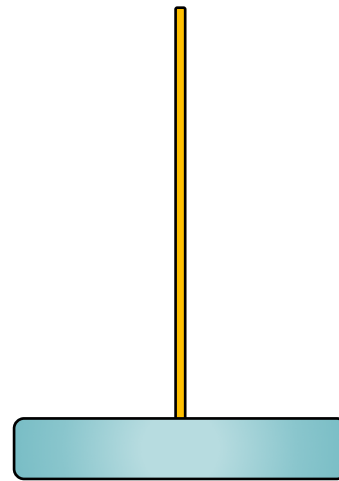




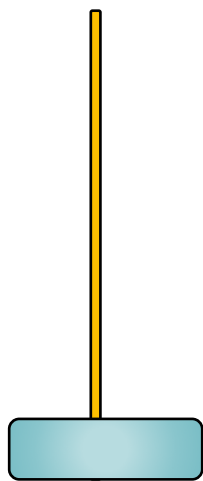
A



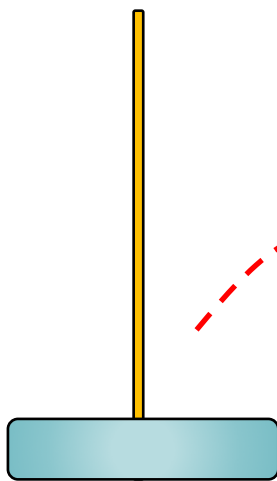
B



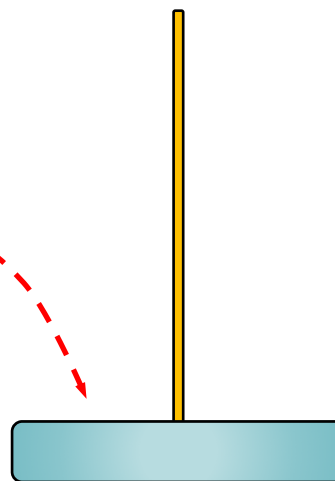
C



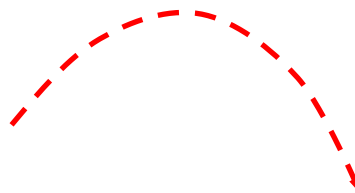
A

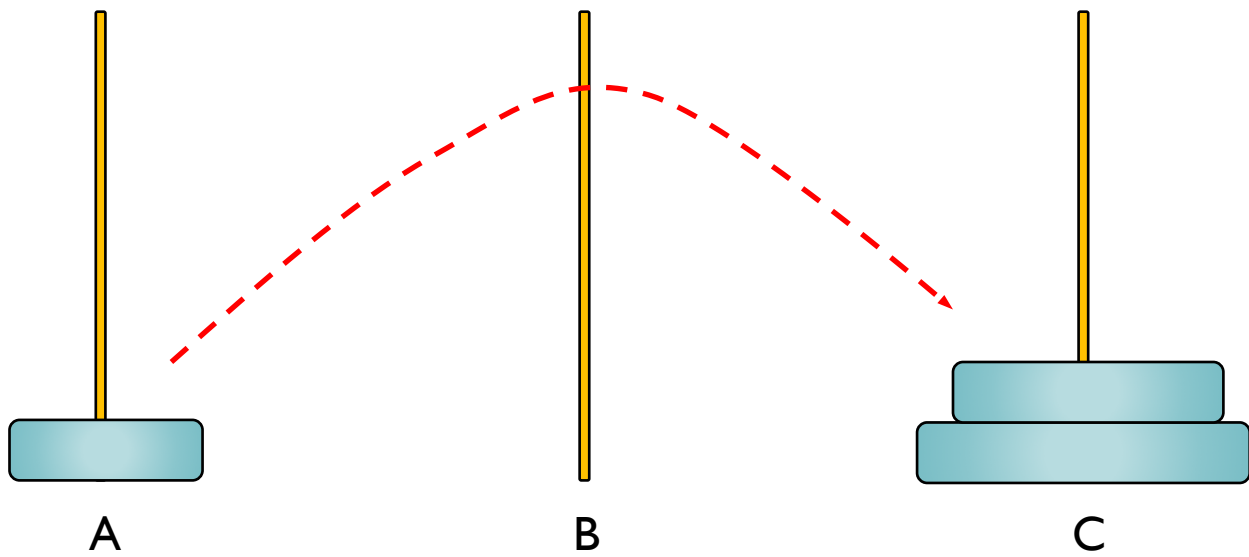


B



C



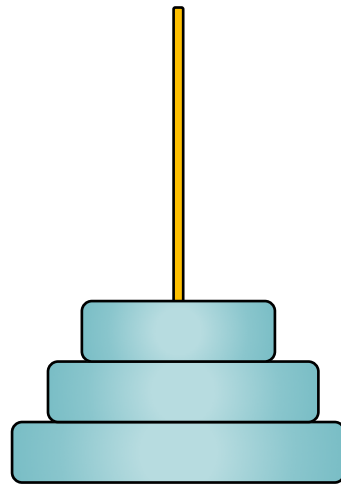




A



B



C

Astrazione

Basta indicare piolo di partenza e piolo di arrivo:

