

ILLUSTRATION DU TRI RAPIDE

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Un algorithme possible

Il existe des variantes plus optimisées...

tri(tab, debut, fin) :

```
    si debut < fin
        iPivot ← partition(tab, debut, fin)
        tri(tab, debut, iPivot-1)
        tri(tab, iPivot+1, fin)
    fsi
```

partition(tab, debut, fin) :

```
    iPivot ← debut
    pivot ← tab[debut]
    pour i allant de debut+1 a fin
        si tab[i] < pivot
            tab[iPivot] ← tab[i]
            tab[i] ← tab[iPivot+1]
            tab[iPivot+1] ← pivot
            iPivot++
    fsi
    fpour
    retourner iPivot
```

Analyse

tri(tab, debut, fin) :

si `debut < fin` **condition d'arrêt**

 iPivot ← `partition(tab, debut, fin)` **partition**

appels
 tri(tab, iPivot+1, fin) **récurifs**

fsi

partition(tab, debut, fin) :

 iPivot ← debut

 pivot ← tab[debut]

 pour i allant de debut+1 a fin

 si tab[i] < pivot

 tab[iPivot] ← tab[i]

 tab[i] ← tab[iPivot+1]

 tab[iPivot+1] ← pivot

 iPivot++

 fsi

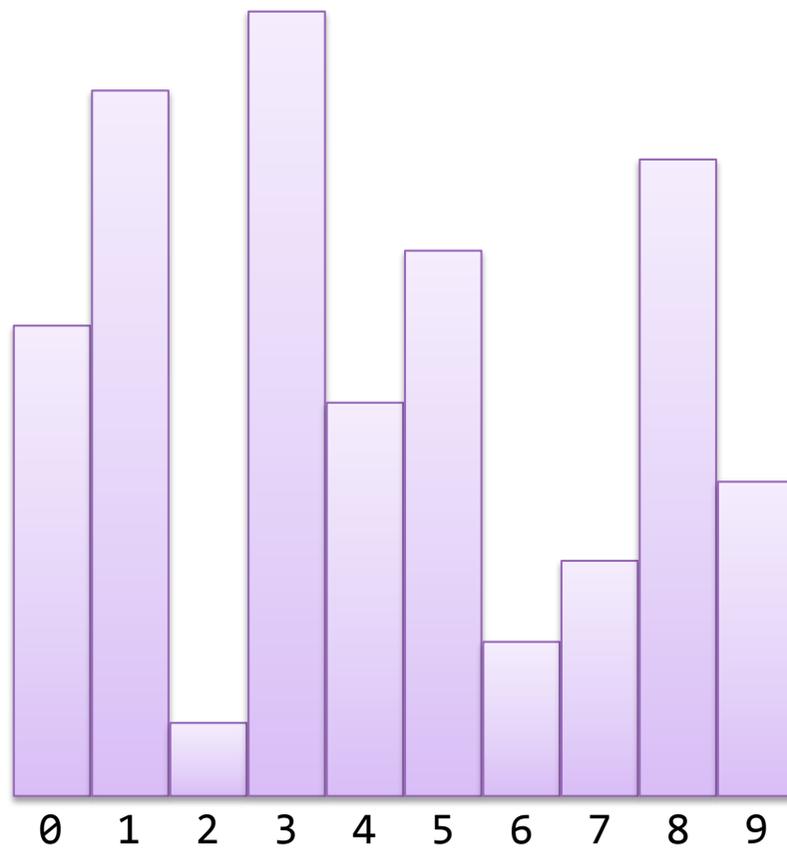
 fpour

 retourner iPivot

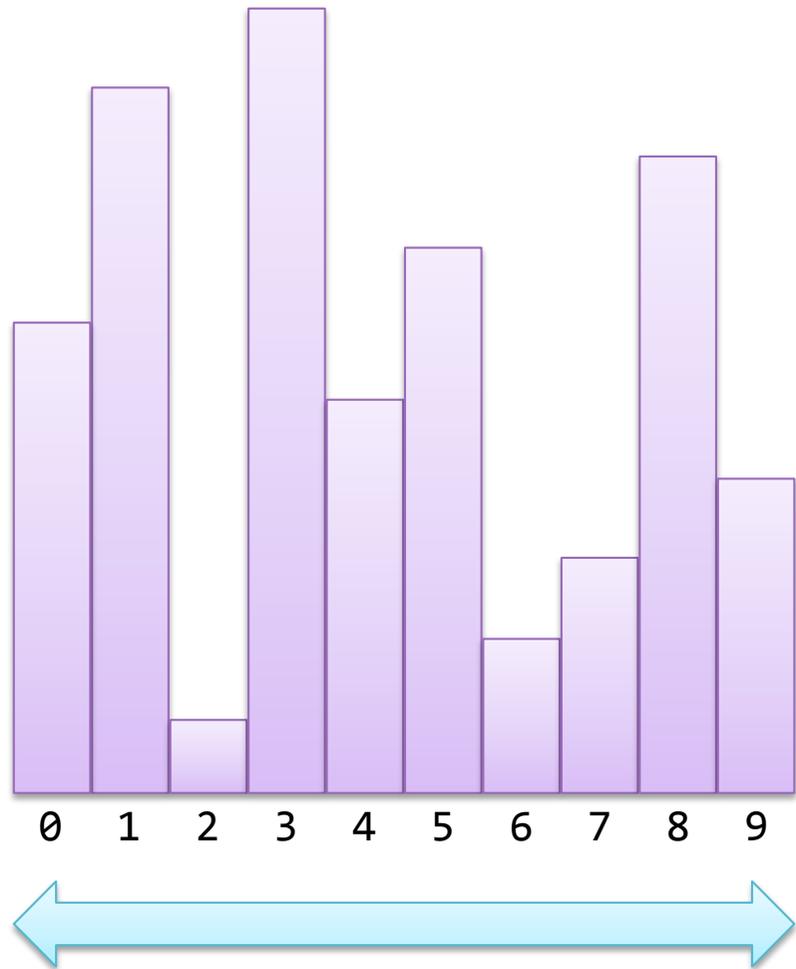
} **initialisation**

} **itération +
comparaison**

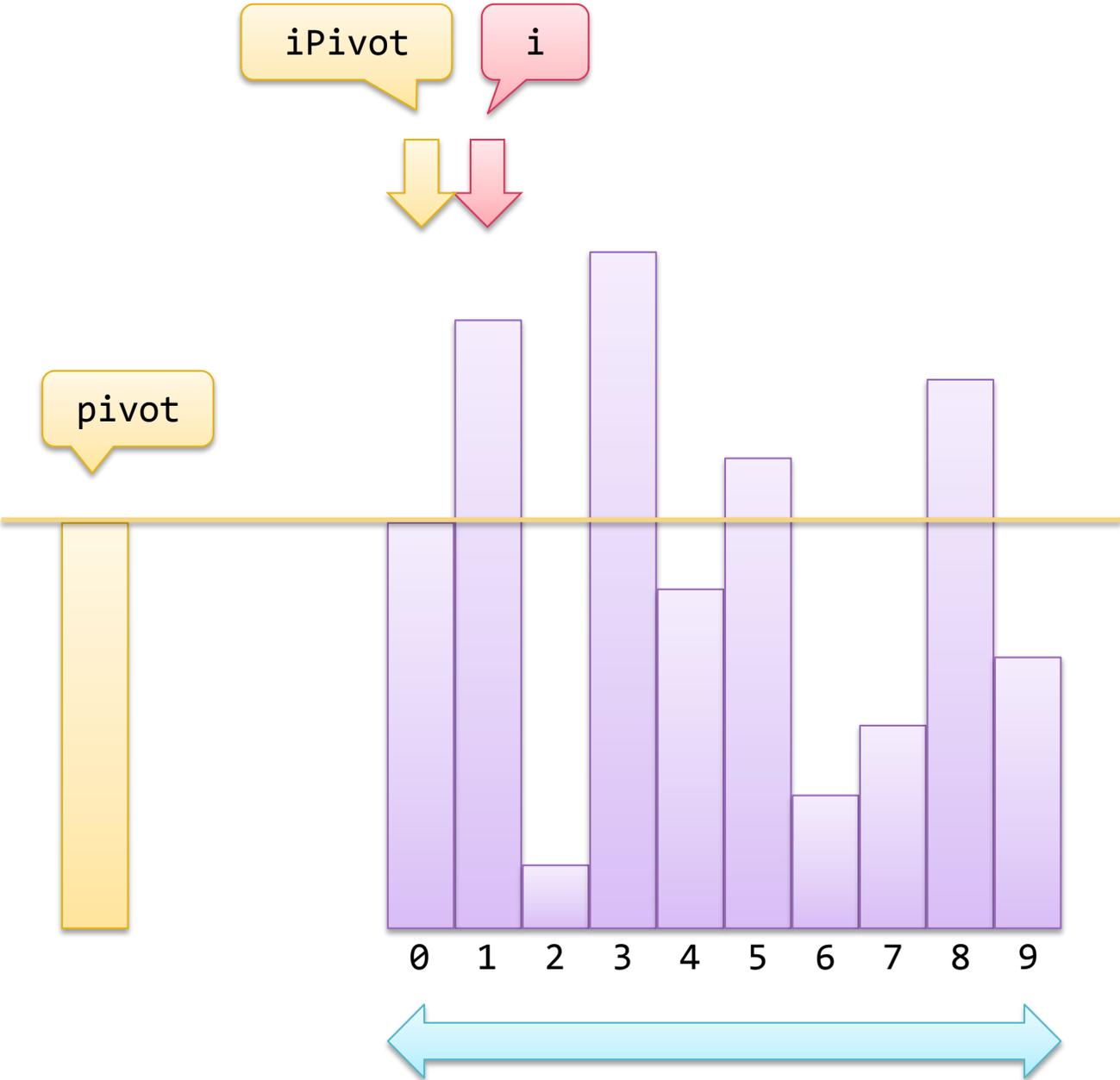
} **permutation**



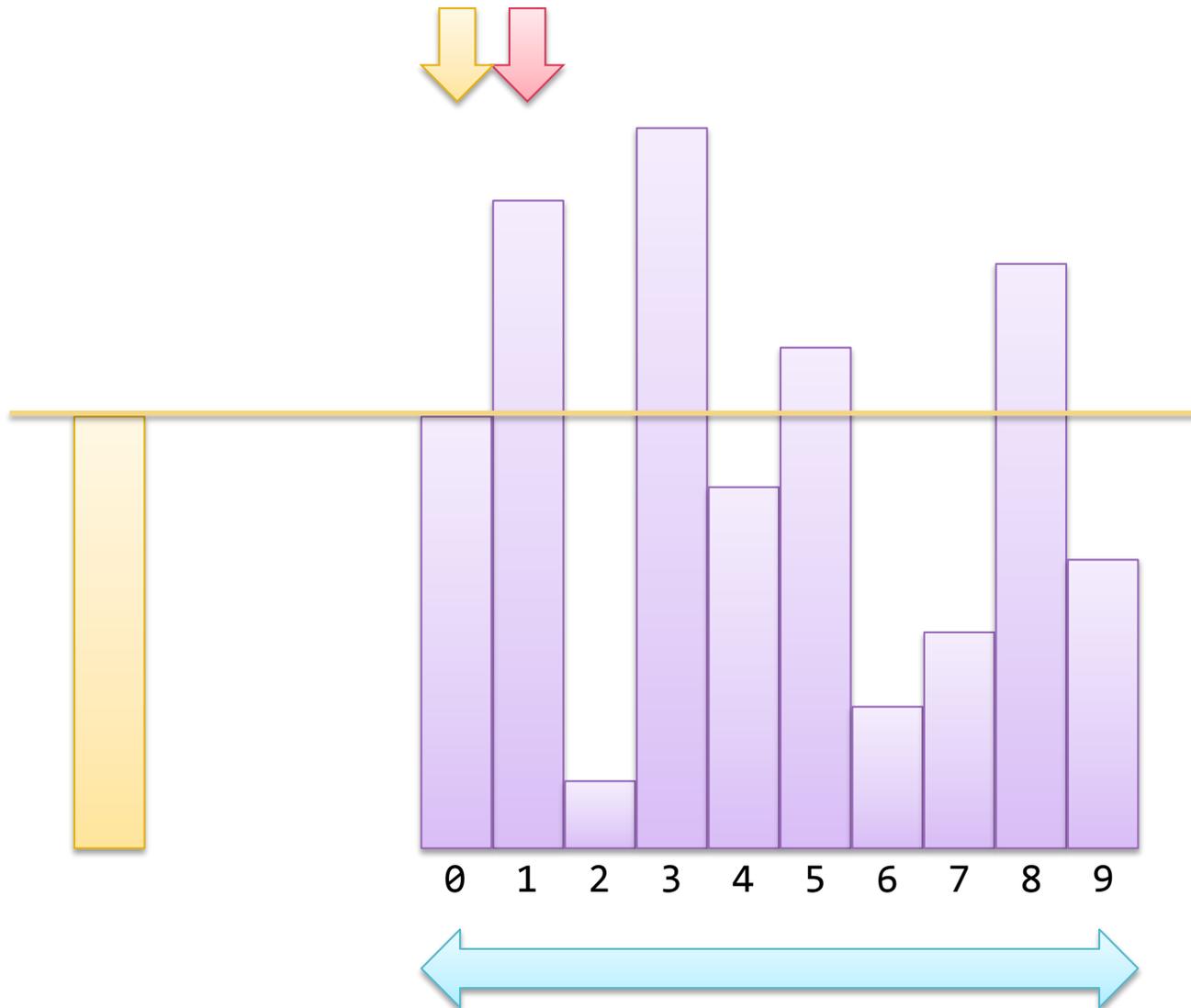
tri
(0,9)