A → C

A → B

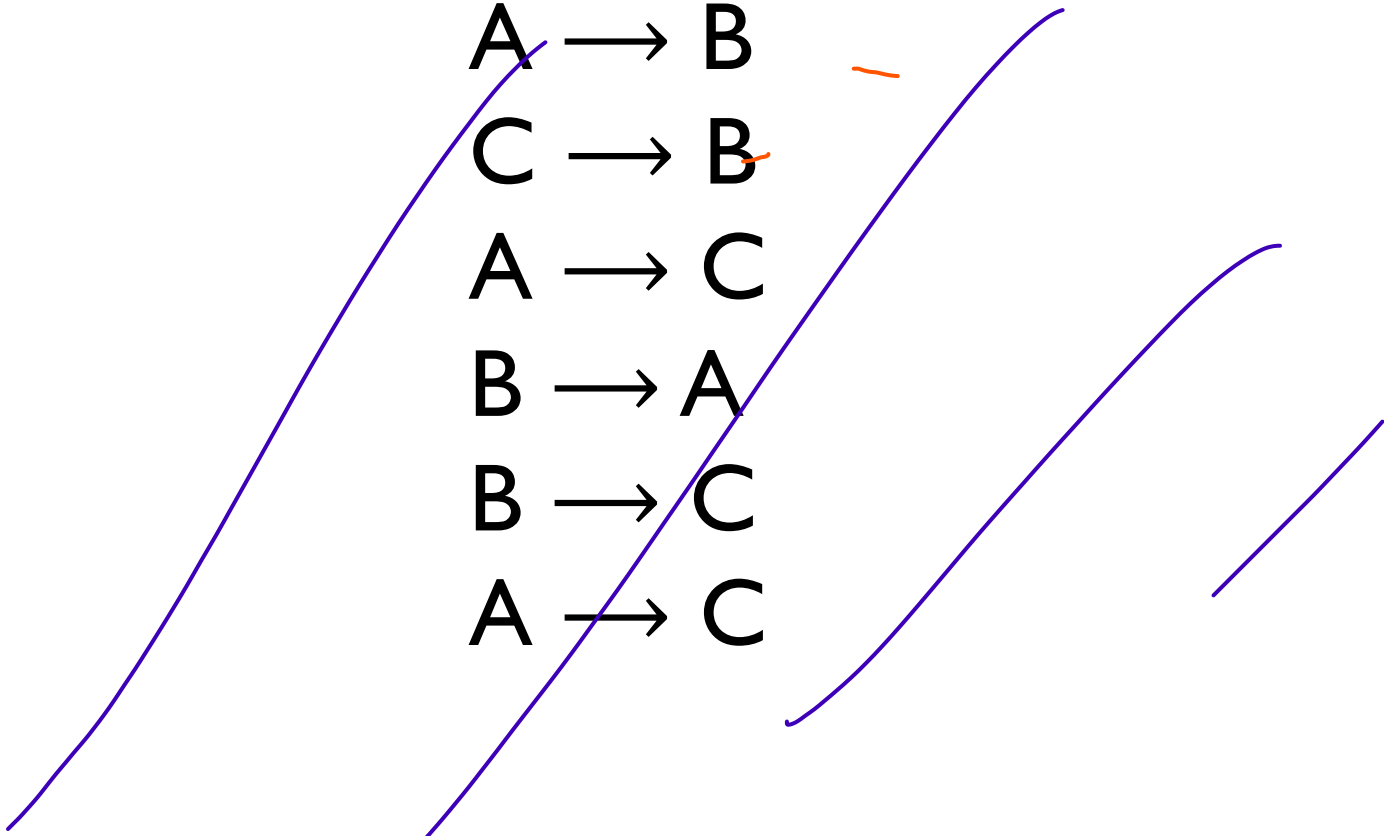
C → B

A → C

B → A

B → C

A → 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

$A \rightarrow C$

$A \rightarrow B$

$C \rightarrow B$

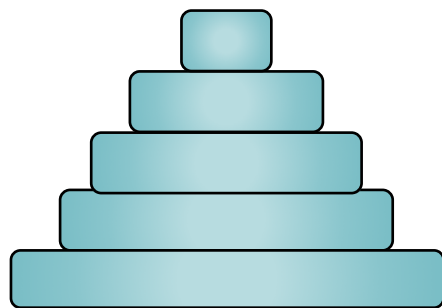
$A \rightarrow C$

$B \rightarrow A$

$B \rightarrow C$

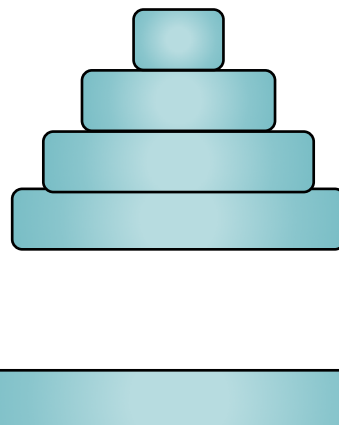
$A \rightarrow C$

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



} torre_1

=



} torre_2

Torre di Hanoi: pseudo-codice

```
muoviTorre(noDischi){  
    se(noDischi = 1)  
        sposta il disco  
    altrimenti  
        muoviTorre(noDischi - 1) 1 → 2  
        sposta il disco           1 → 3  
        muoviTorre(noDischi - 1) 2 → 3 (e inverti  
                                         2 con 3)
```

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