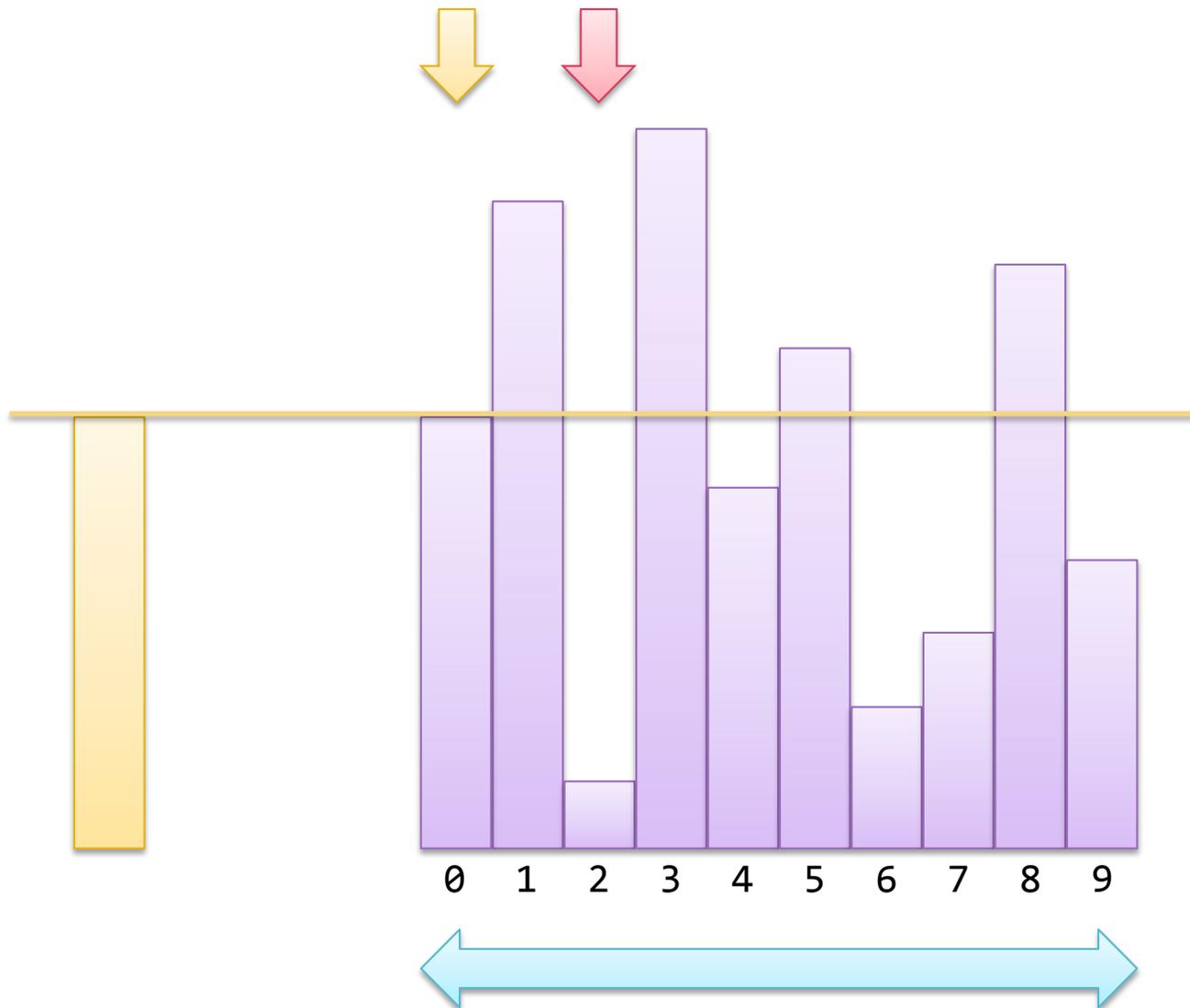
tri :
appel



partition :
initialisation

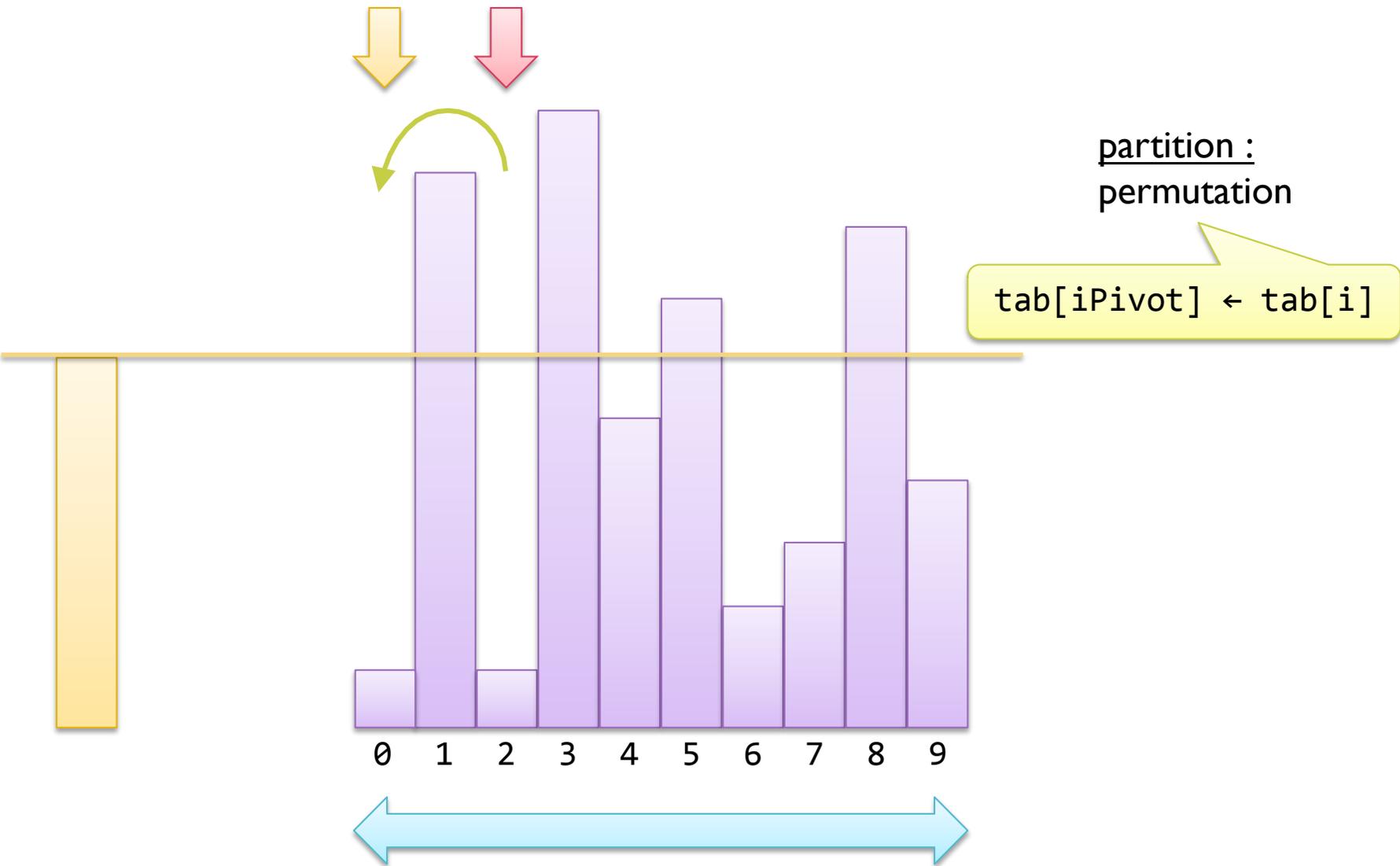


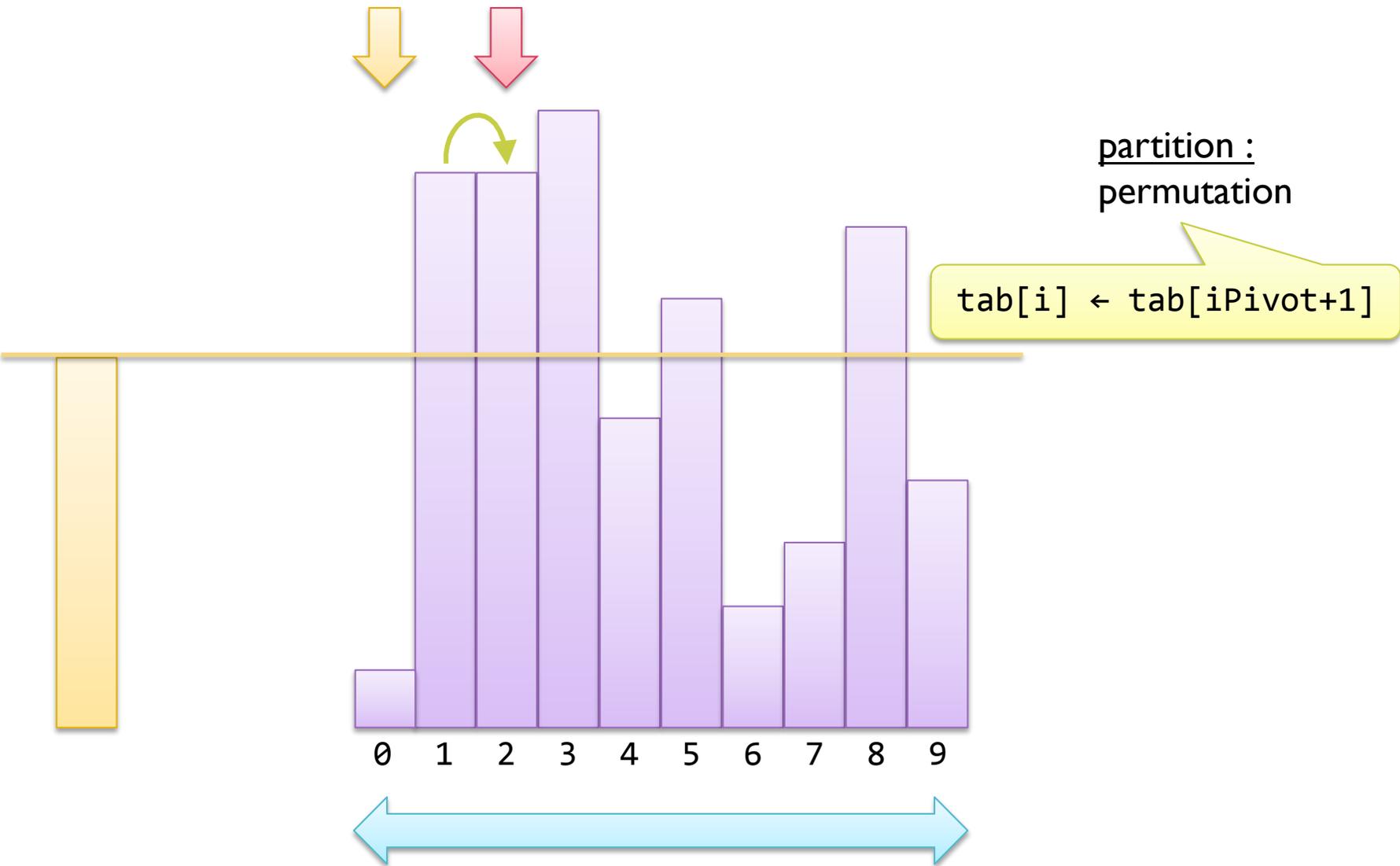
partition :
itération +
comparaison

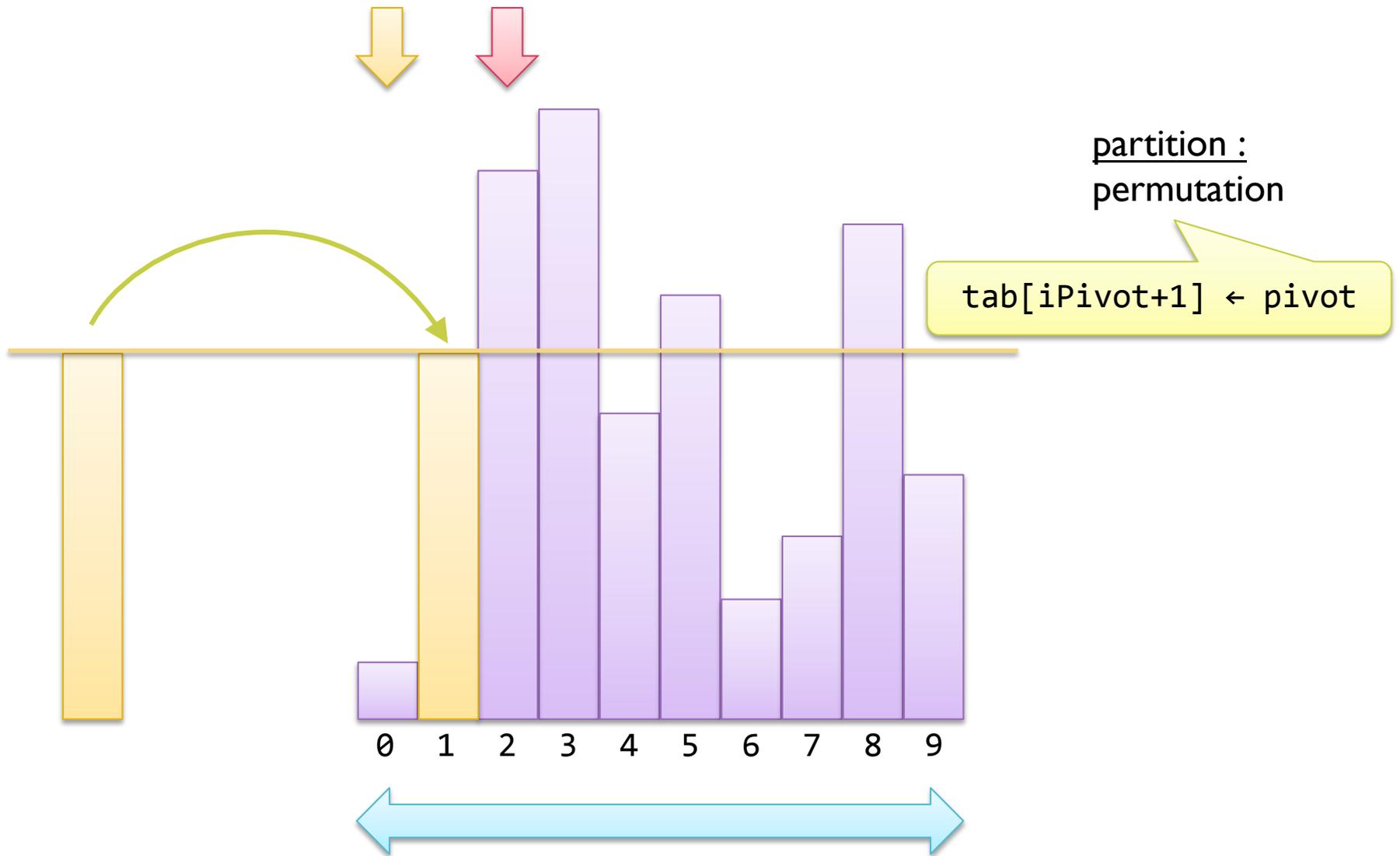


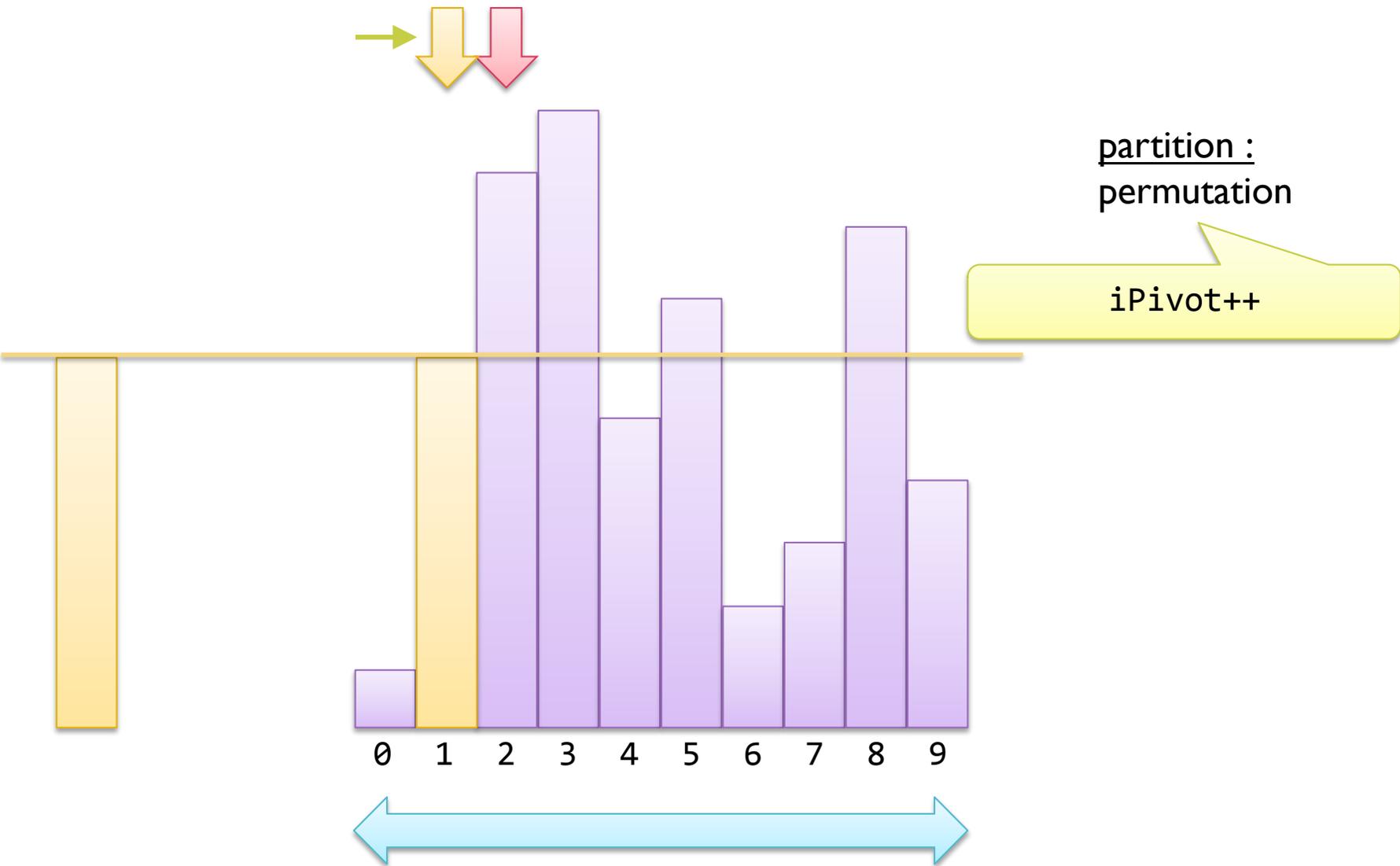
partition :
itération +
comparaison

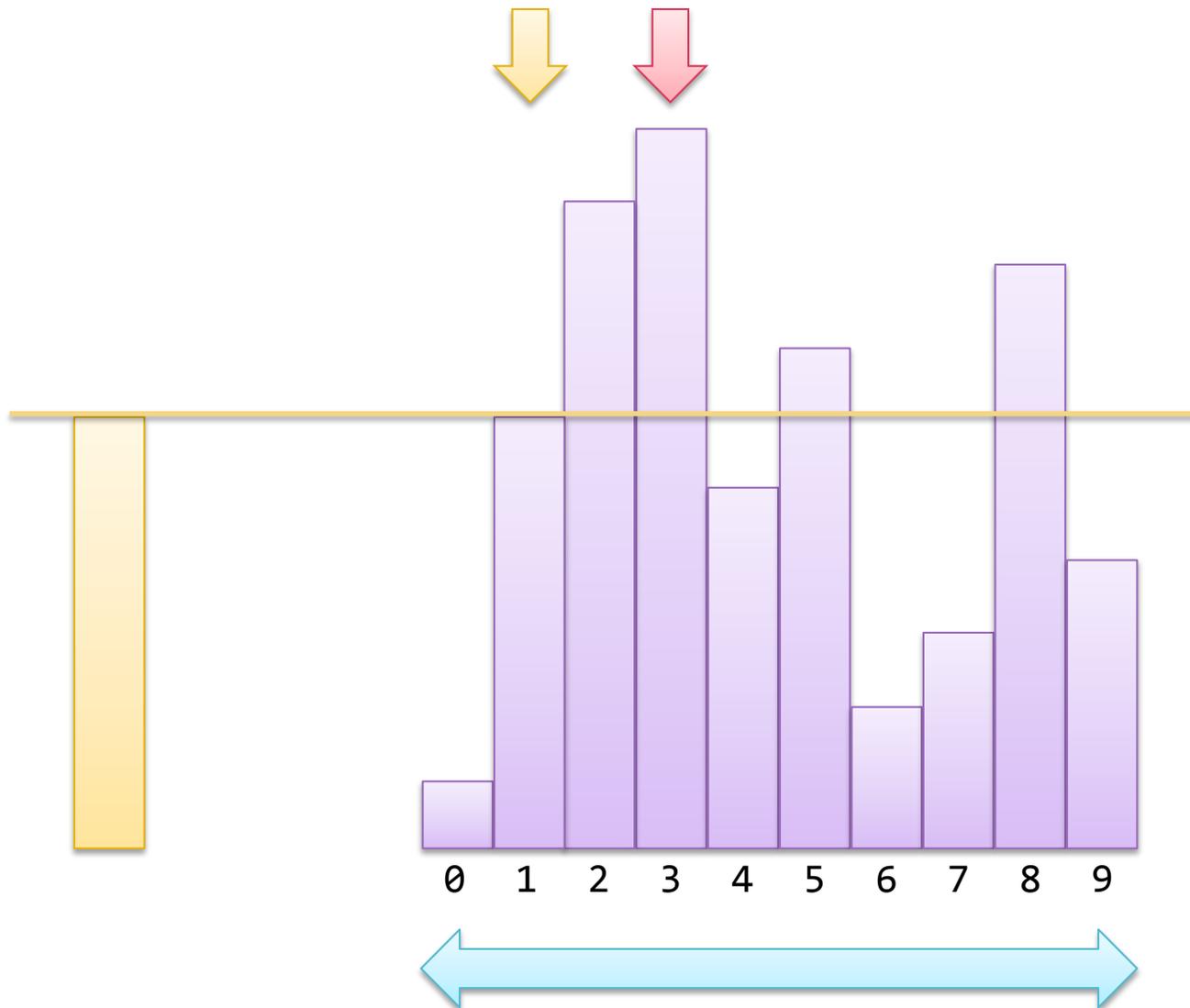
`tab[i] < pivot`



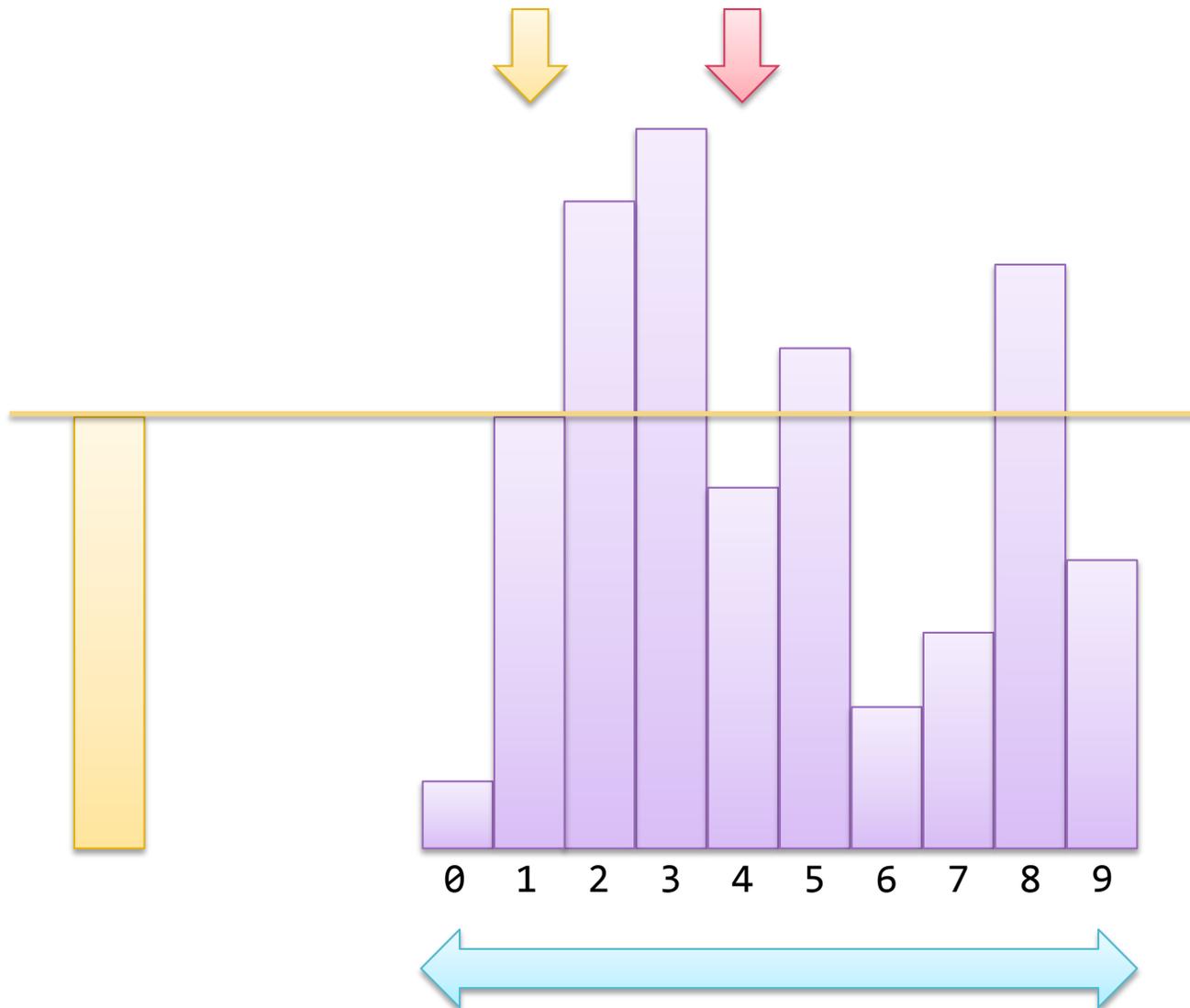




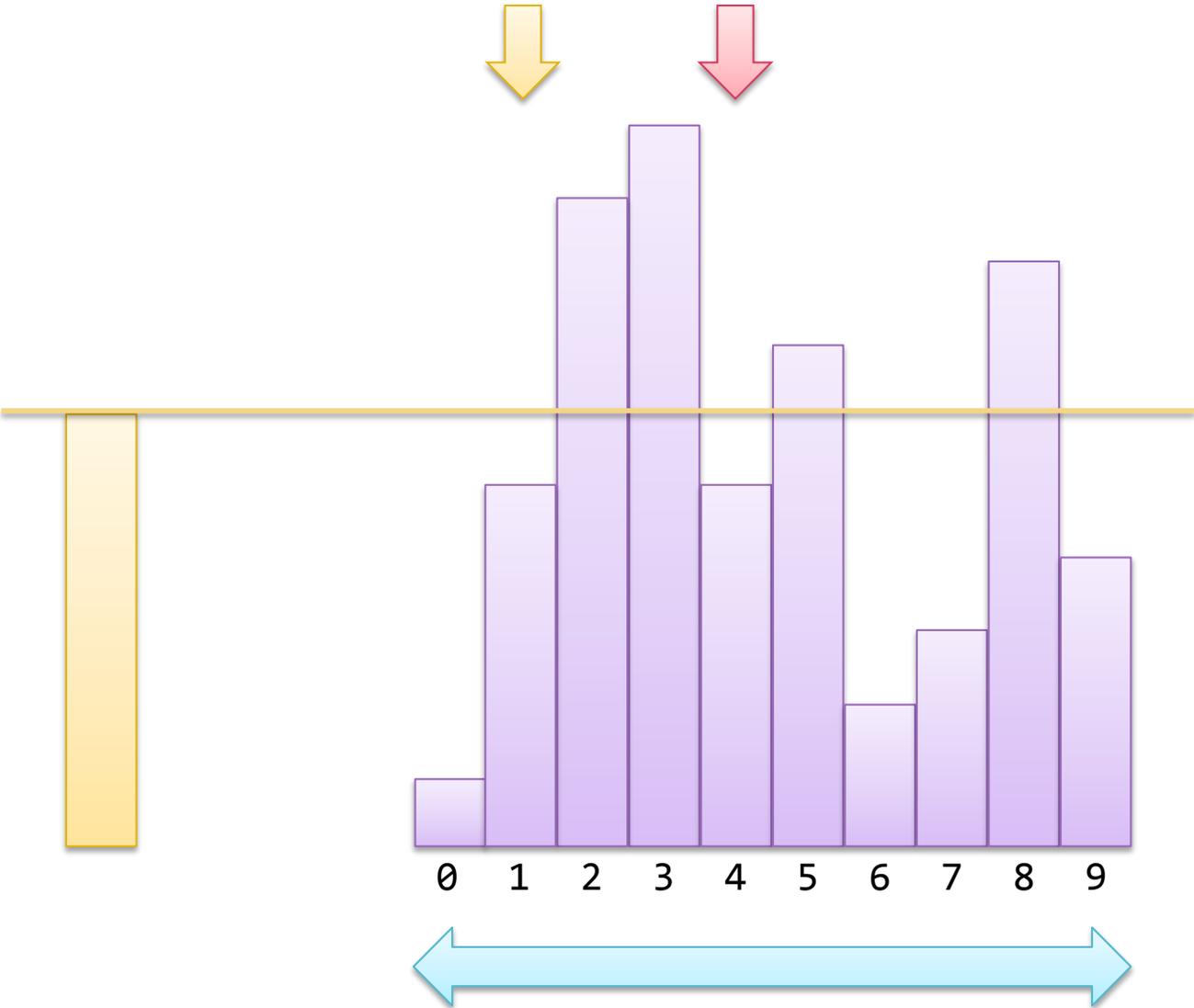




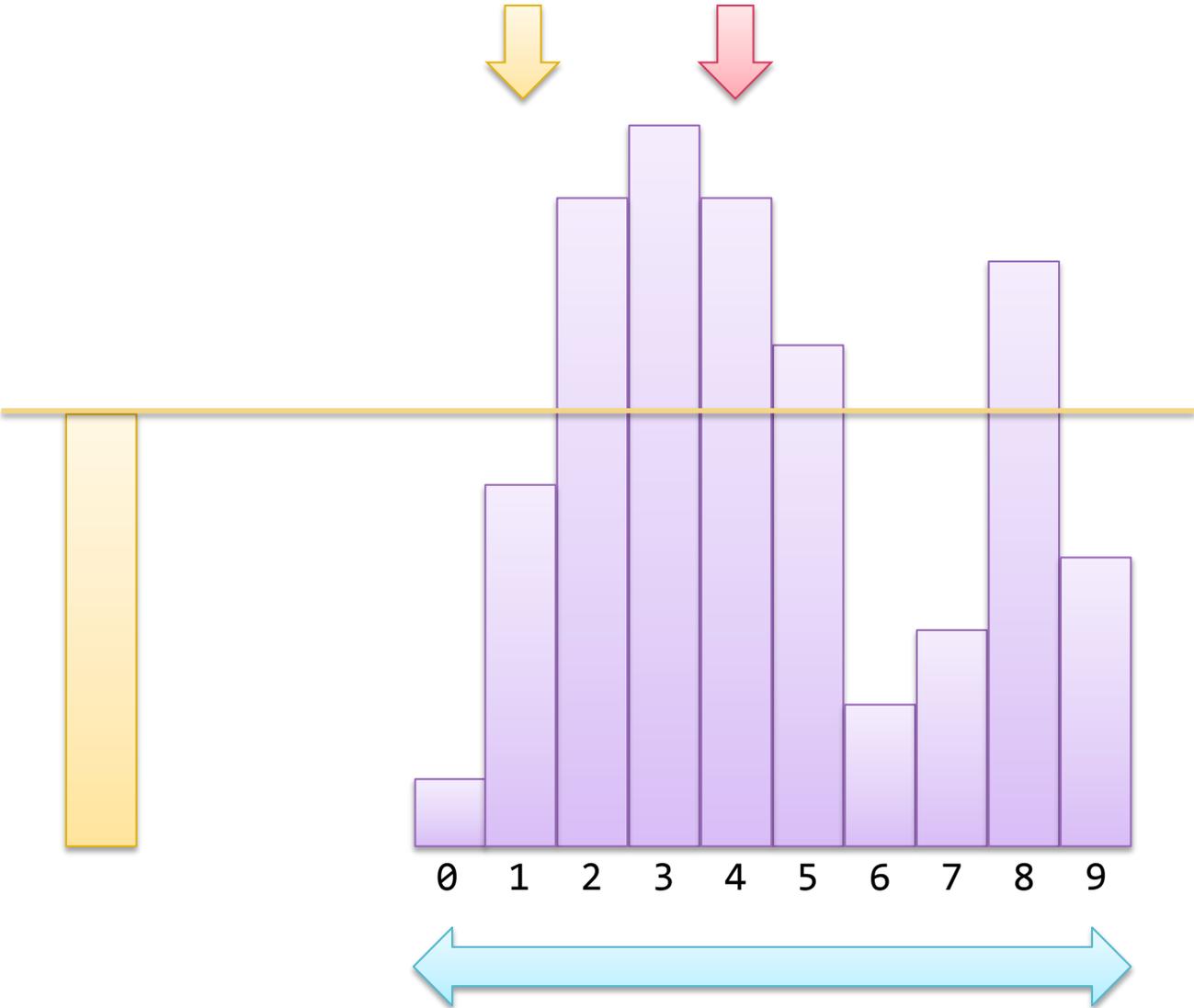
partition :
itération +
comparaison



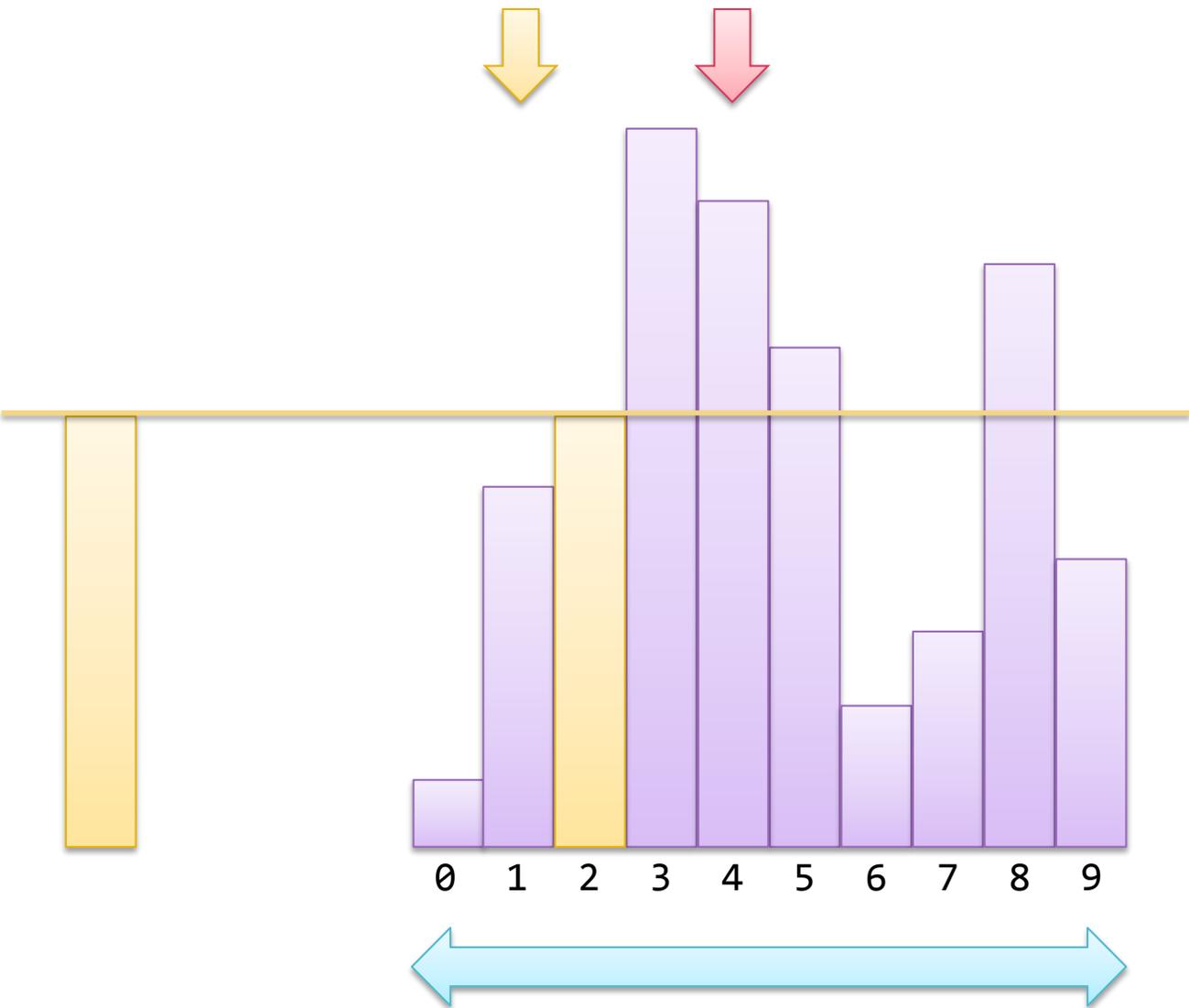
partition :
itération +
comparaison



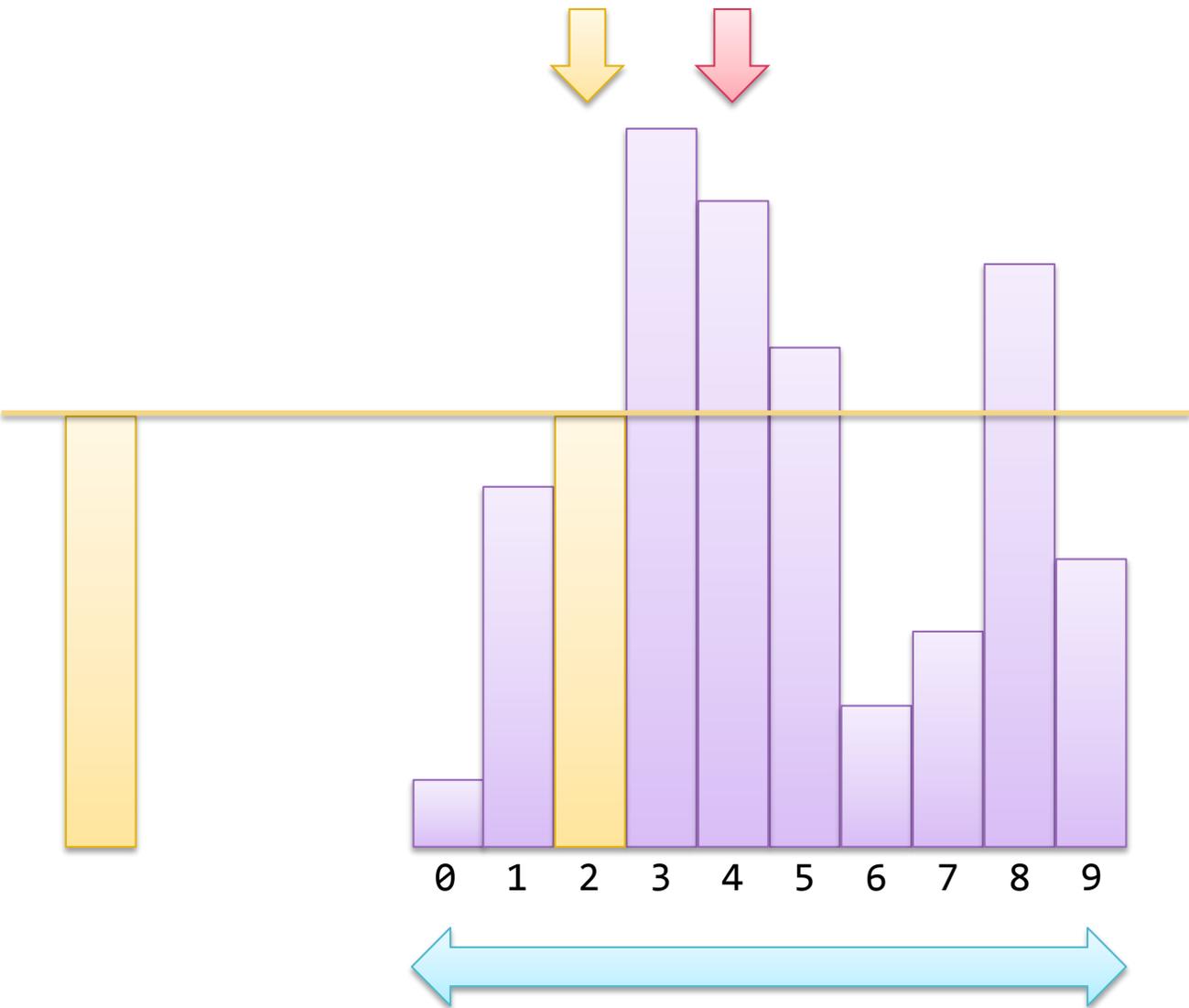
partition :
permutation



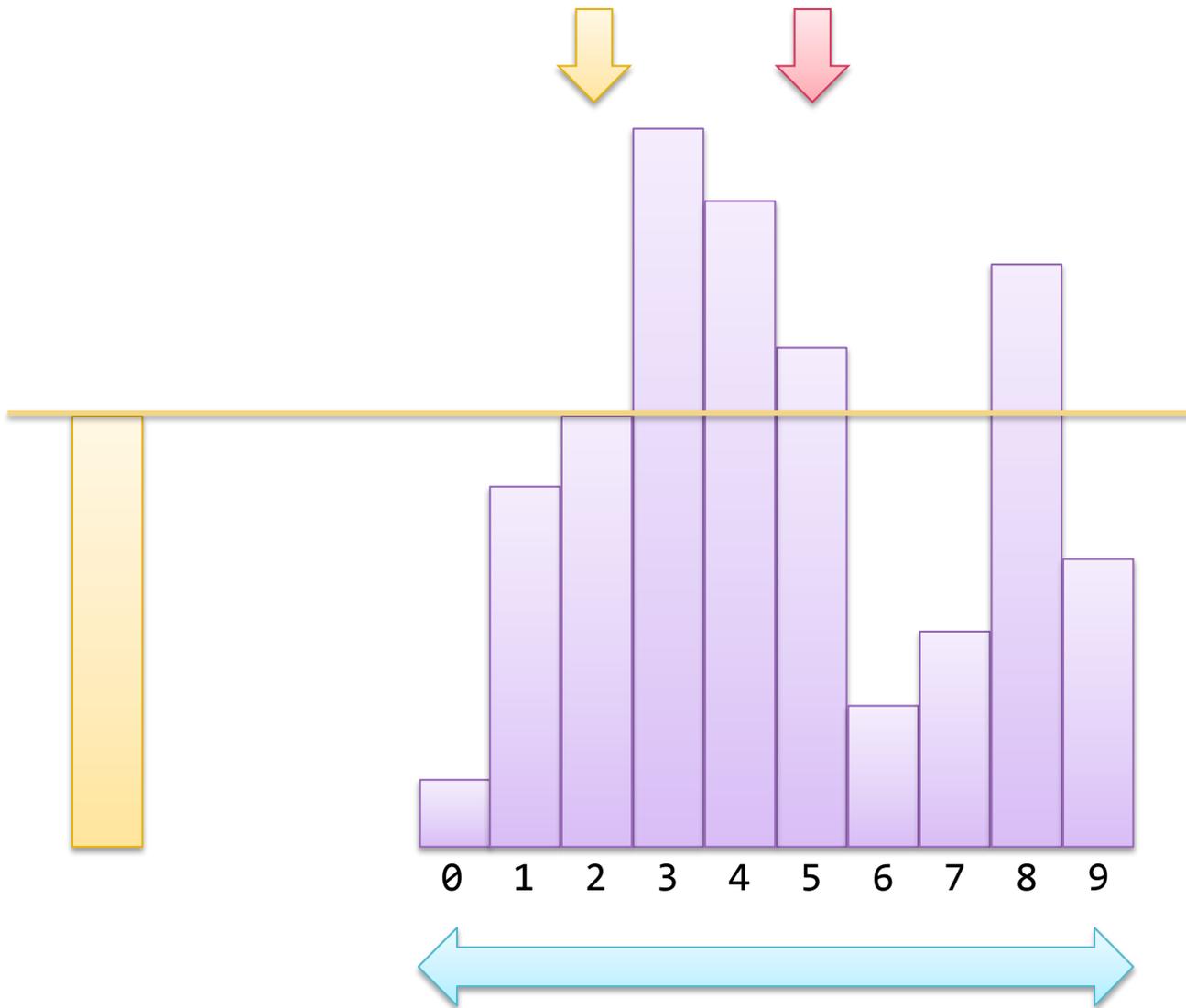
partition :
permutation



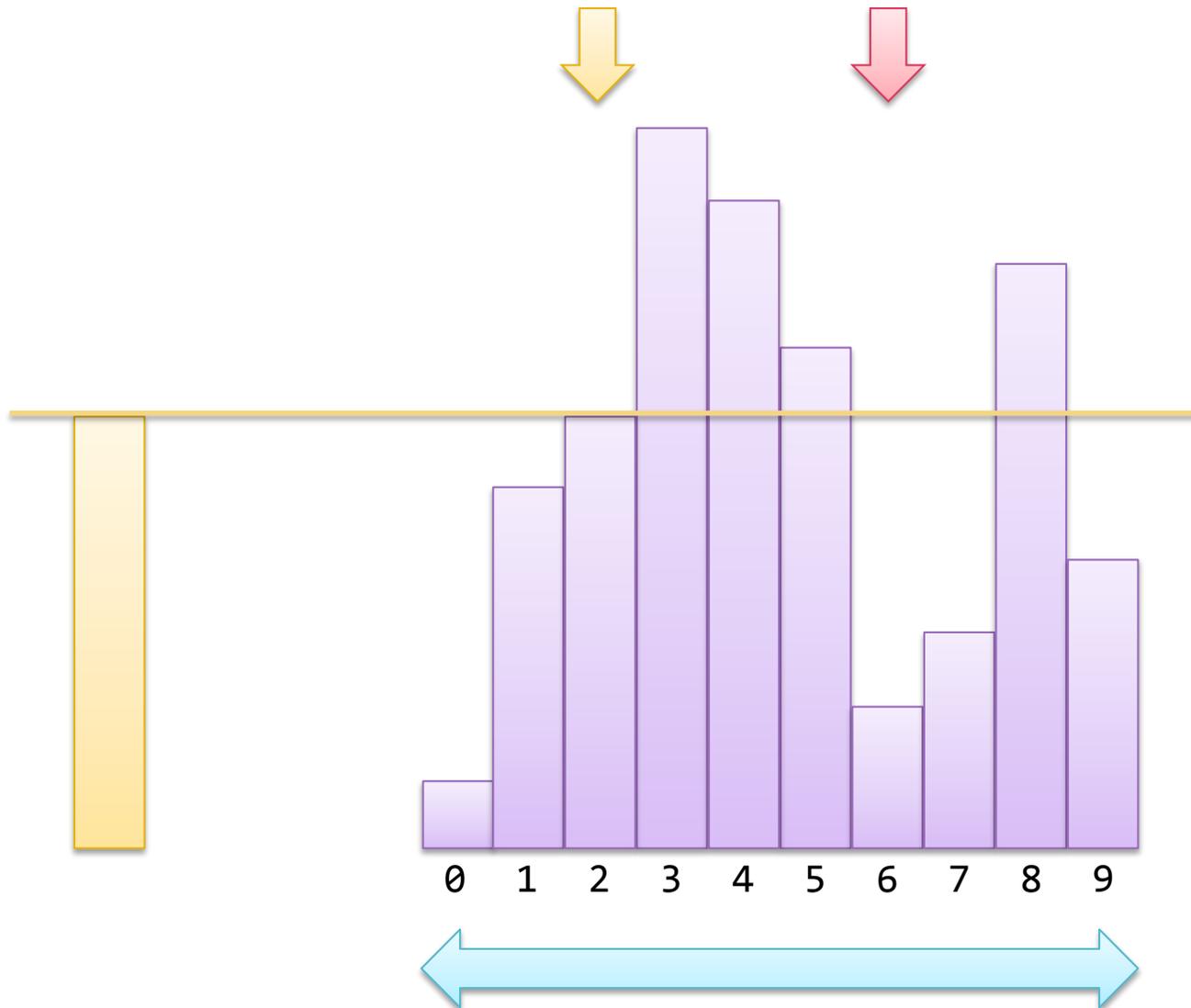
partition :
permutation



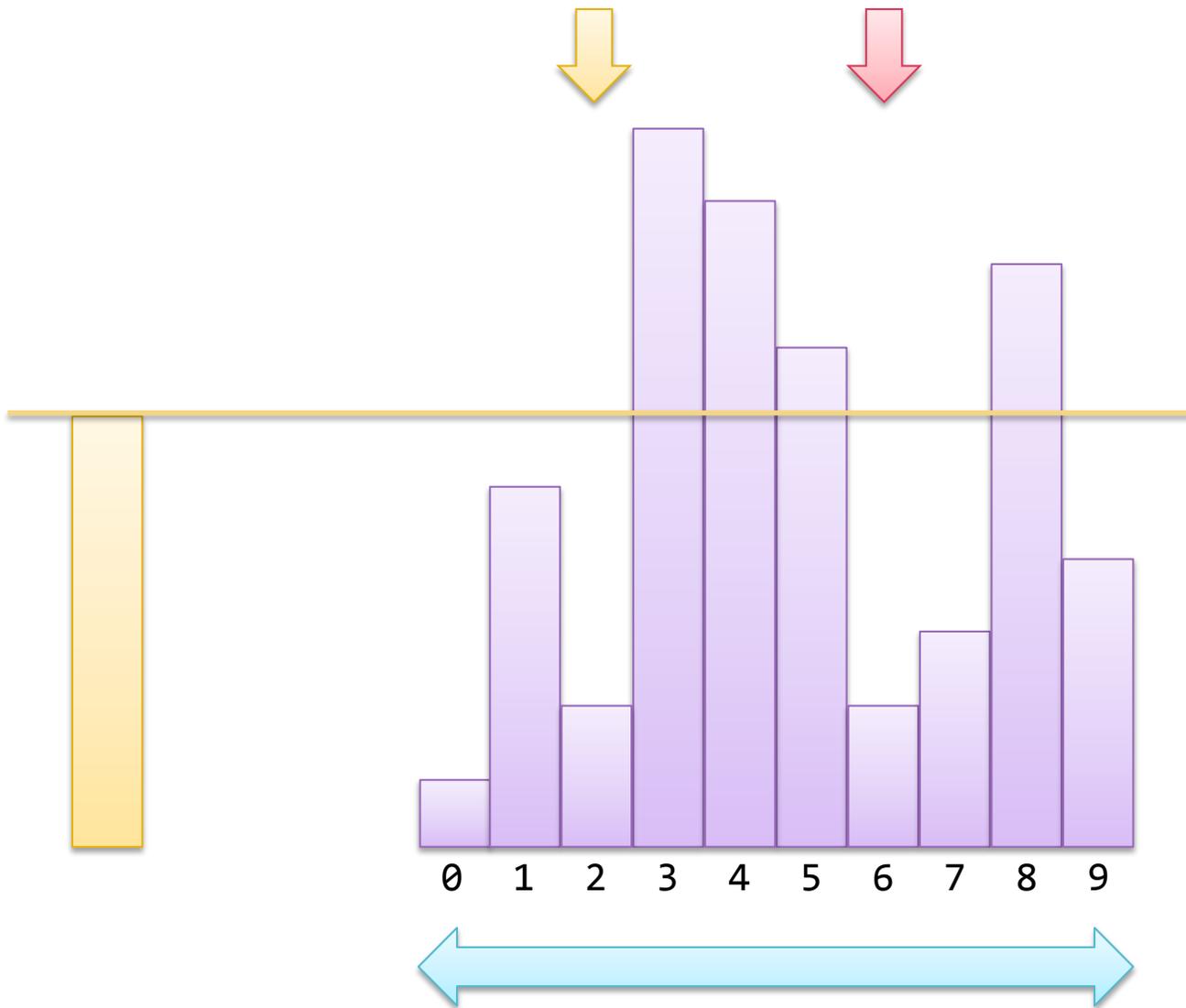
partition :
permutation



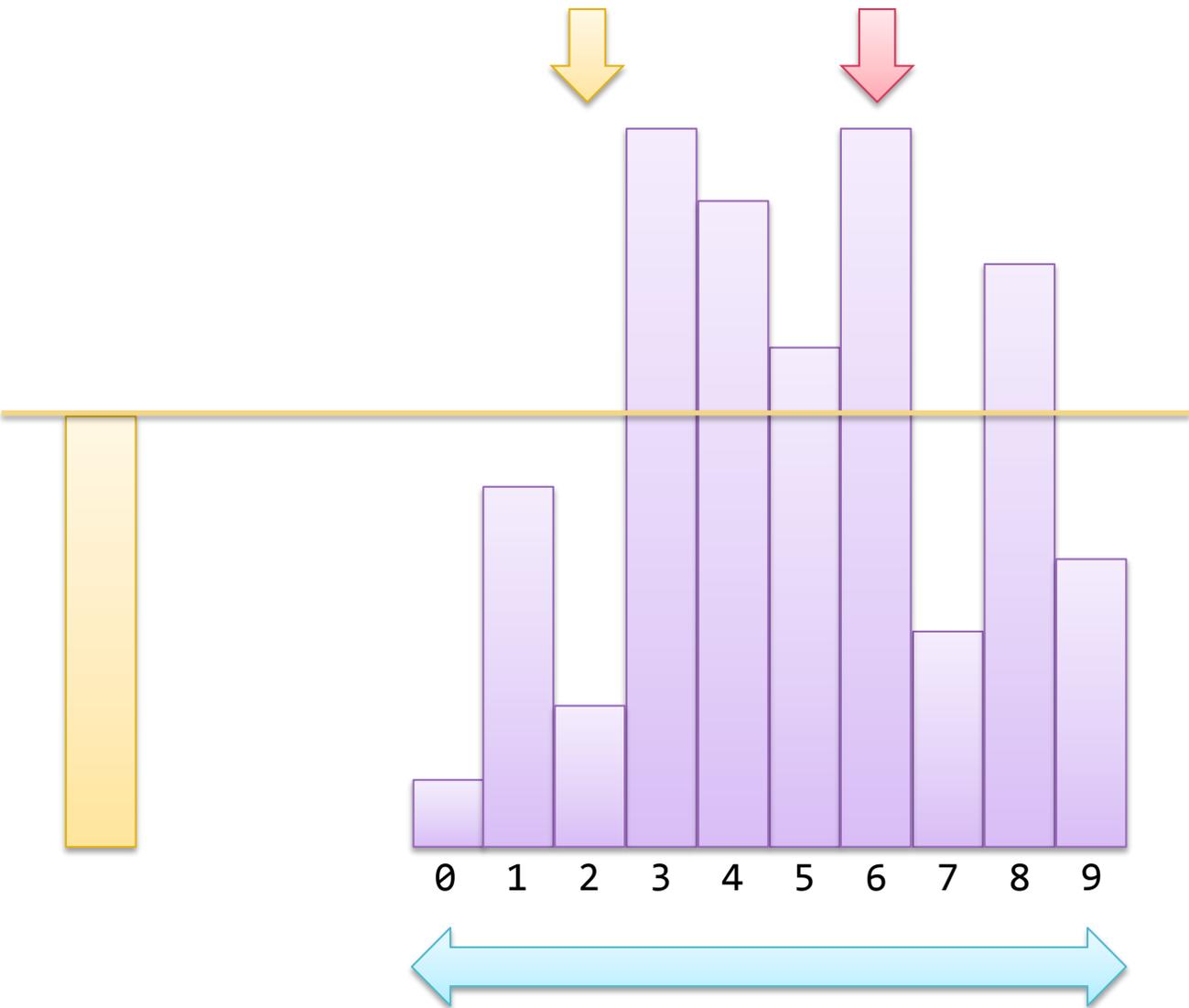
partition :
itération +
comparaison



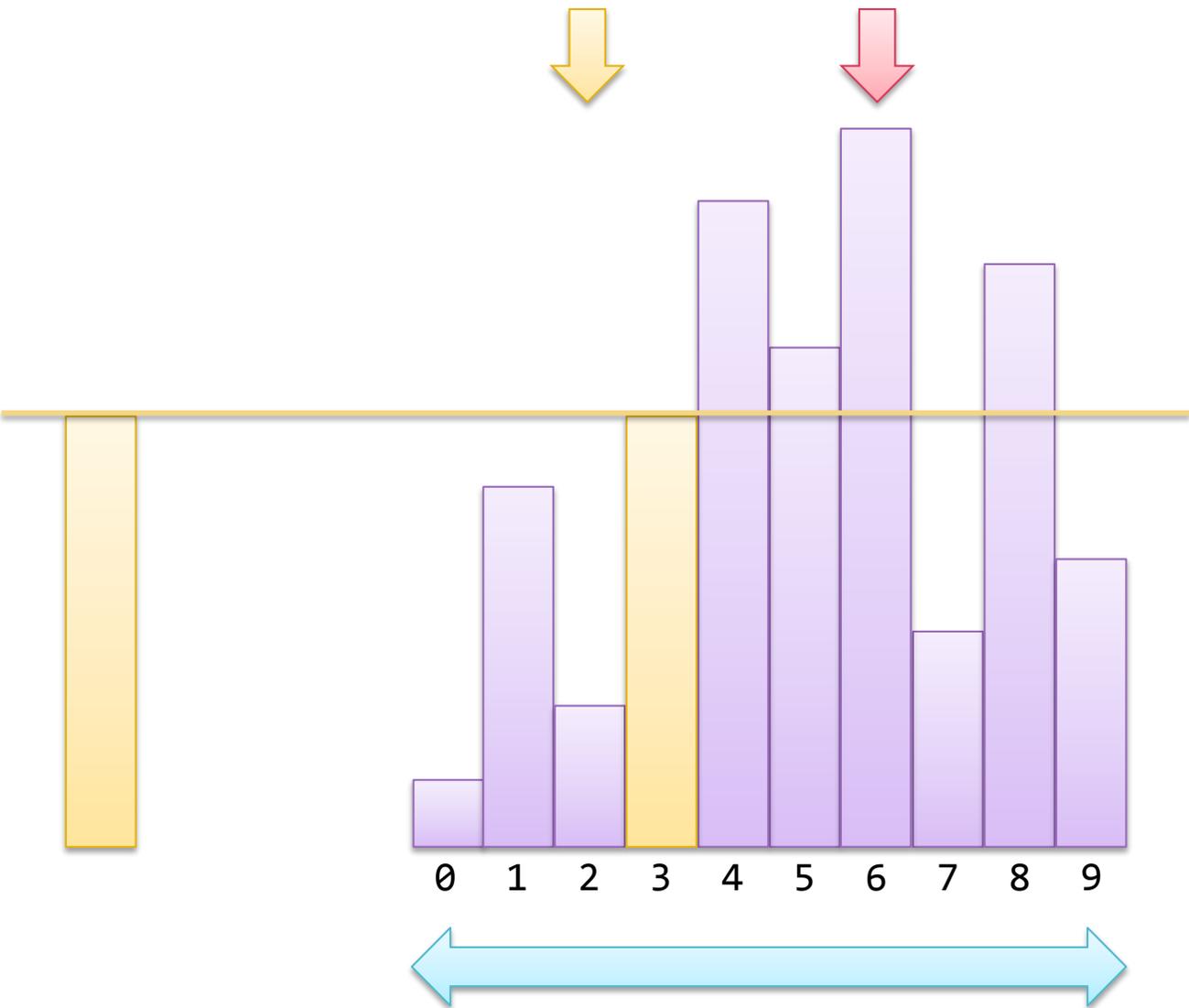
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itération +
comparaison



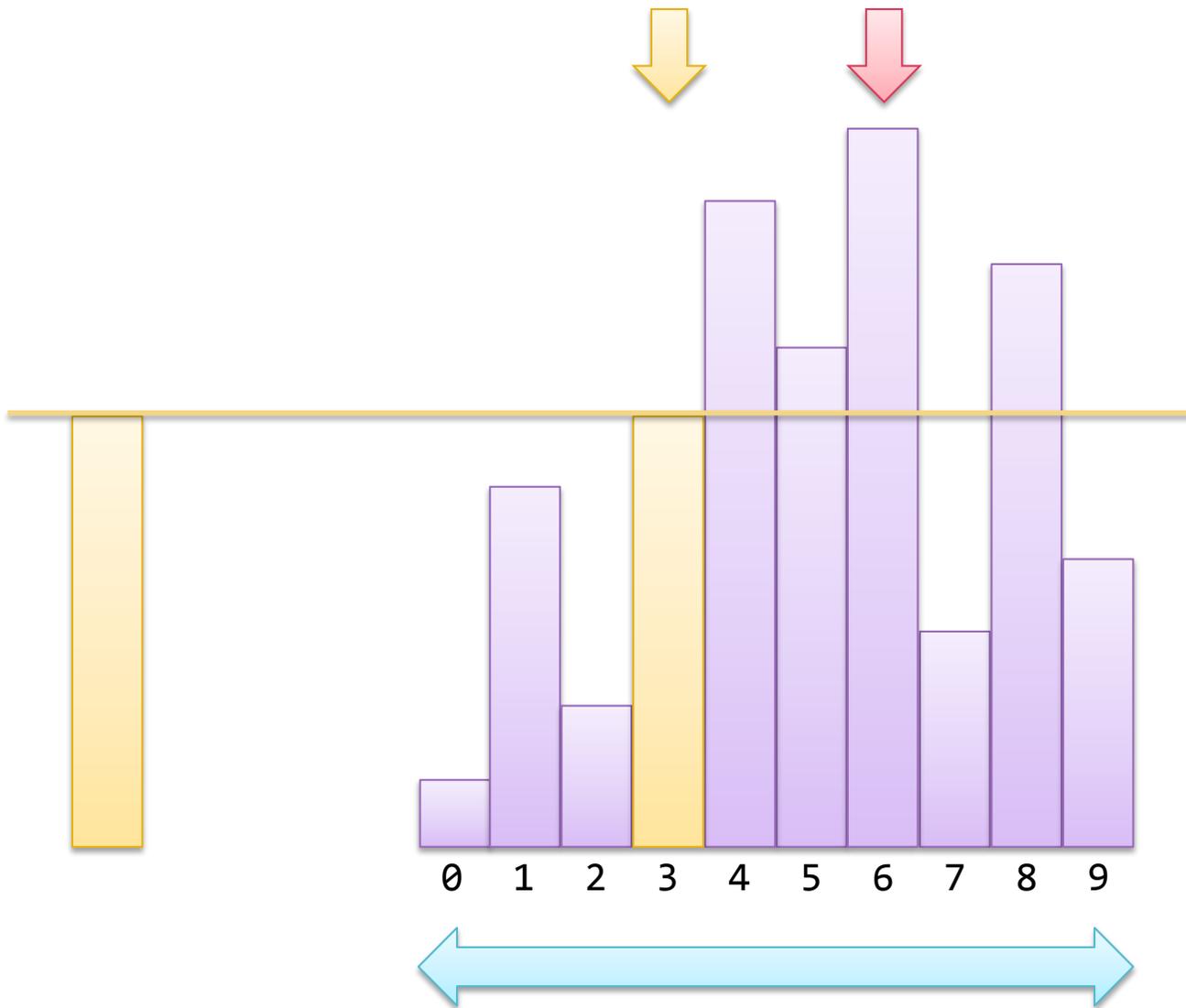
partition :
permutation



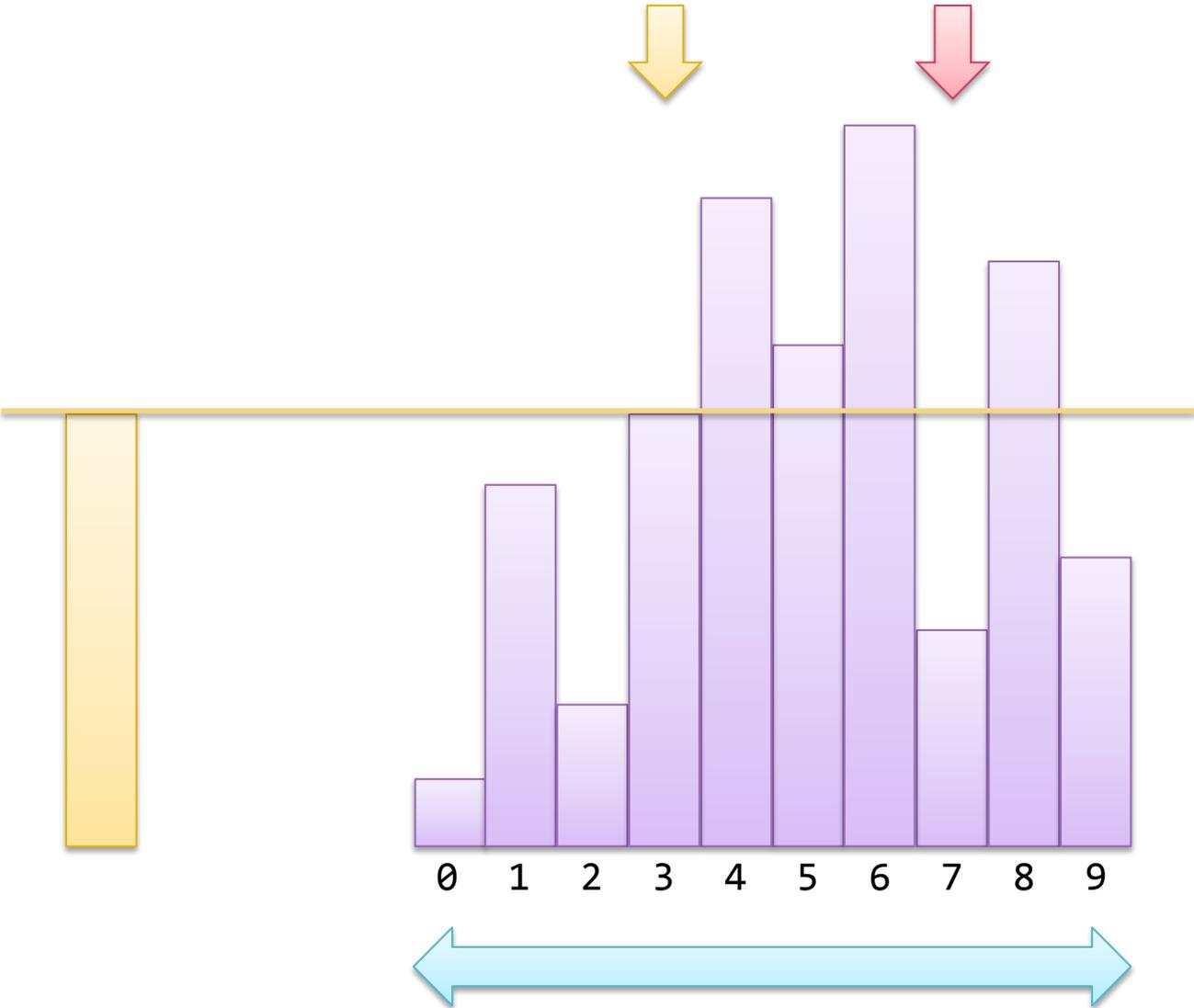
partition :
permutation



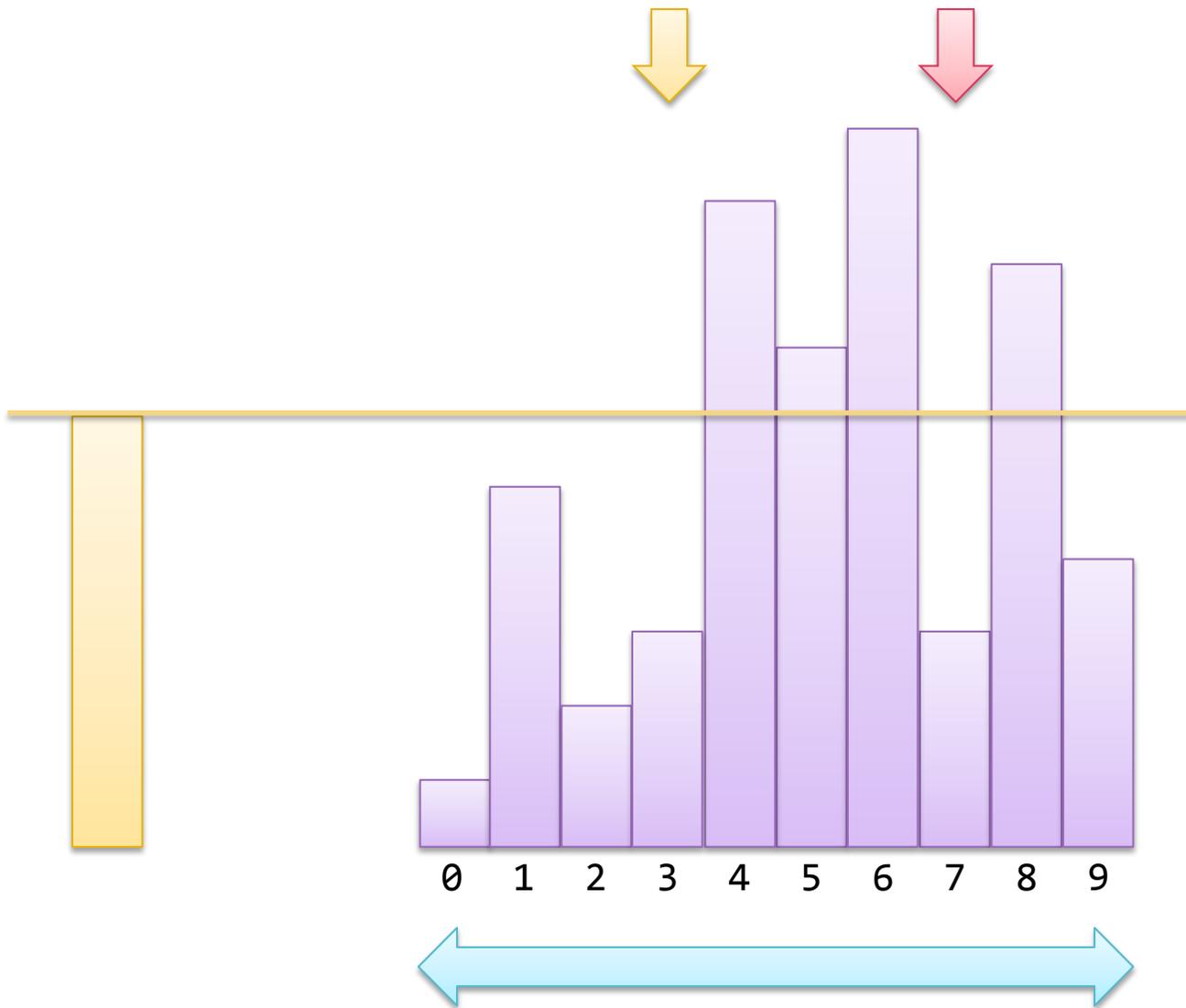
partition :
permutation



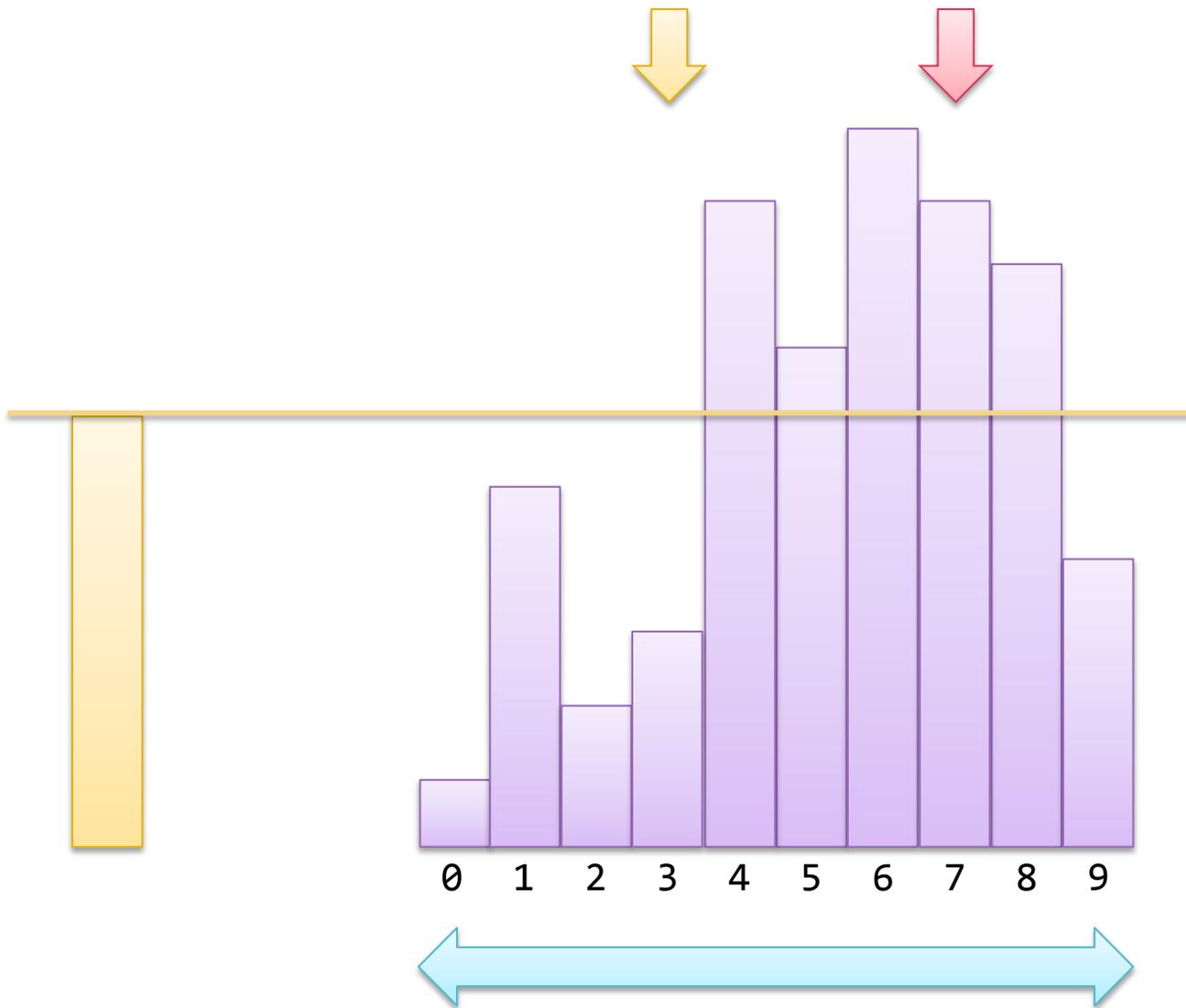
partition :
permutation



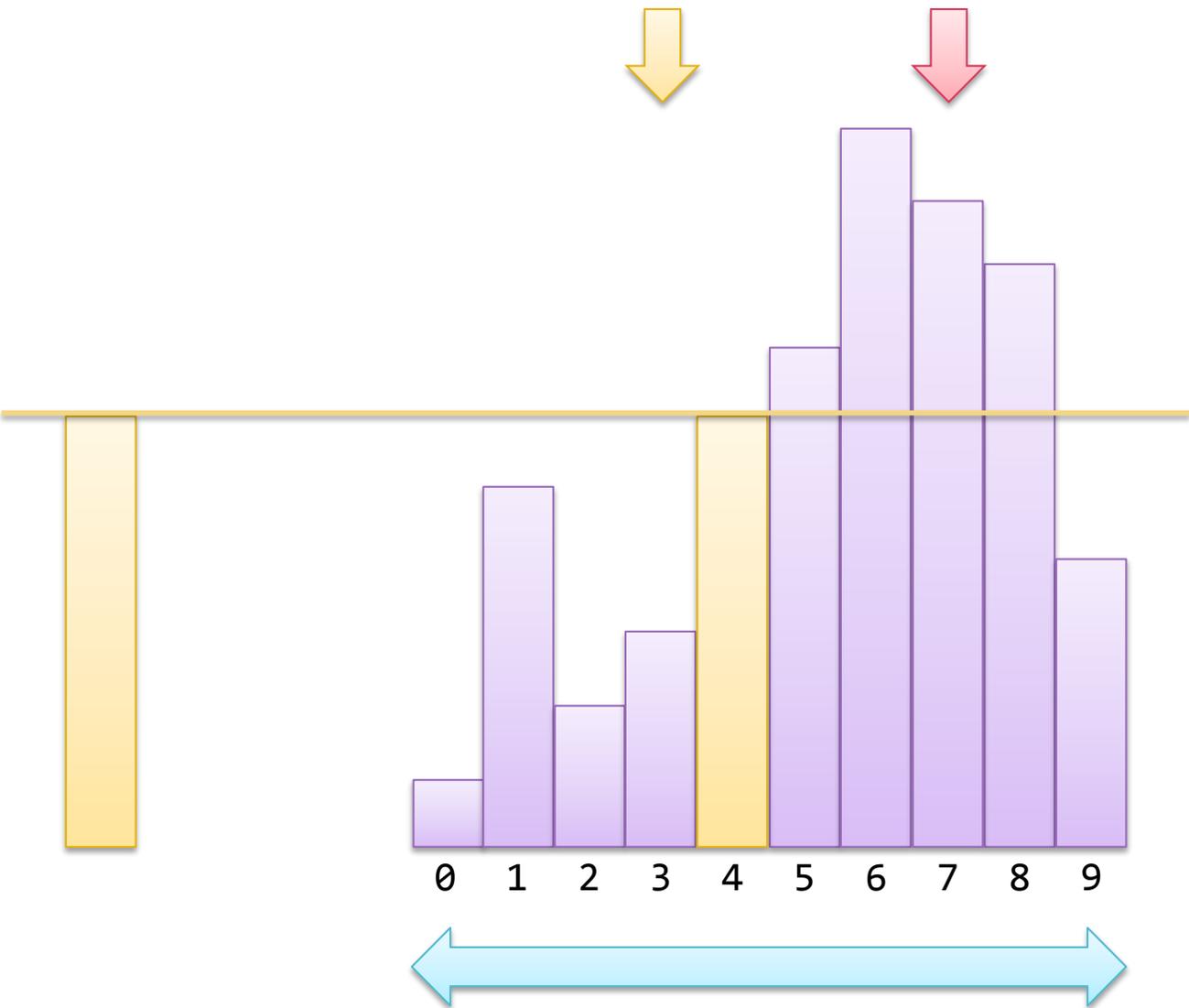
partition :
itération +
comparaison



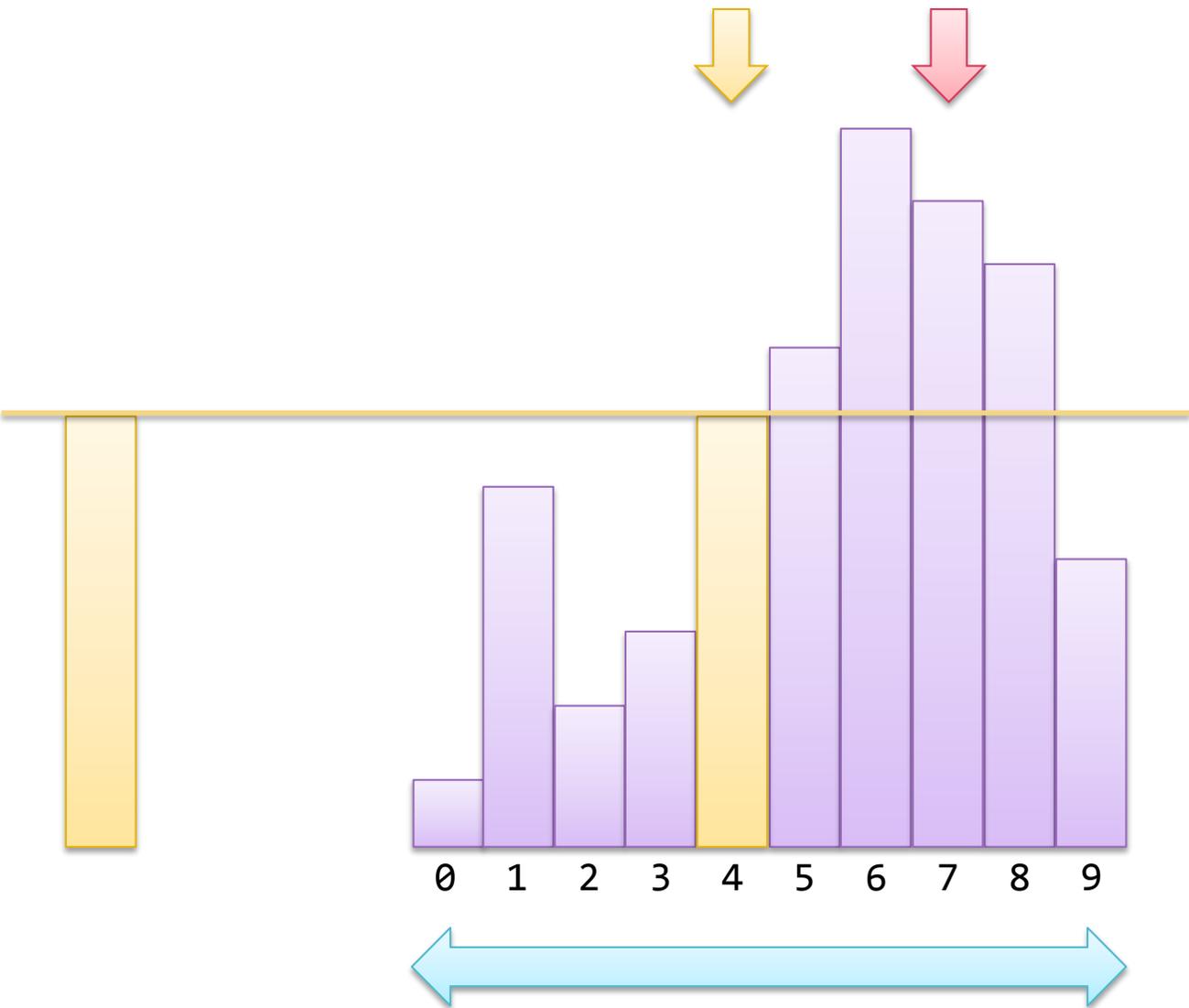
partition :
permutation



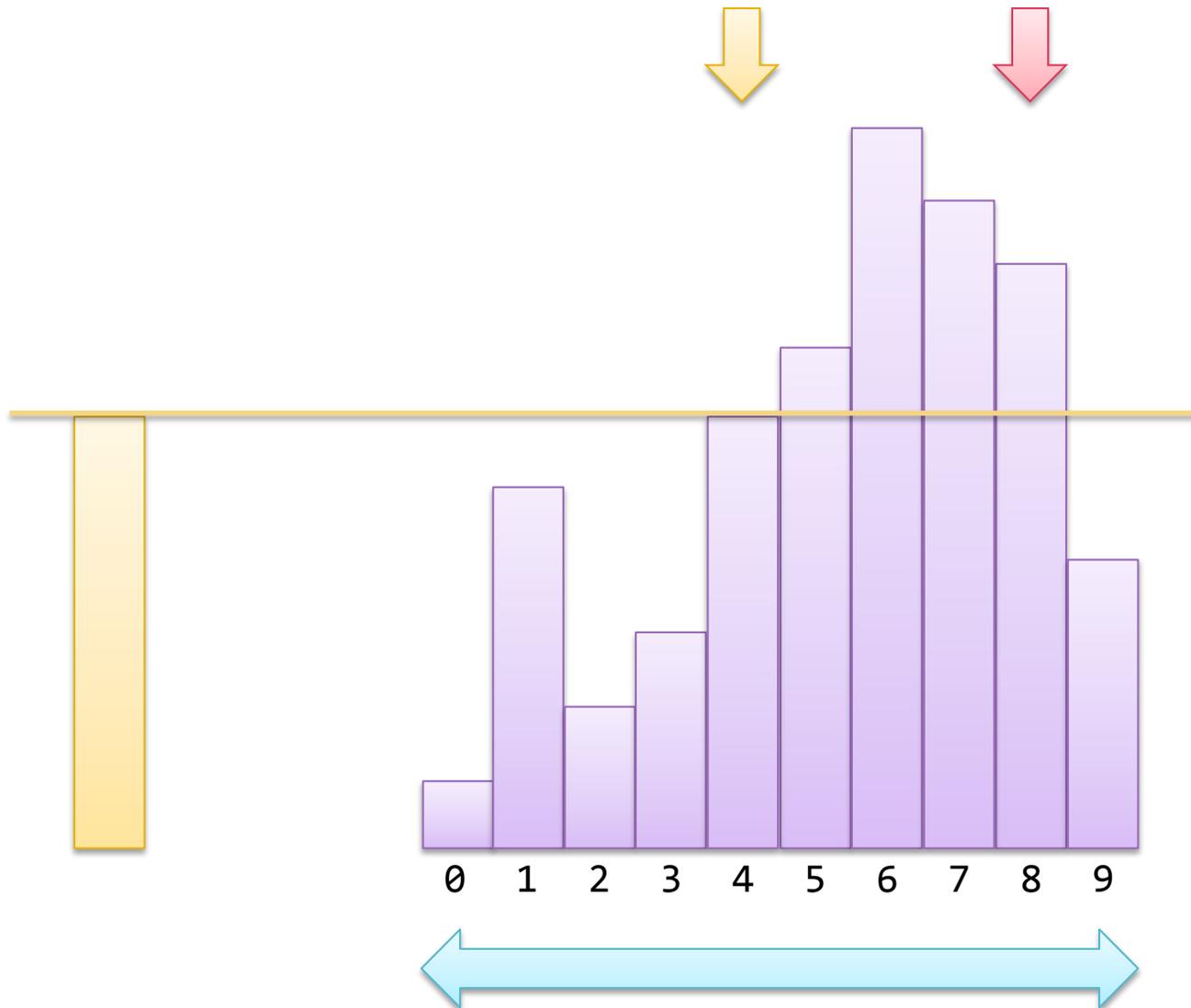
partition :
permutation



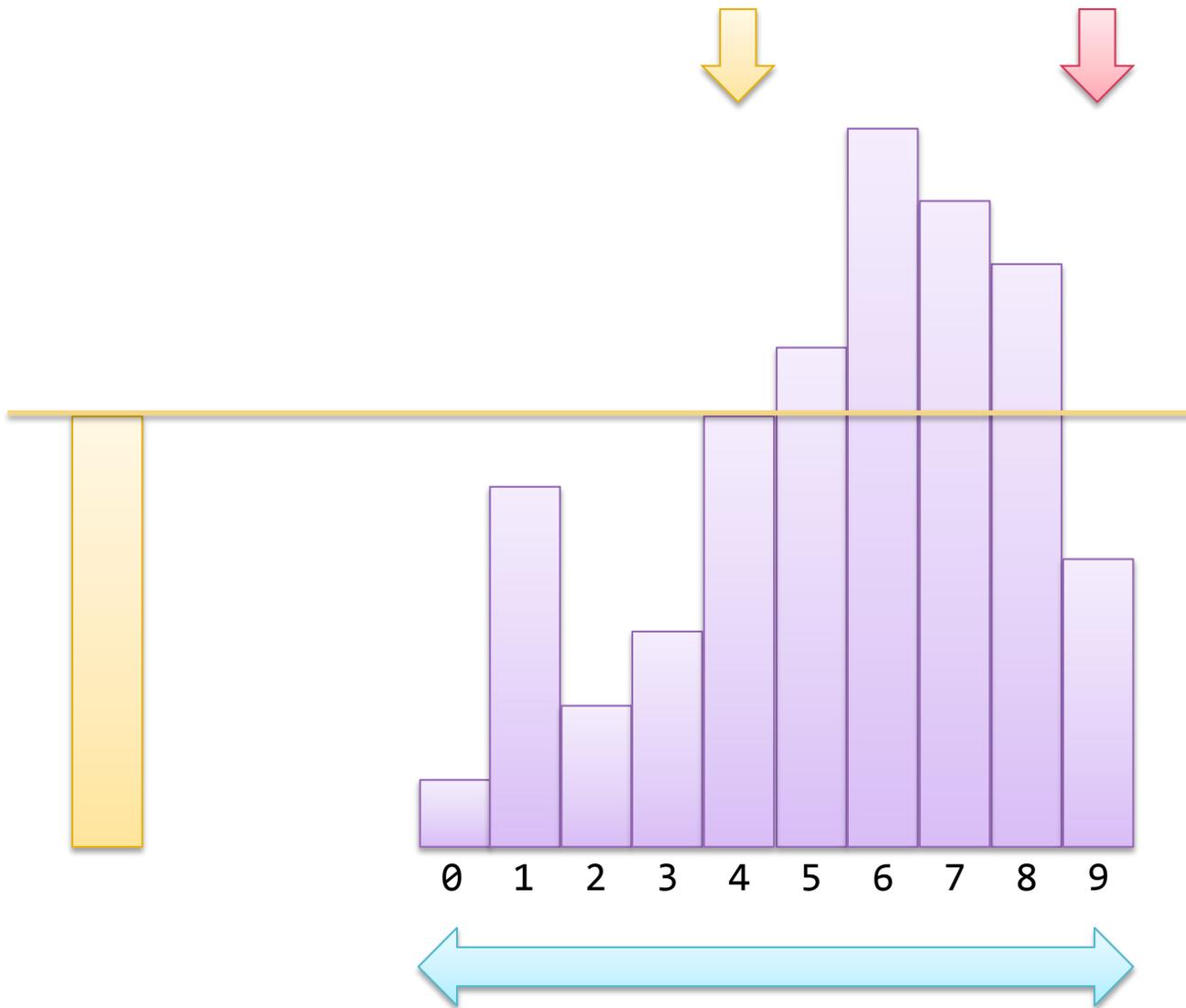
partition :
permutation



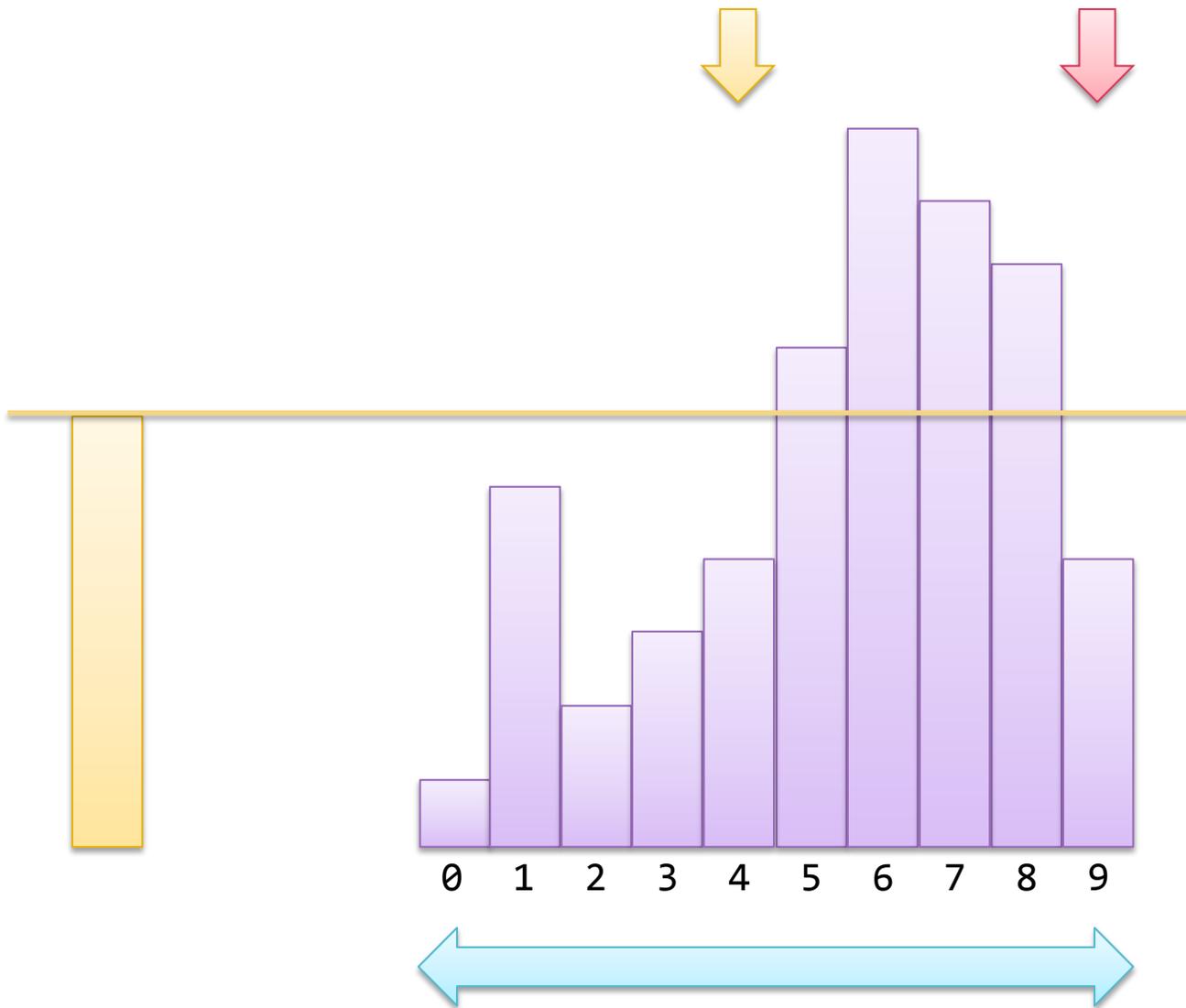
partition :
permutation



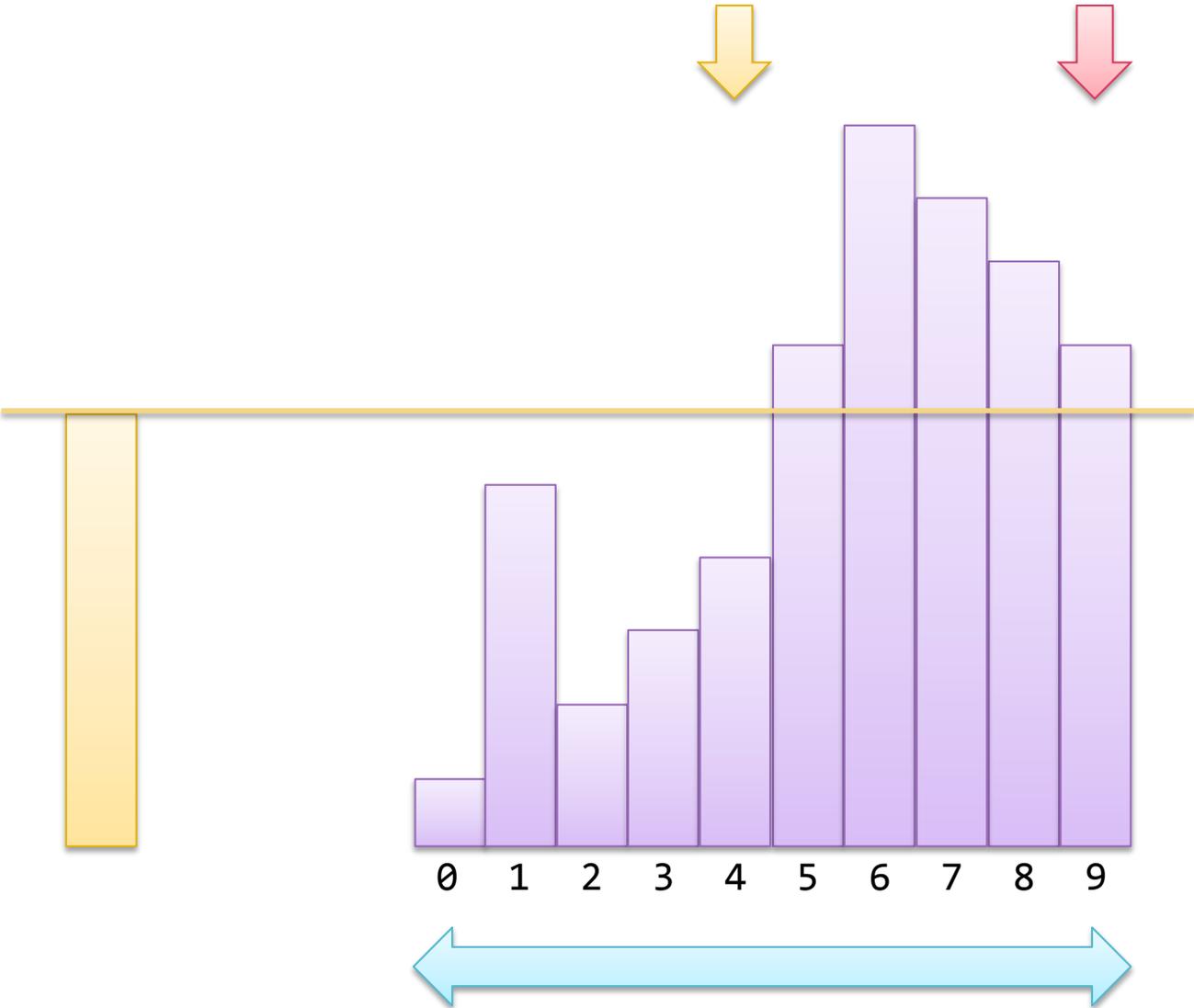
partition :
itération +
comparaison



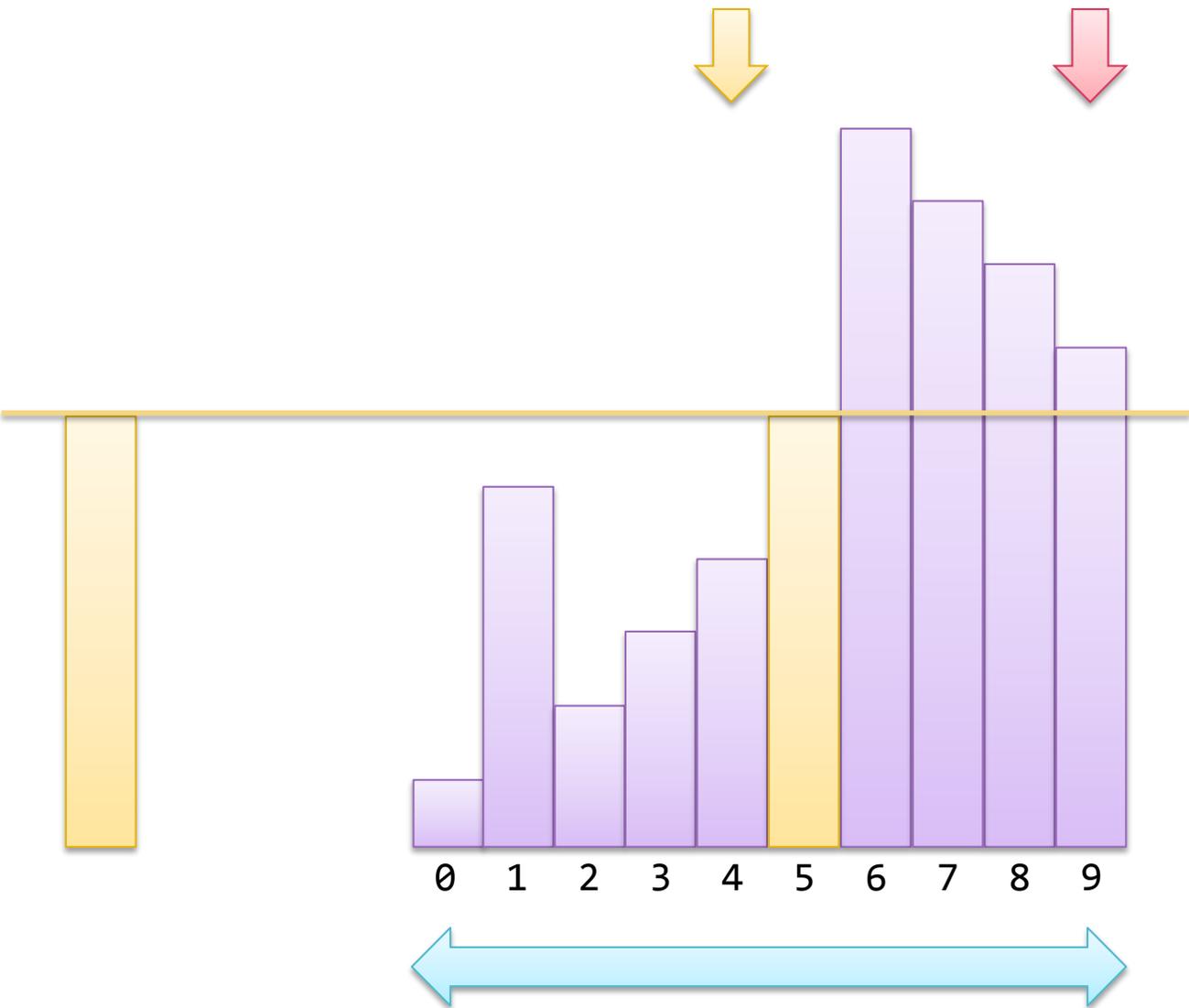
partition :
itération +
comparaison



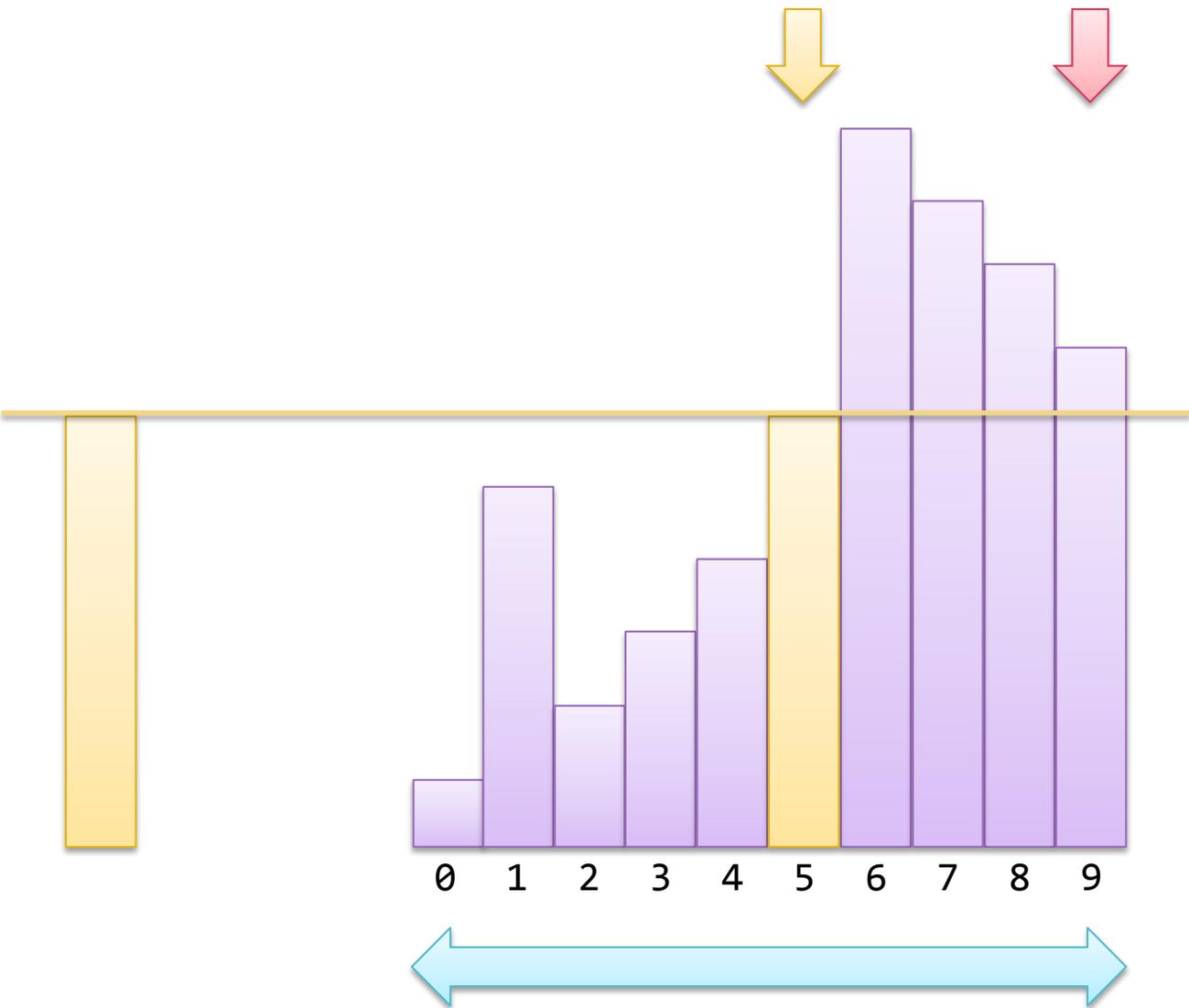
partition :
permutation



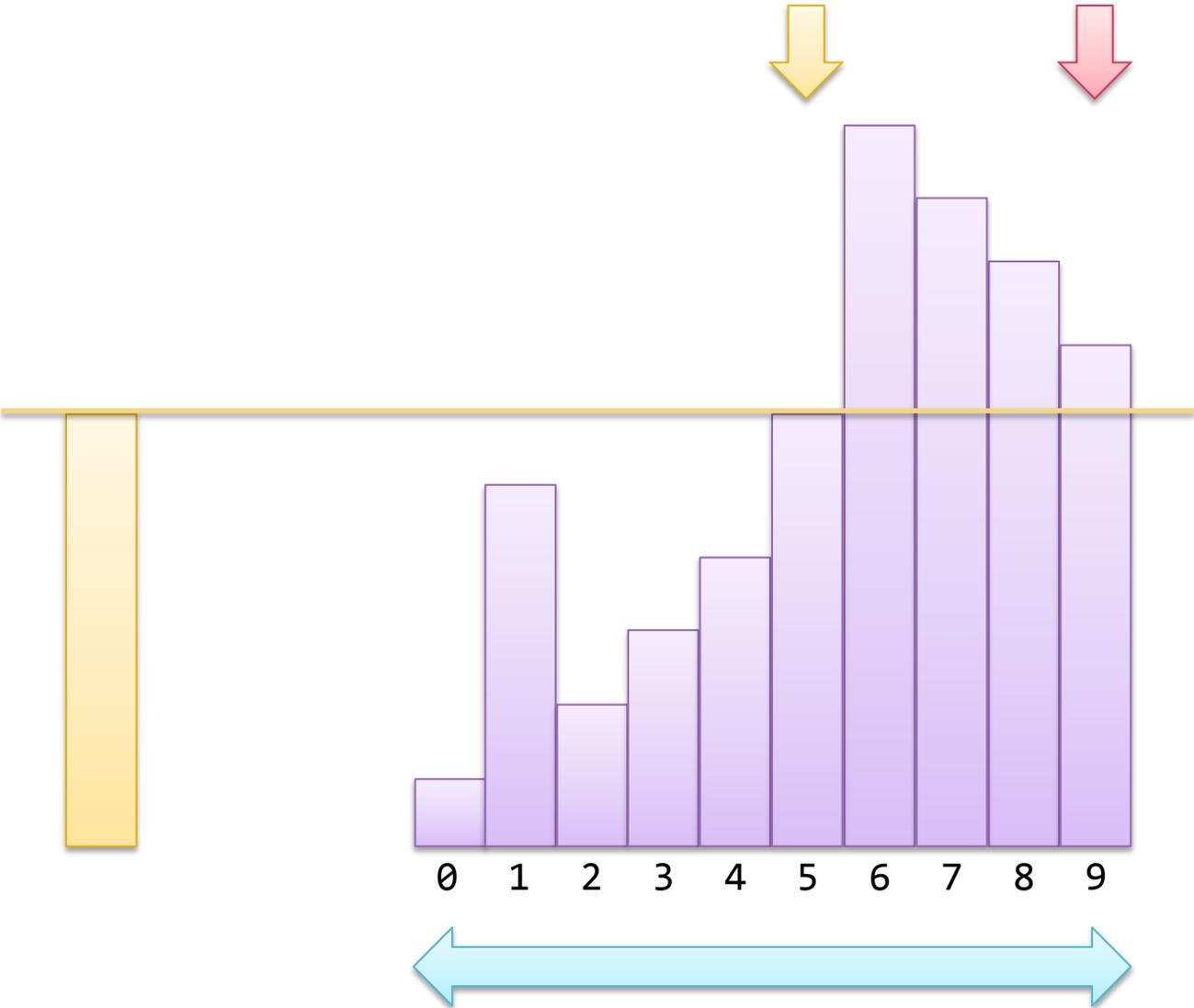
partition :
permutation



partition :
permutation



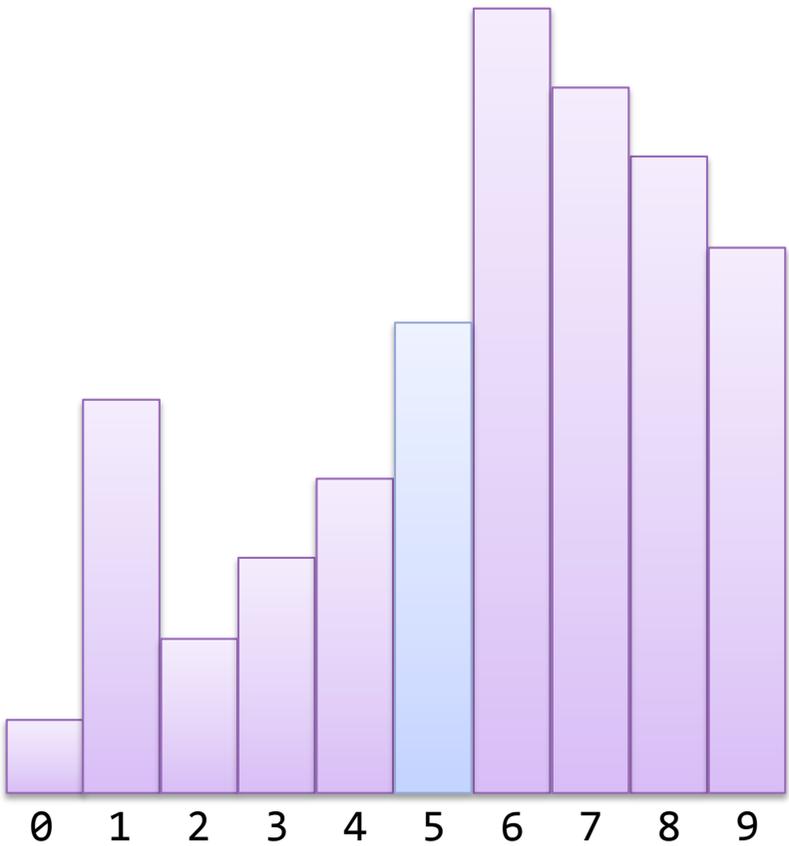
partition :
permutation



partition :
fin

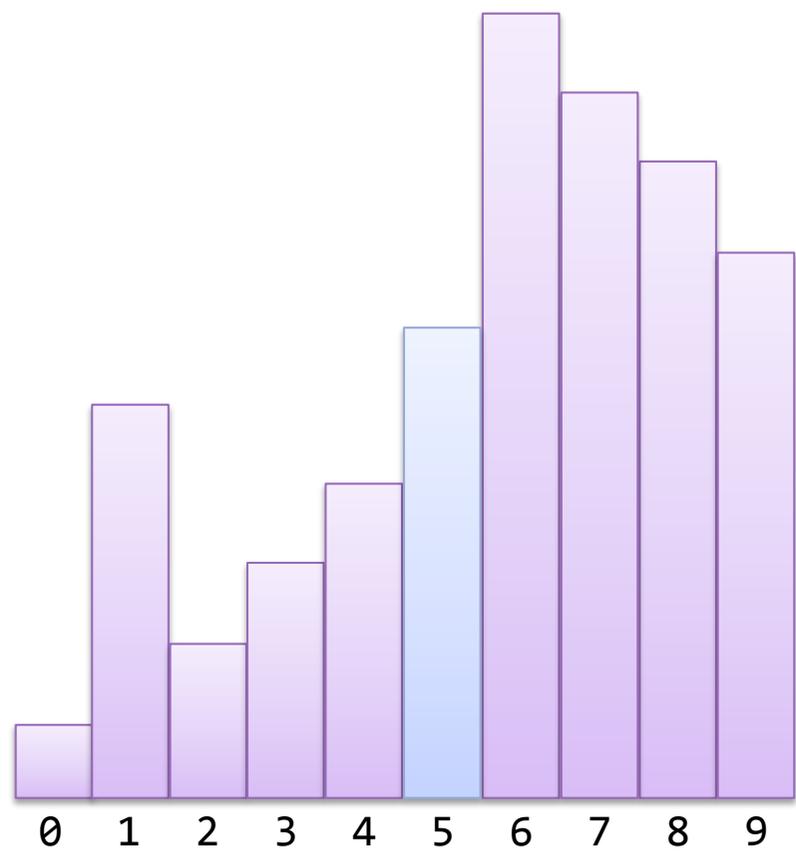
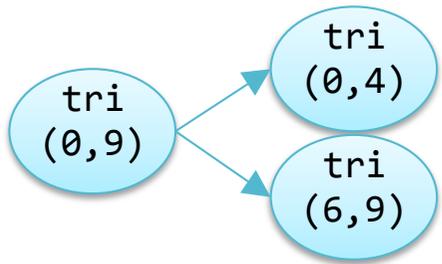
tri
(0,9)

iPivot

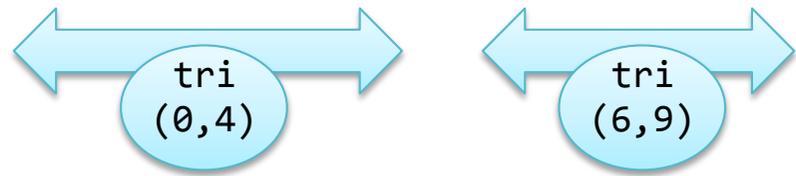


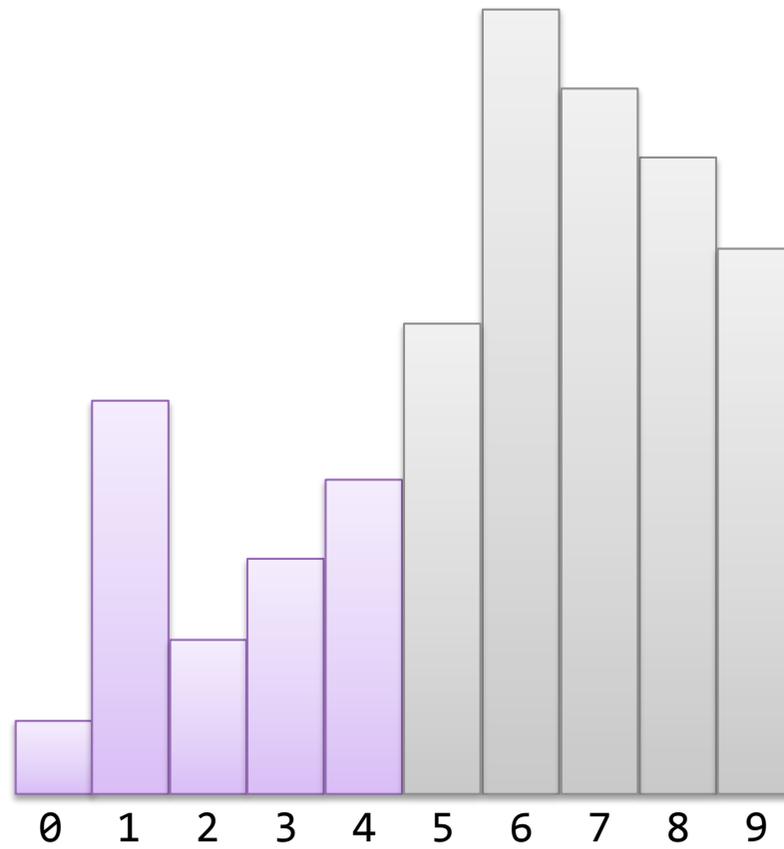
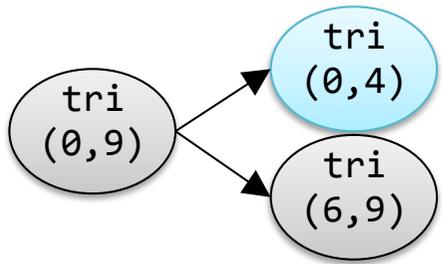
tri :
après partition





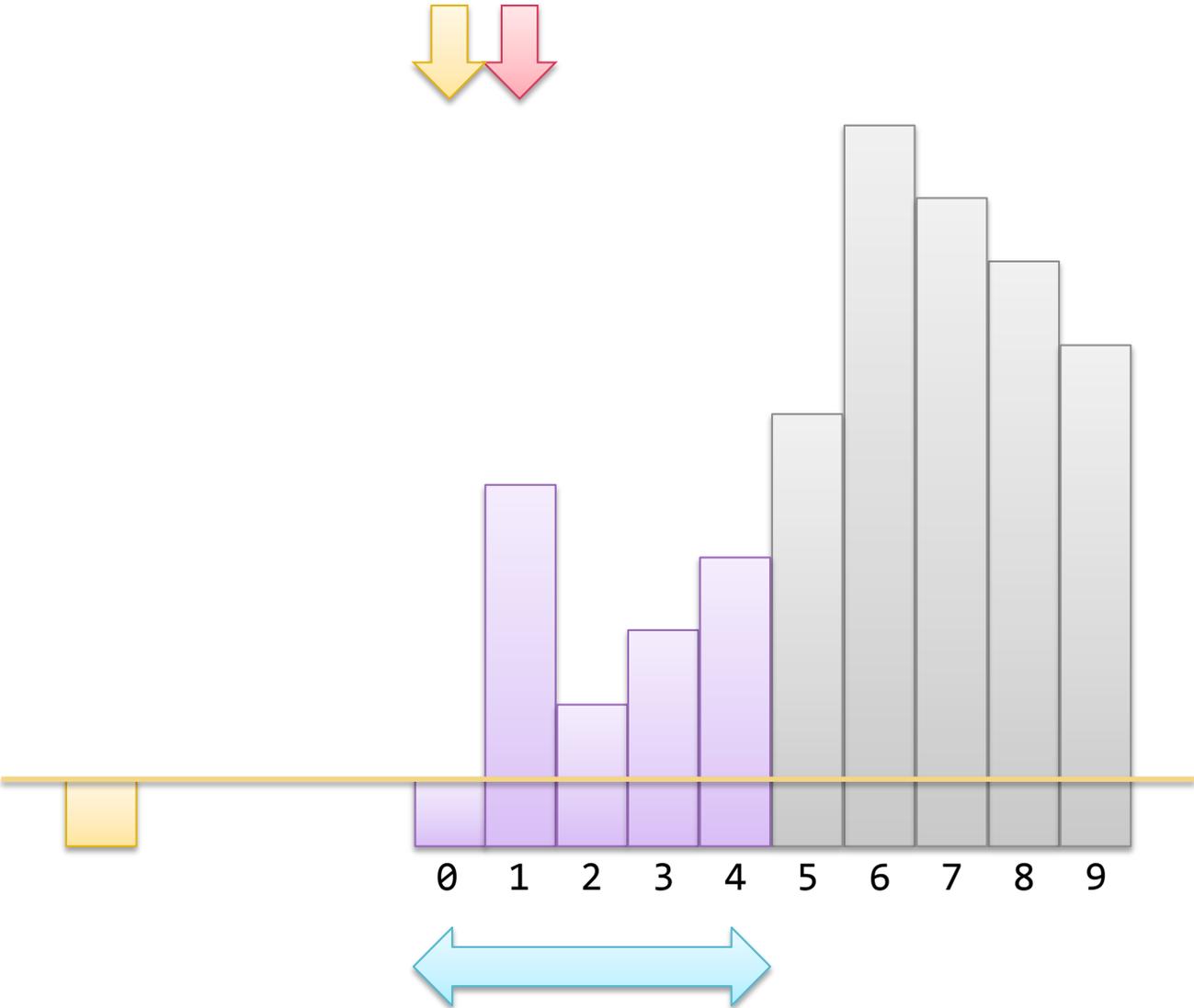
tri :
appels récurrents



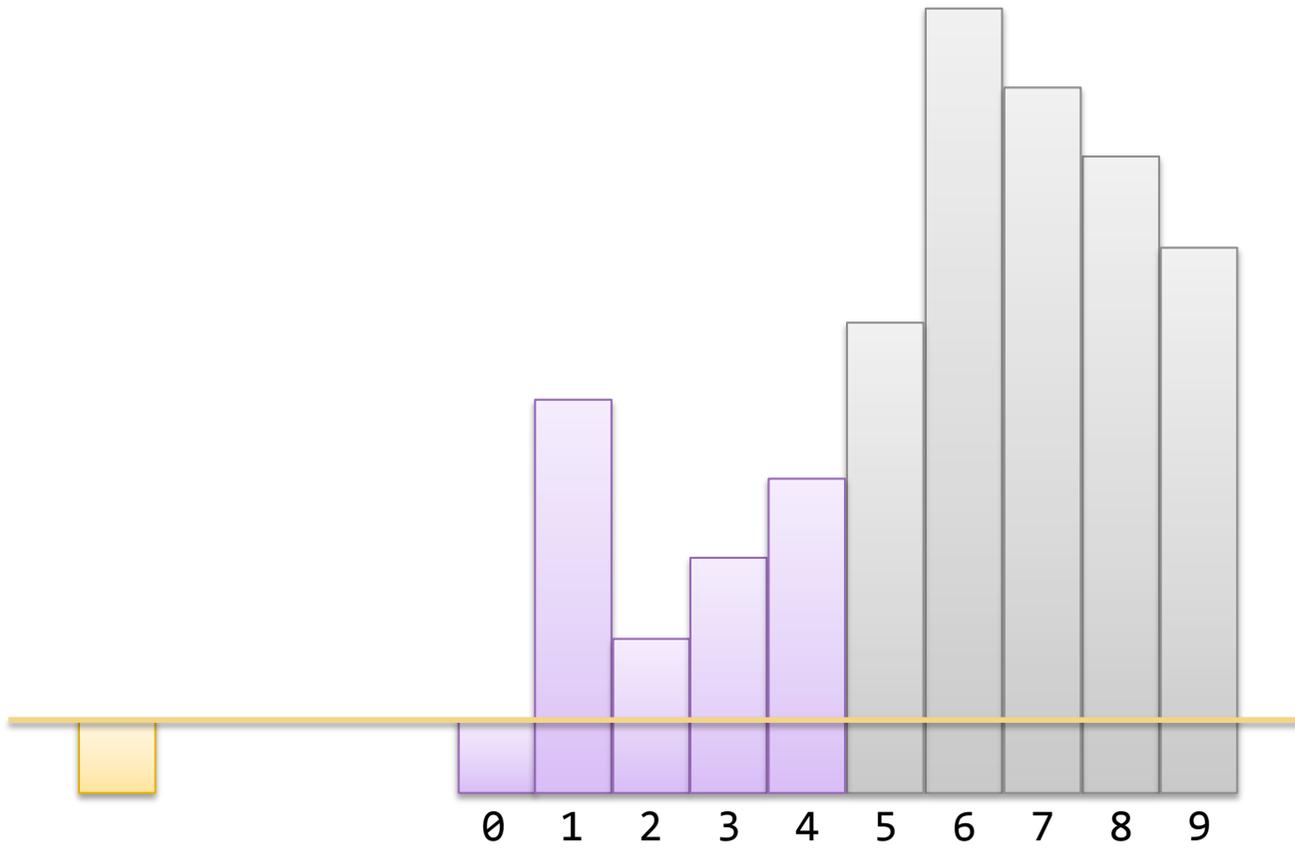


tri :
appel

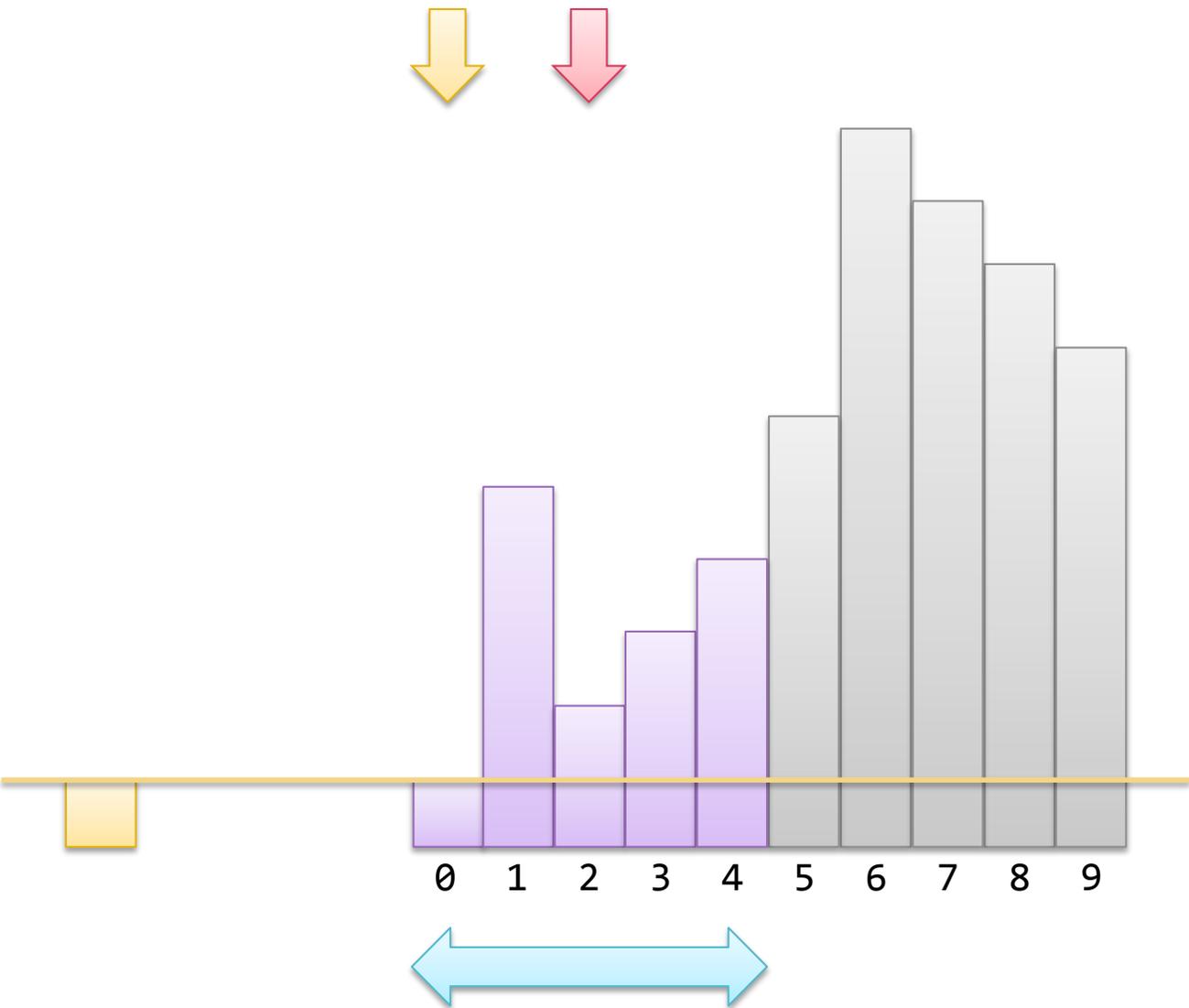




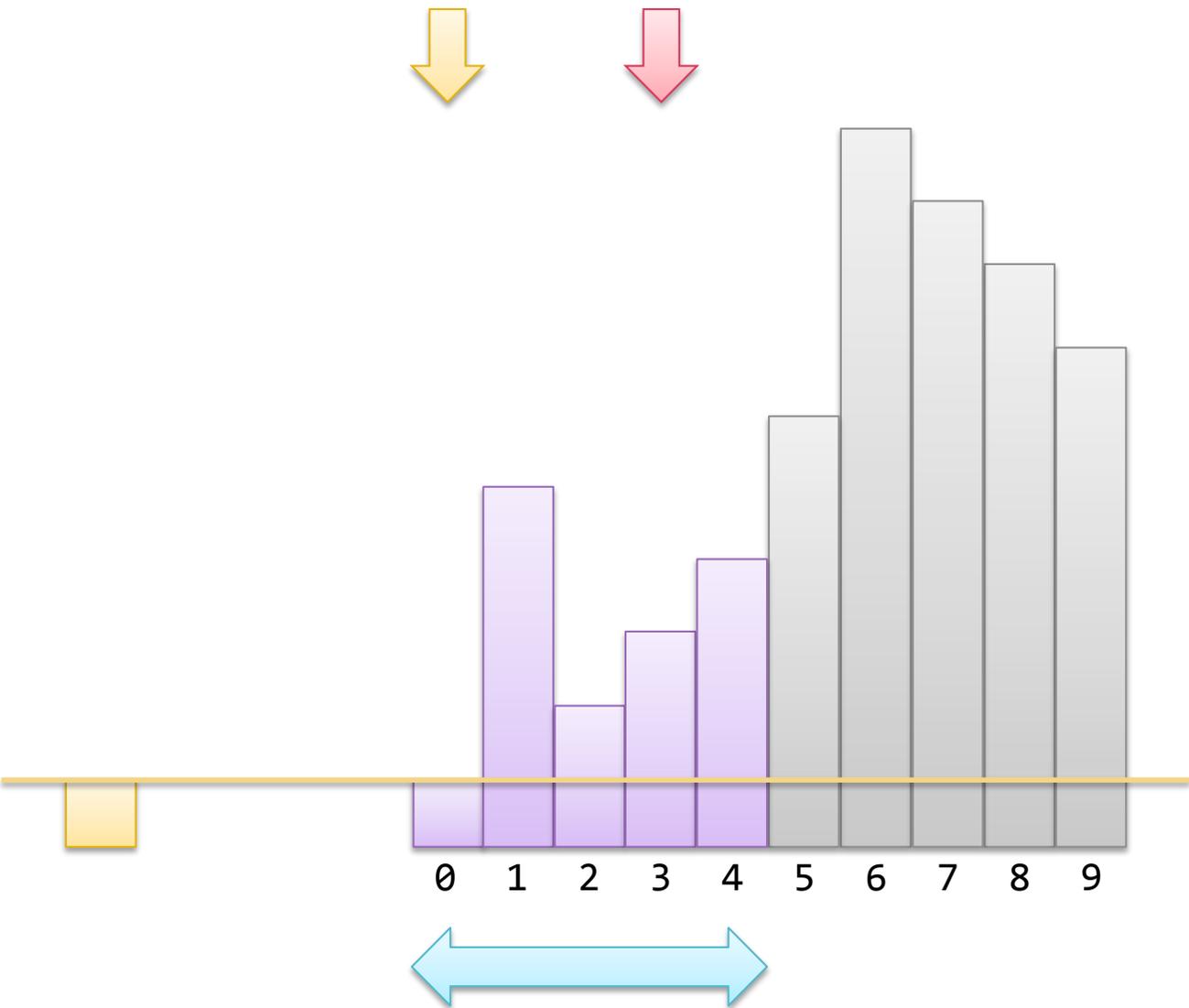
partition :
initialisation



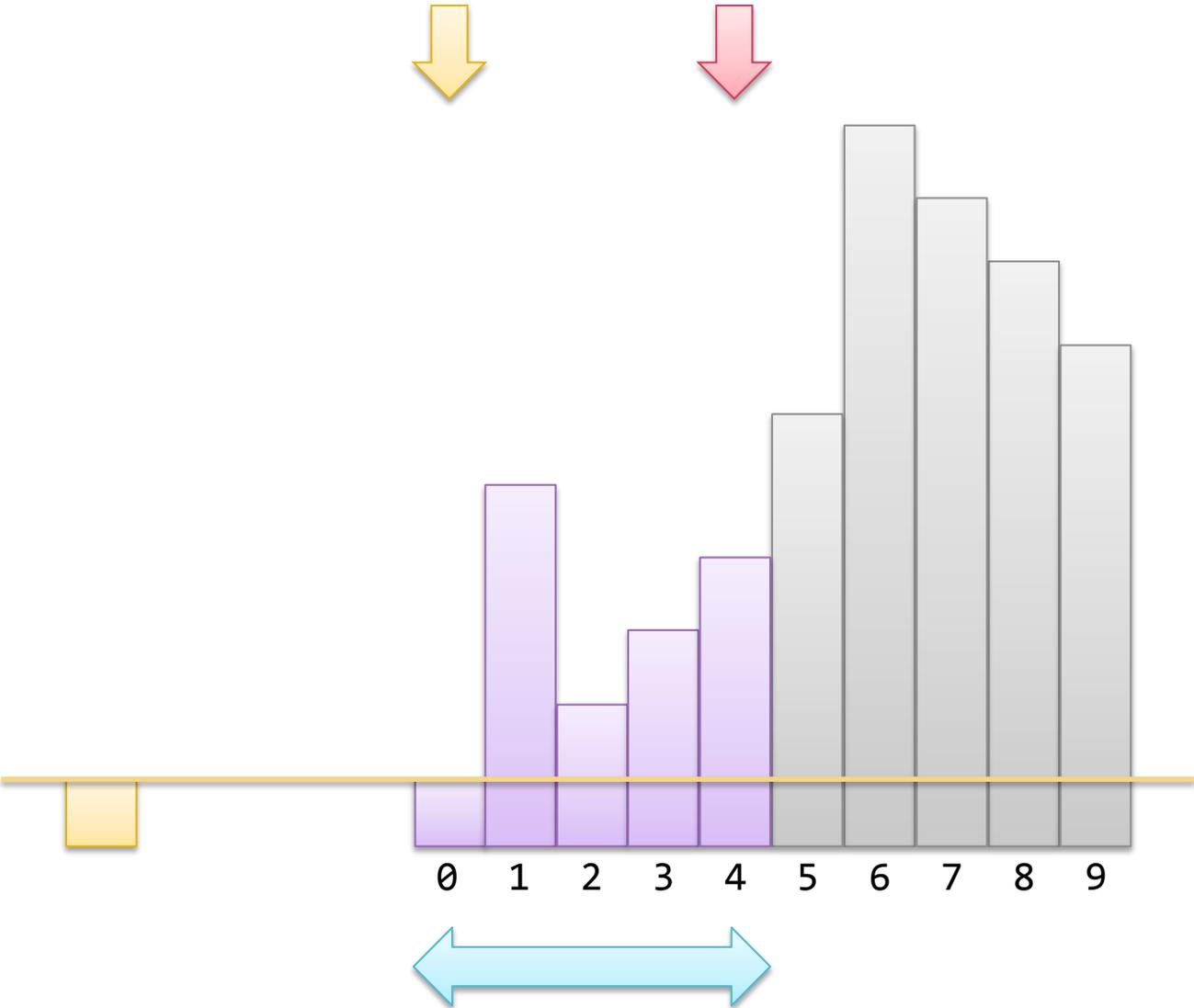
partition :
itération +
comparaison



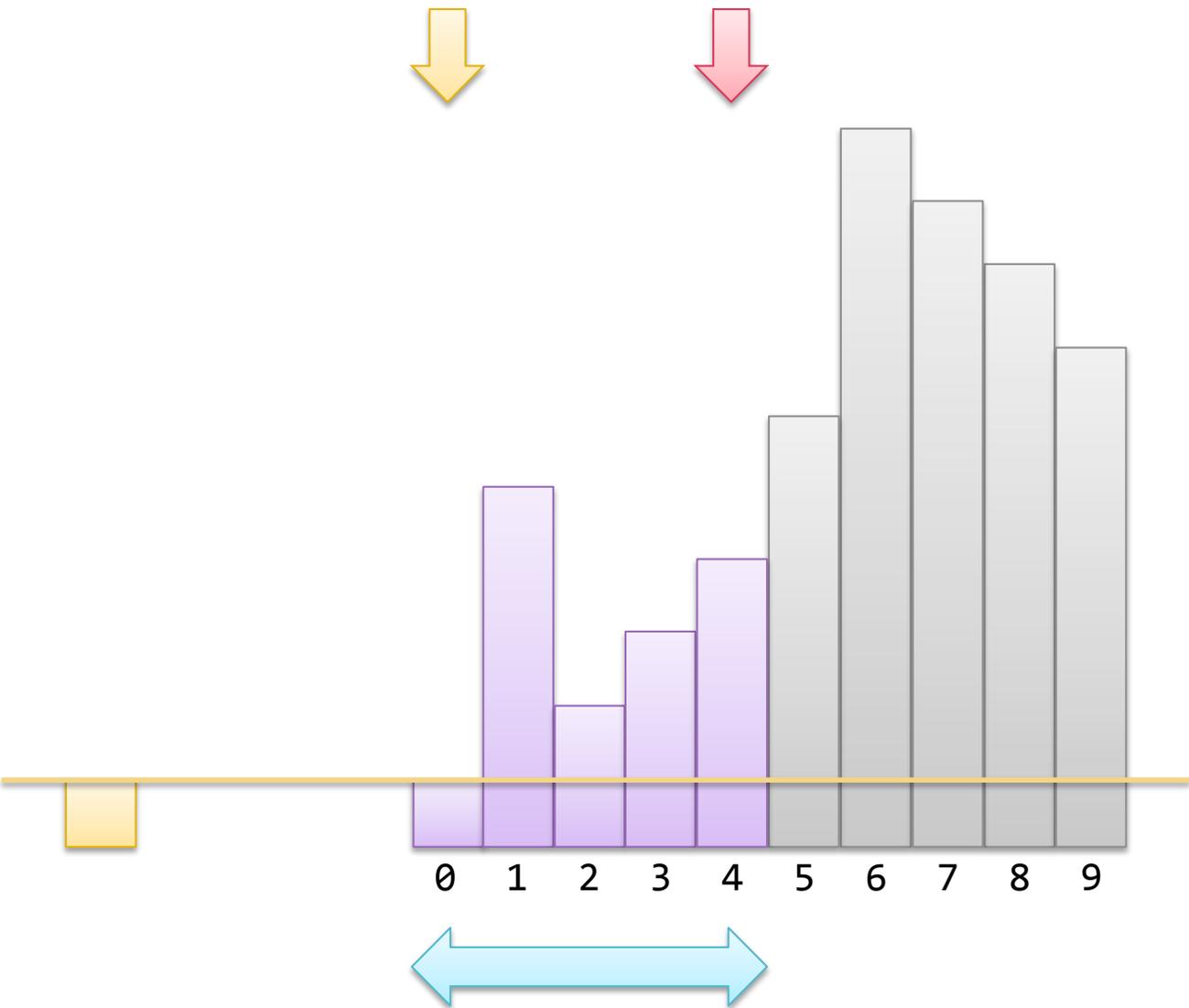
partition :
itération +
comparaison



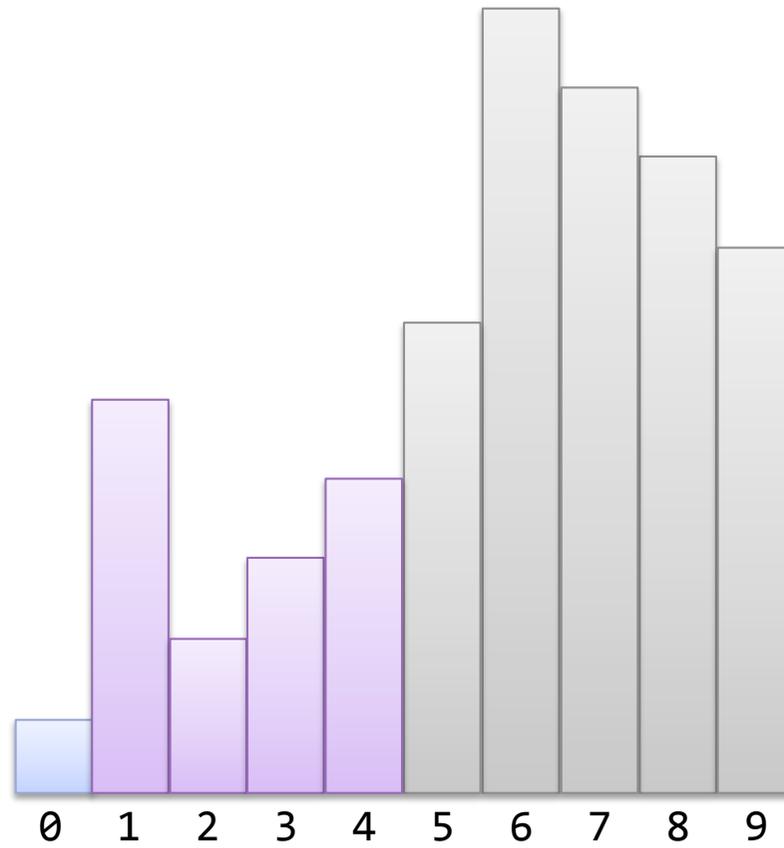
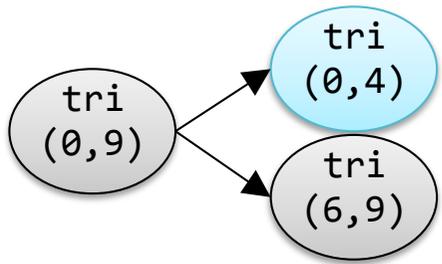
partition :
itération +
comparaison



partition :
itération +
comparaison

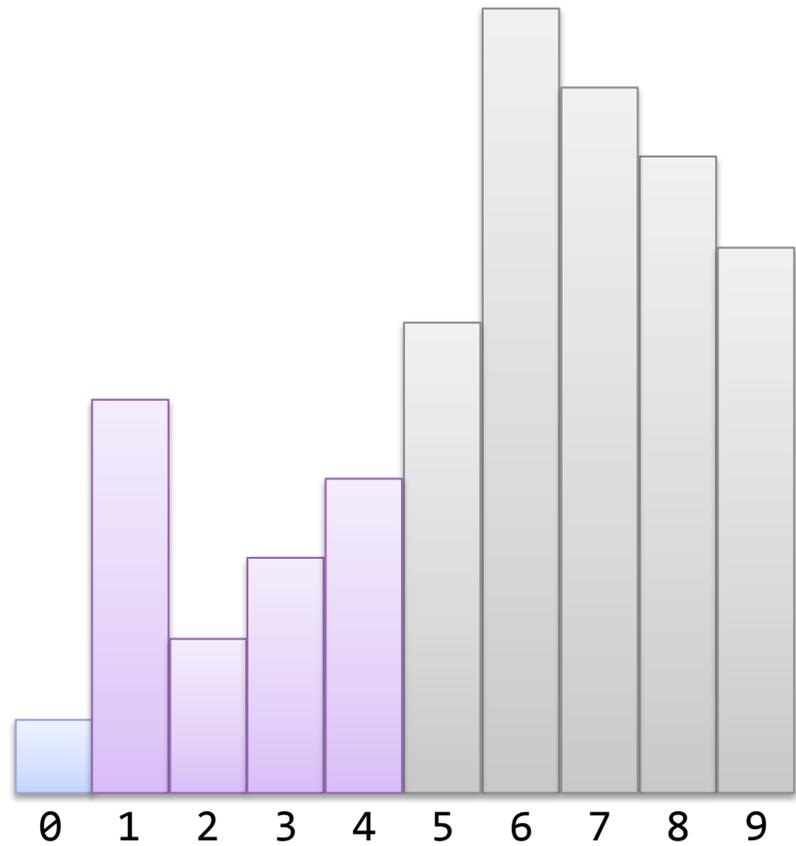
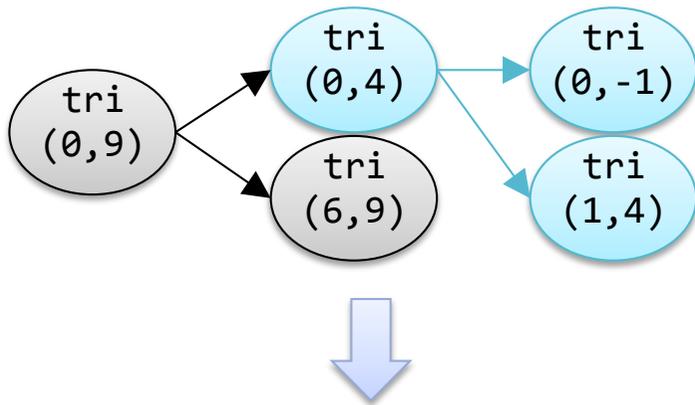


partition :
fin

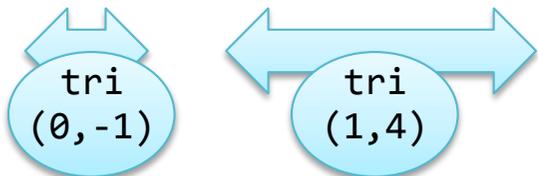


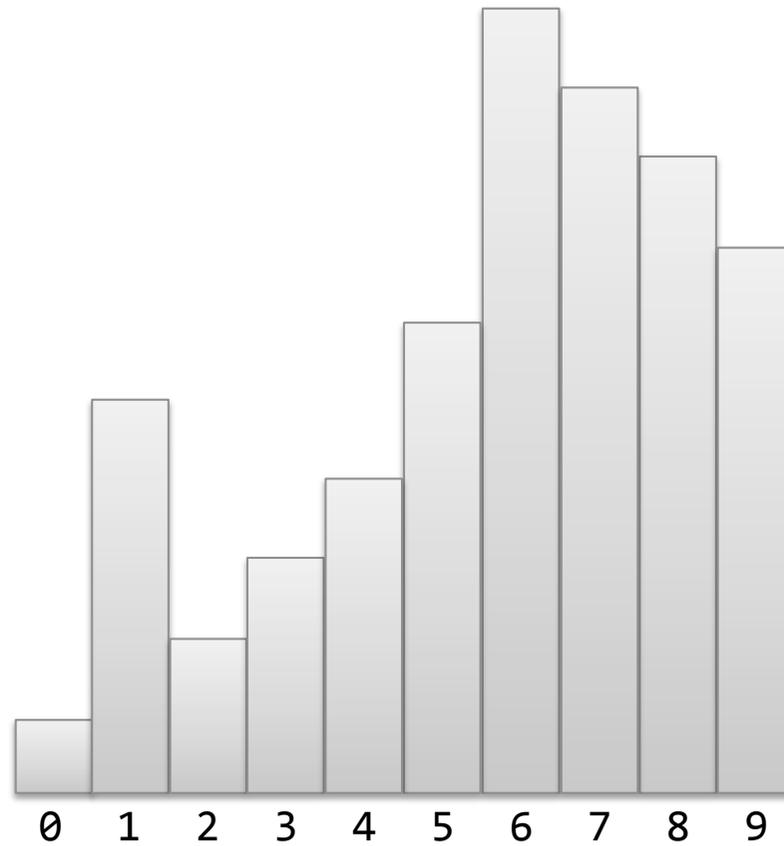
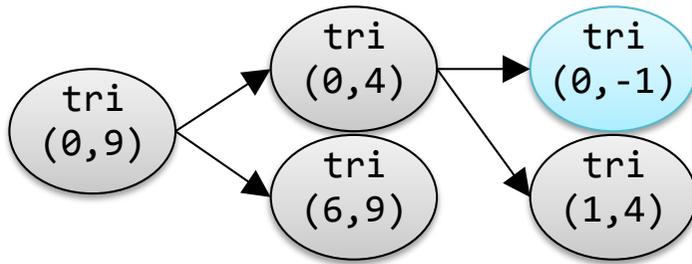
tri :
après partition





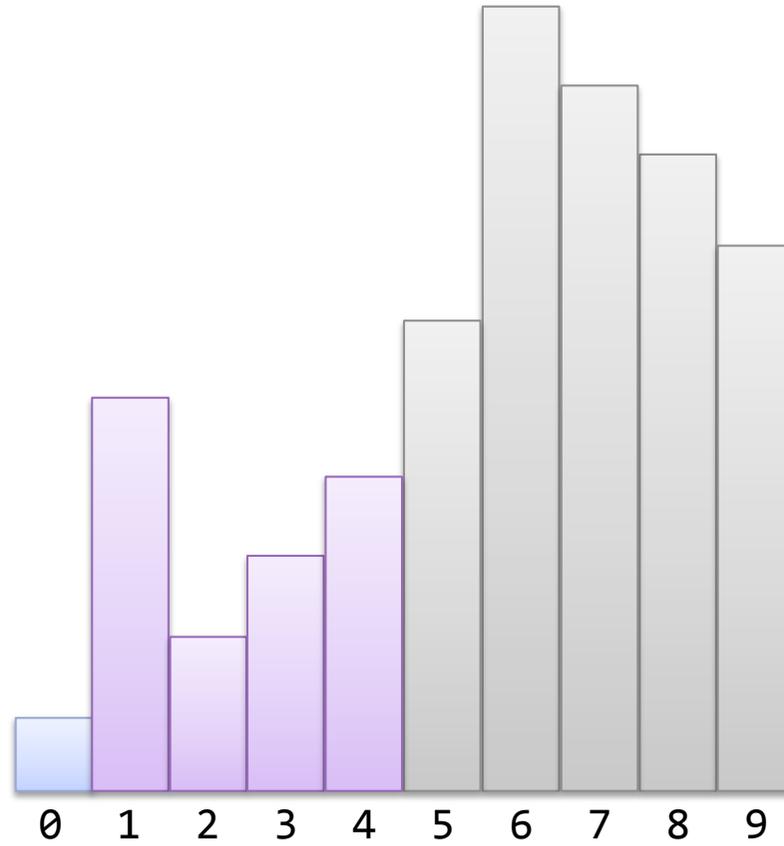
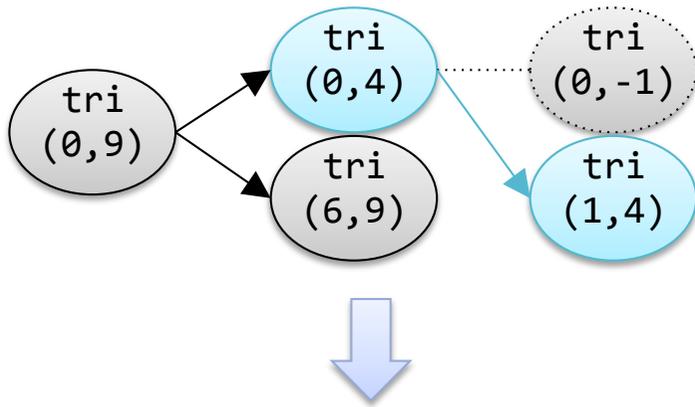
tri :
appels récurrents



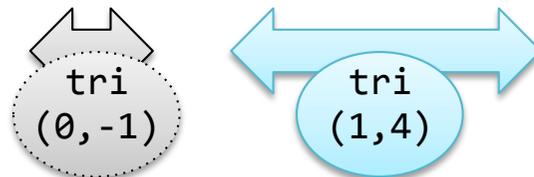


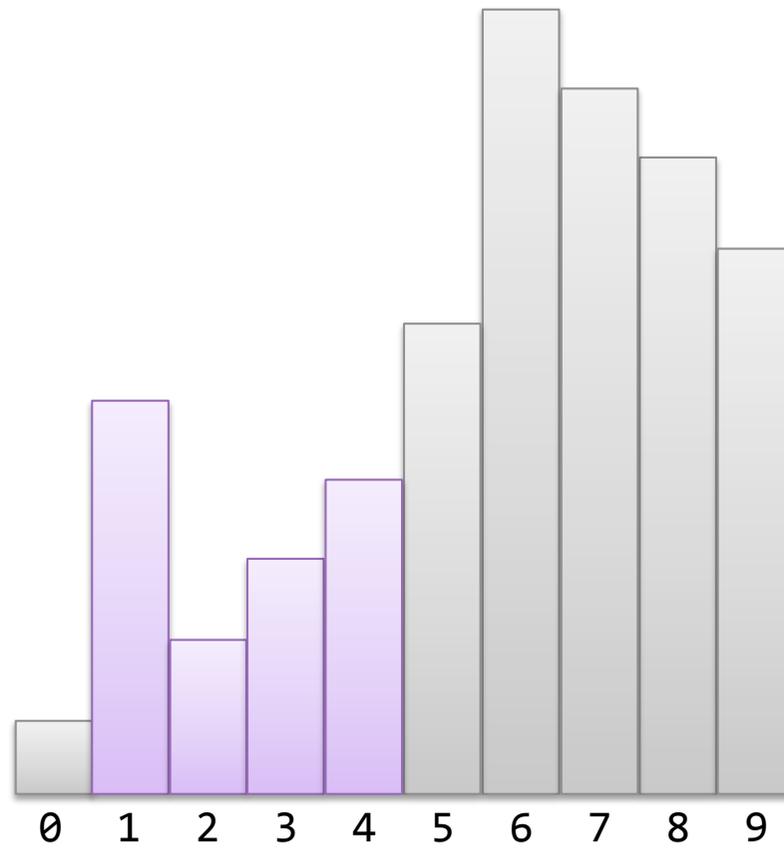
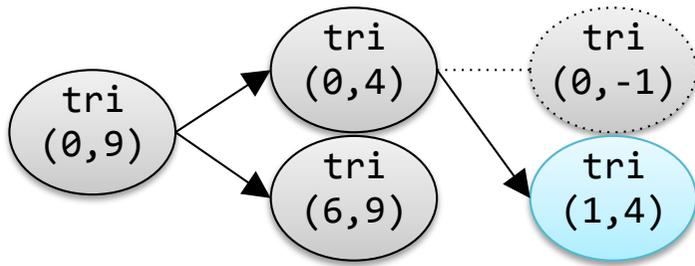
tri :
appel...
et fin !

La condition
debut < fin
n'est pas vérifiée



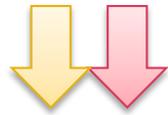
tri :
appels récurrents



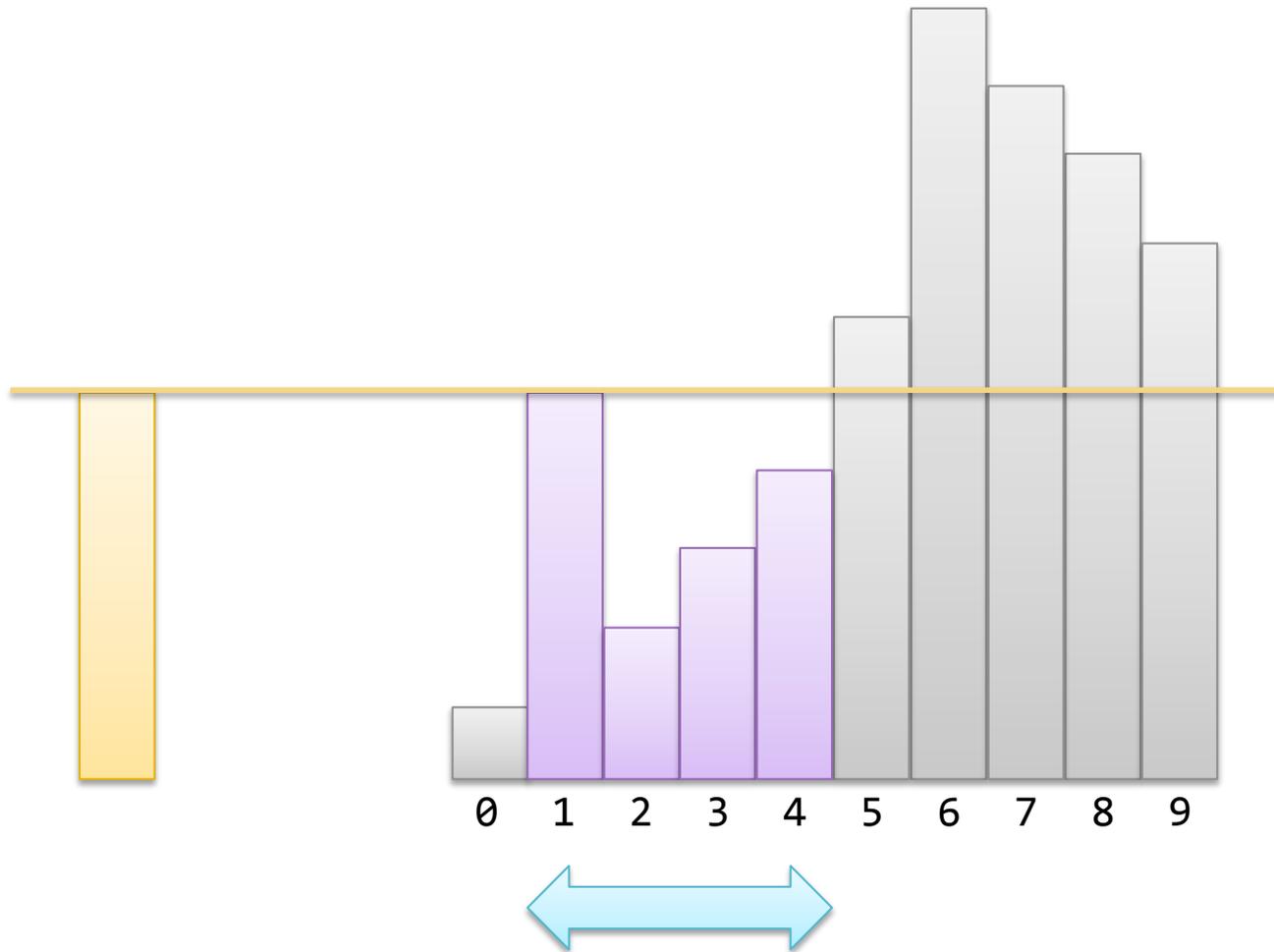


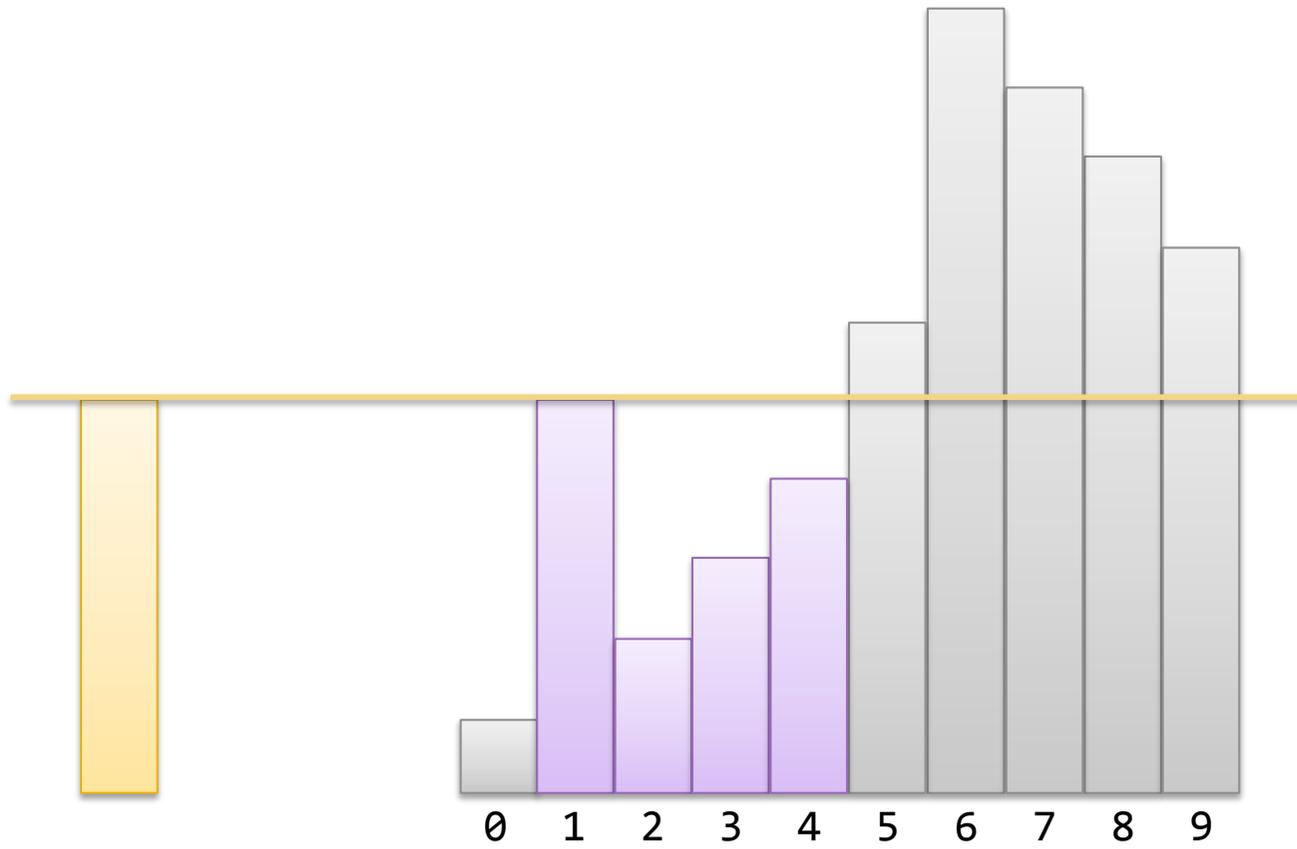
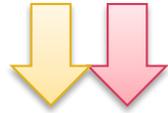
tri :
appel



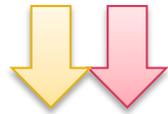


partition :
initialisation

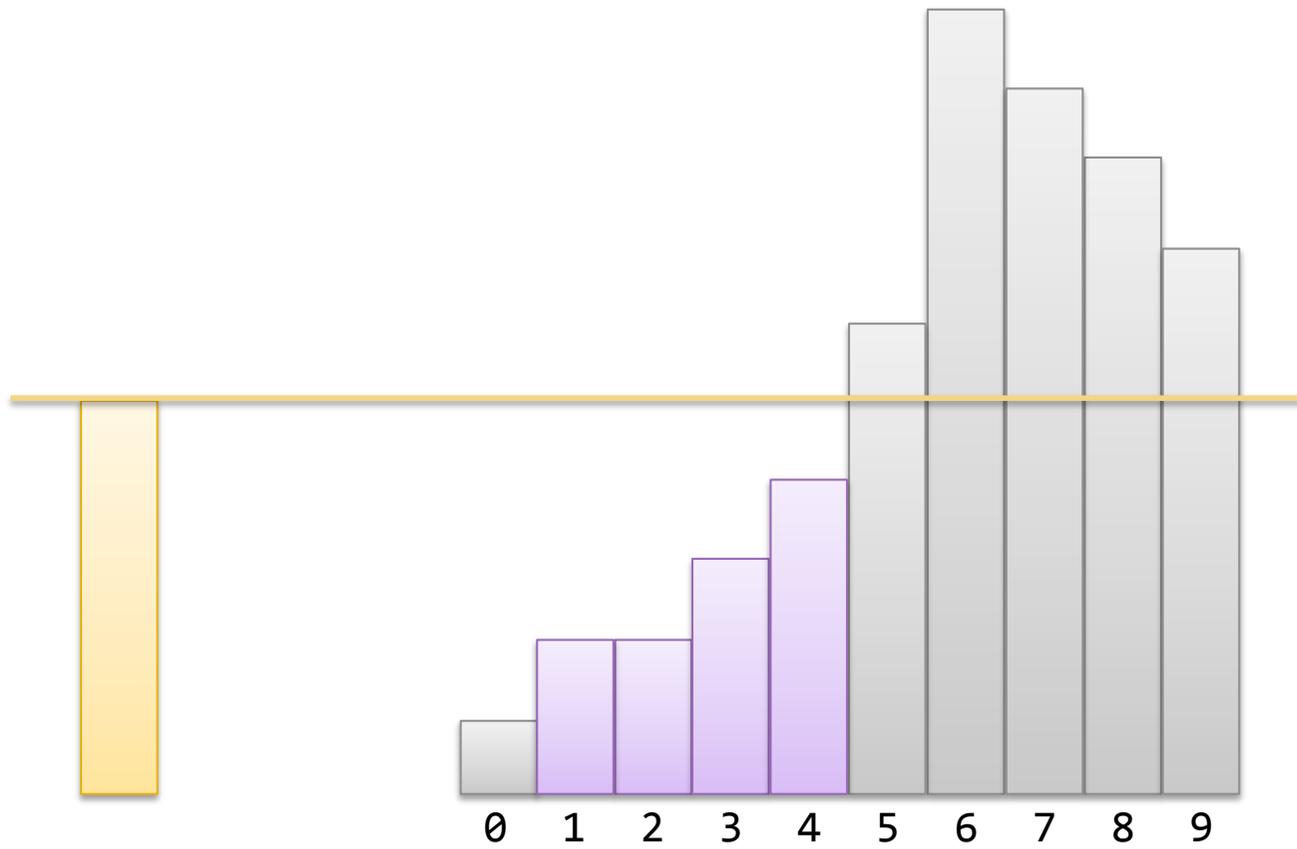


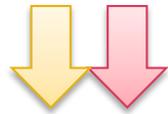


partition :
itération +
comparaison

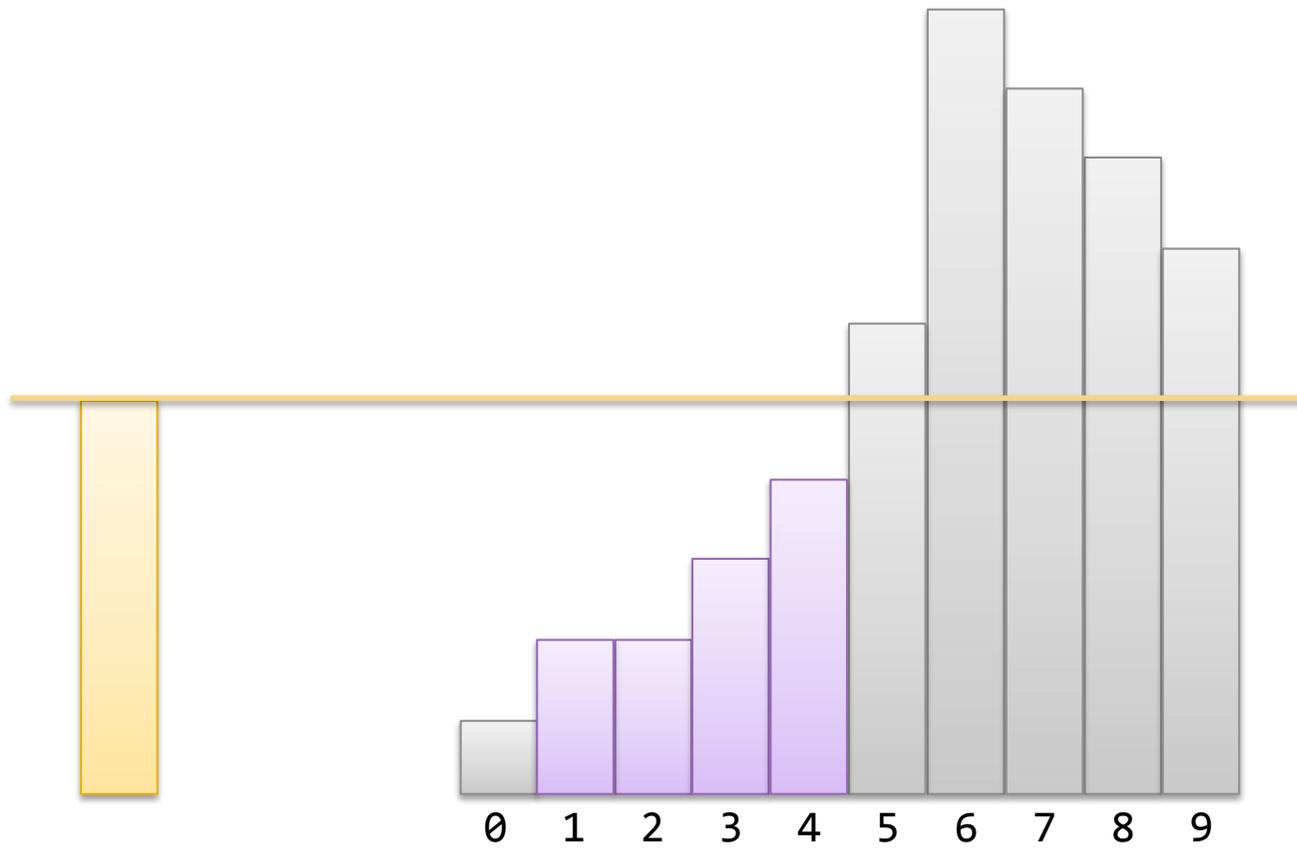


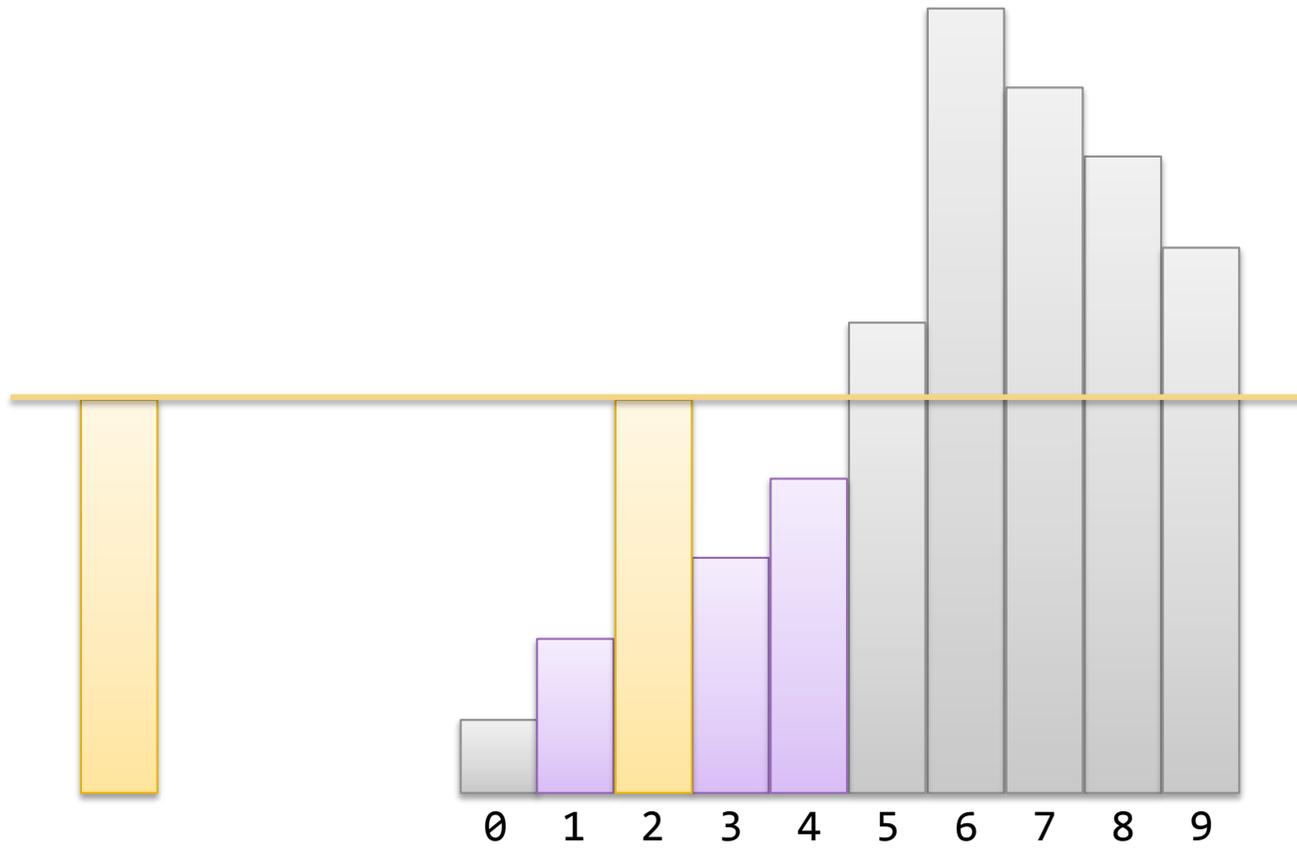
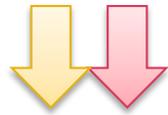
partition :
permutation





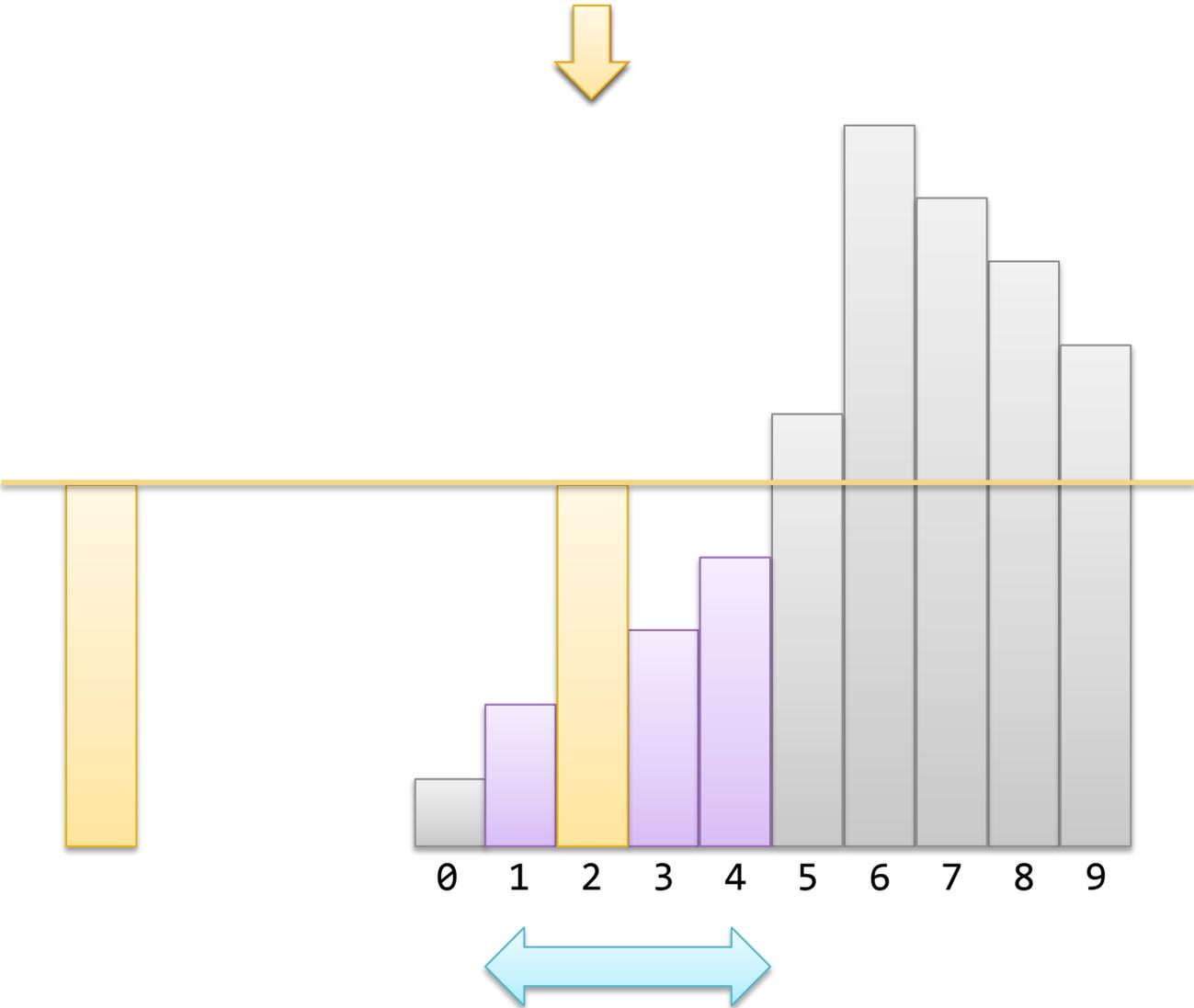
partition :
permutation



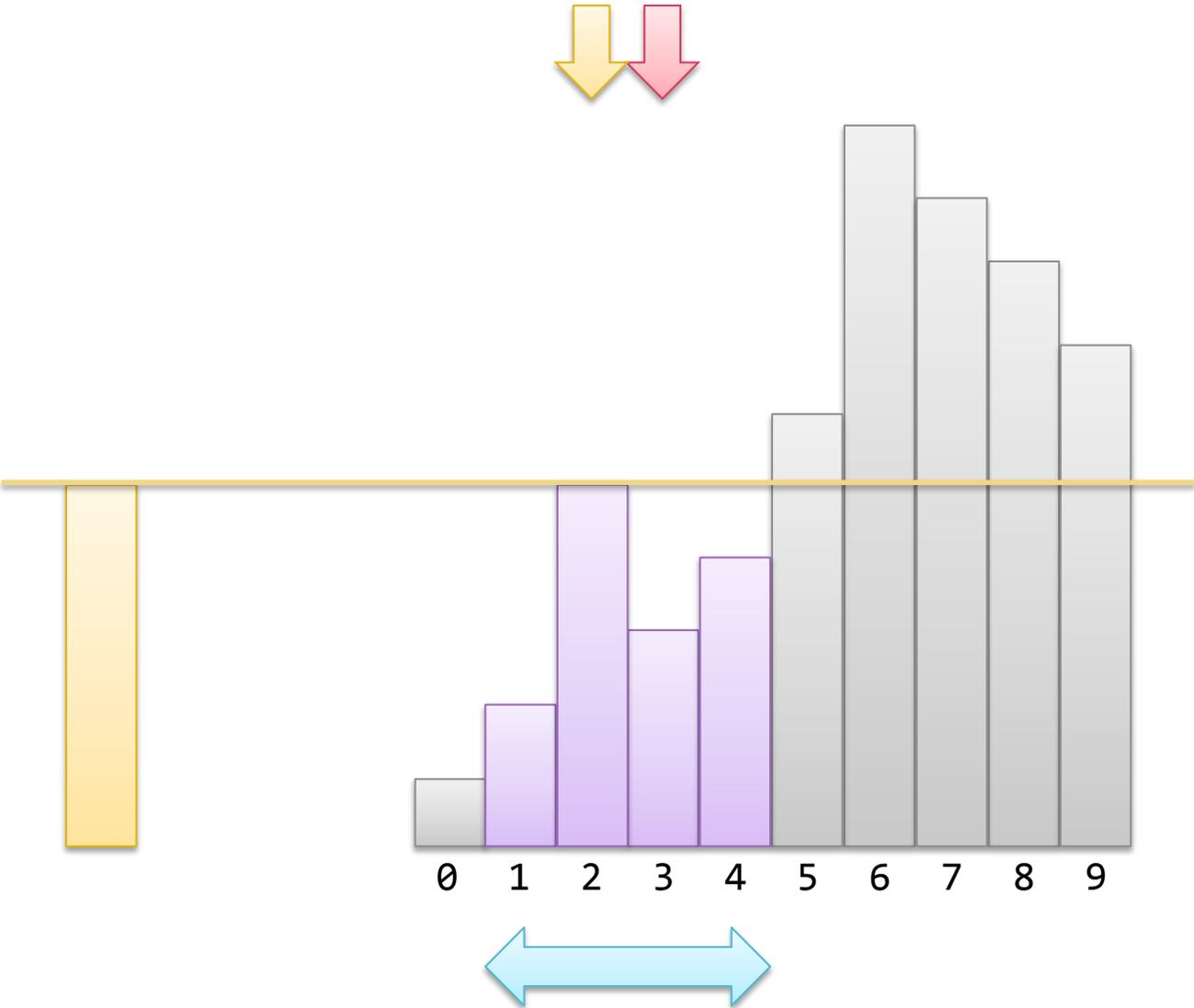


partition :
permutation

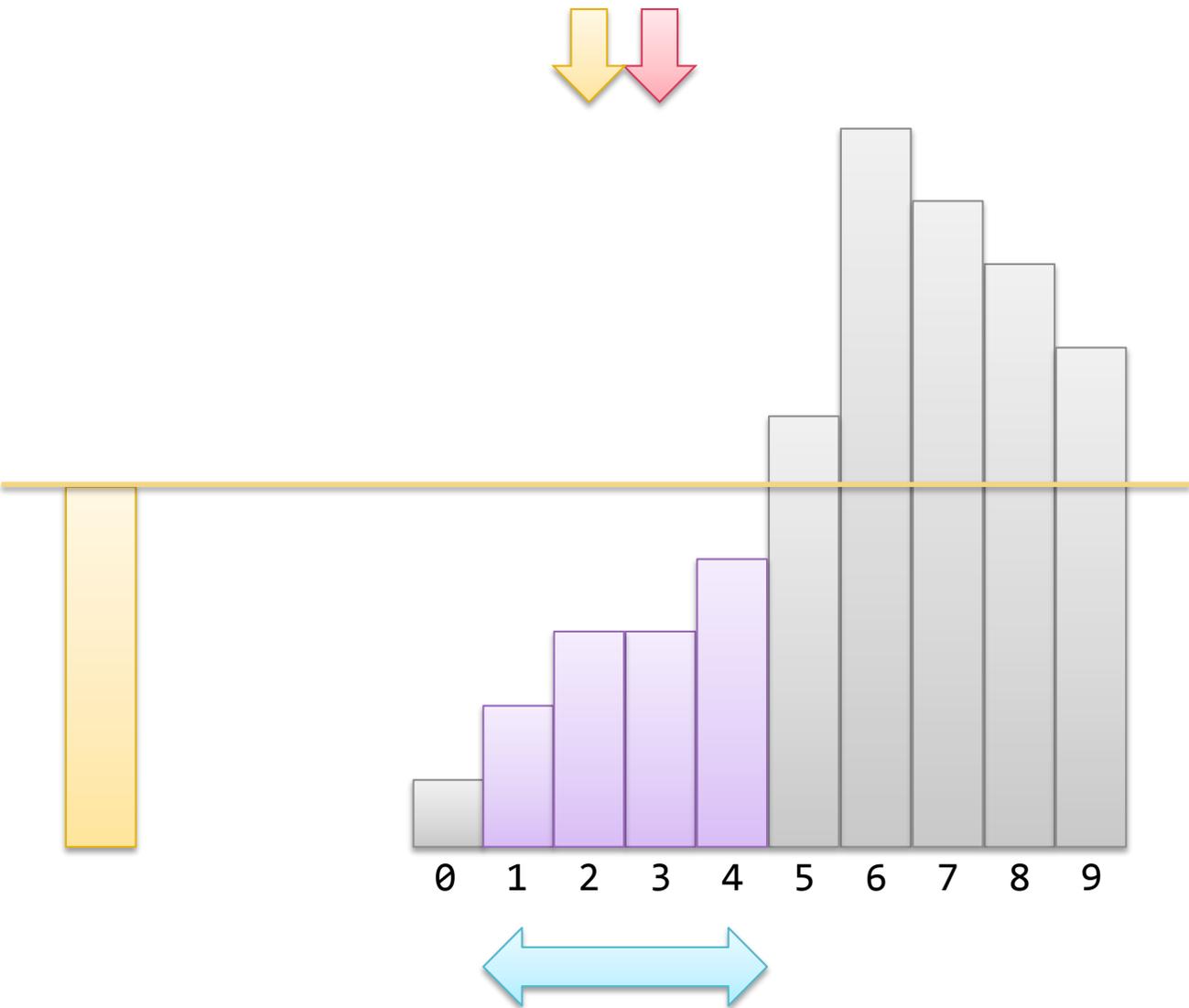




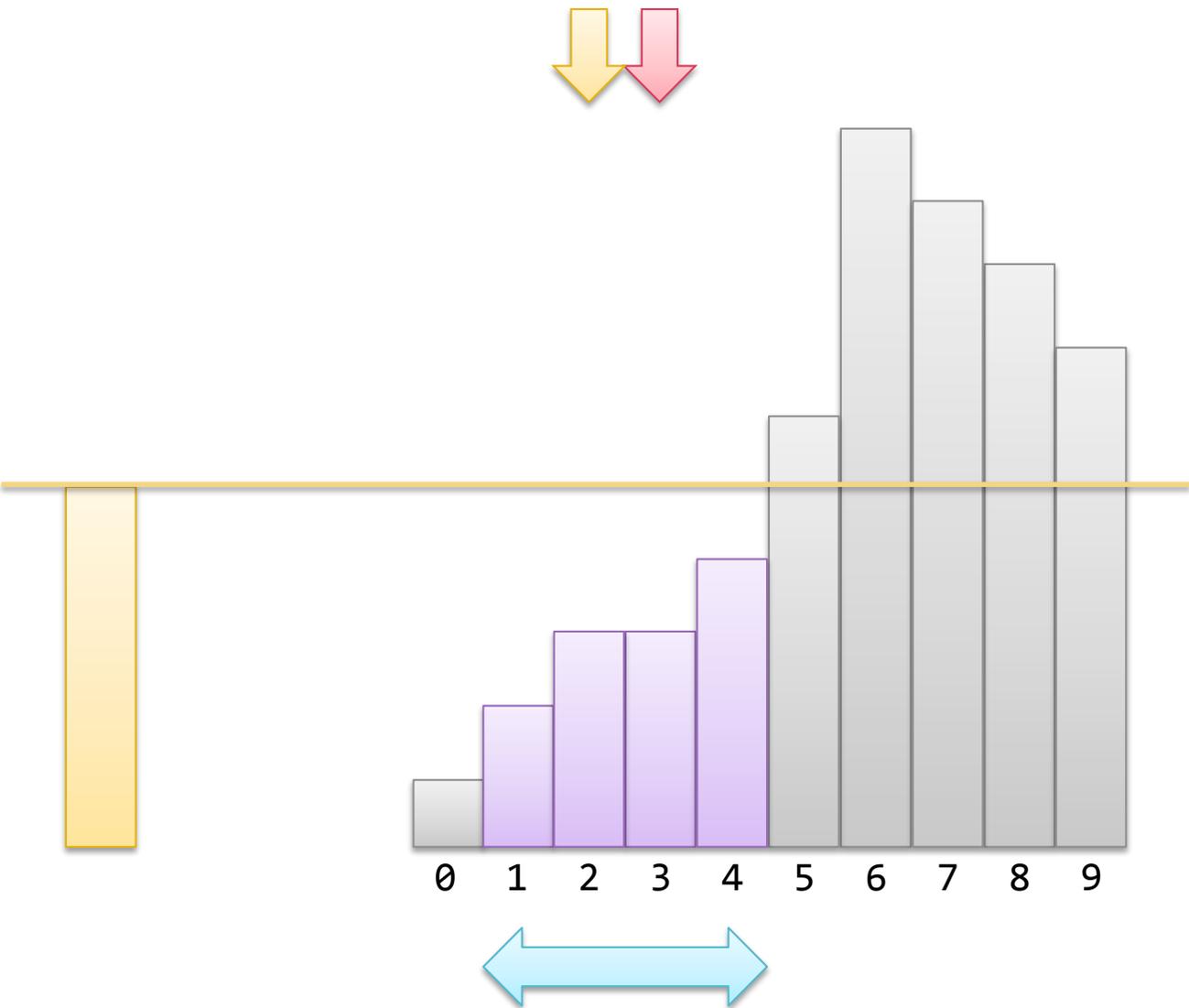
partition :
permutation



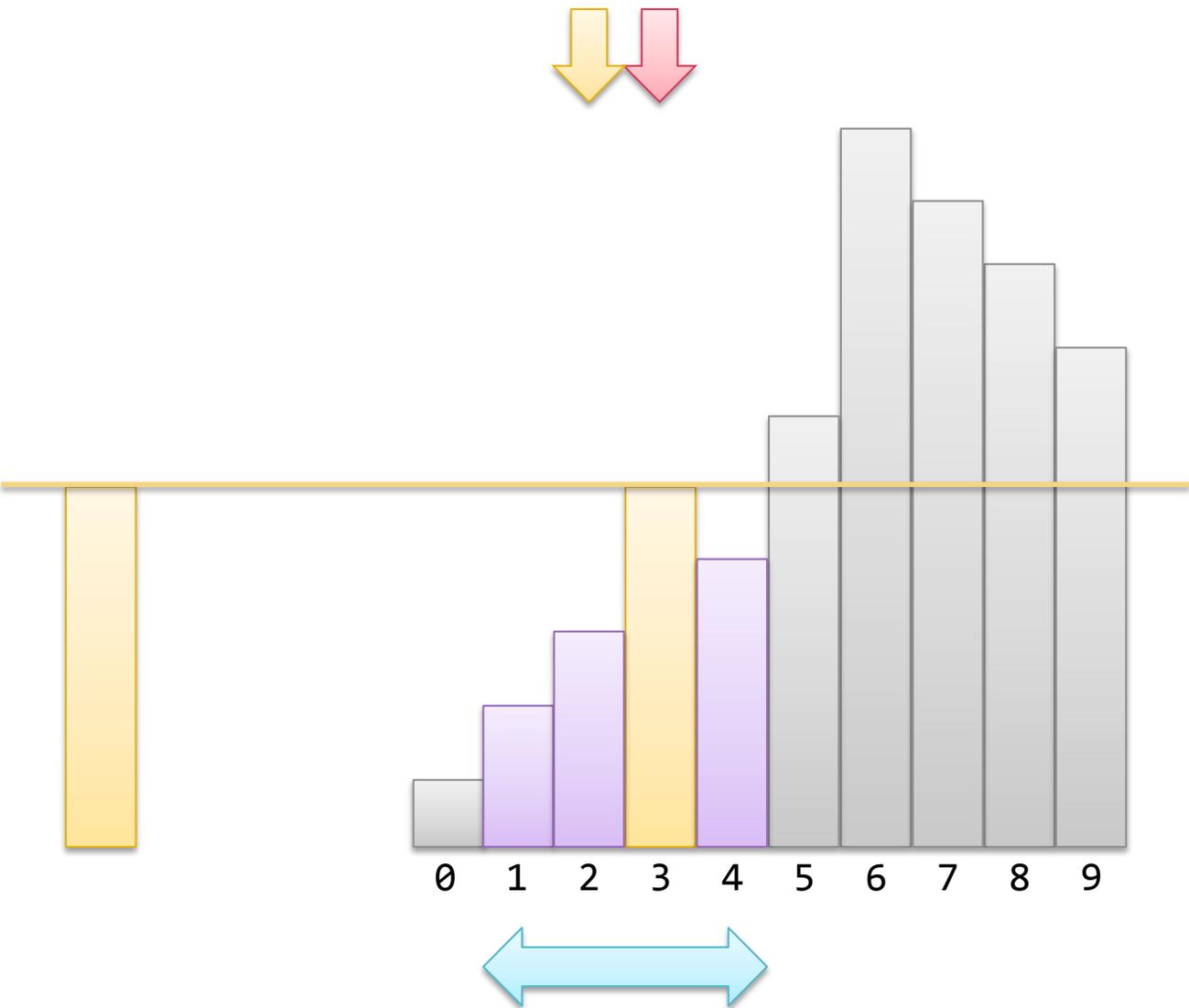
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itération +
comparaison



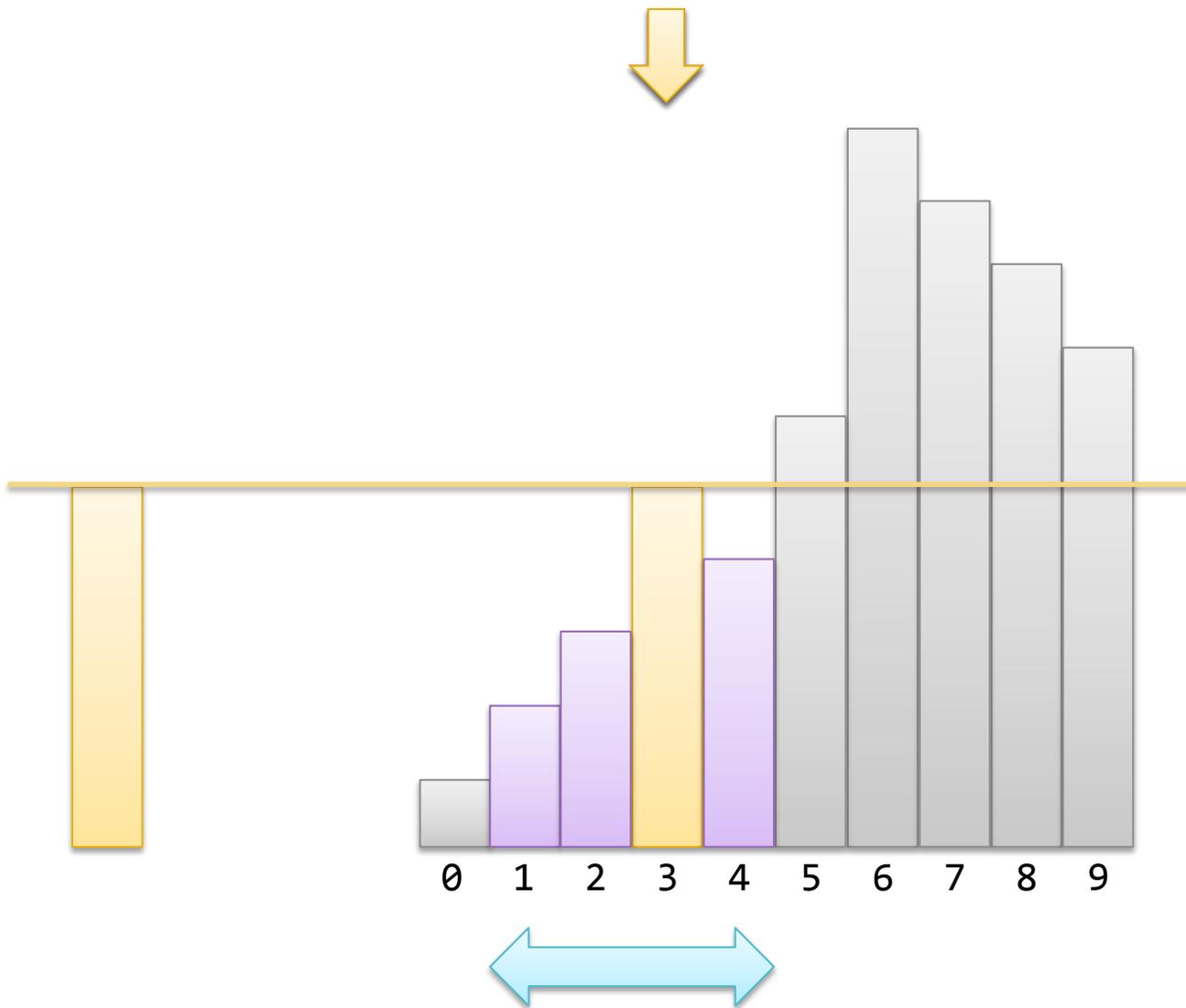
partition :
permutation



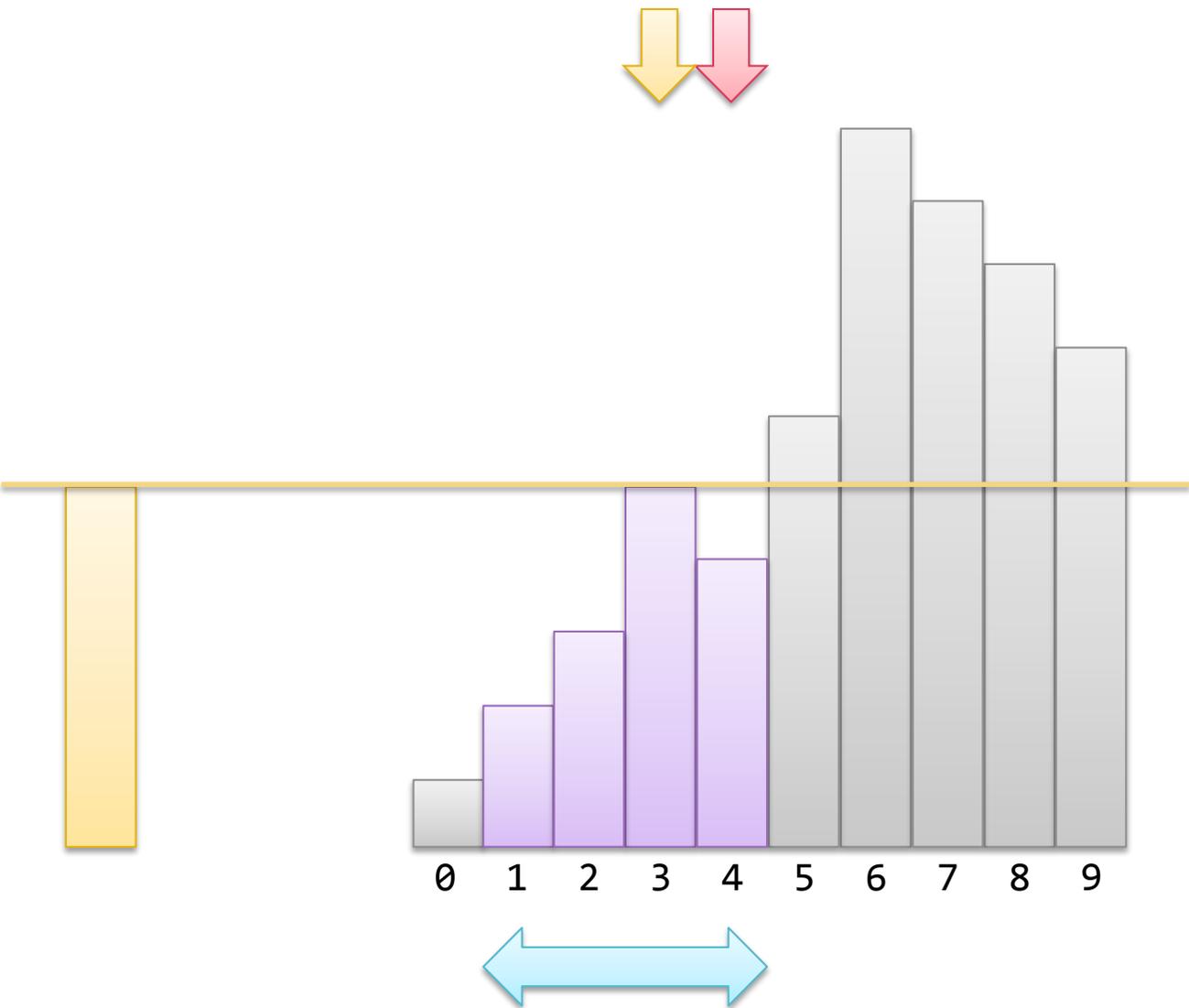
partition :
permutation



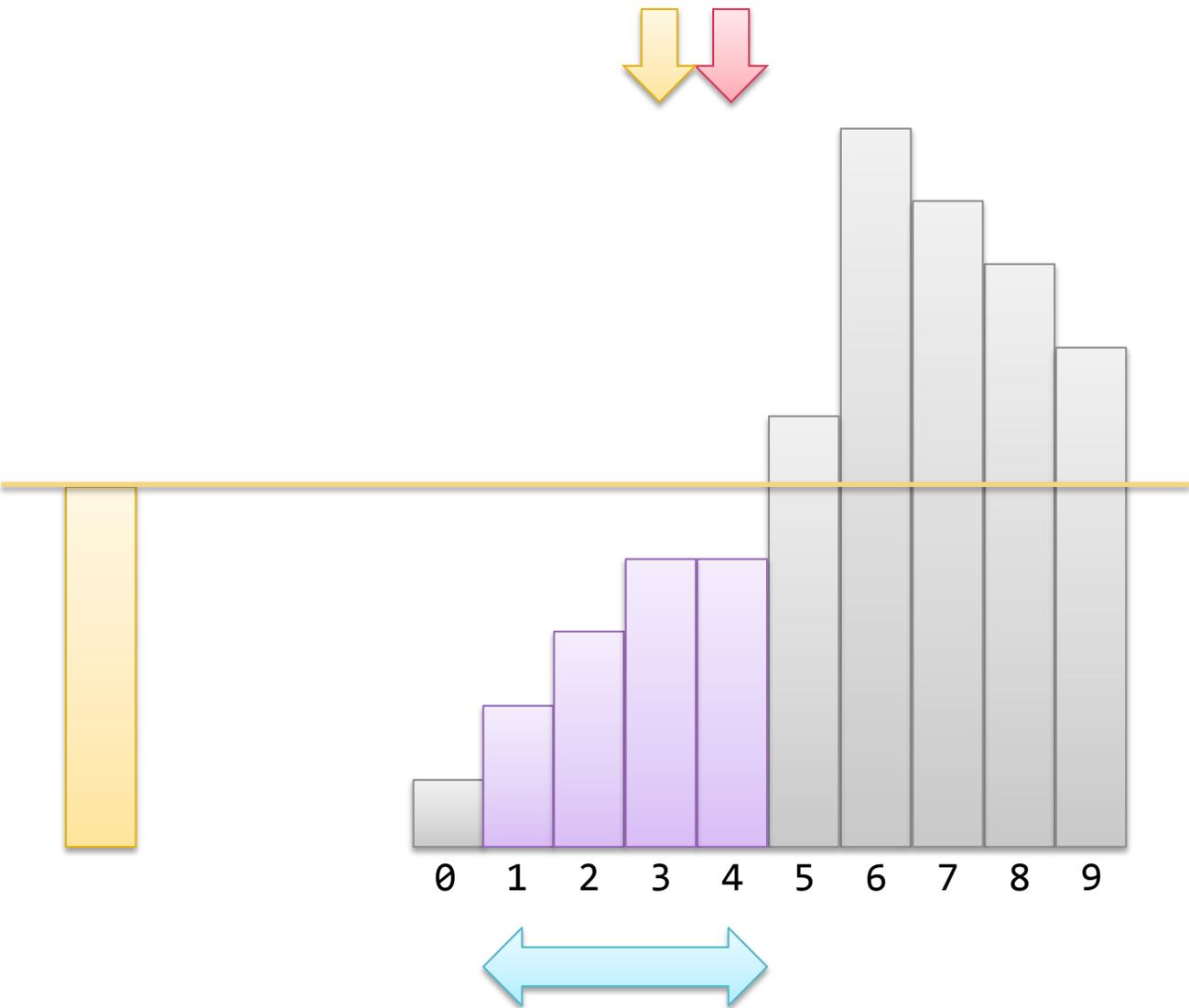
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permutation



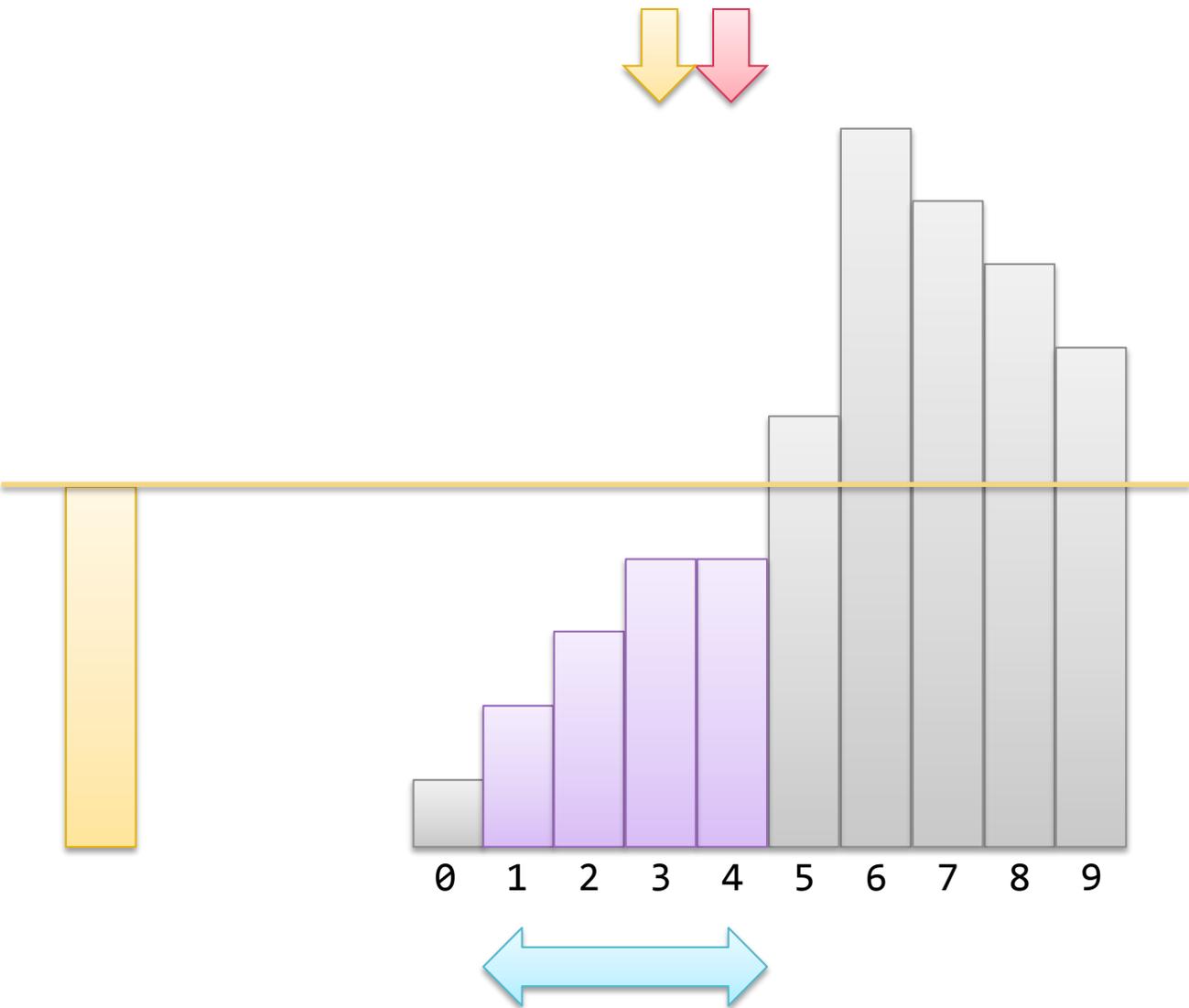
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permutation



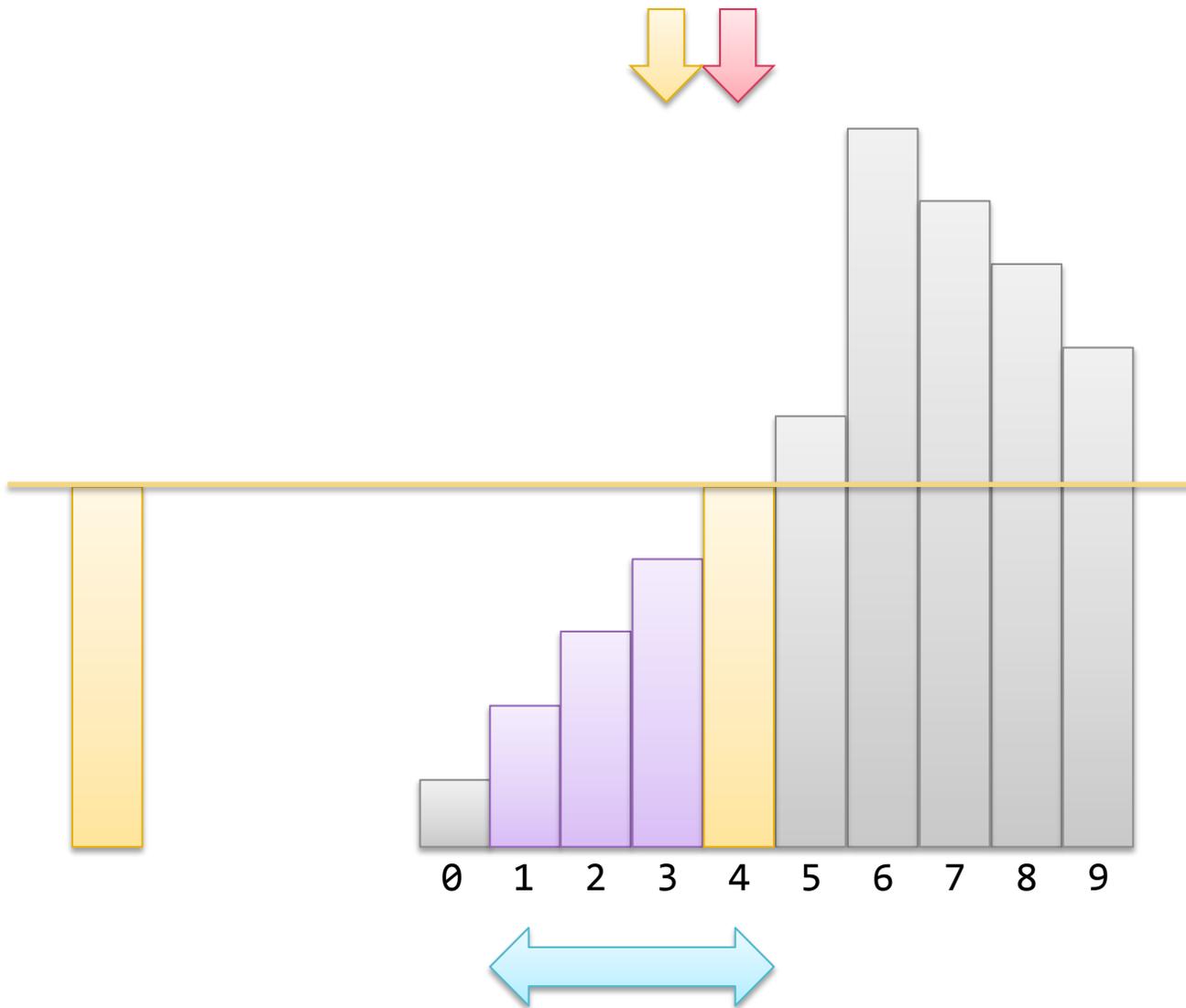
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itération +
comparaison



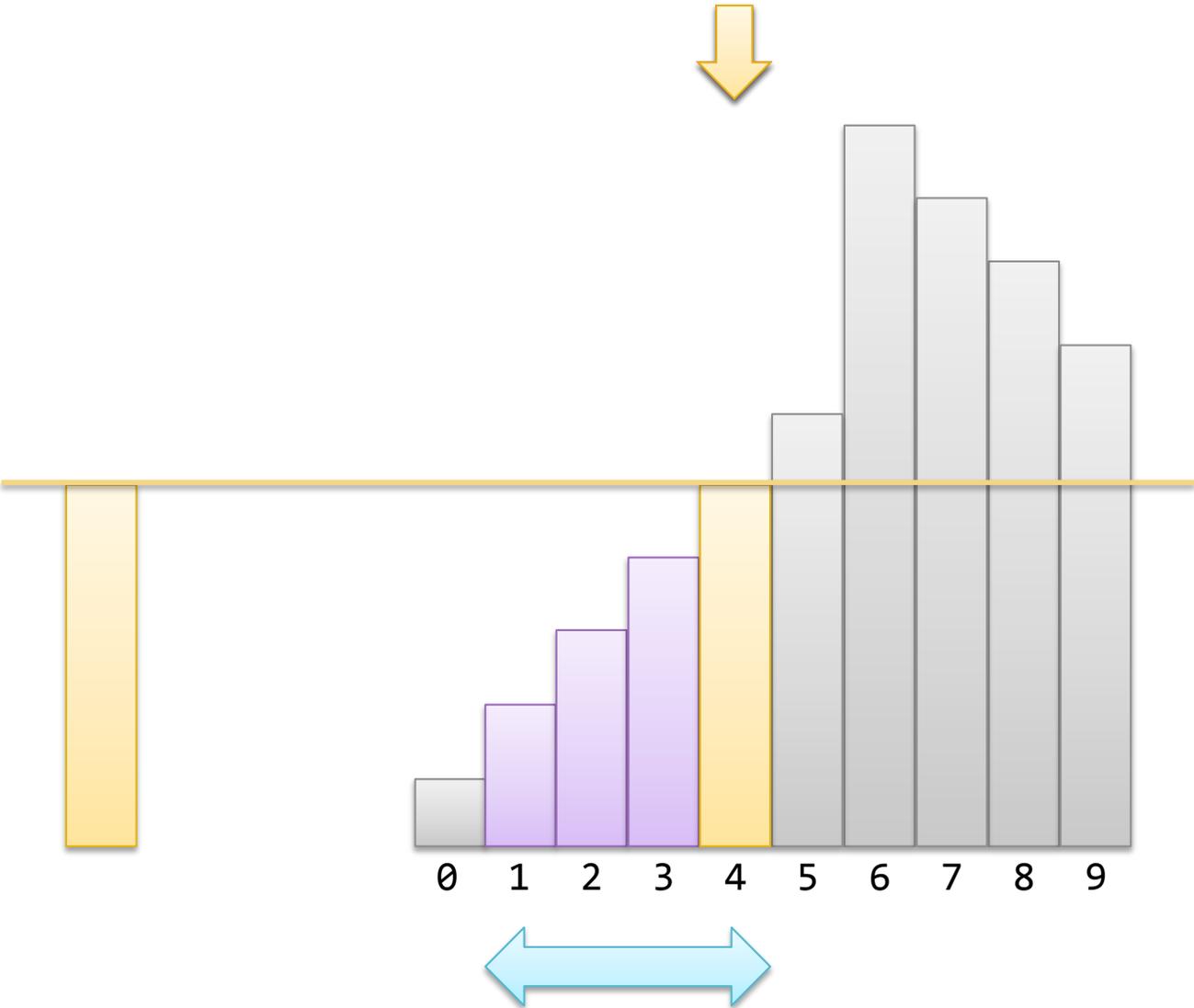
partition :
permutation



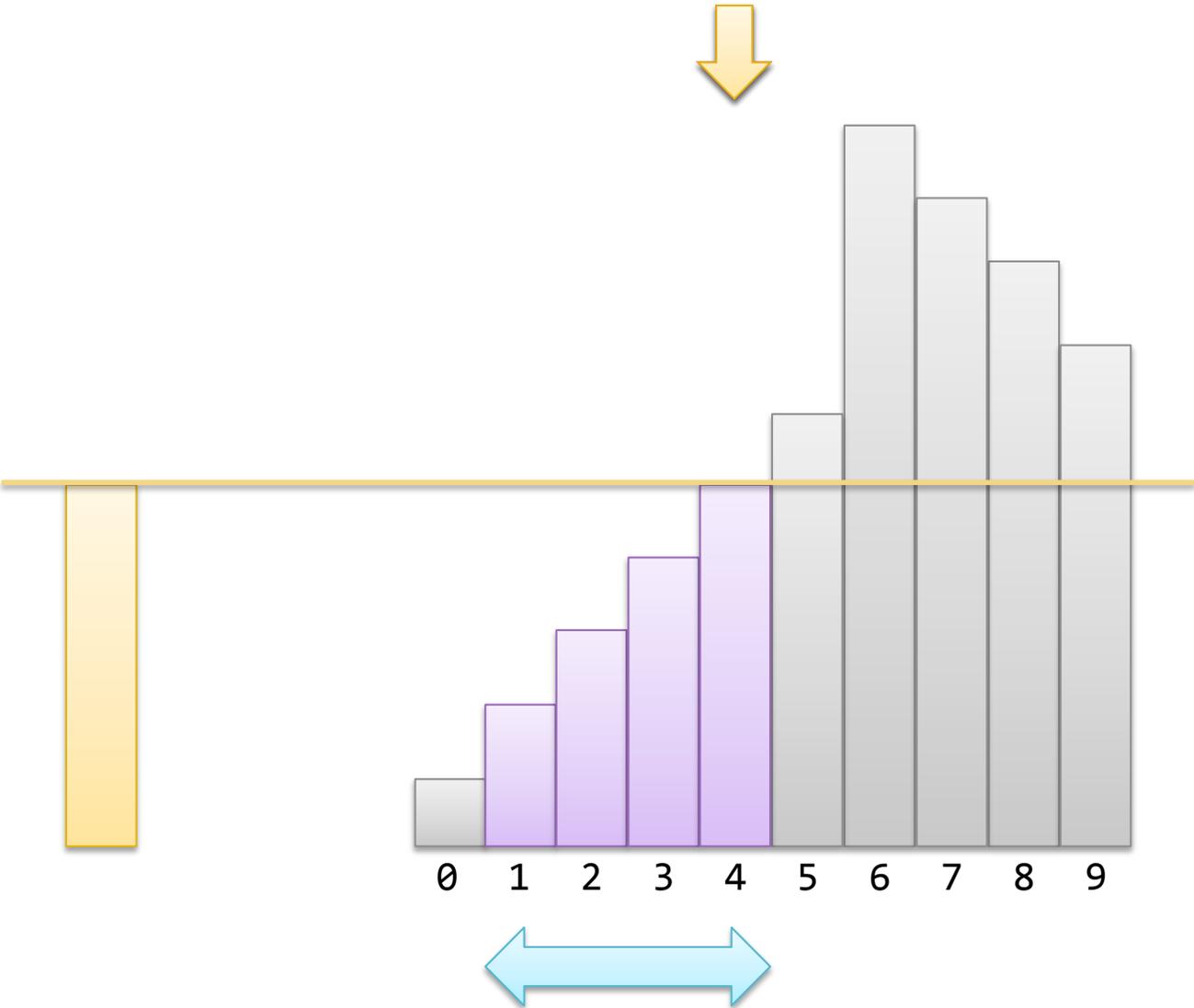
partition :
permutation



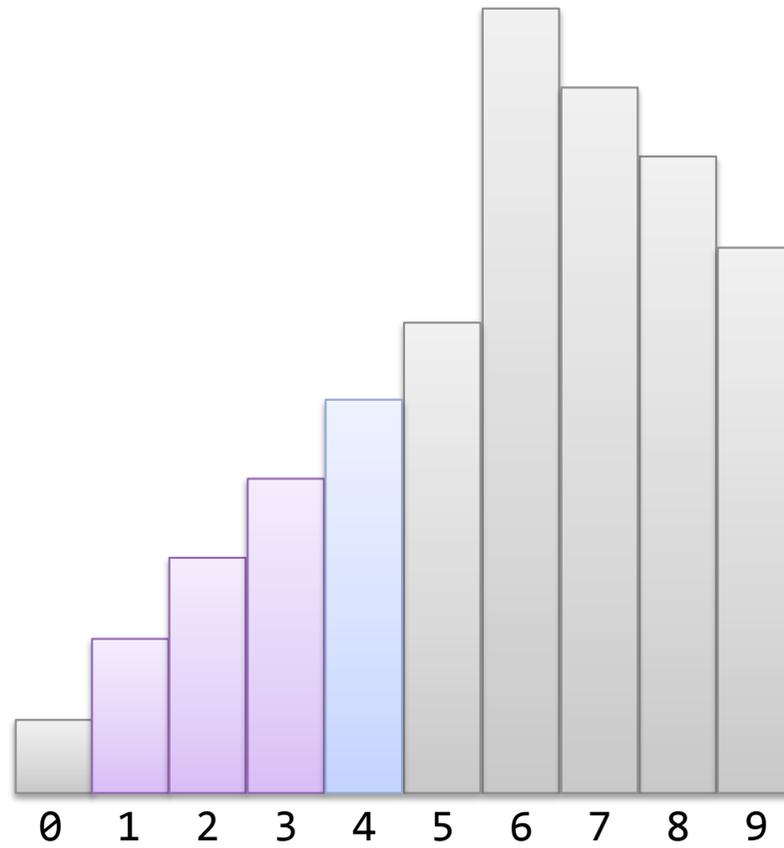
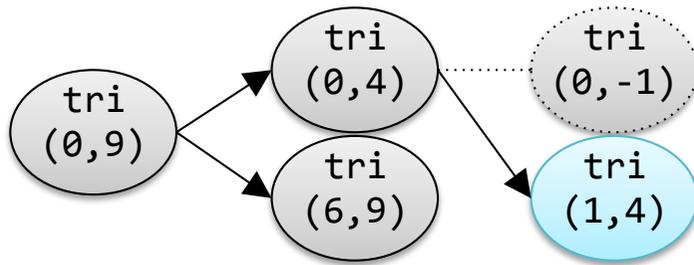
partition :
permutation



partition :
permutation

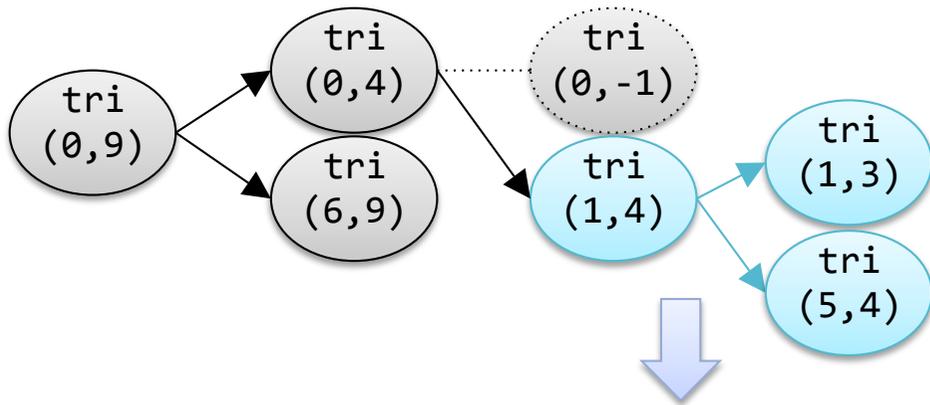


partition :
fin

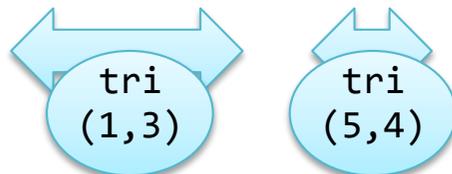
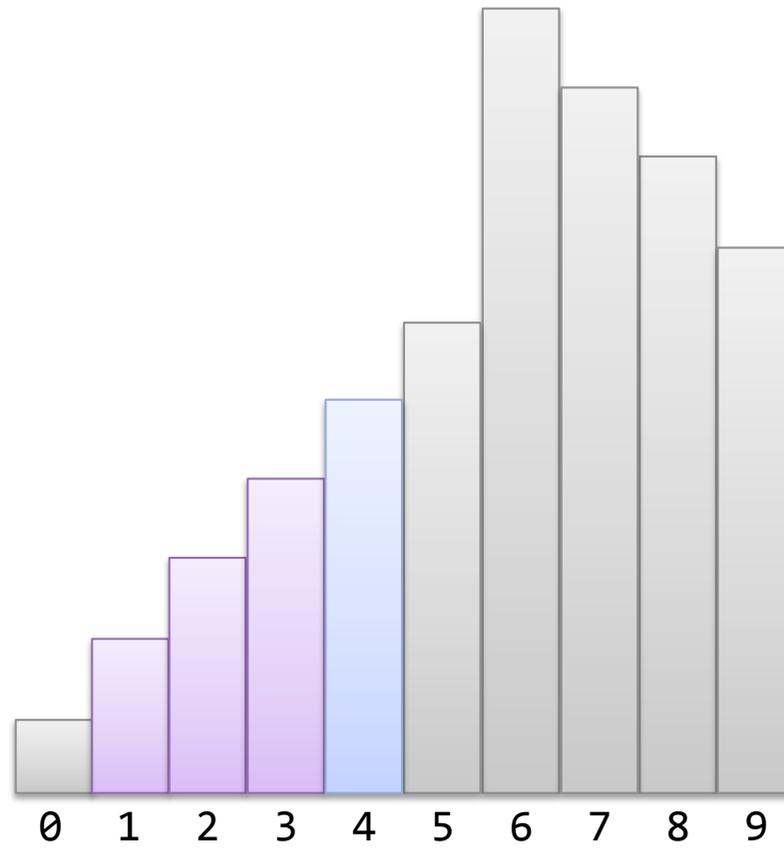


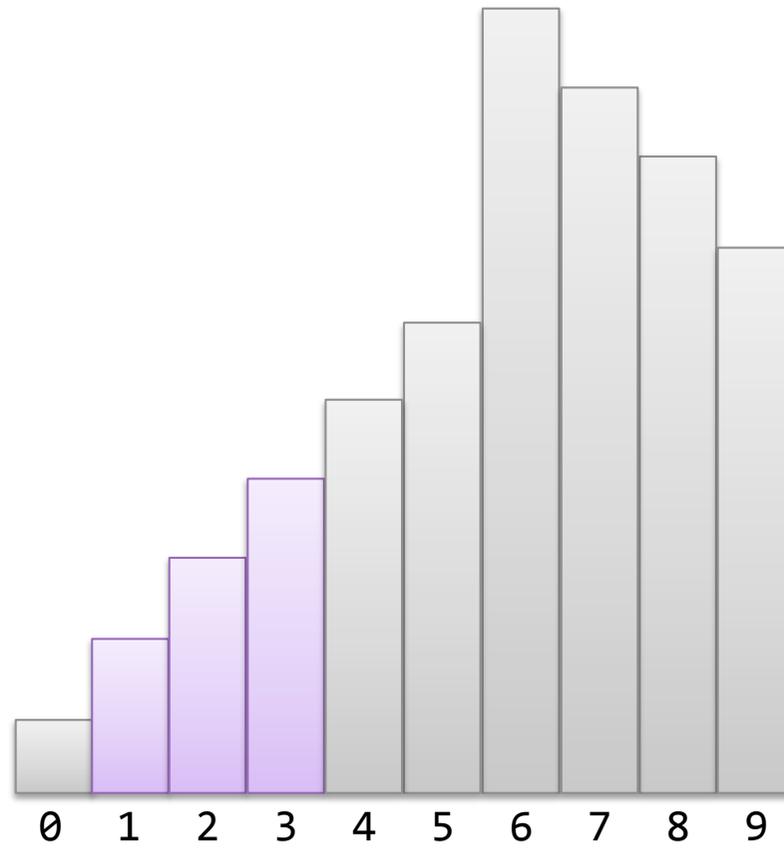
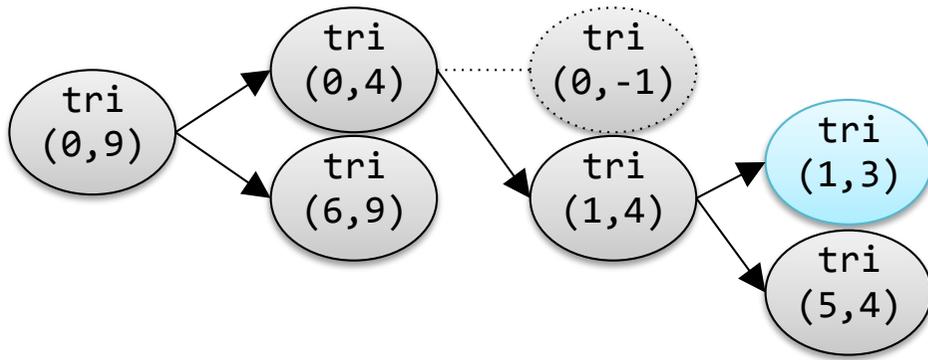
tri :
après partition





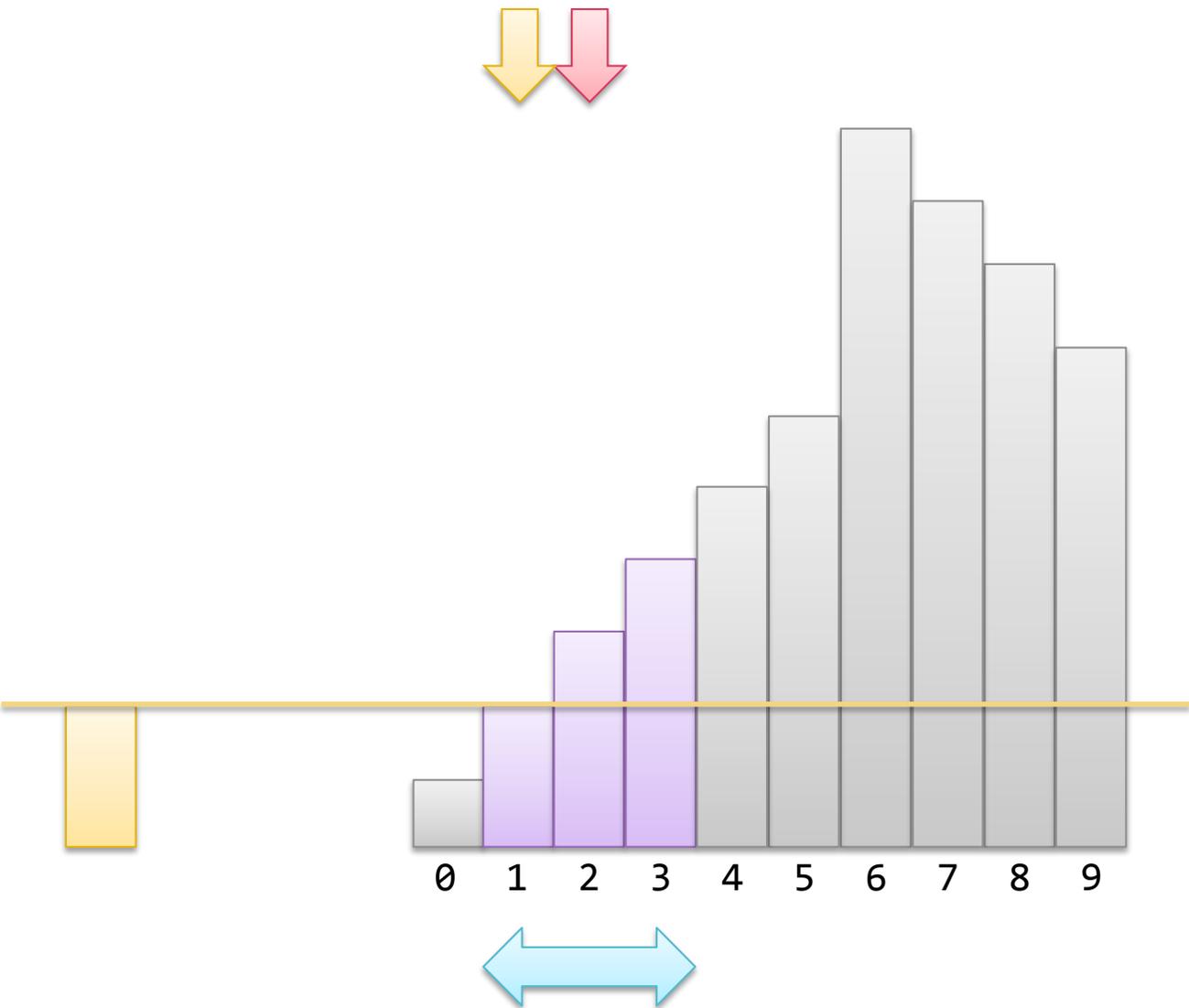
tri :
appels récurrents



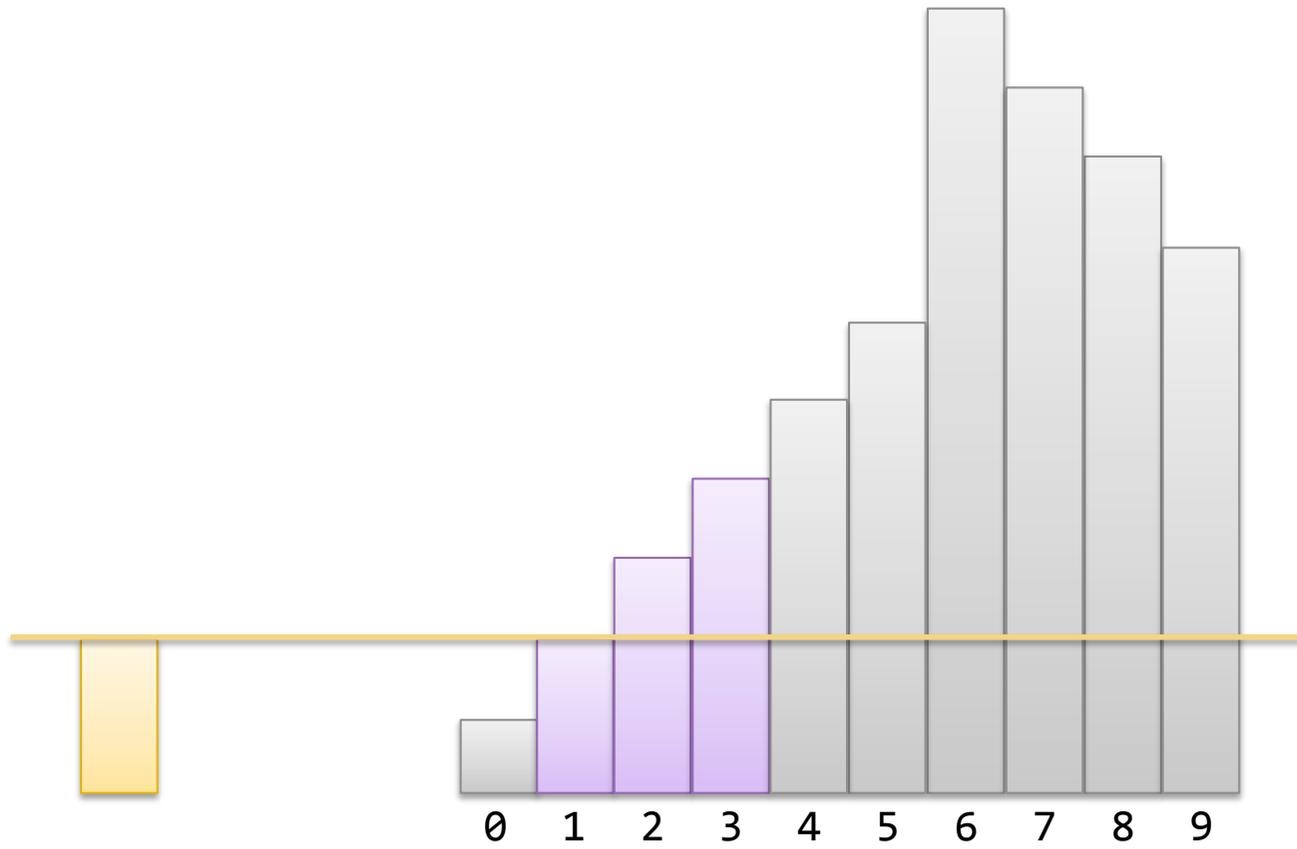


tri :
appel



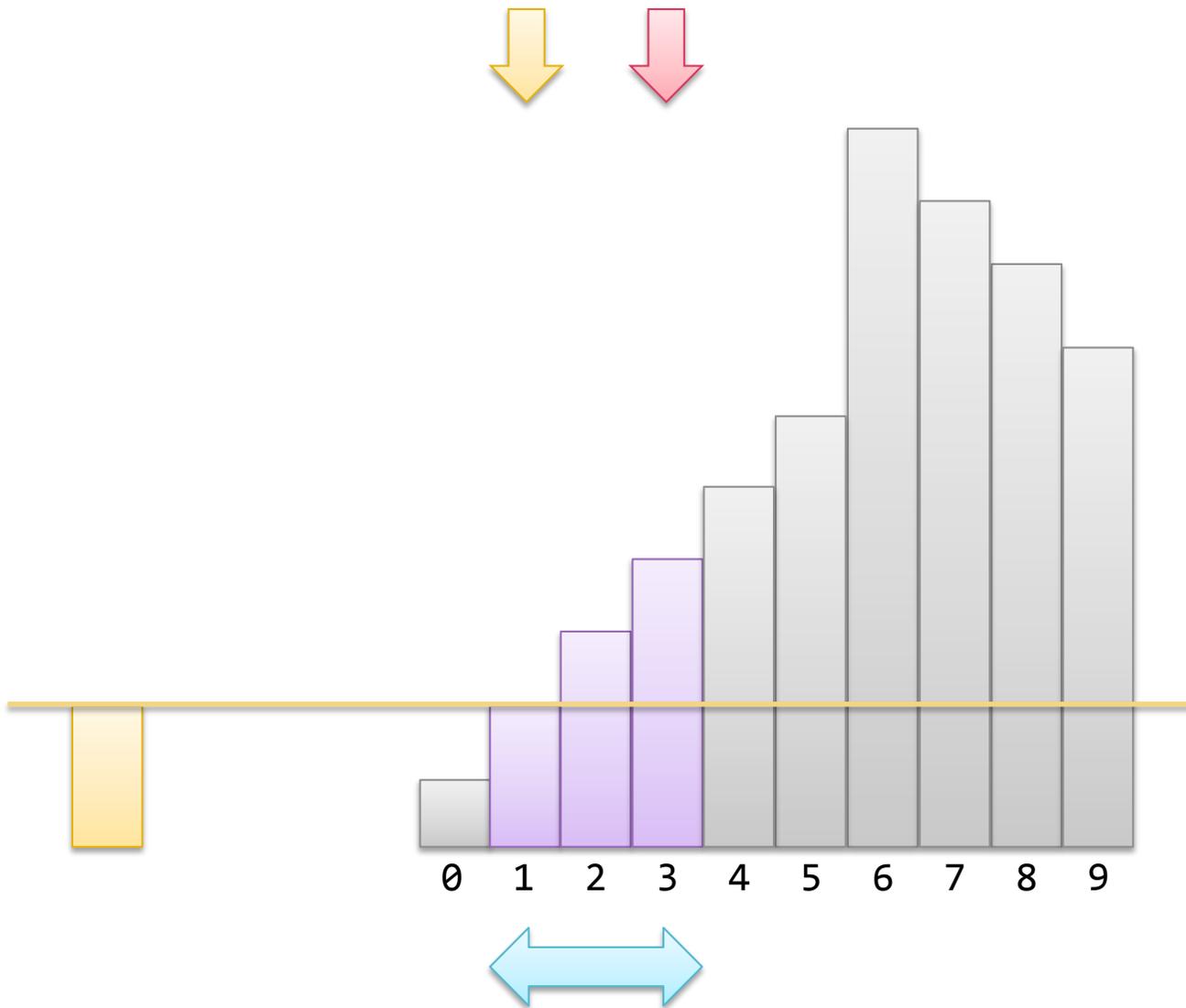


partition:
initialisation

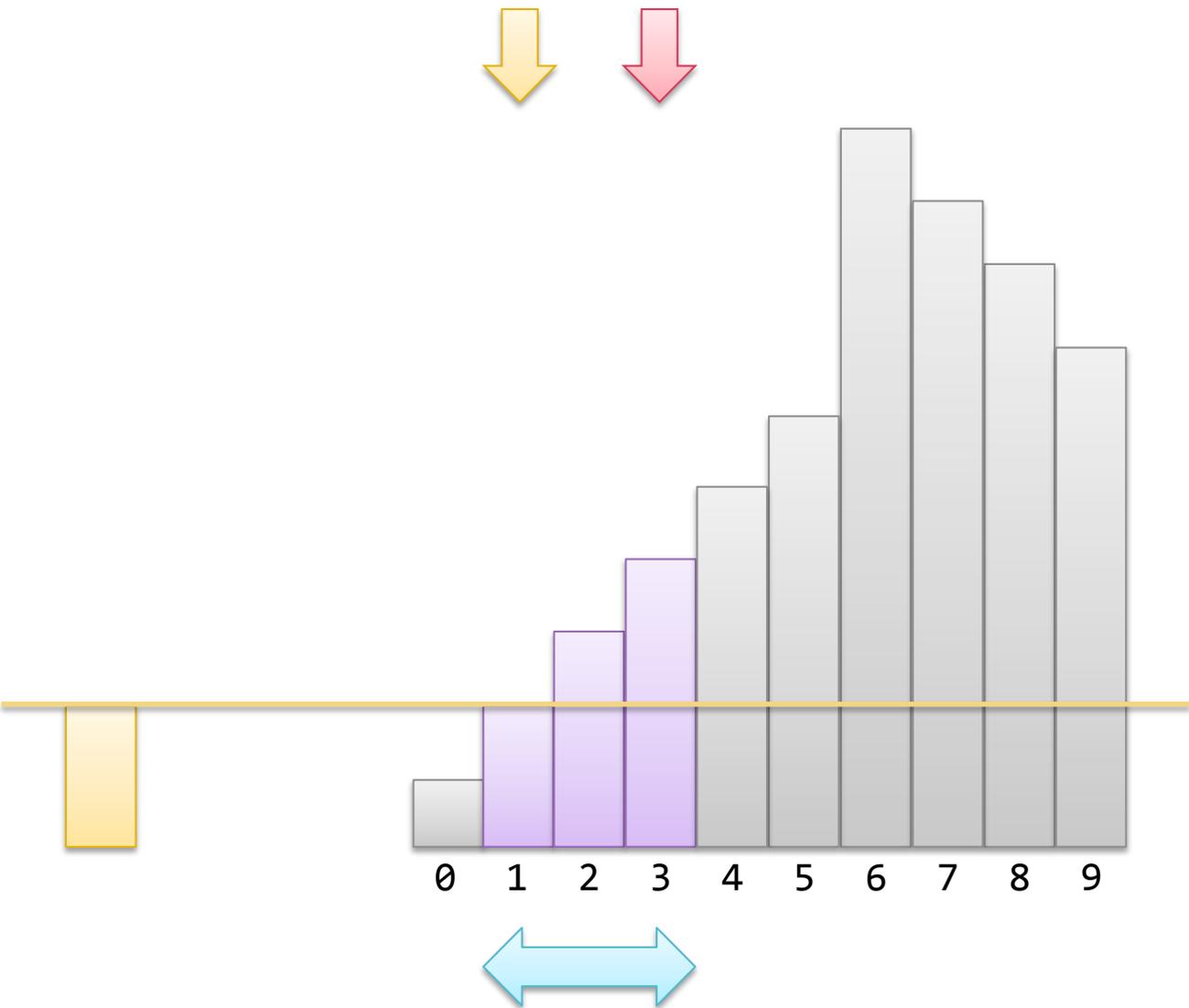


partition:
itération +
comparaison

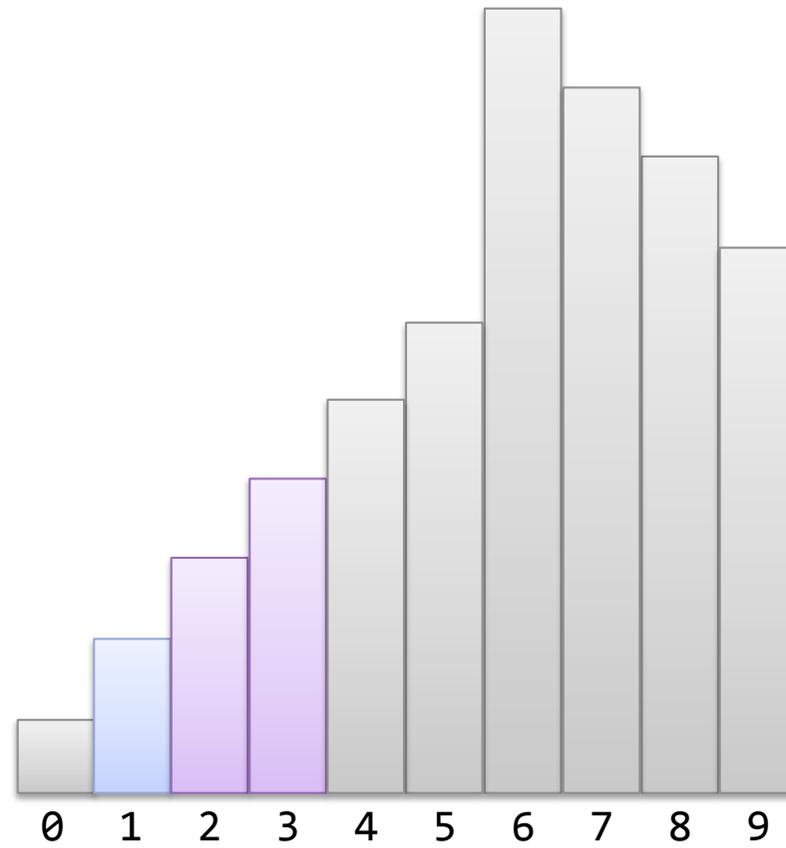
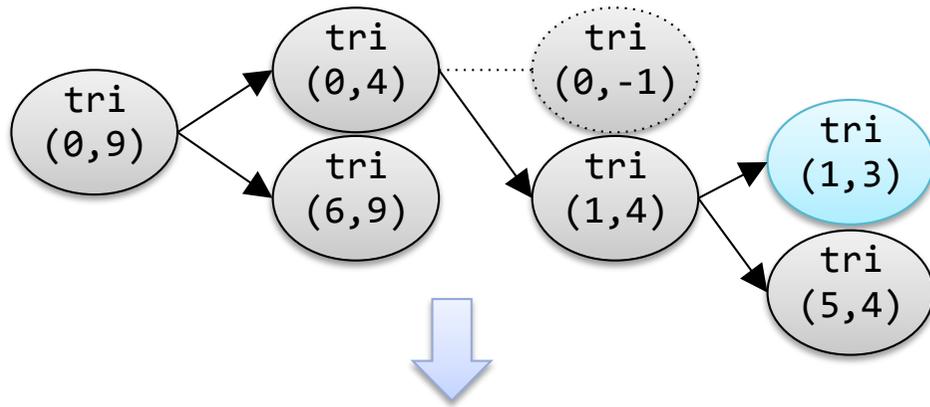




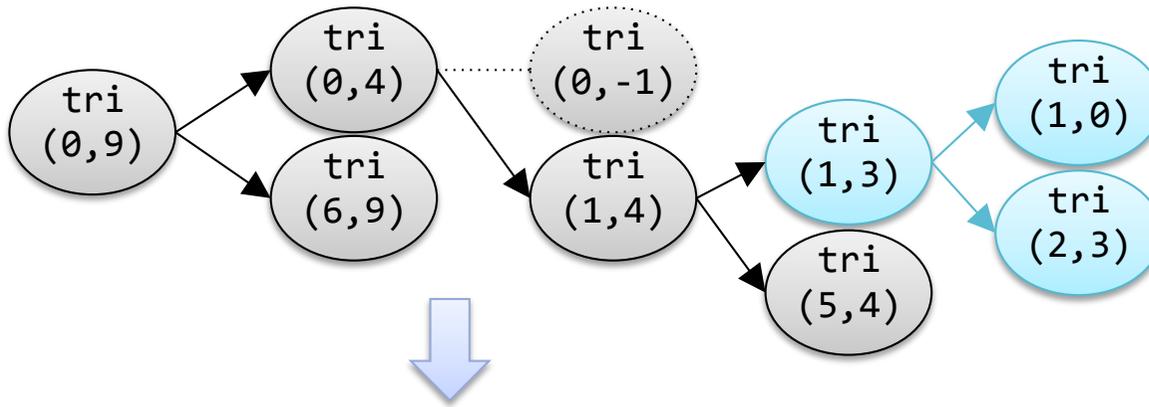
partition:
itération +
comparaison



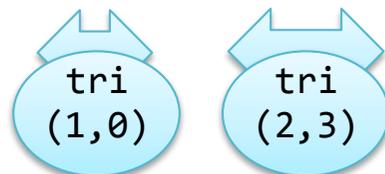
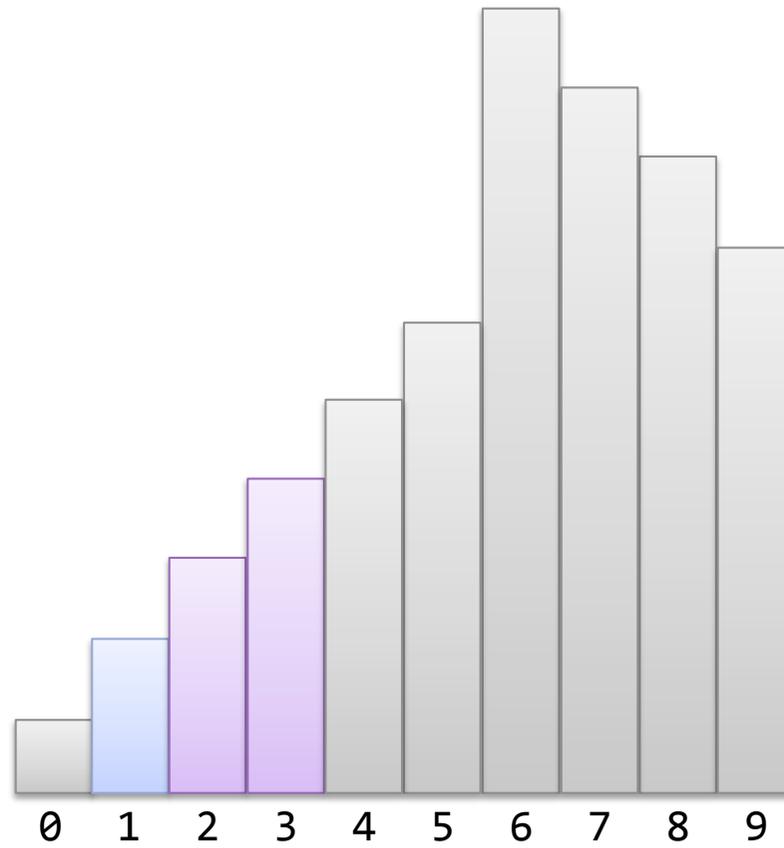
partition:
fin

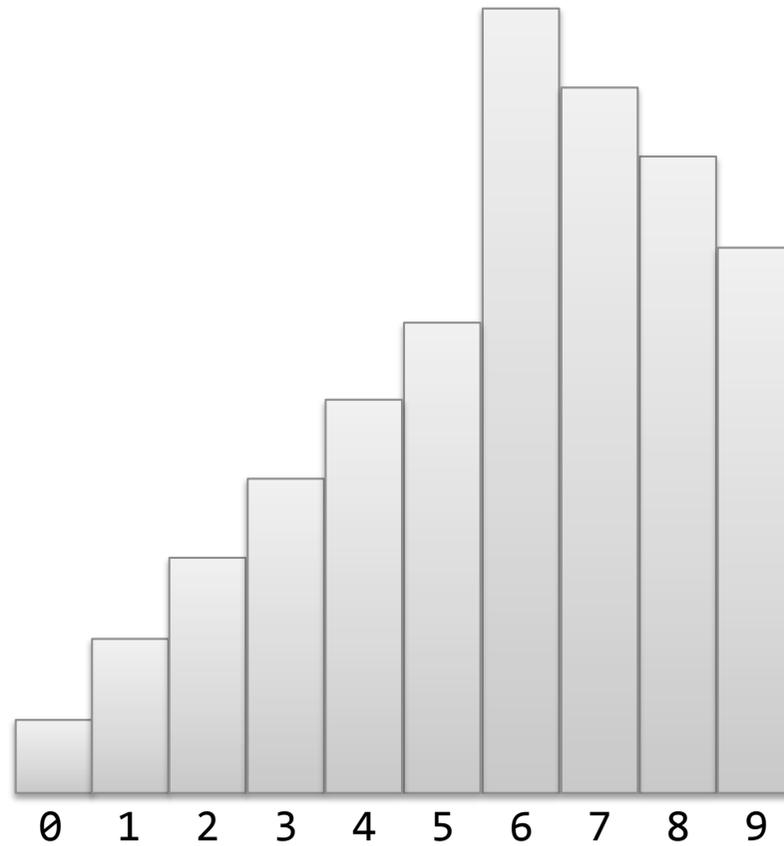
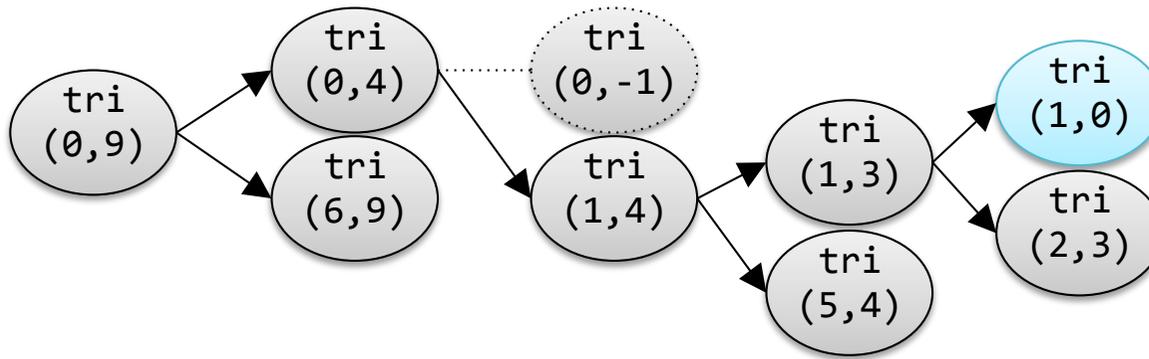


tri :
après partition



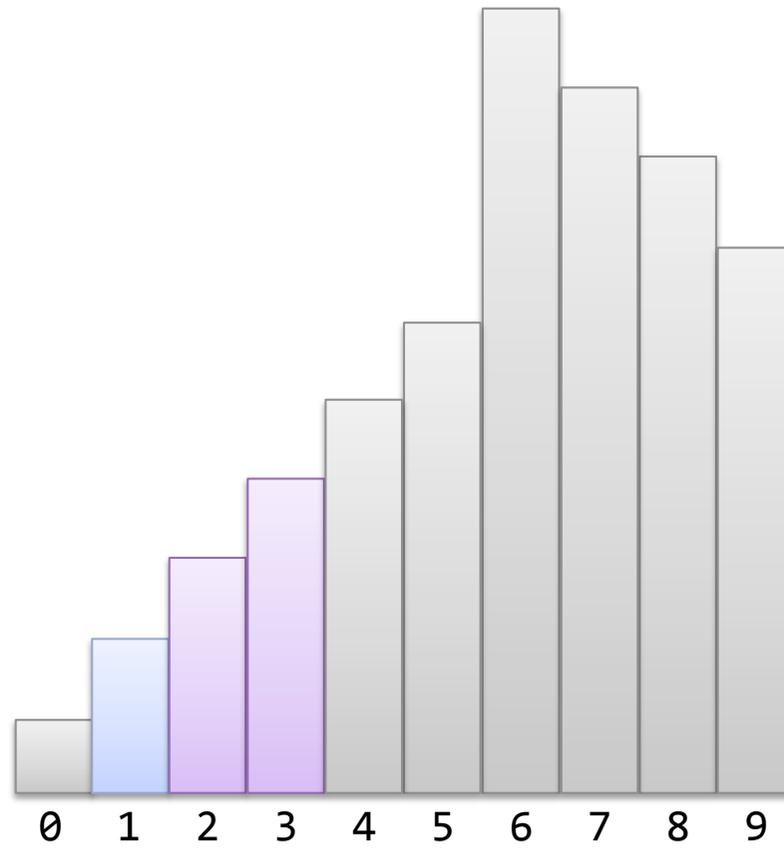
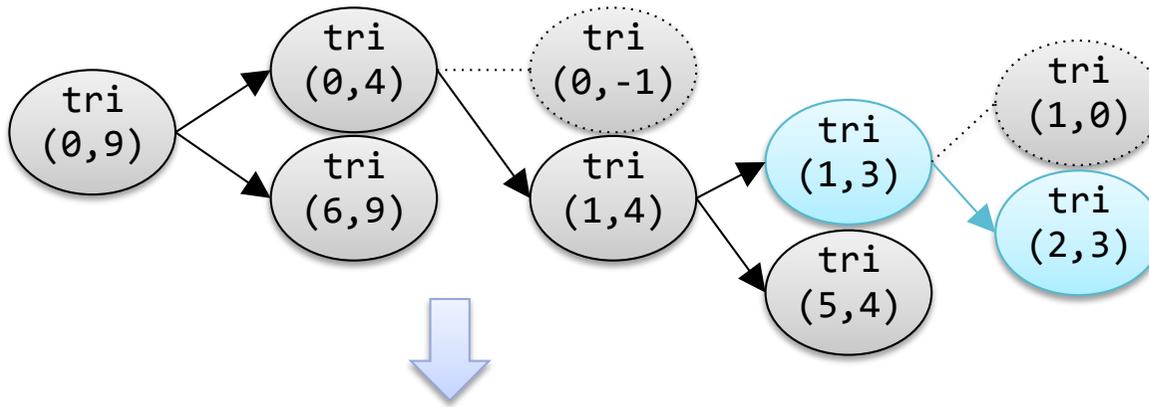
tri :
appels récurrents



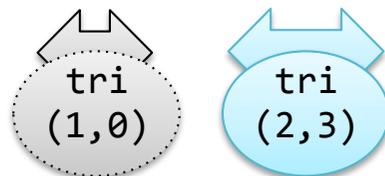


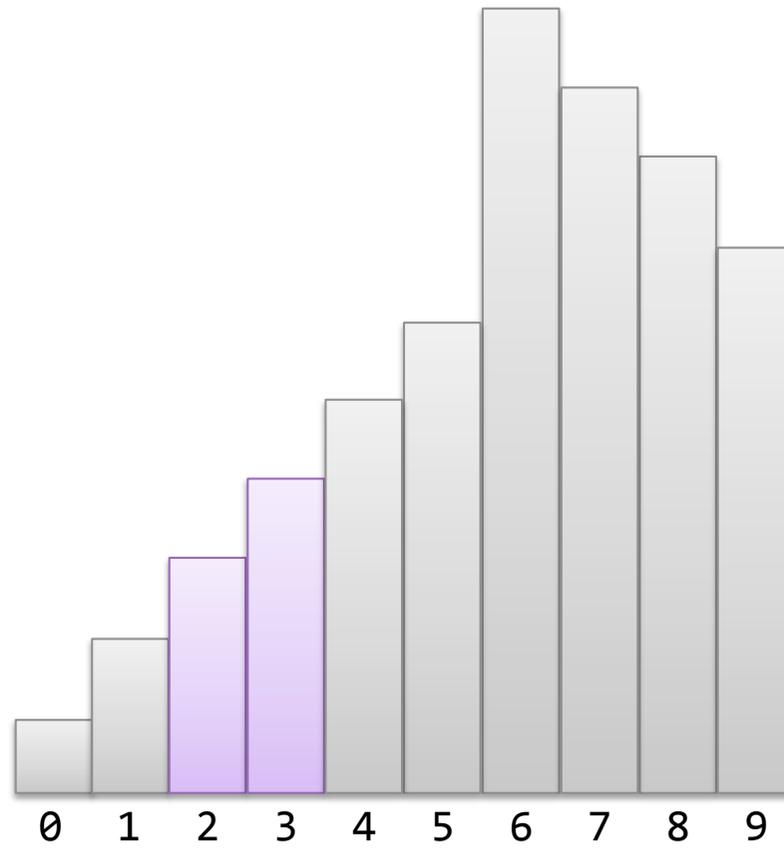
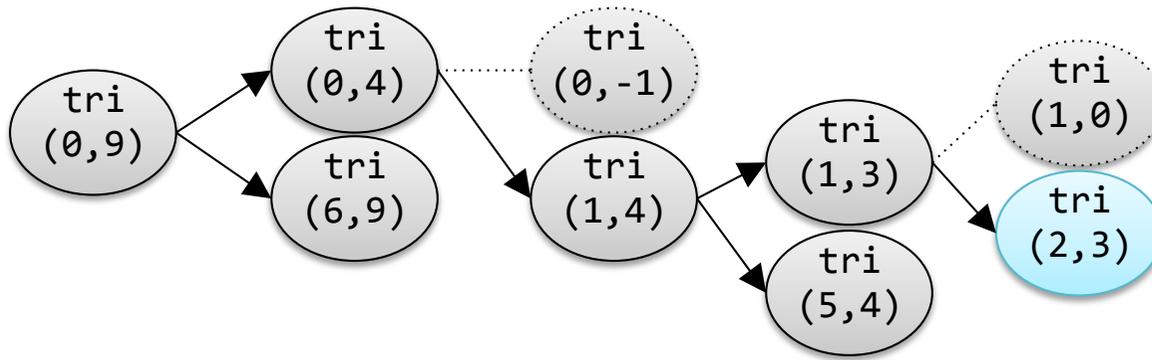
tri :
appel...
et fin !

La condition
debut < fin
n'est pas vérifiée



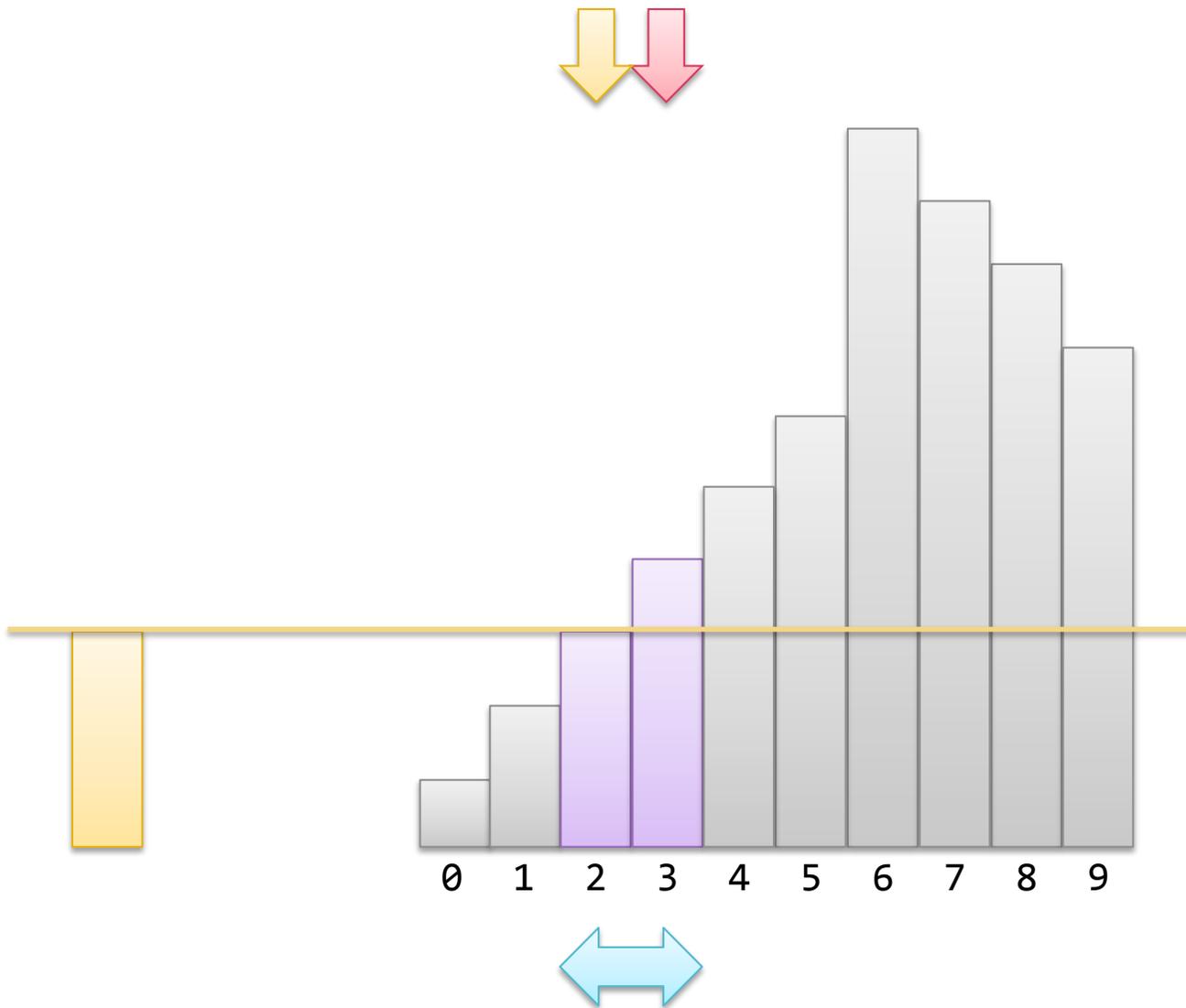
tri :
appels récurrents



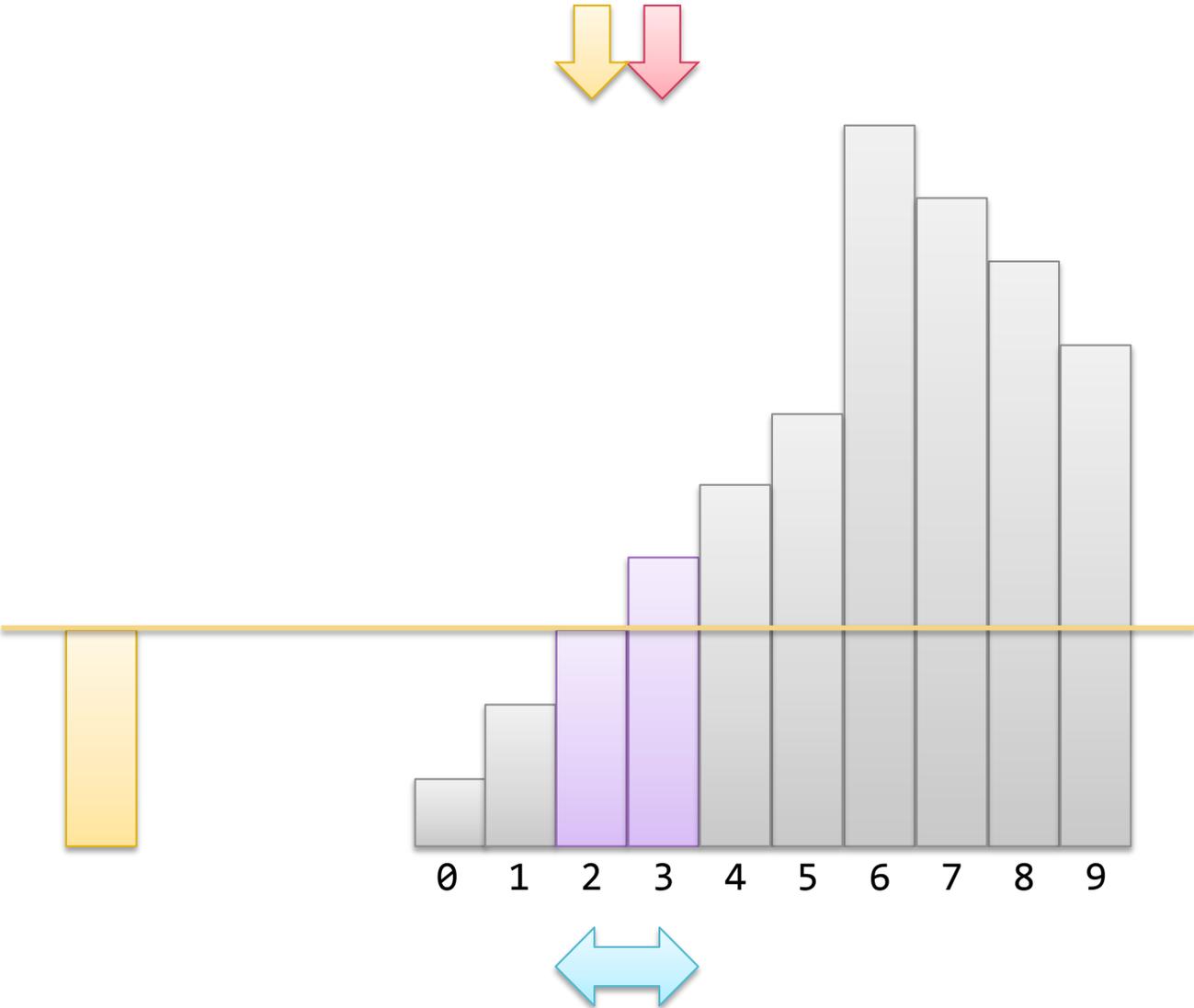


tri :
appel

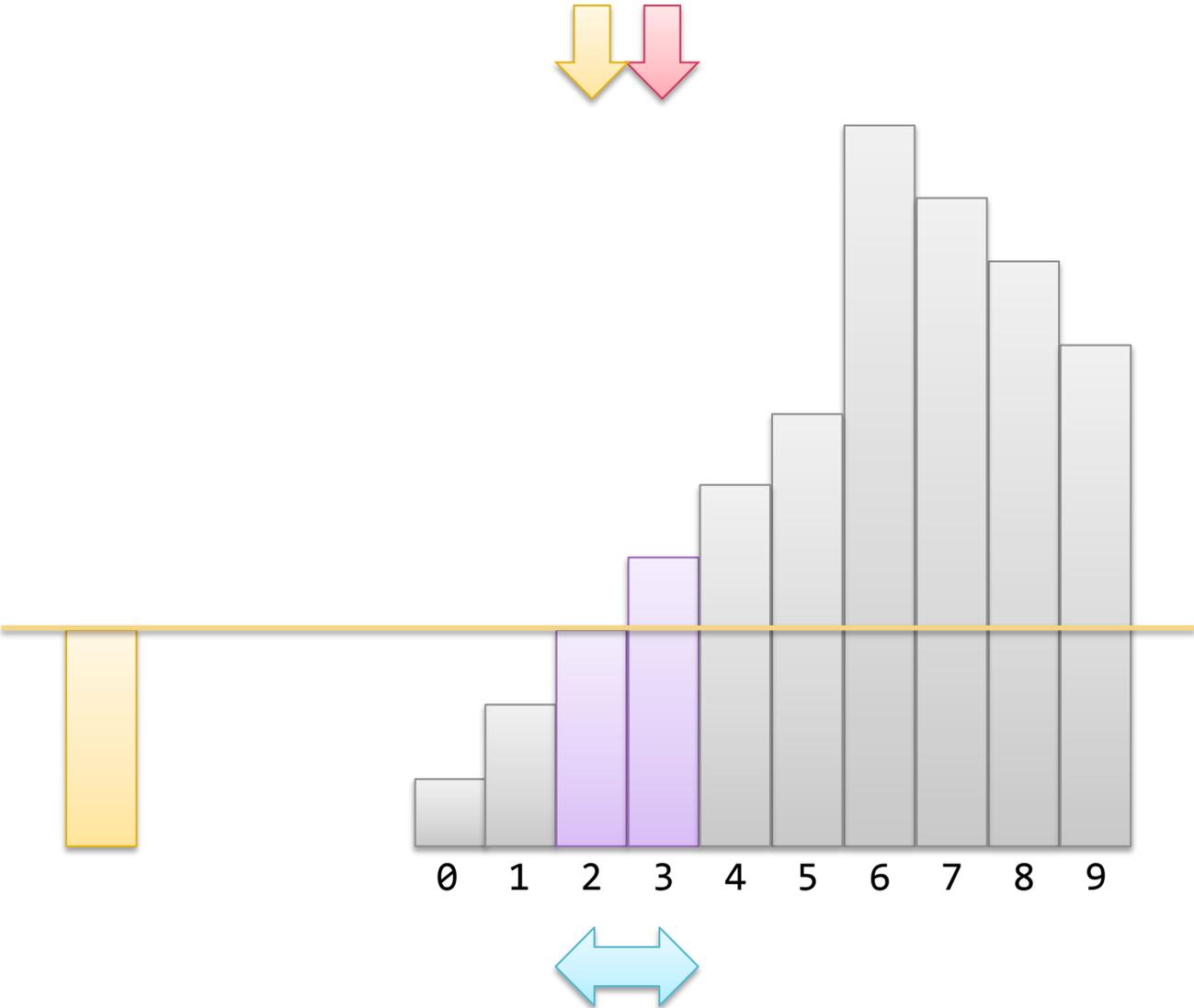




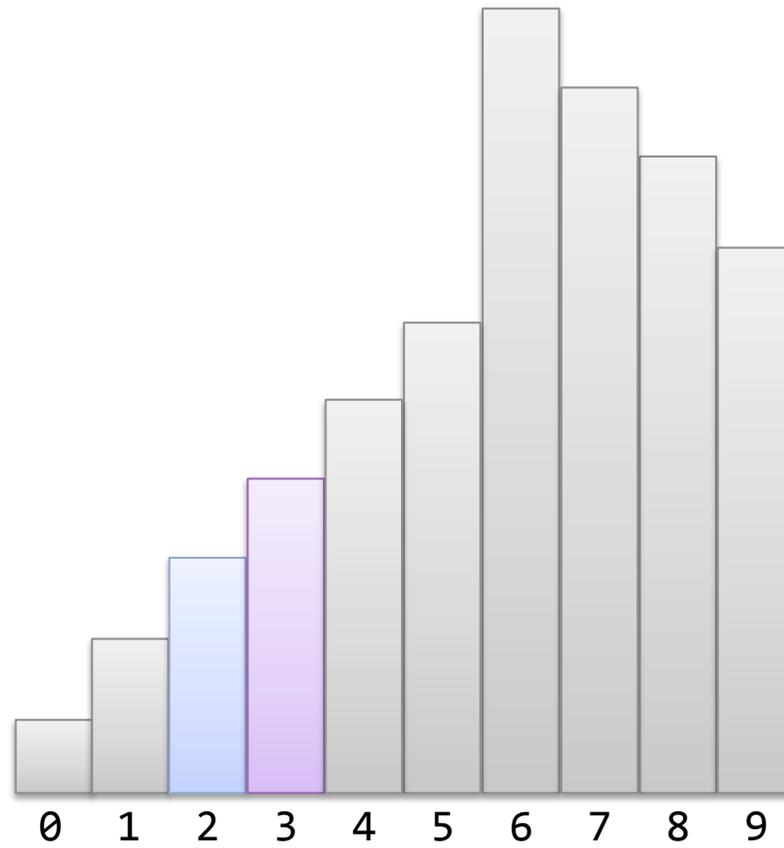
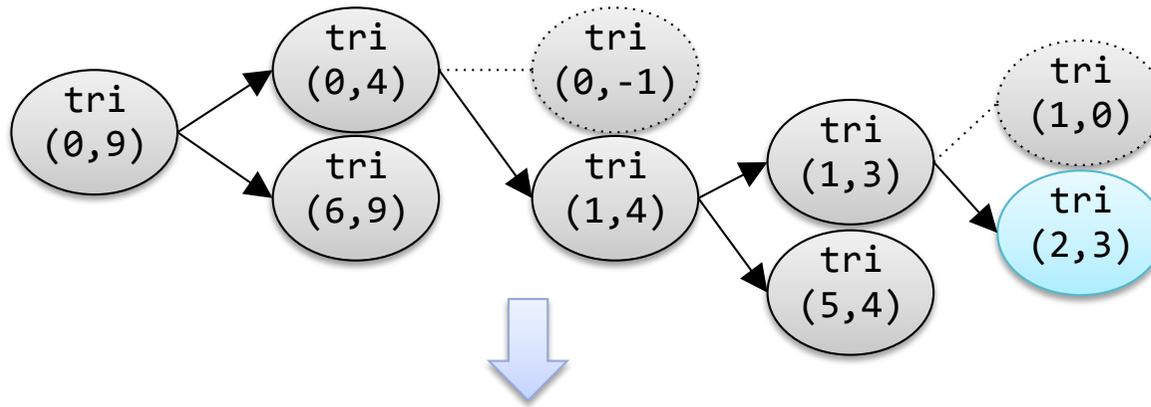
partition :
initialisation



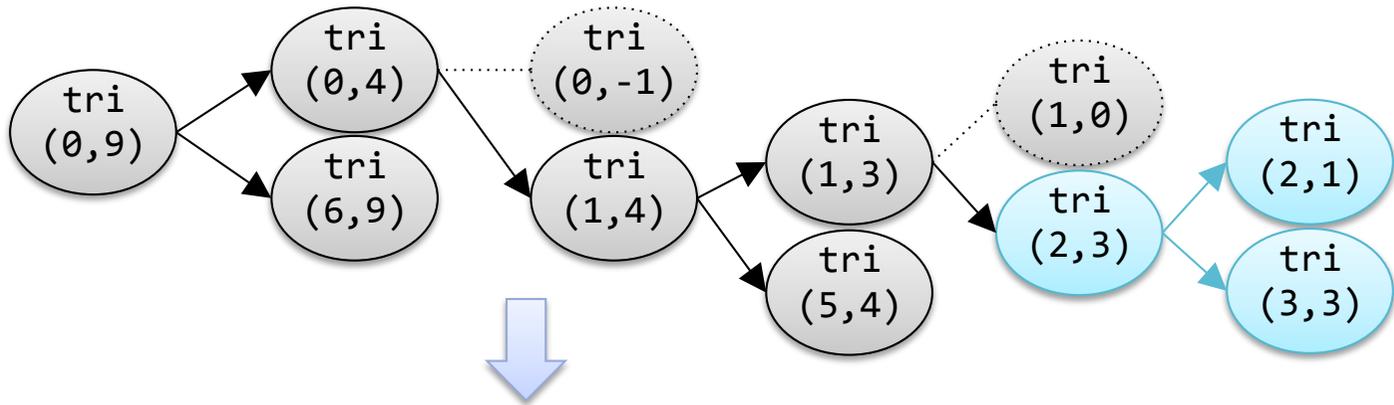
partition :
itération et
comparaison



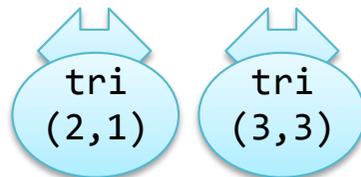
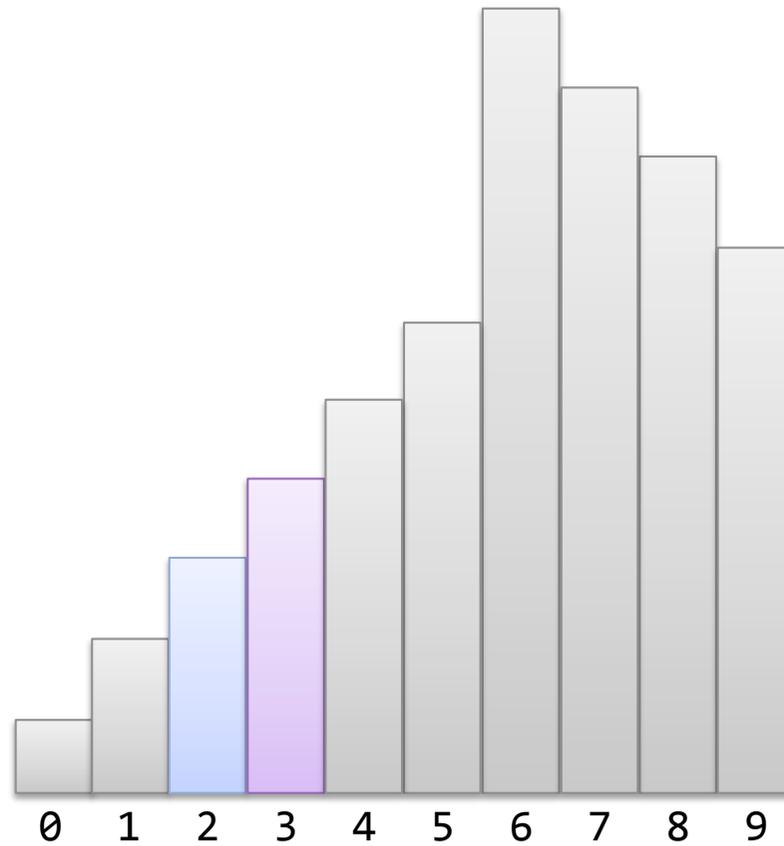
partition :
fin

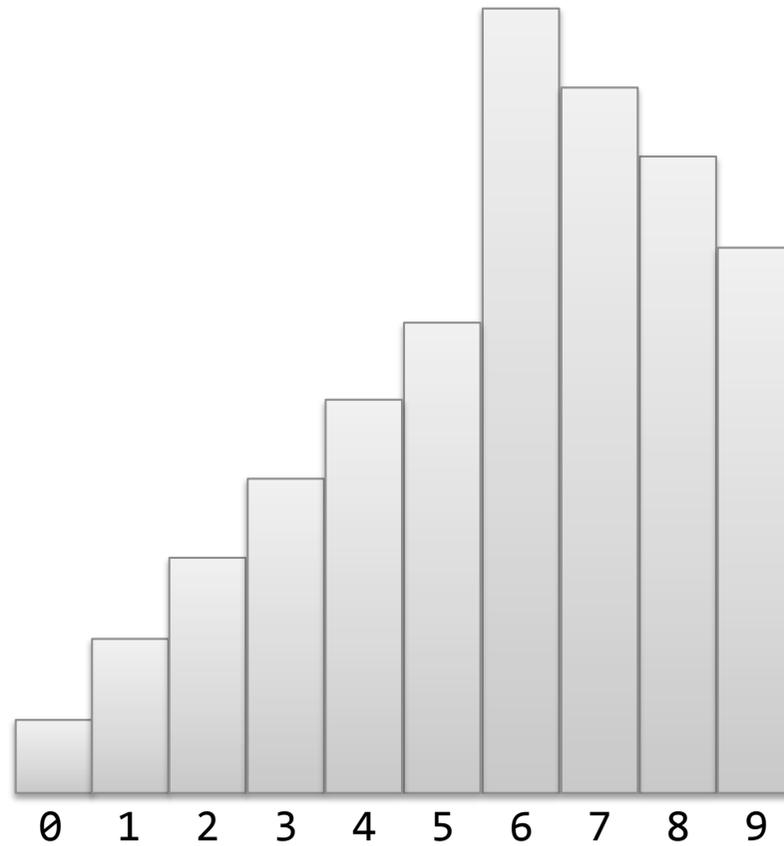
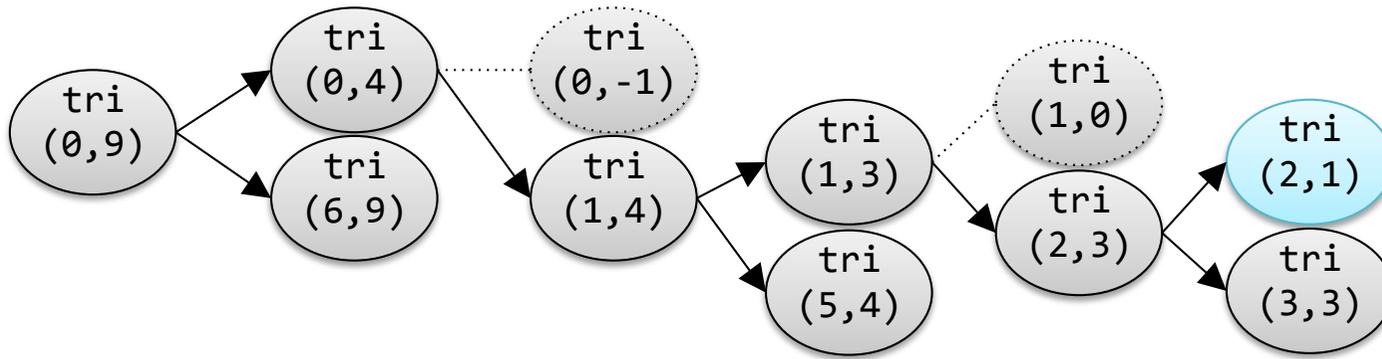


tri :
après partition



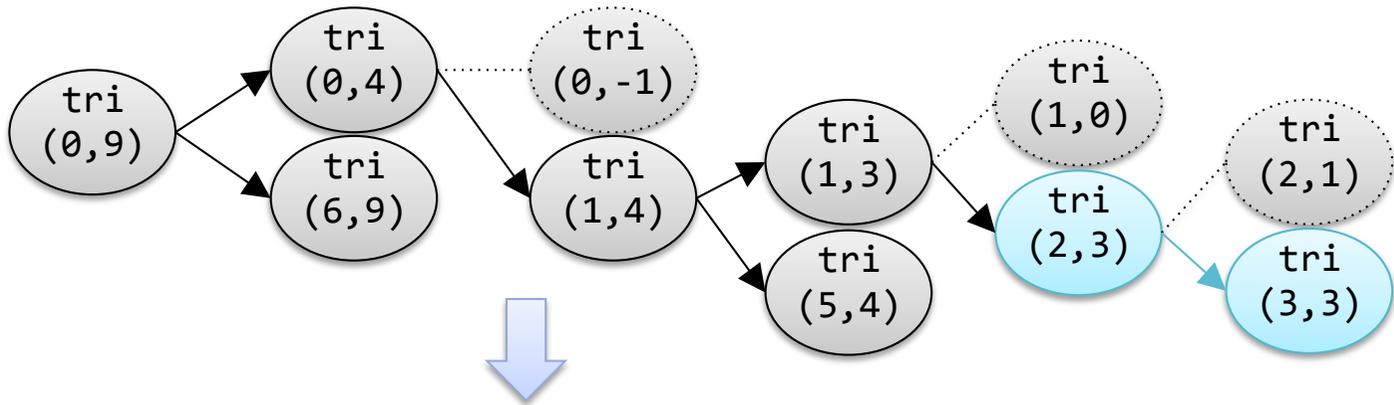
tri :
appels récurrents



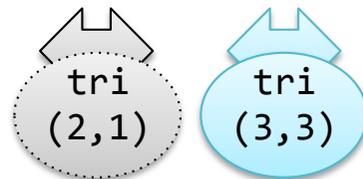
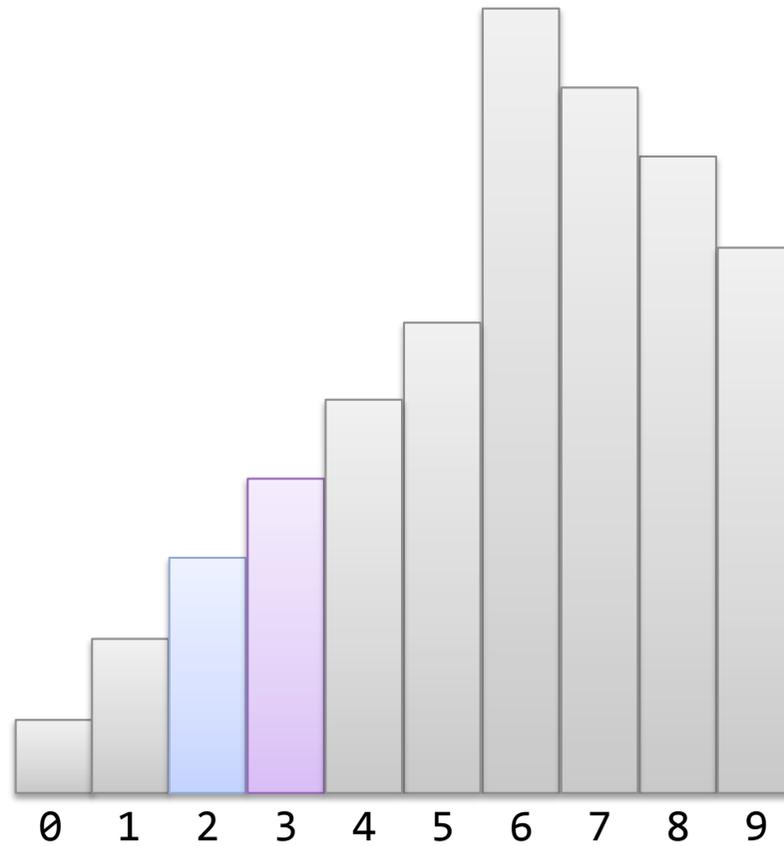


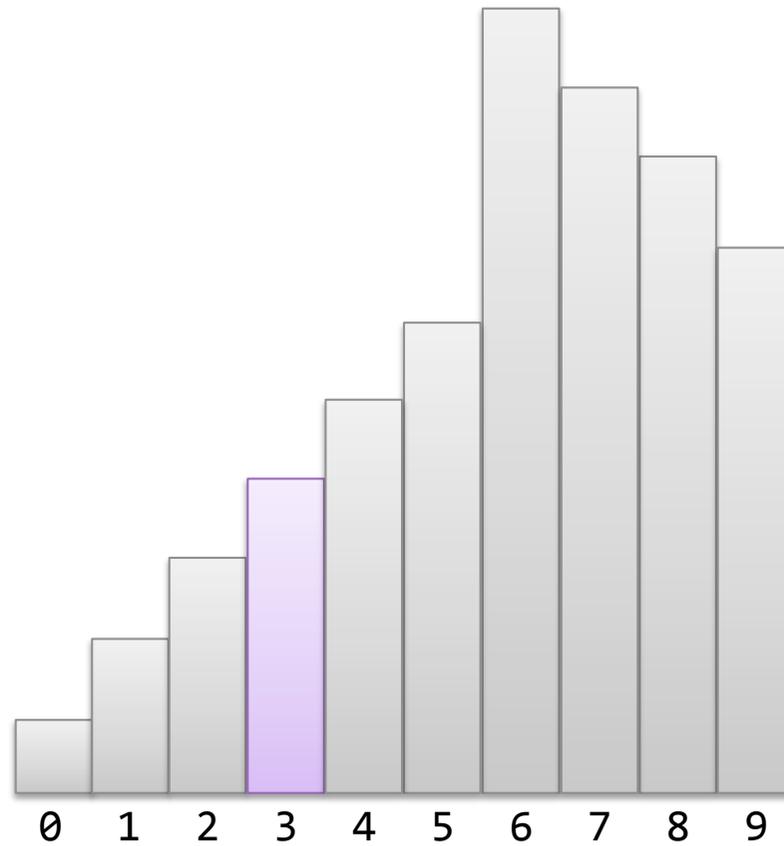
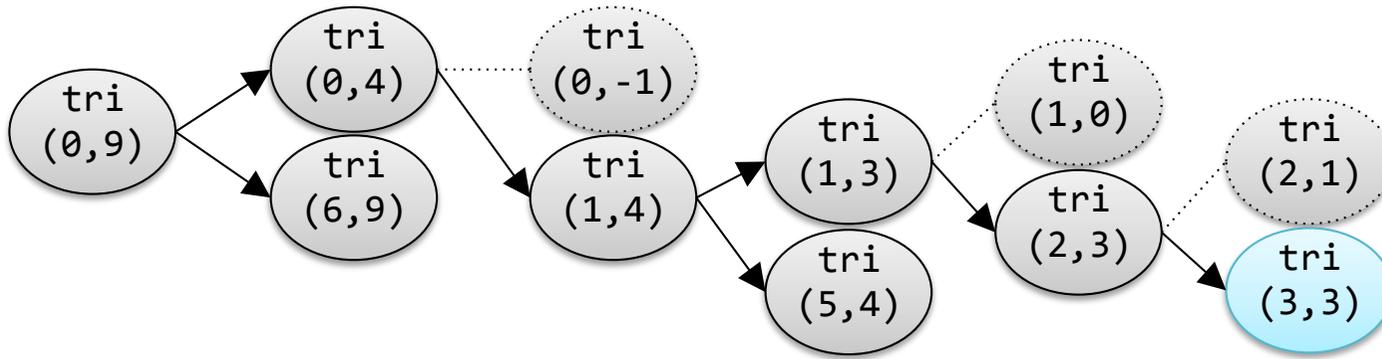
tri :
 appel...
 et fin !

La condition
 debut < fin
 n'est pas vérifiée



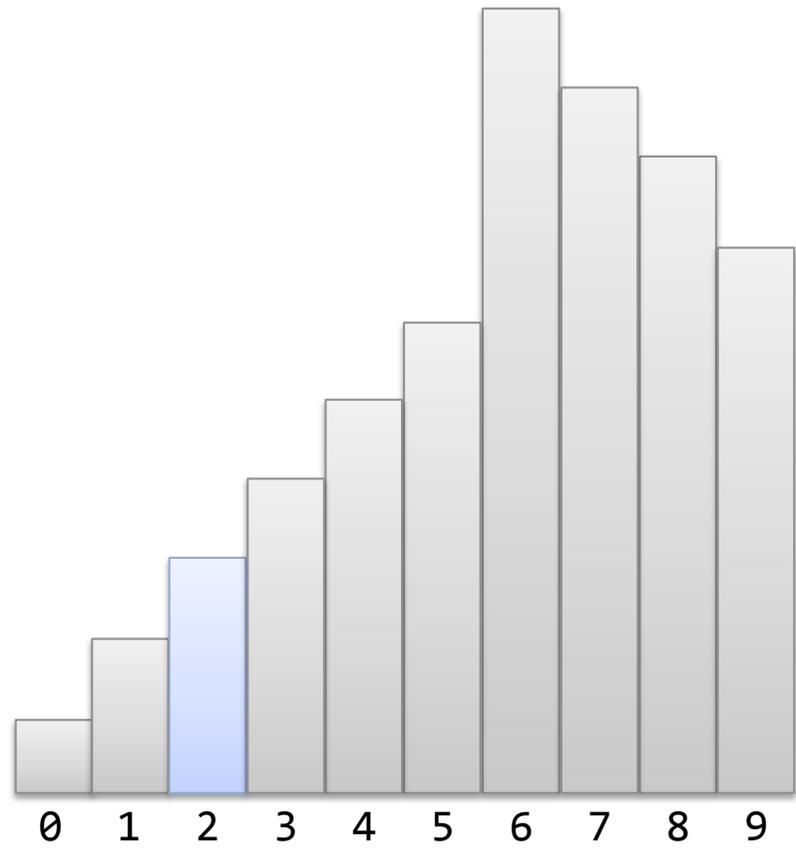
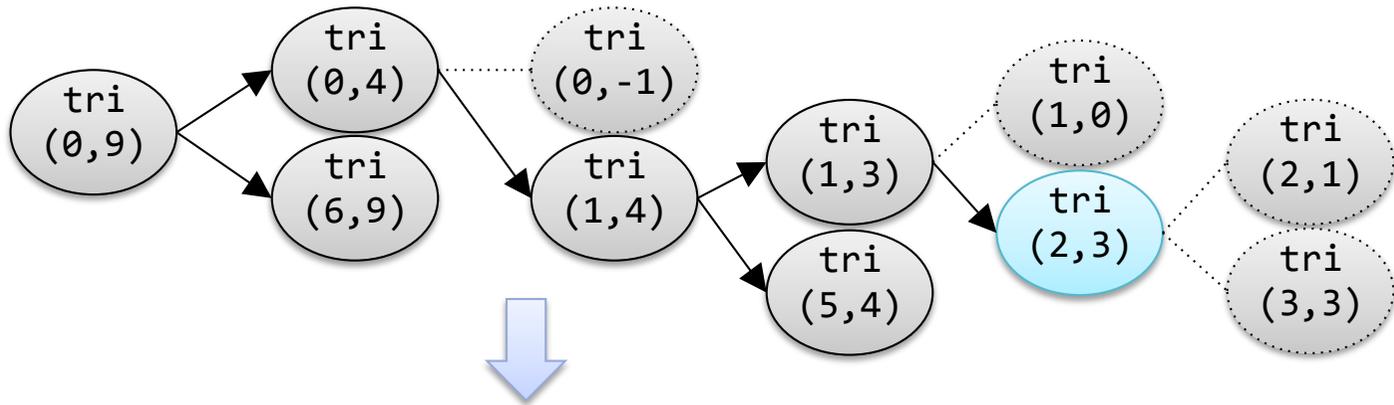
tri :
appels récurrents



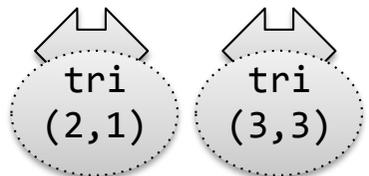


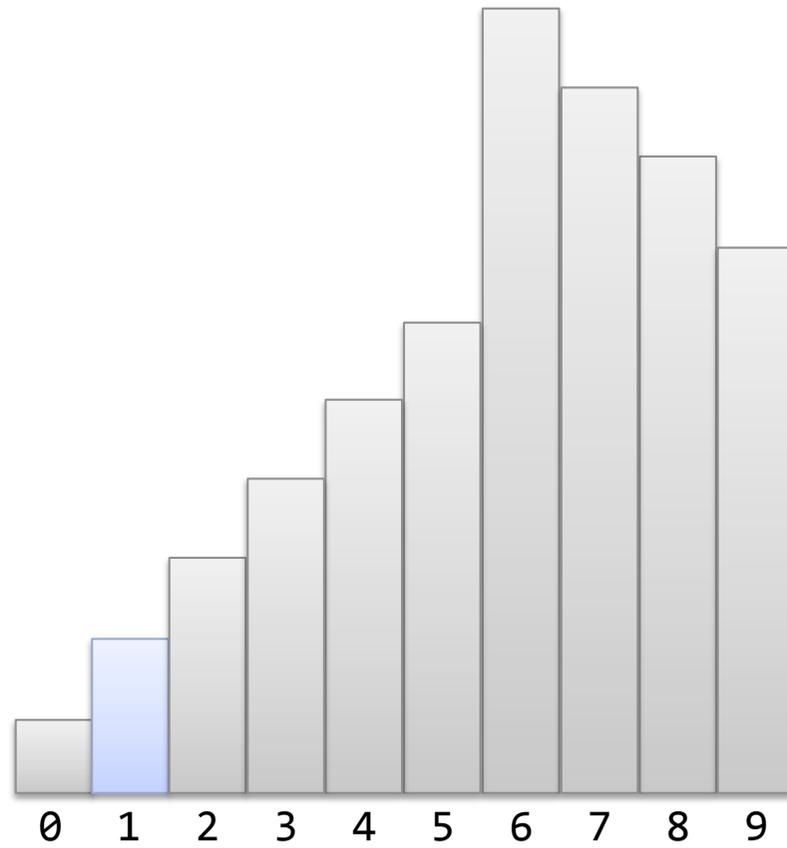
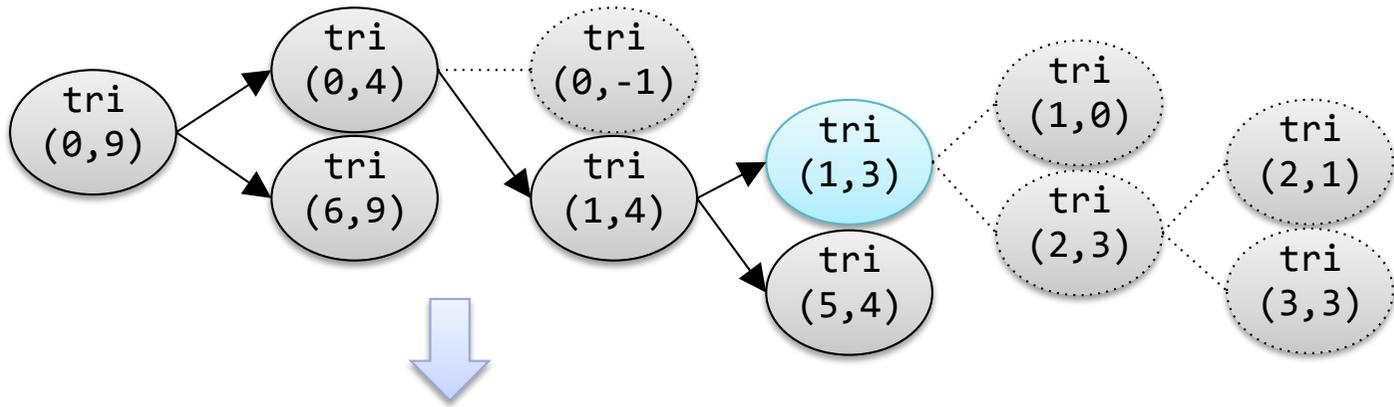
tri :
appel...
et fin !

La condition
debut < fin
n'est pas vérifiée

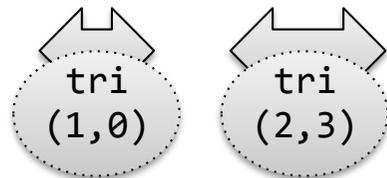


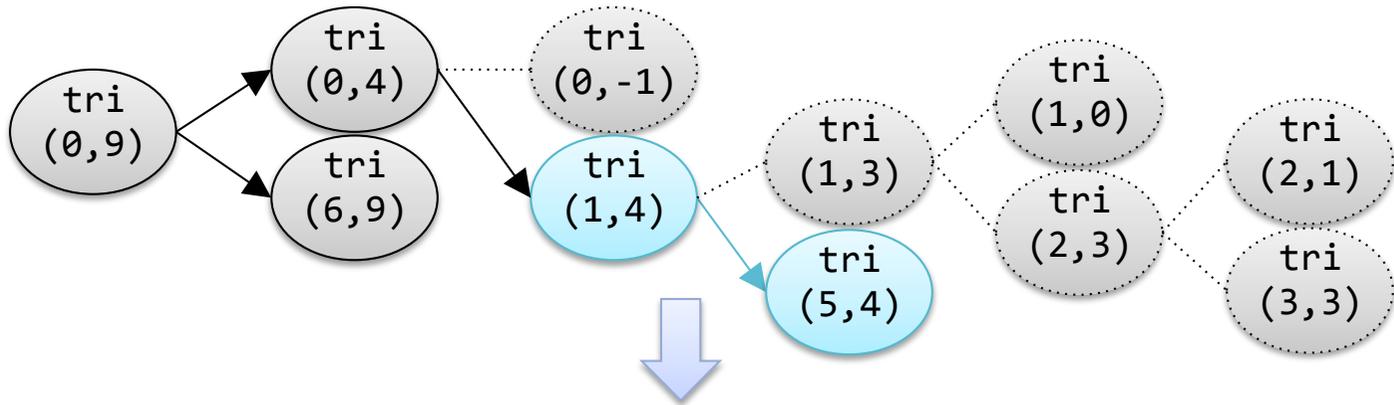
tri :
fin



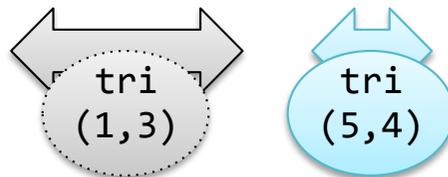
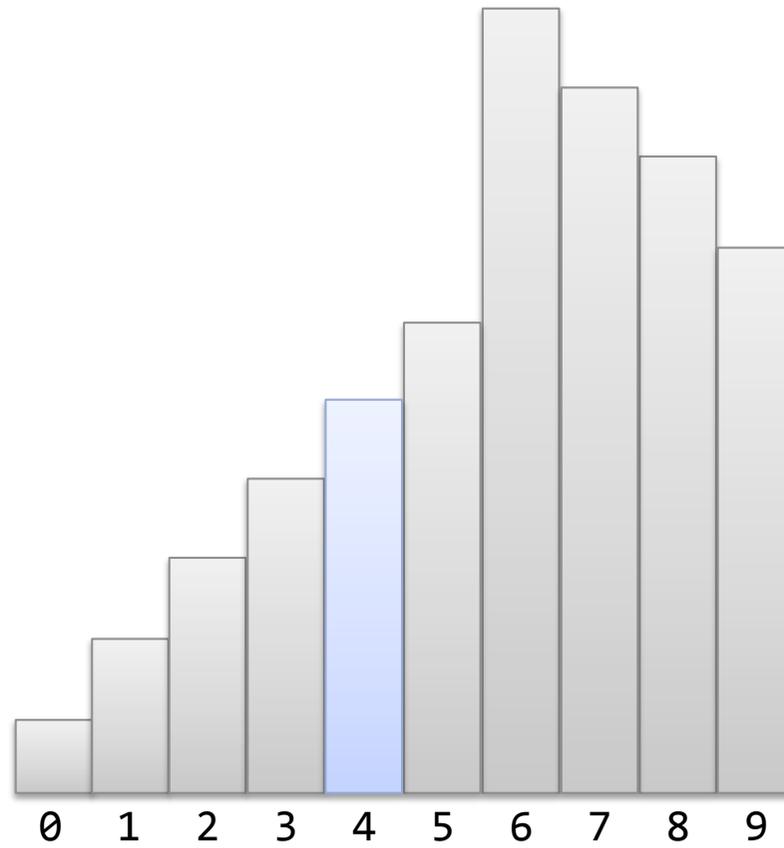


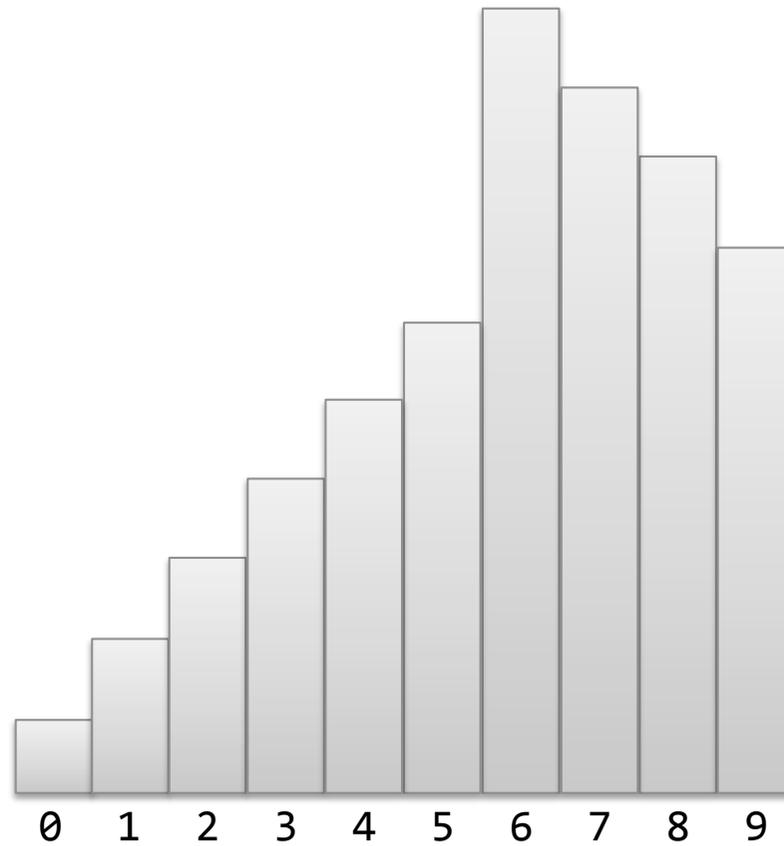
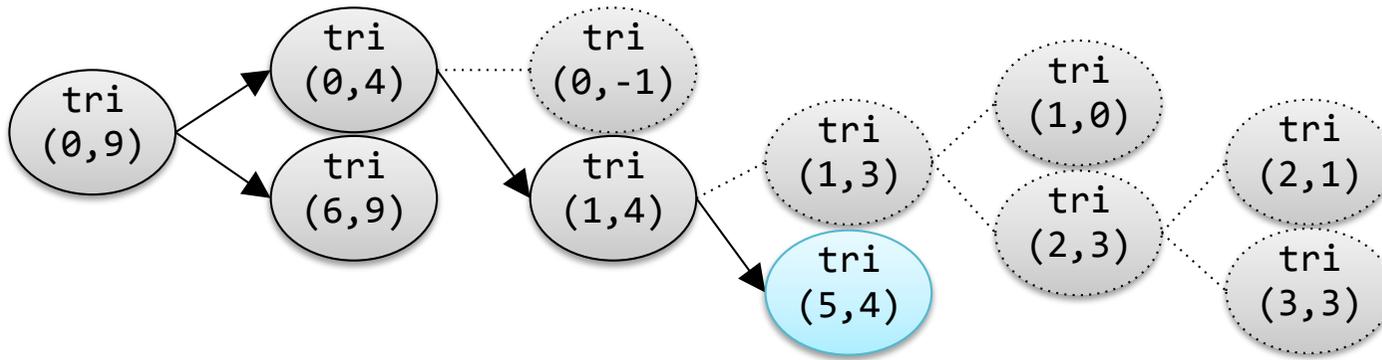
tri :
fin





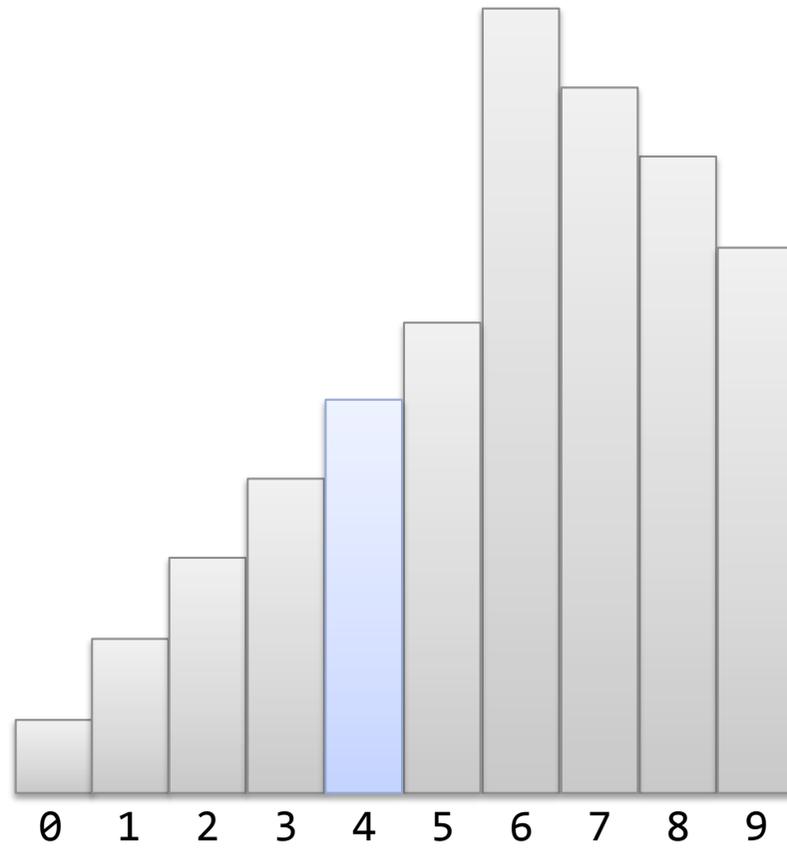
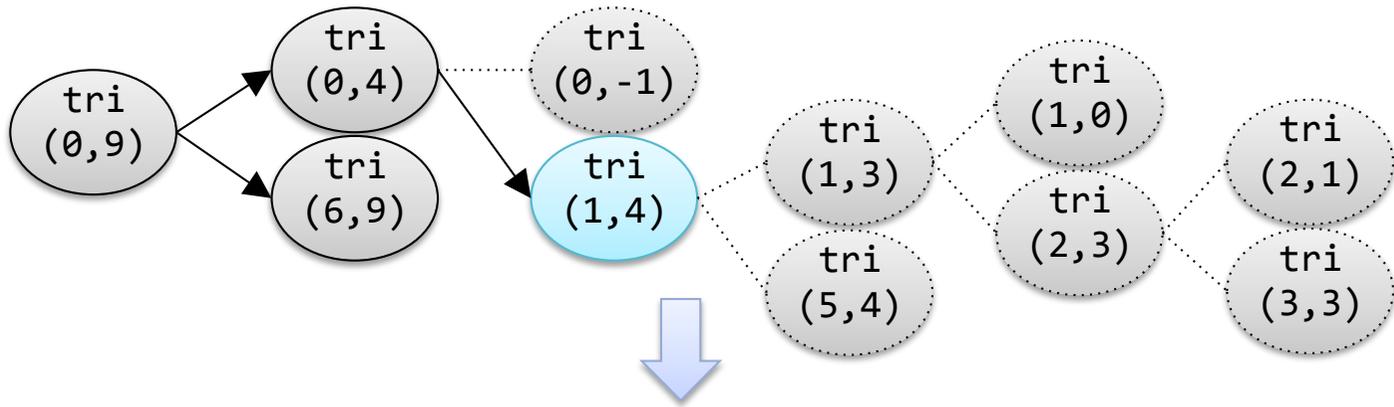
tri :
appels récurrents



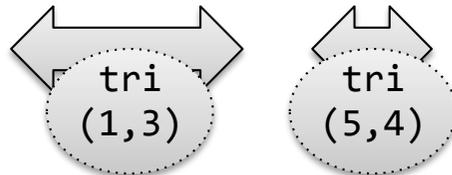


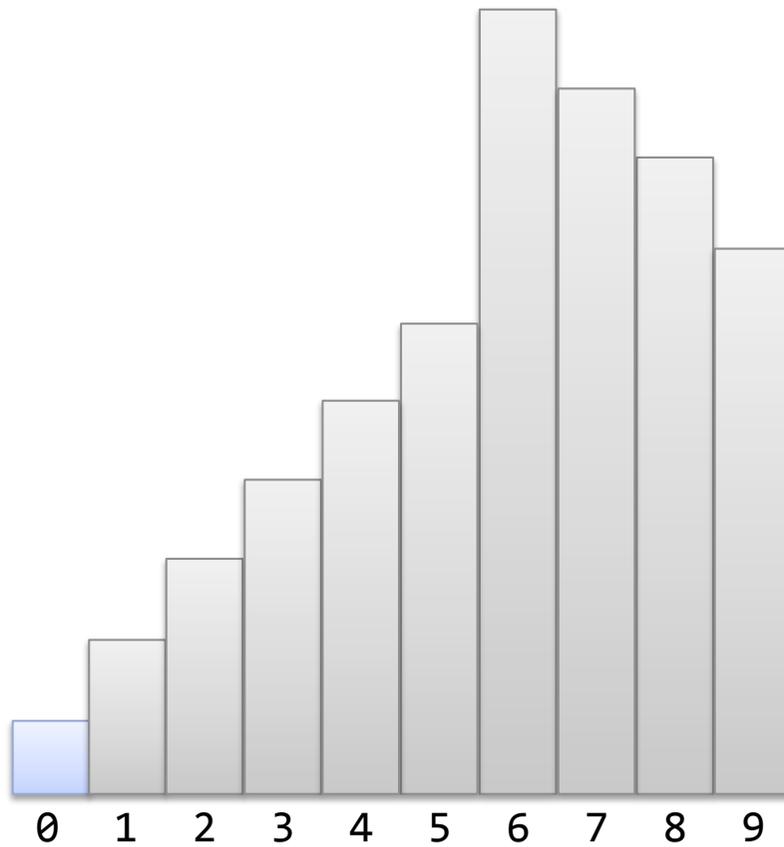
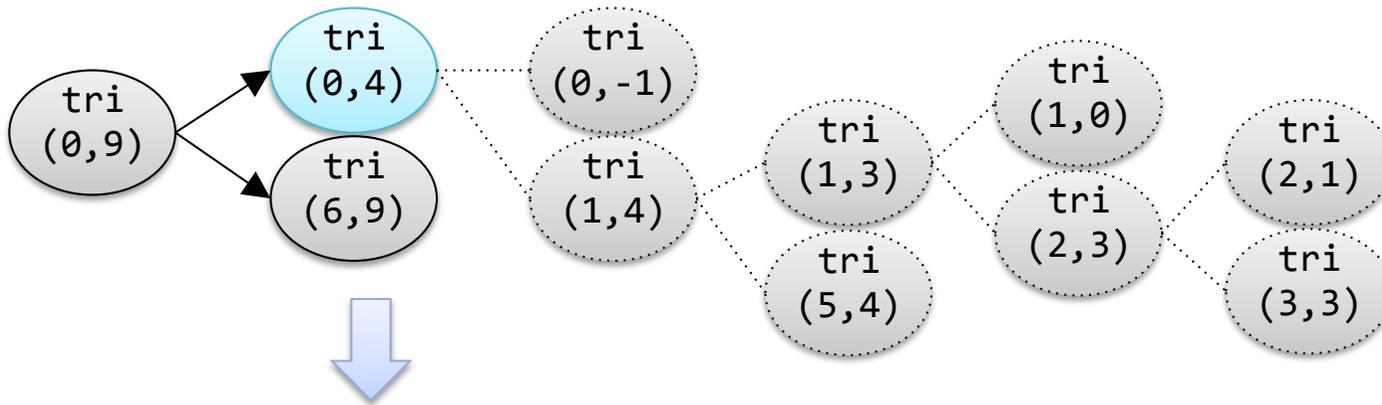
tri :
 appel...
 et fin !

La condition
 debut < fin
 n'est pas vérifiée

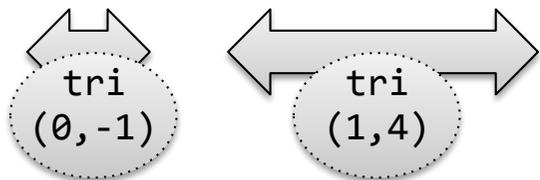


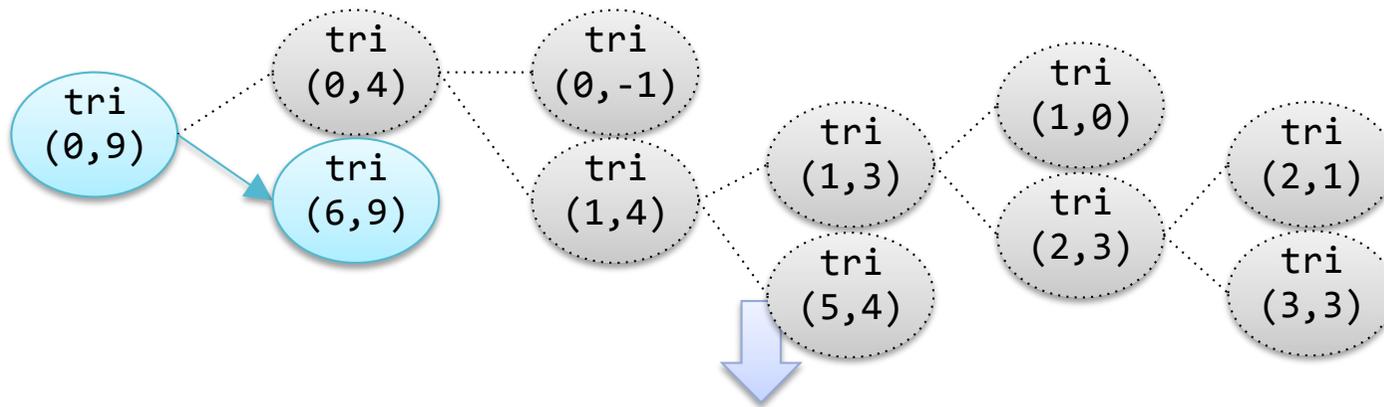
tri :
fin



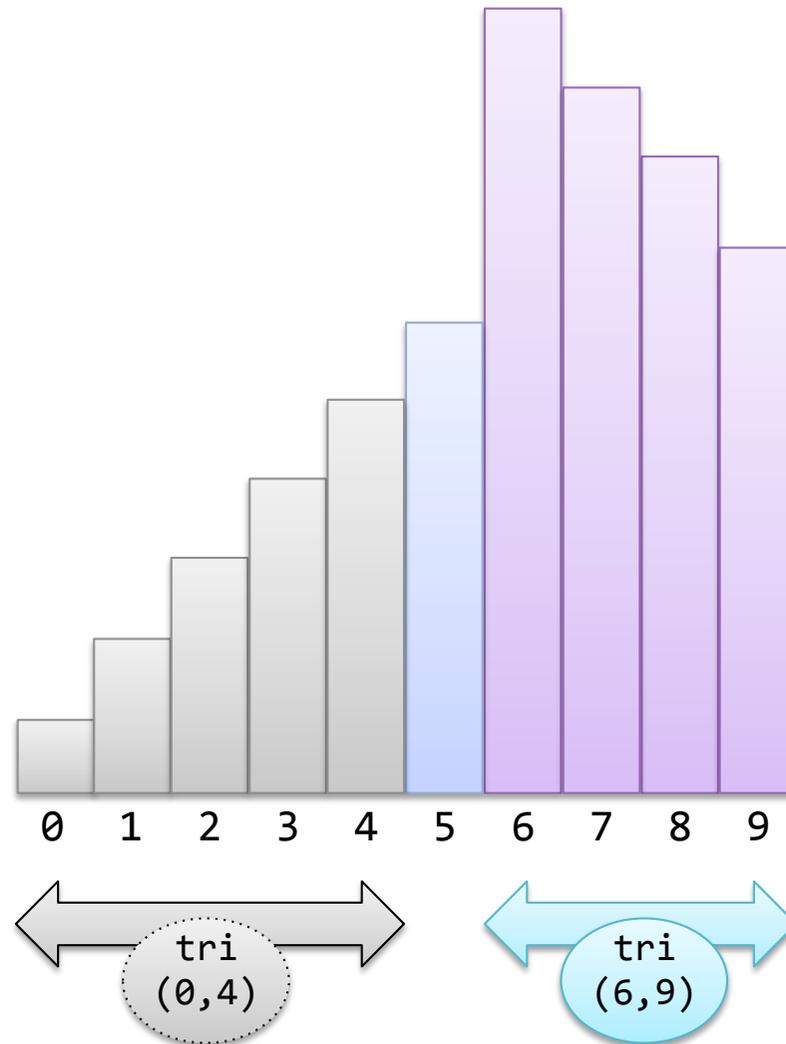


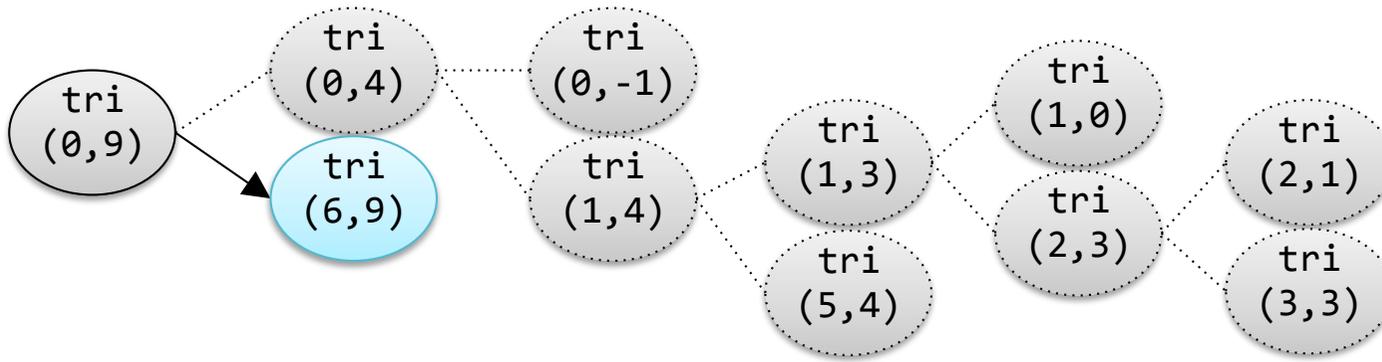
tri :
fin



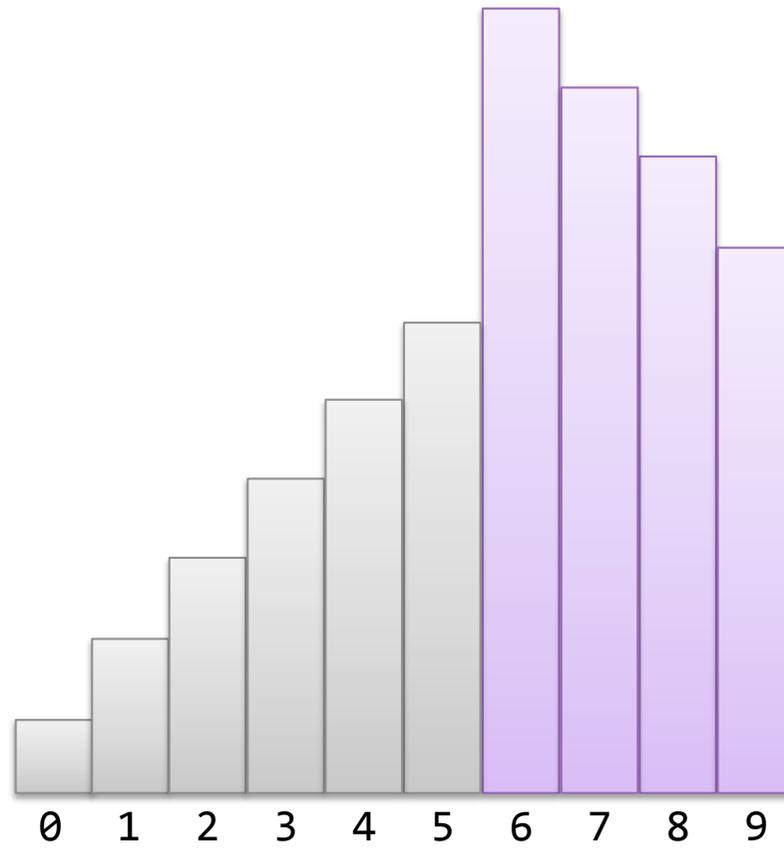


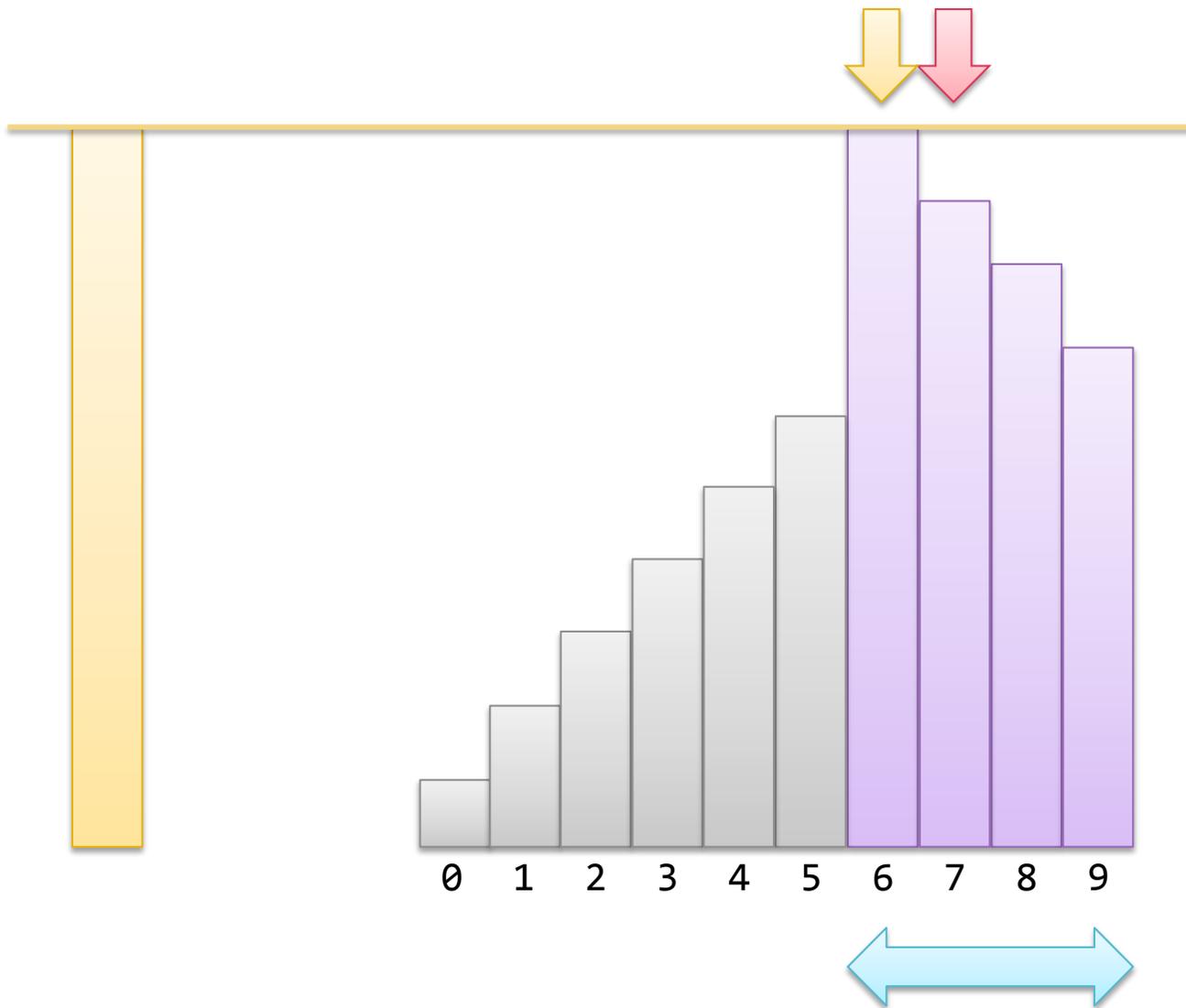
tri :
appels récurrents



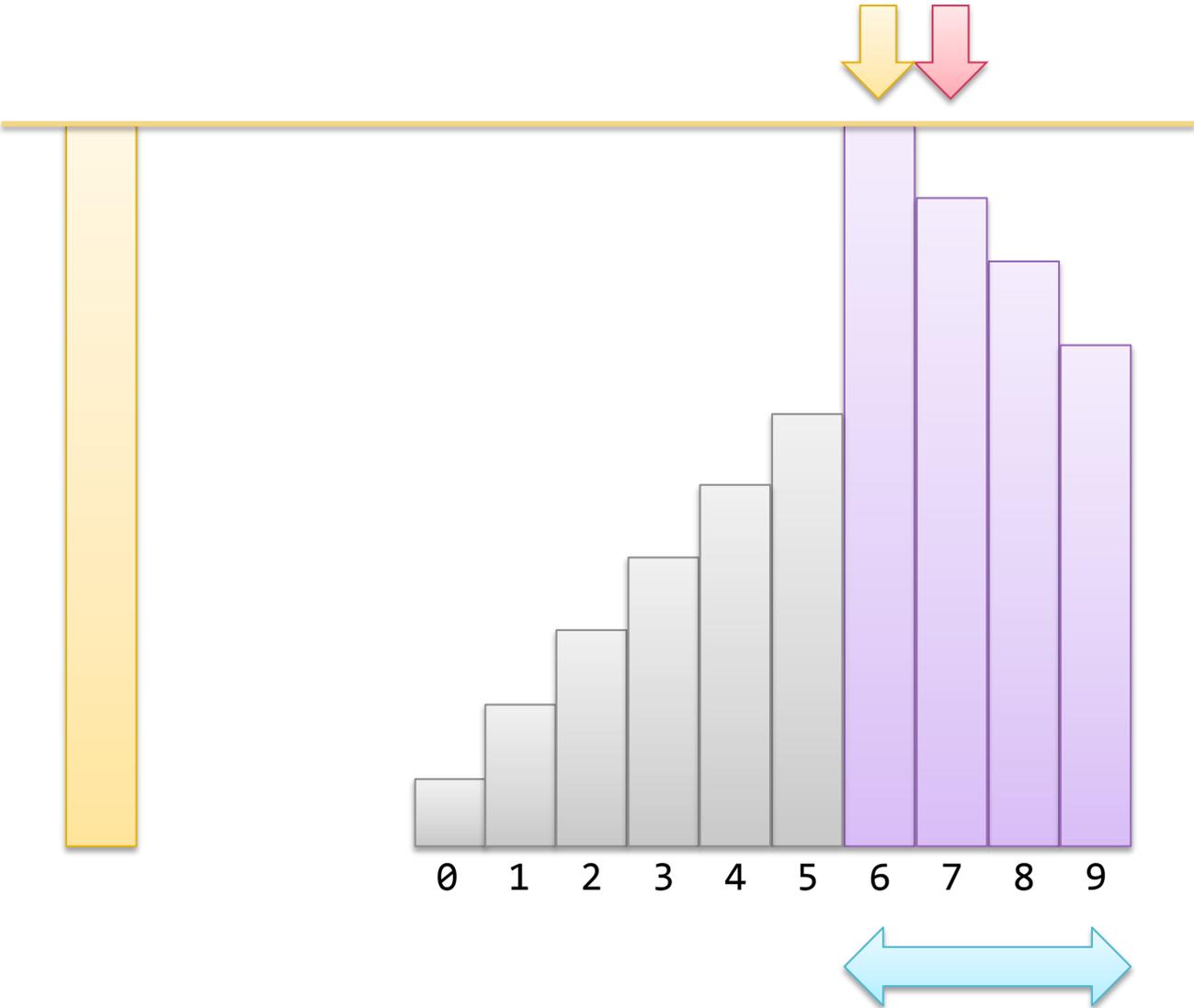


tri :
appel

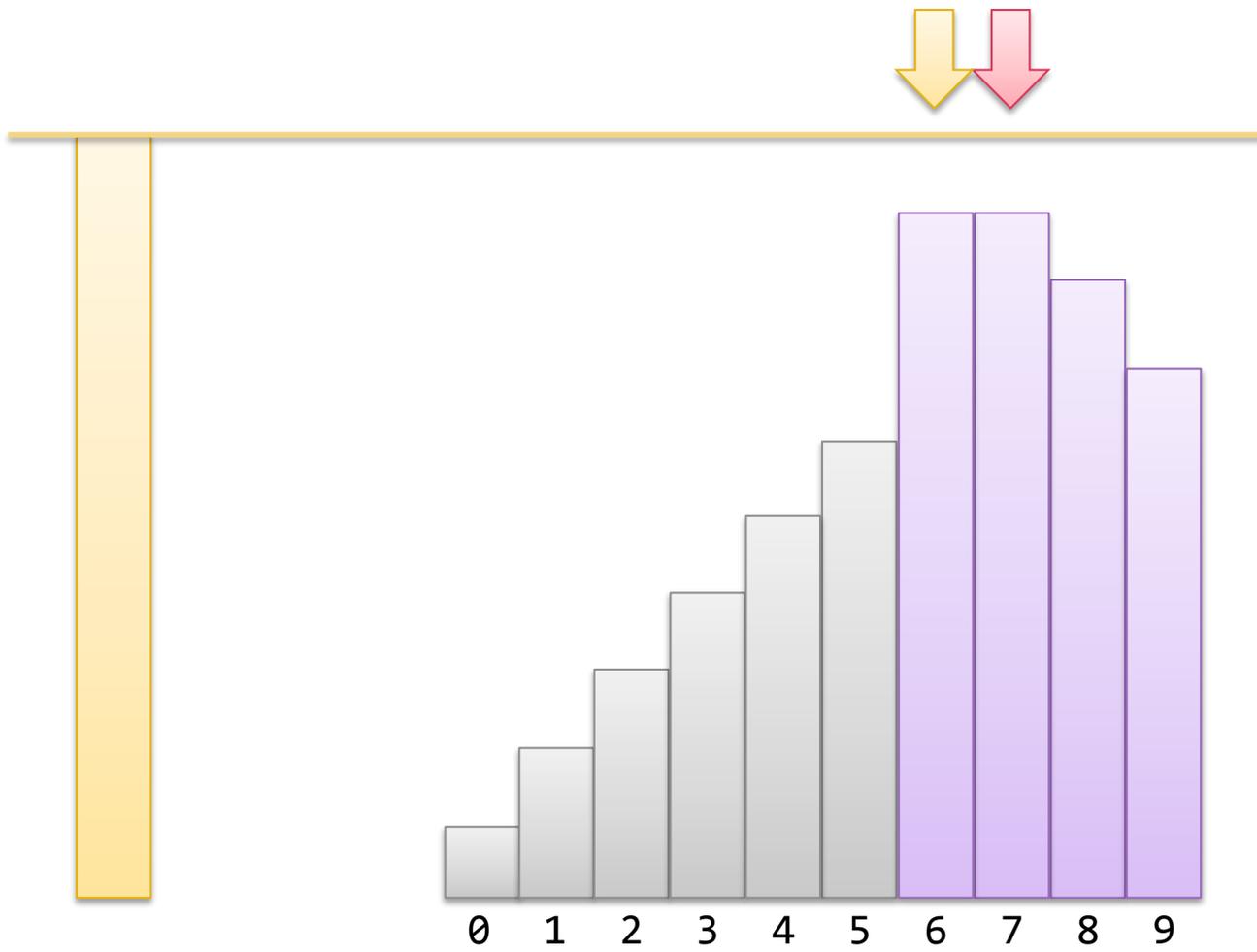




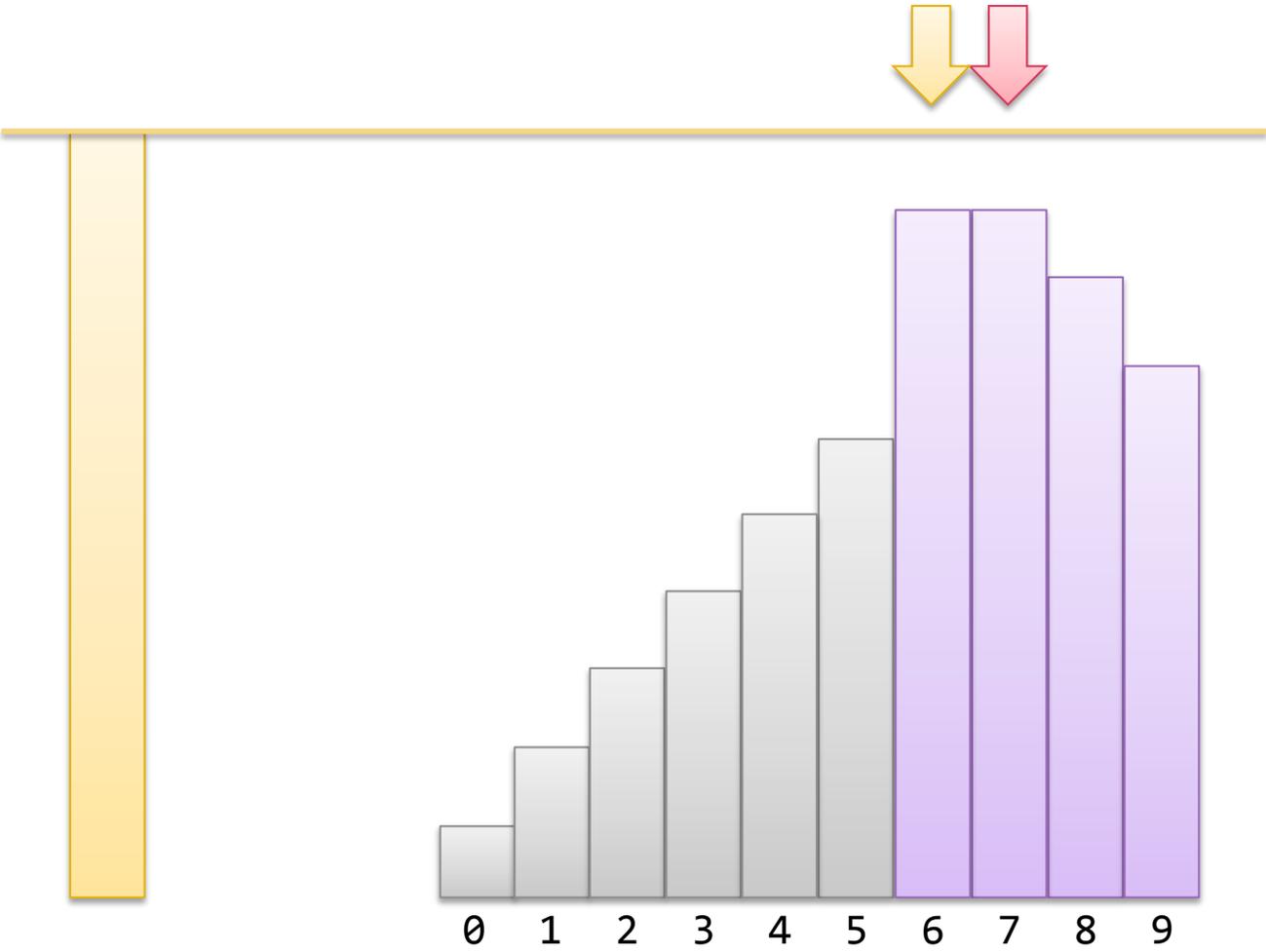
partition :
initialisation



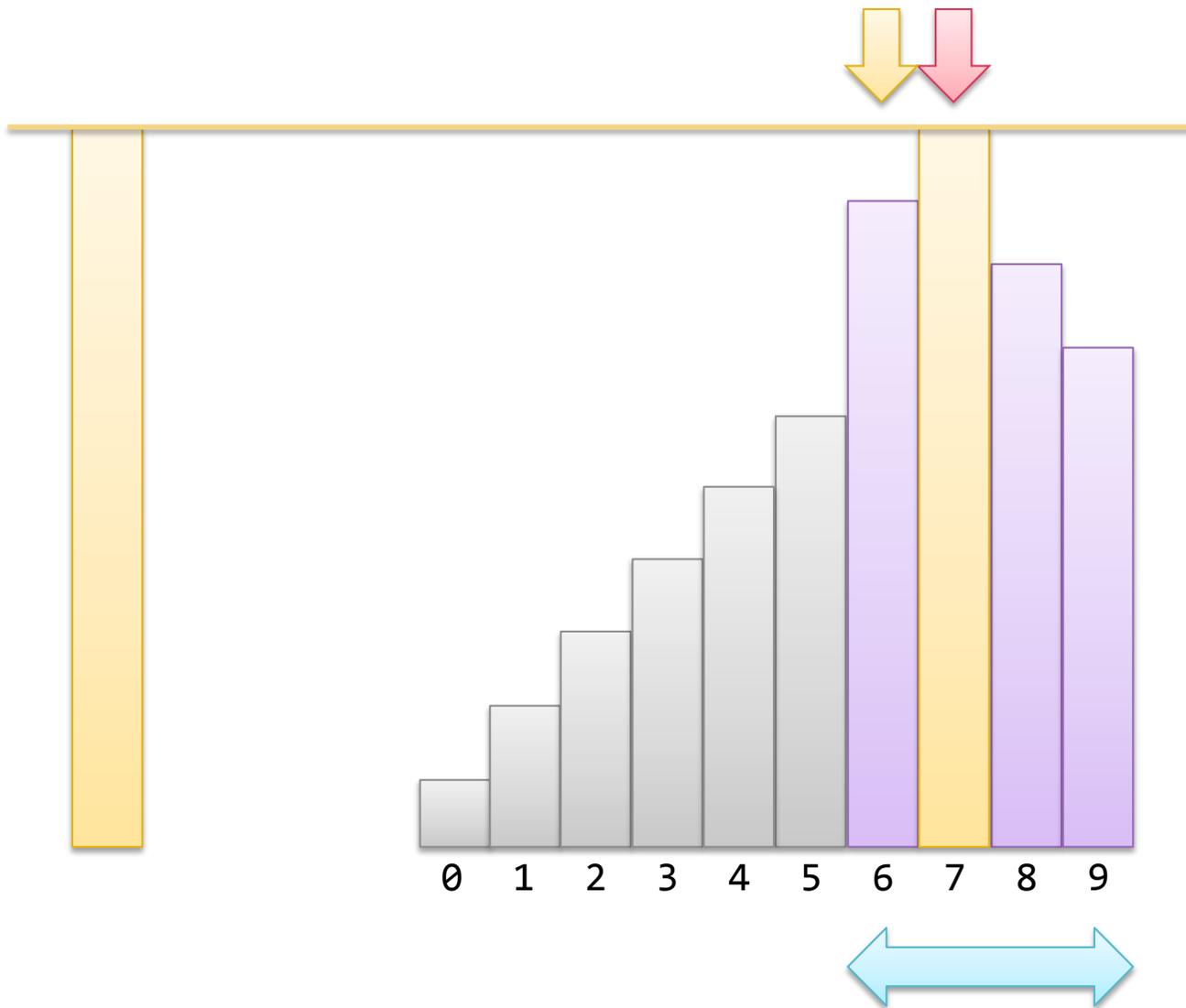
partition :
itération +
comparaison



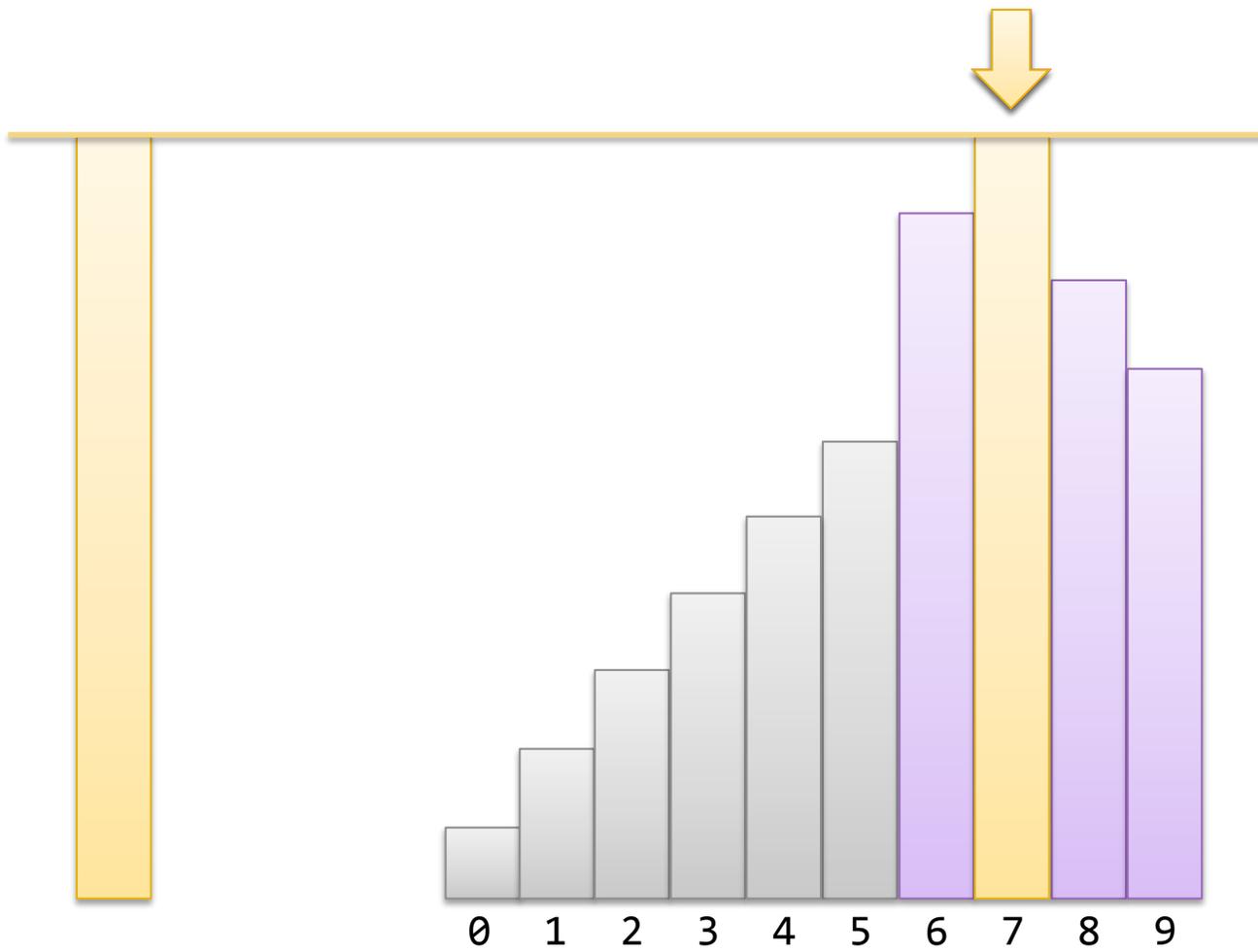
partition :
permutation



partition :
permutation

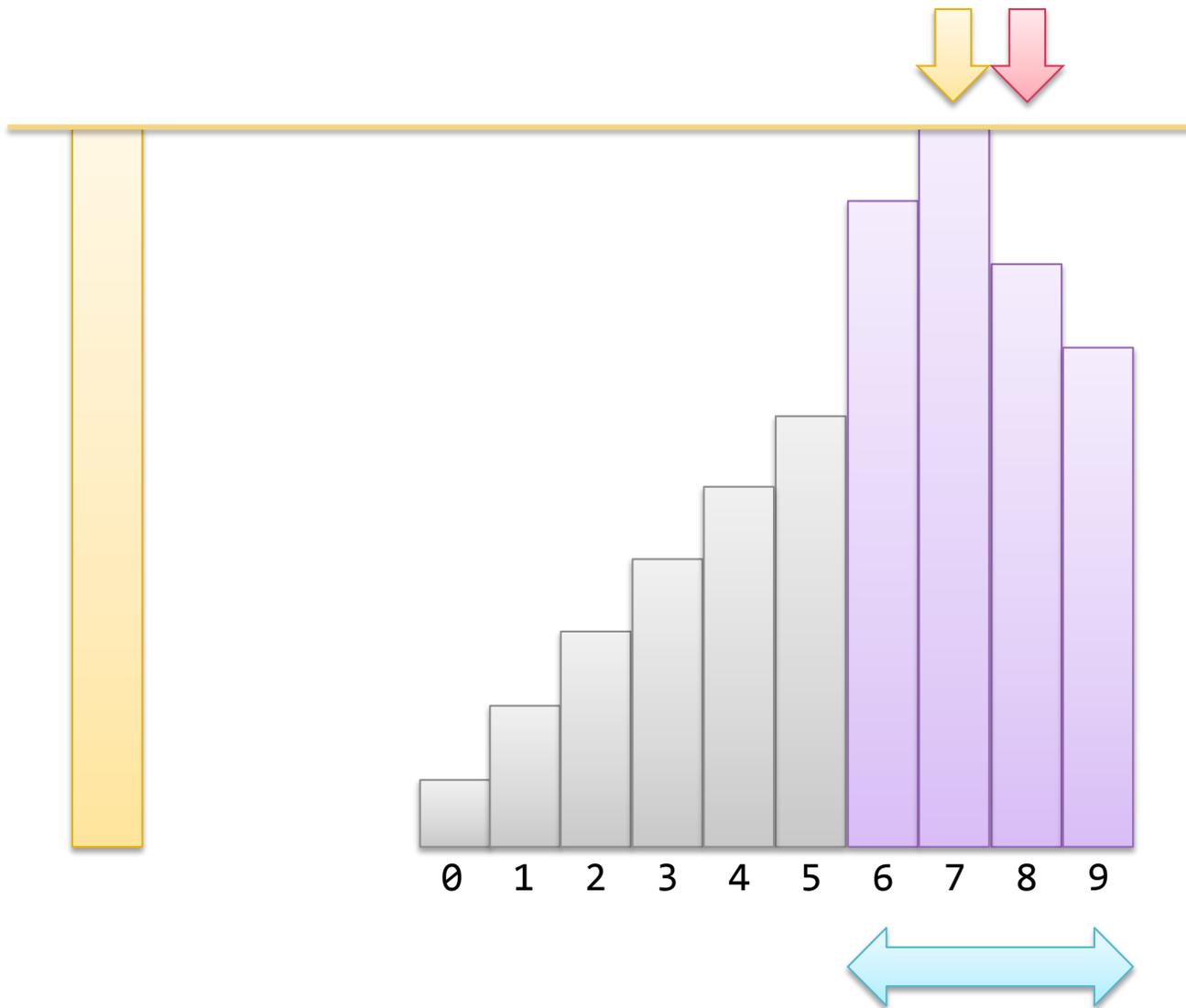


partition :
permutation

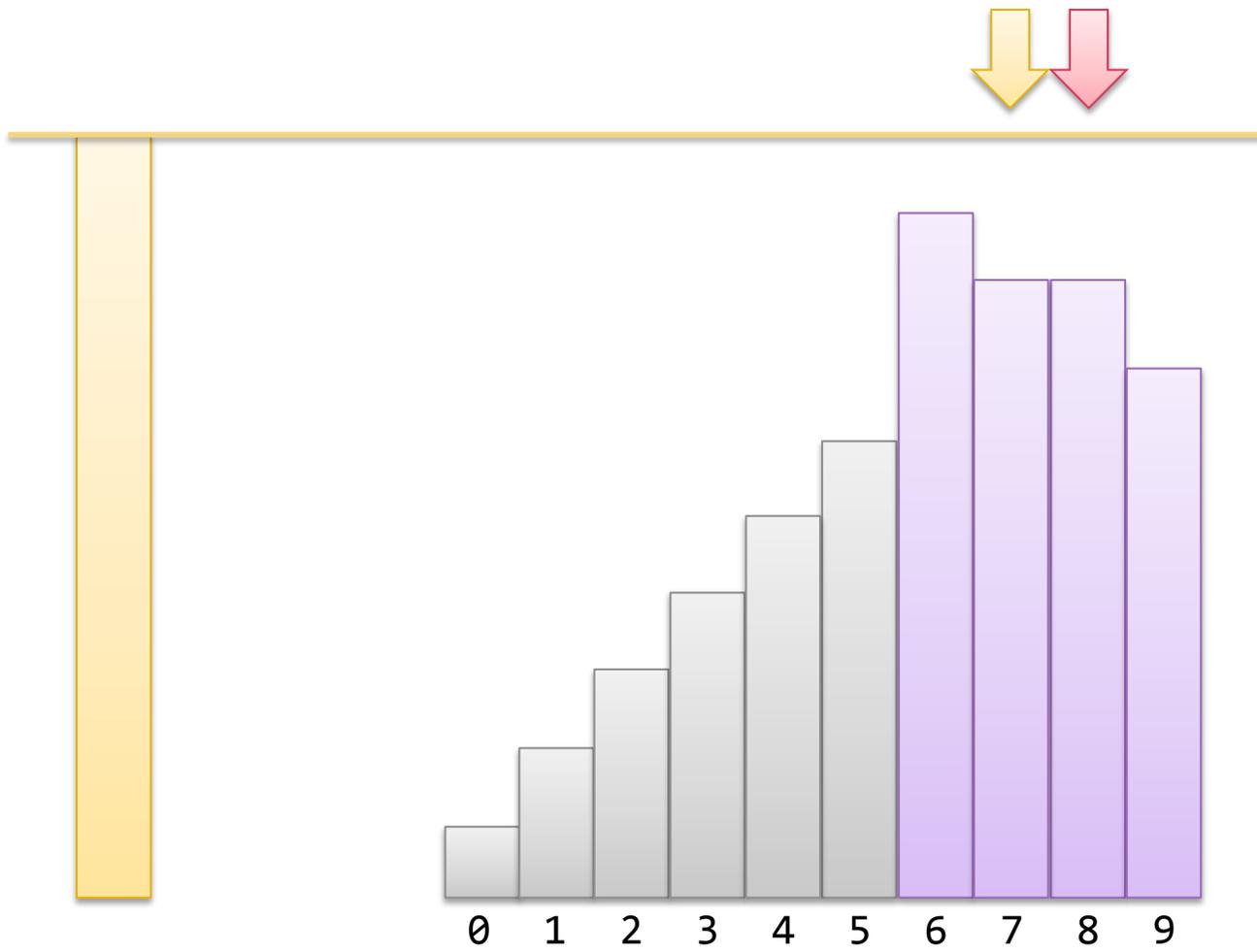


partition :
permutation

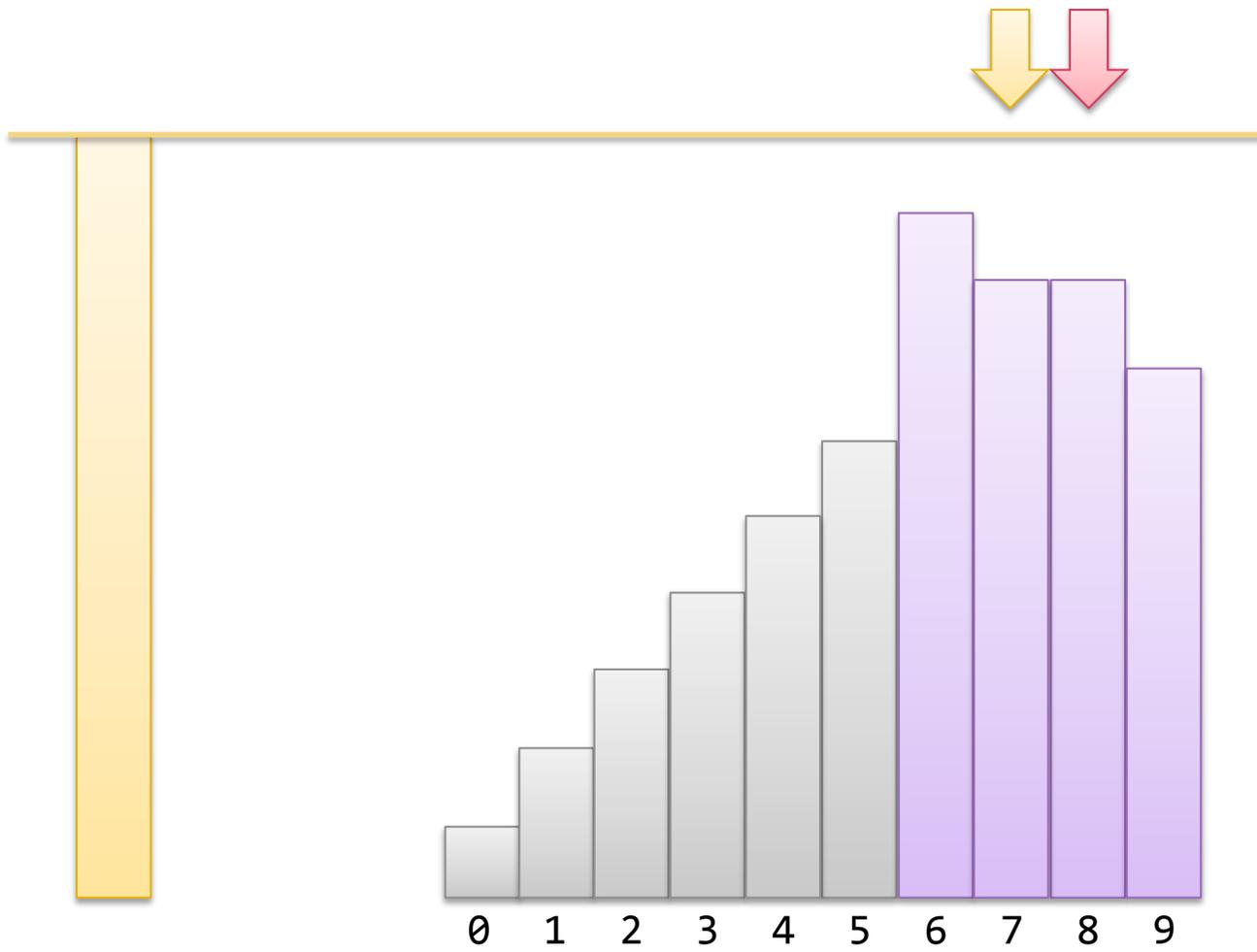




partition :
itération +
comparaison

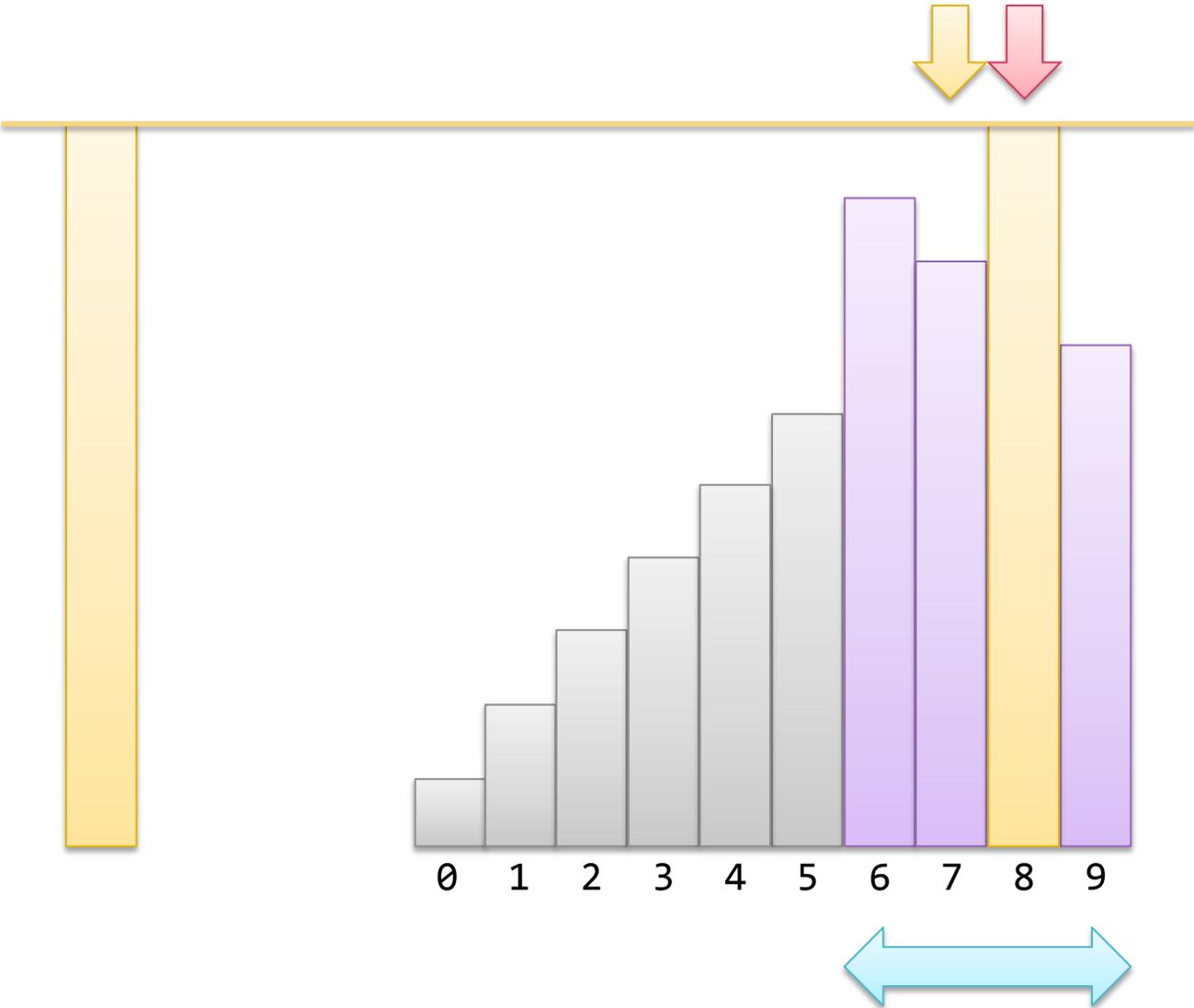


partition :
permutation

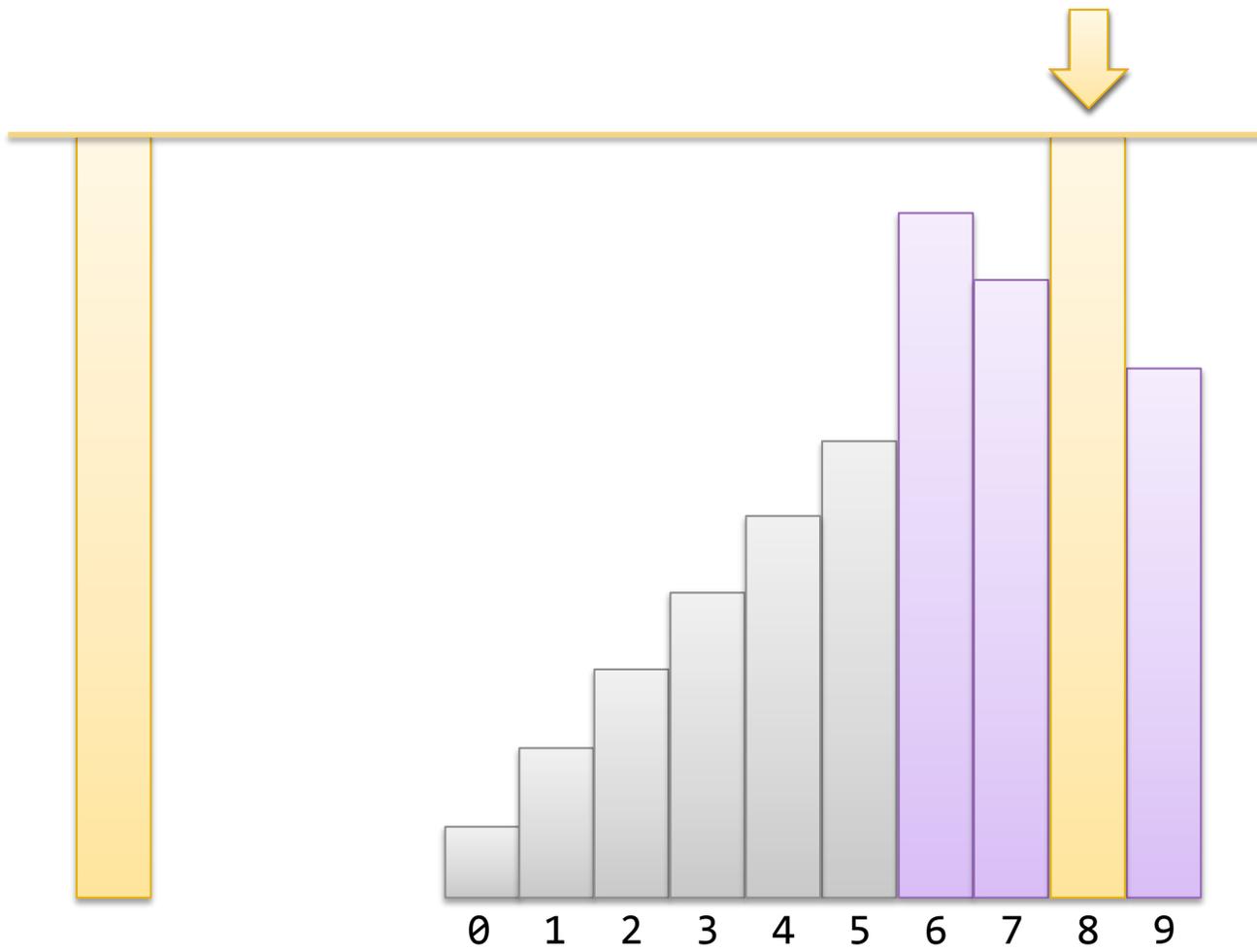


partition :
permutation



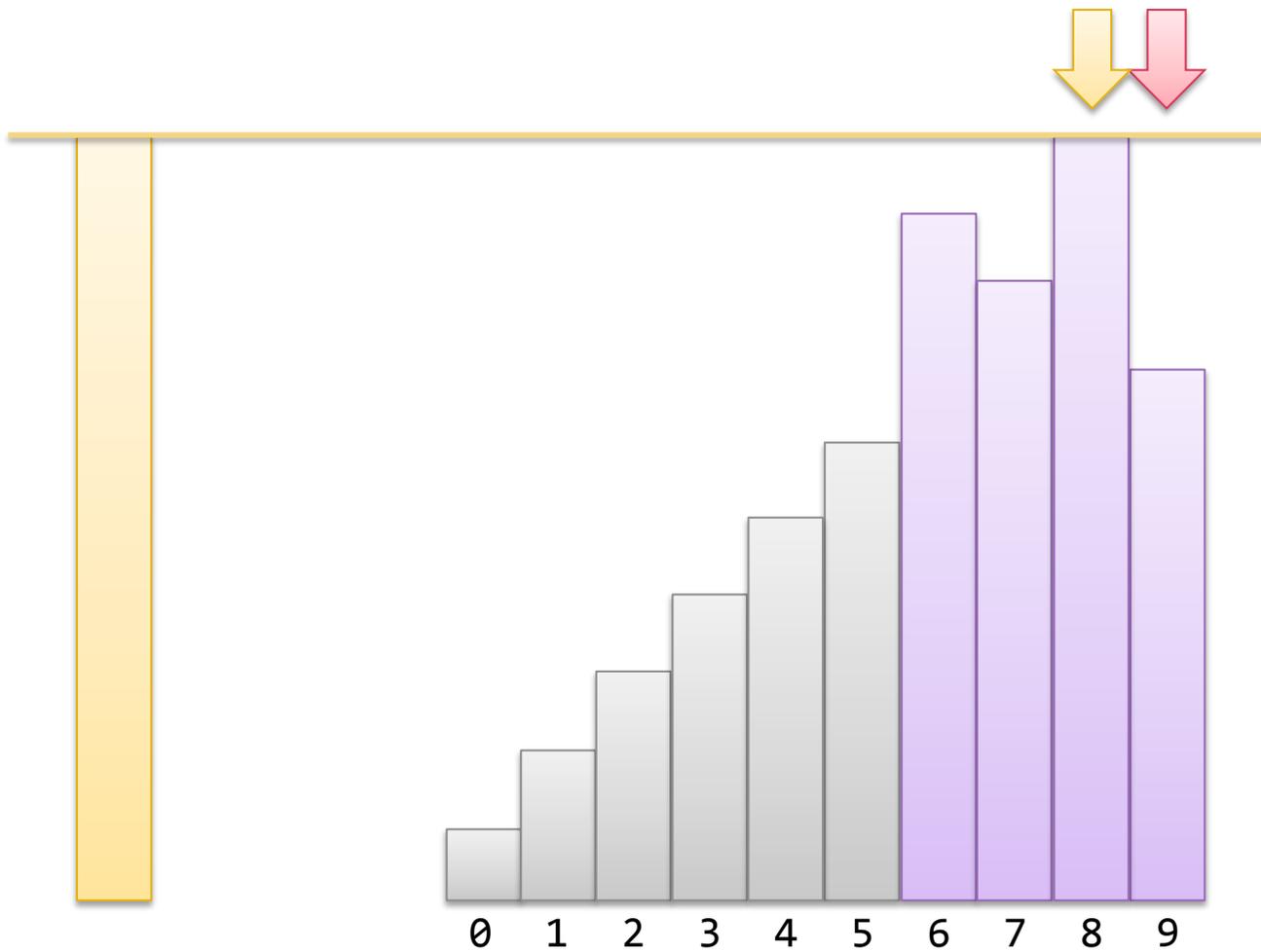


partition :
permutation

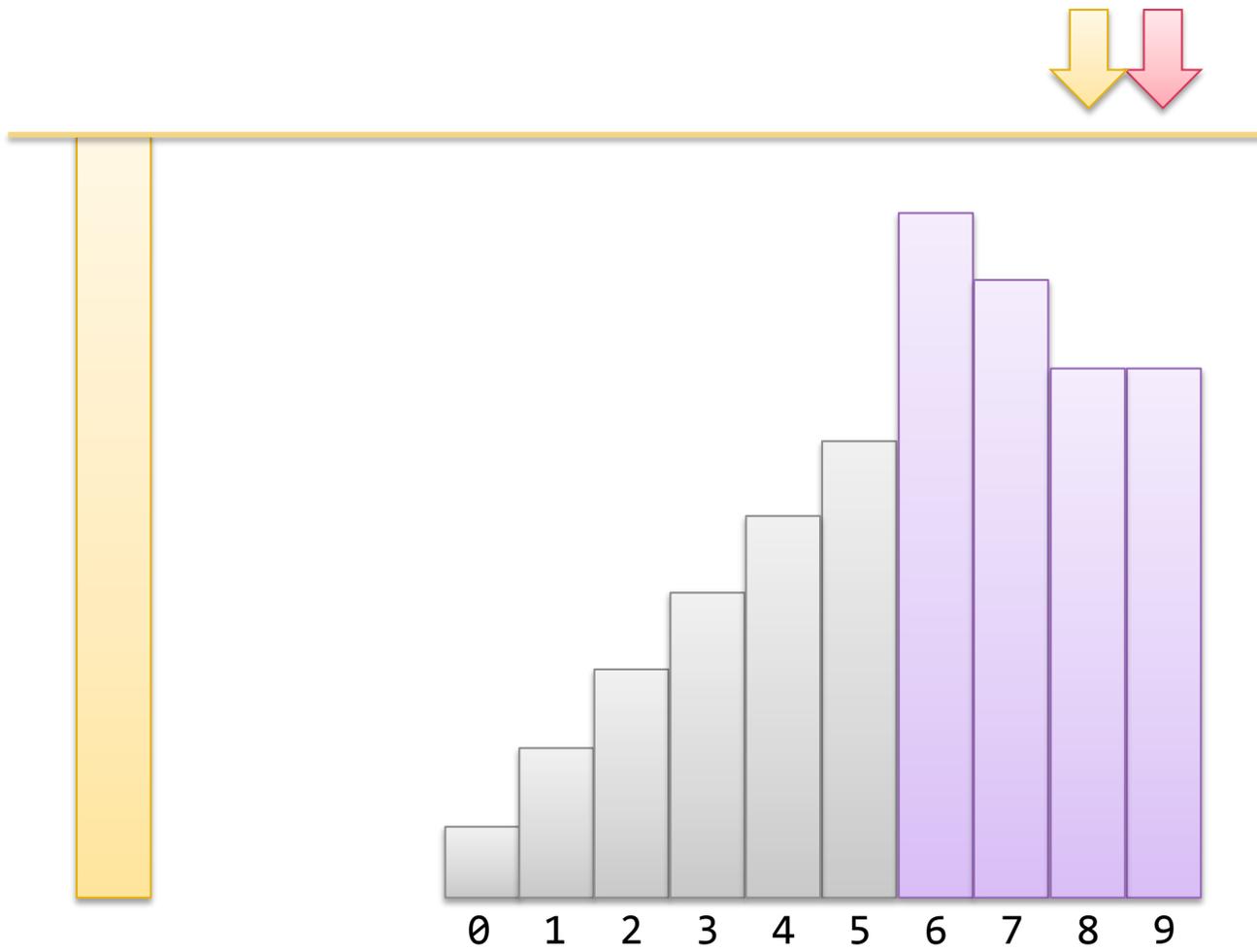


partition :
permutation



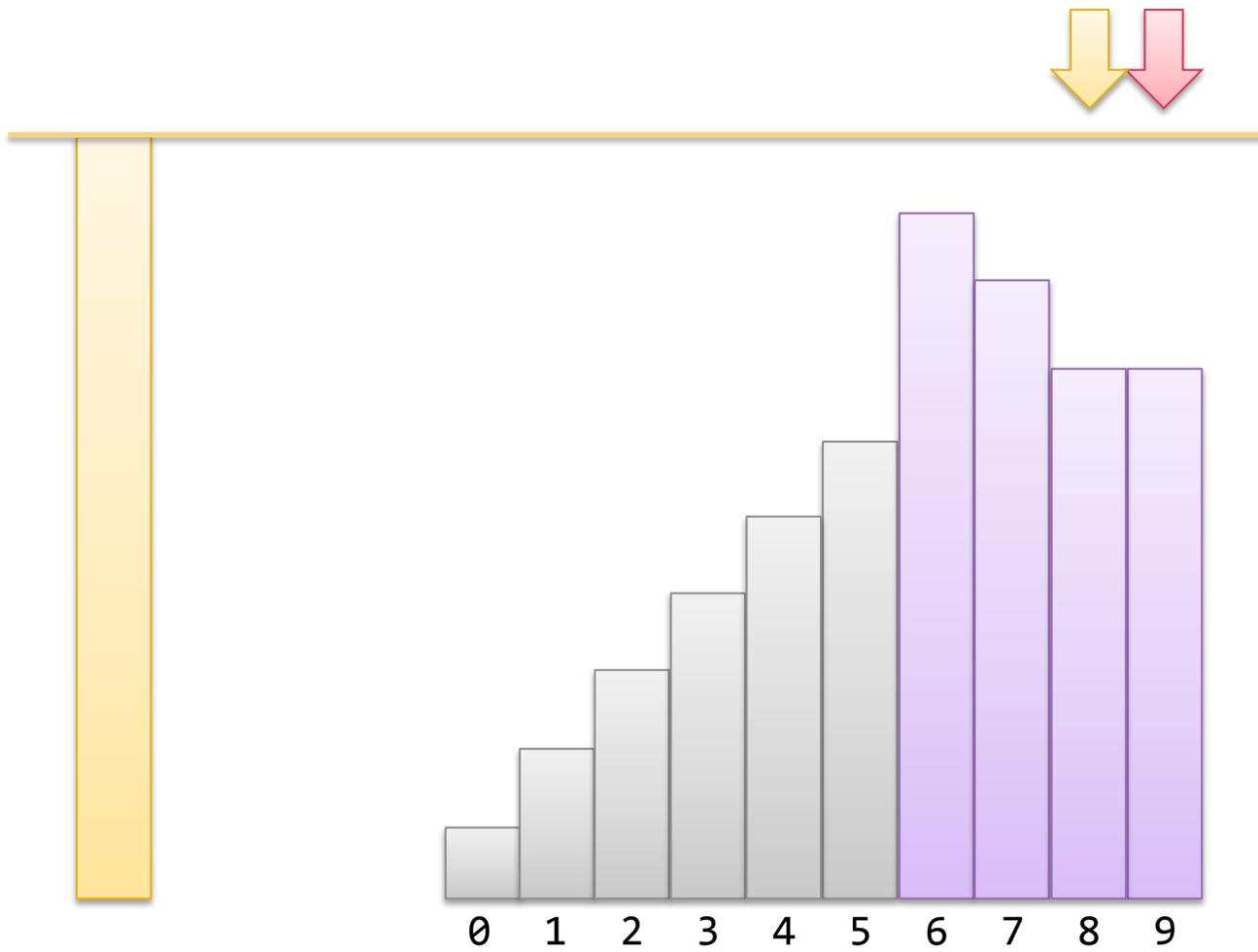


partition :
itération +
comparaison



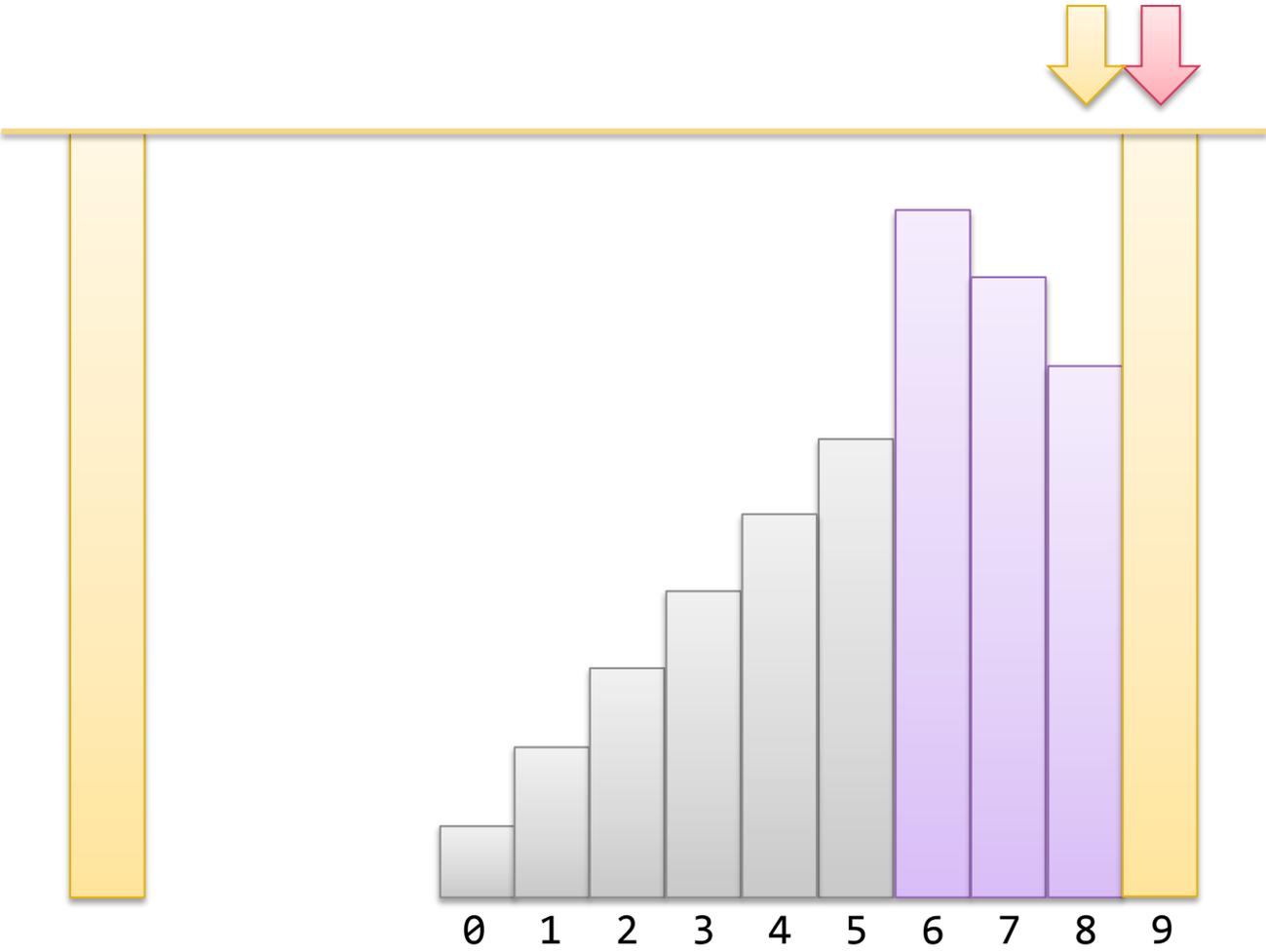
partition :
permutation





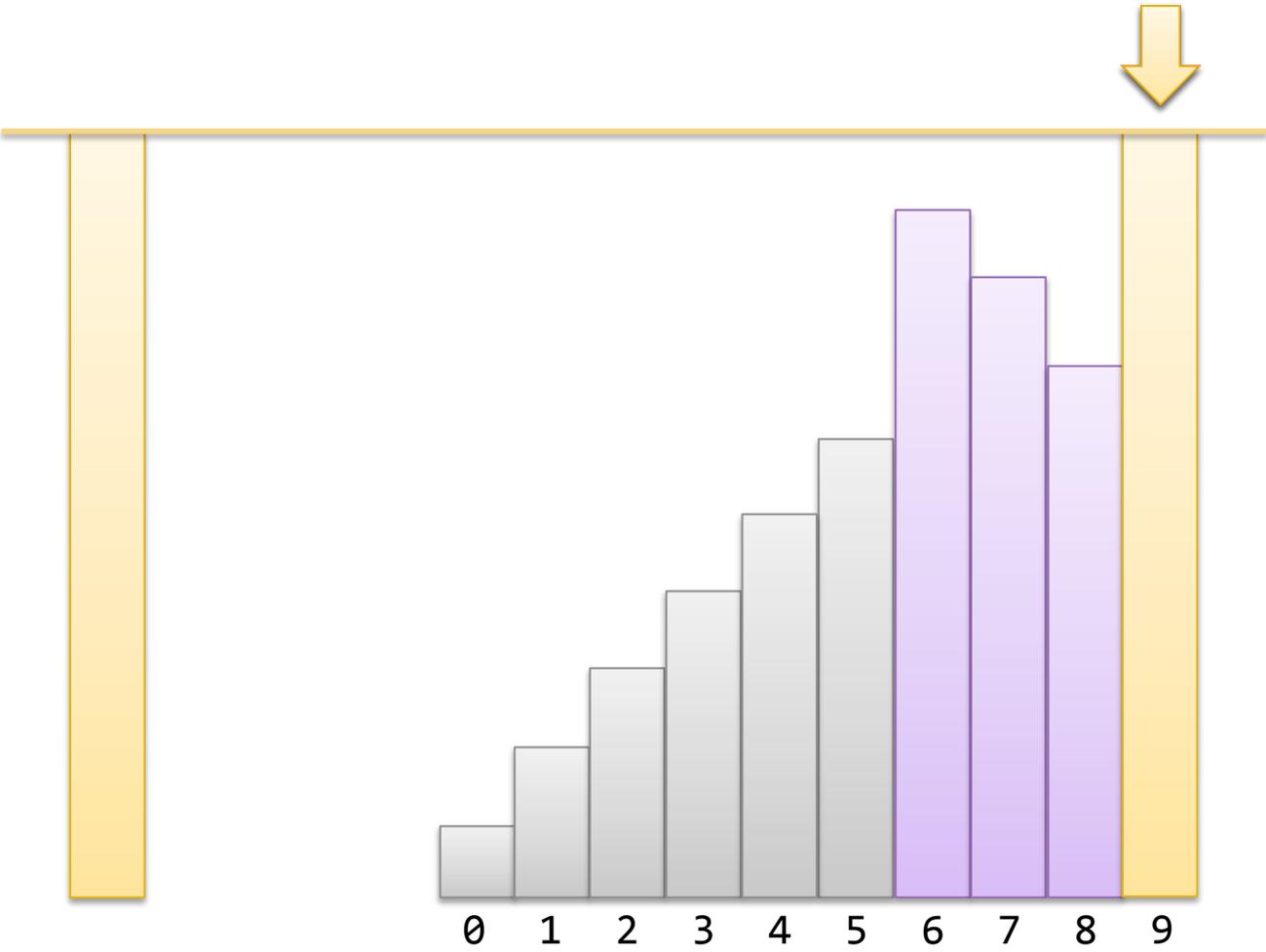
partition :
permutation





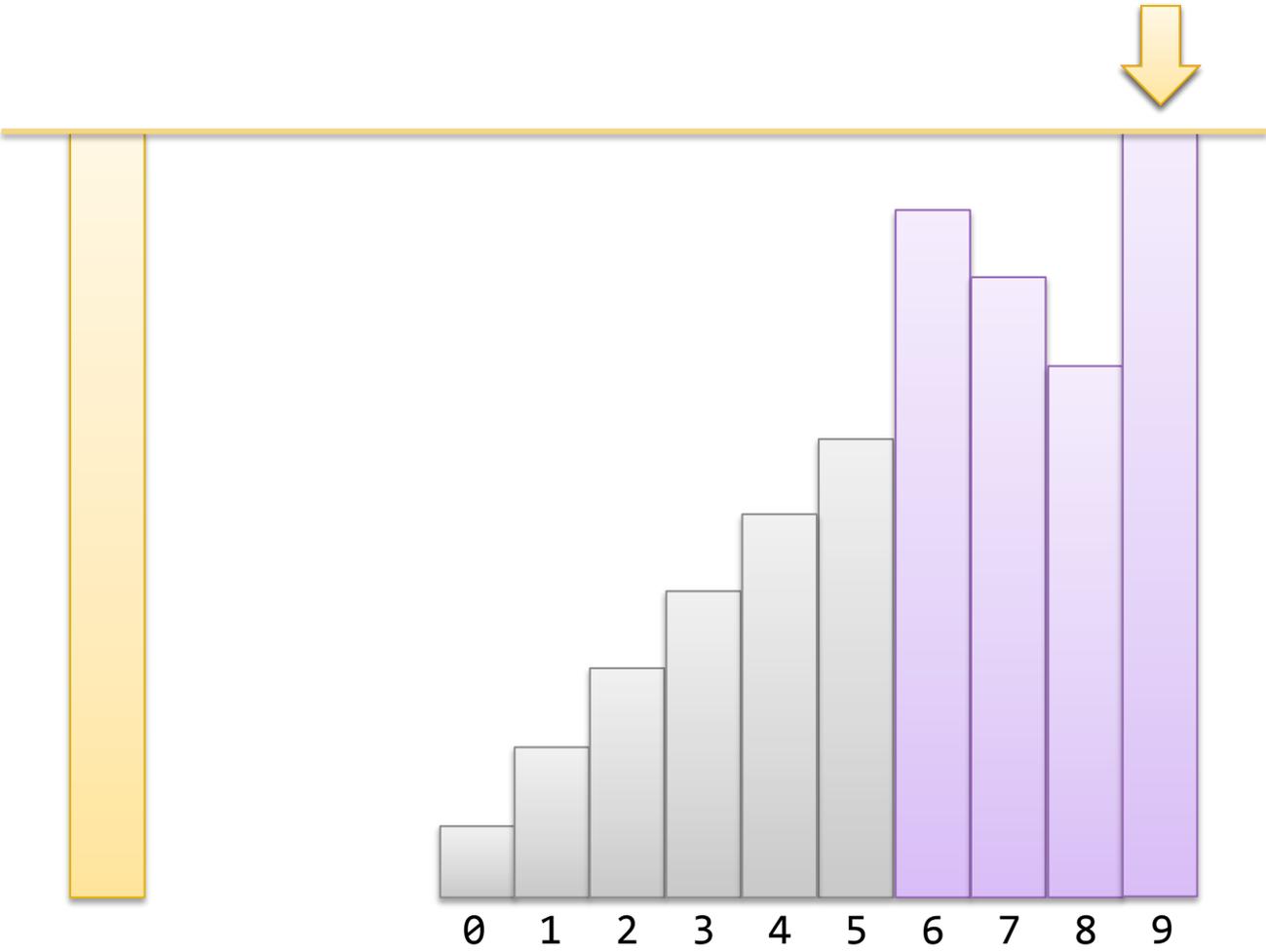
partition :
permutation





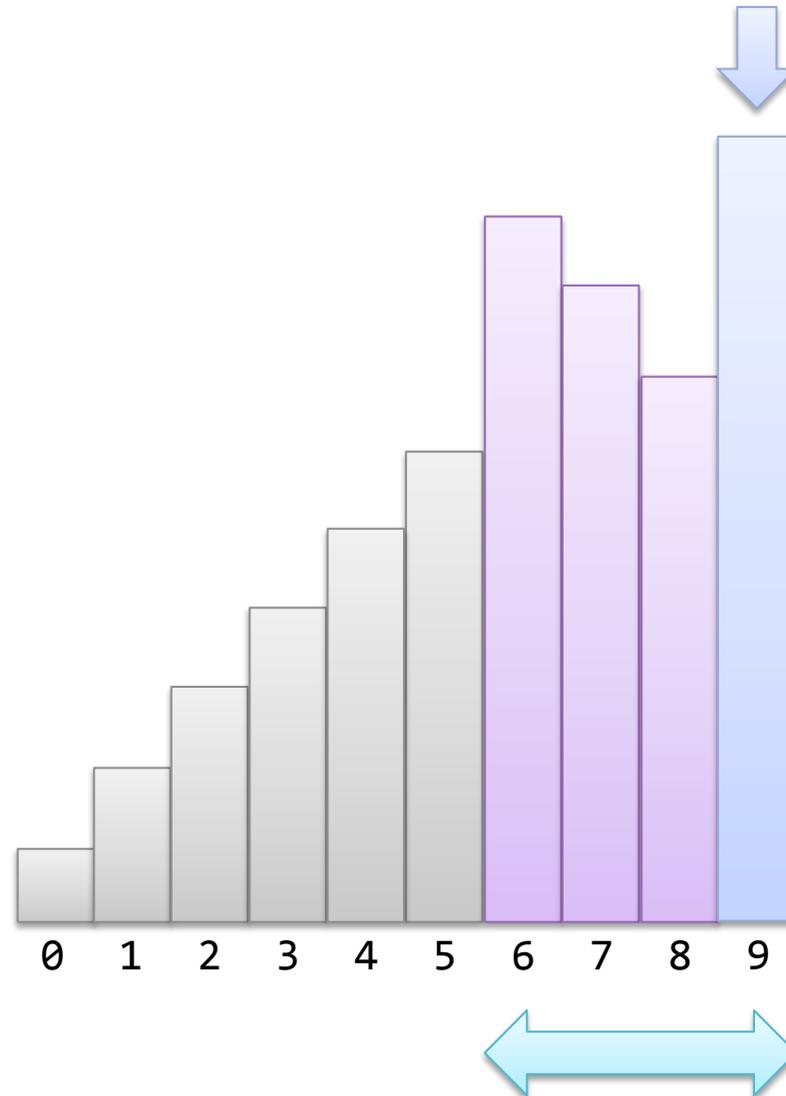
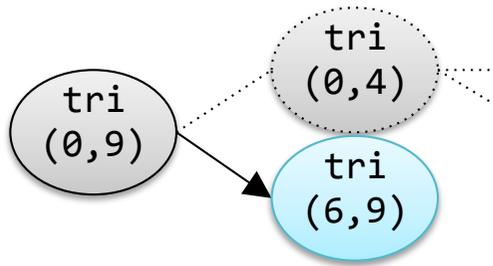
partition :
permutation



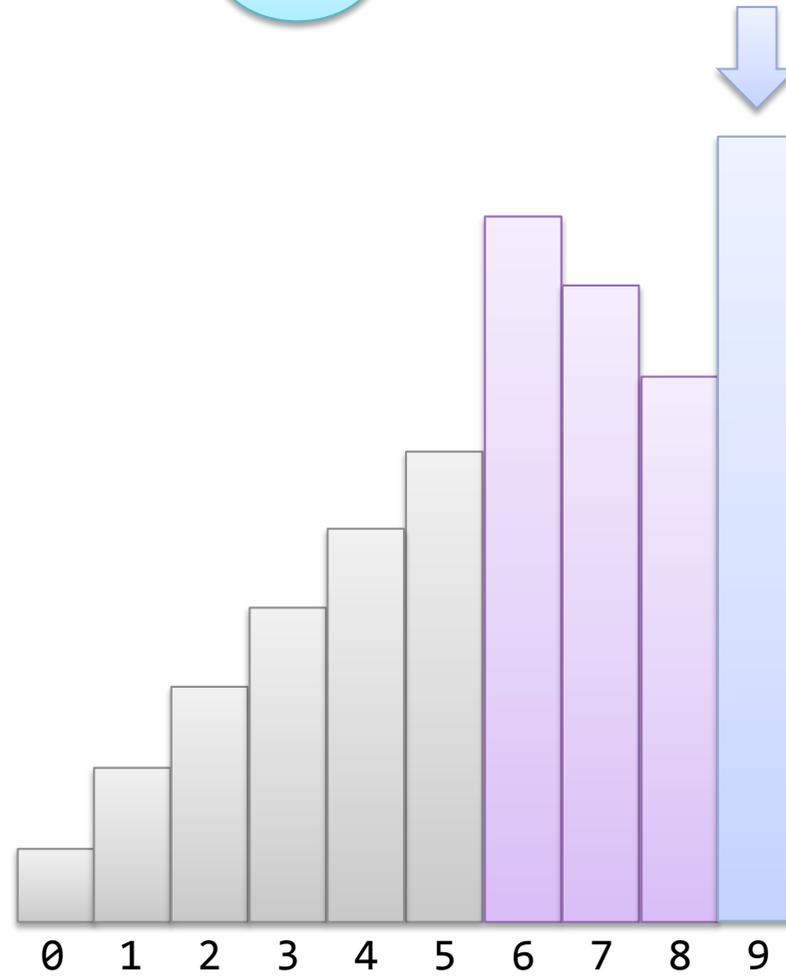
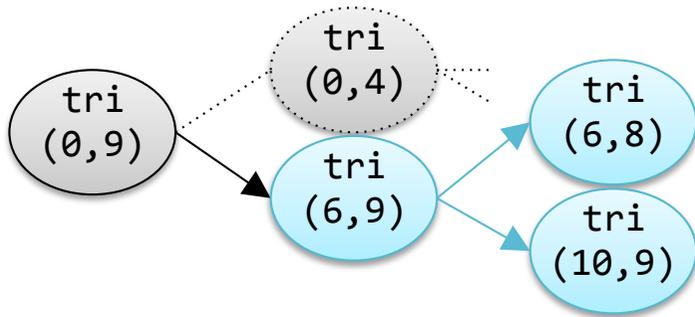


partition :
fin

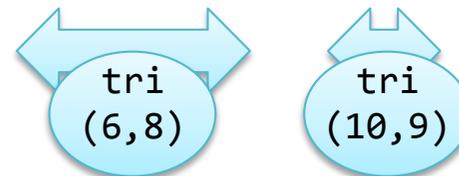


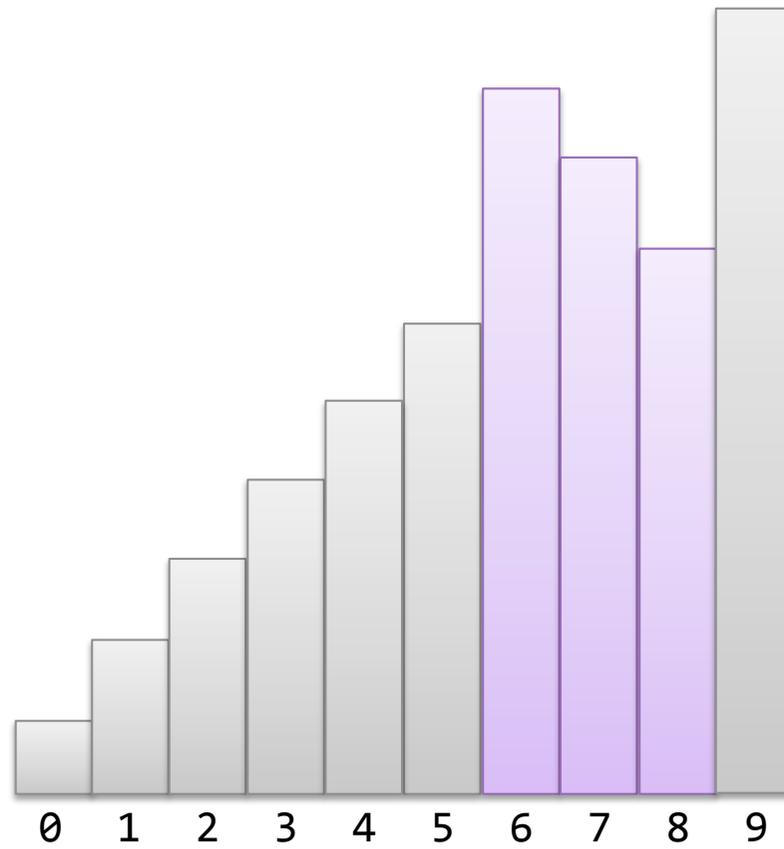
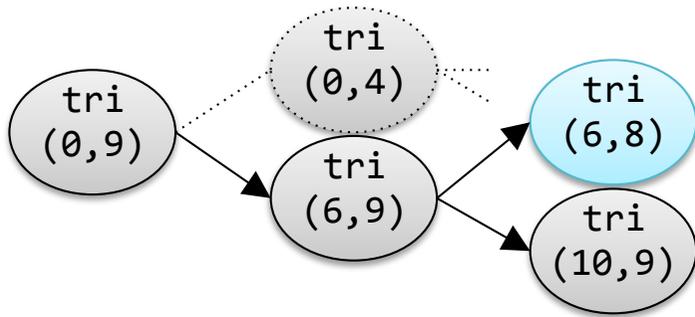


tri :
après partition



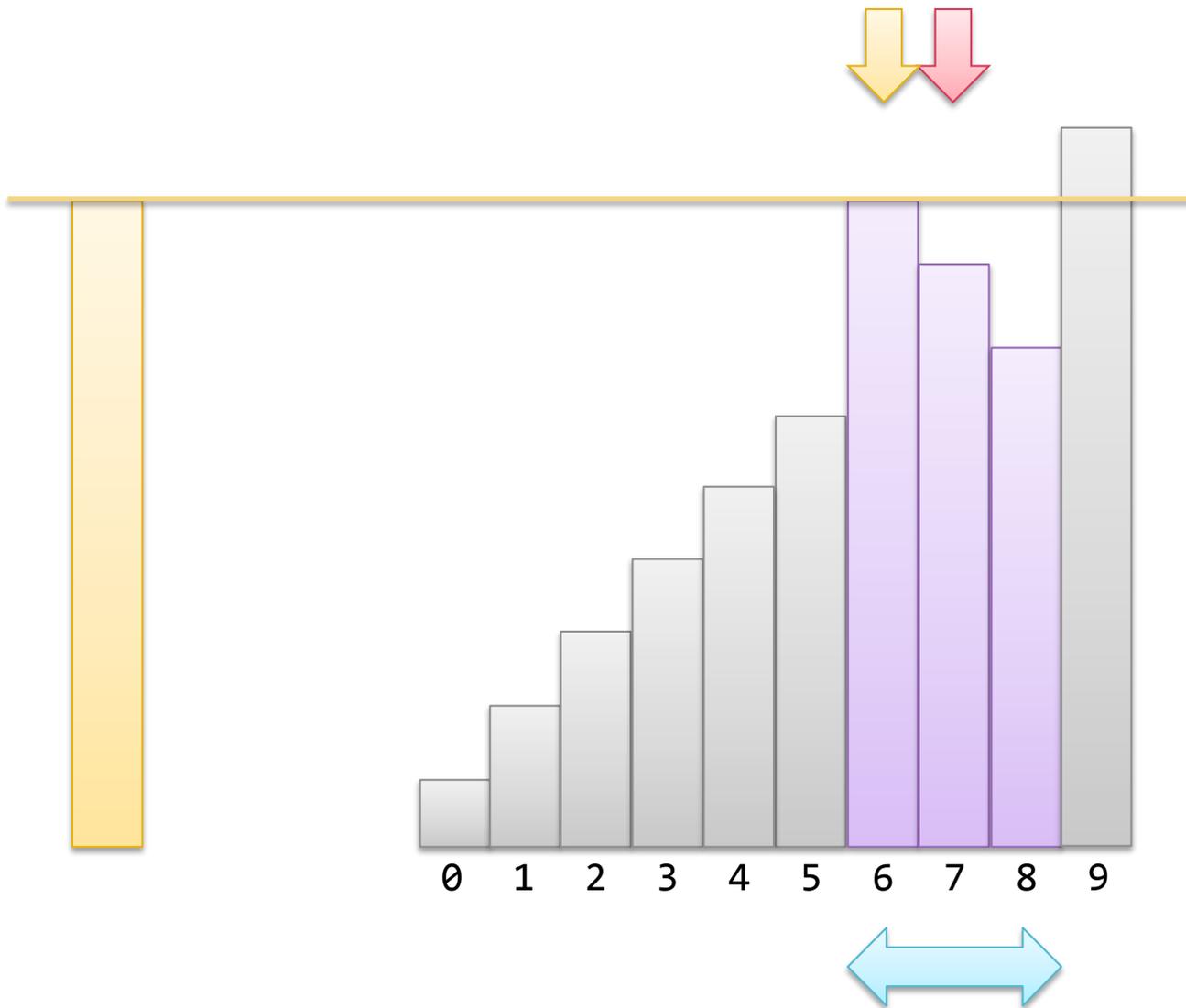
tri :
appels récurrents



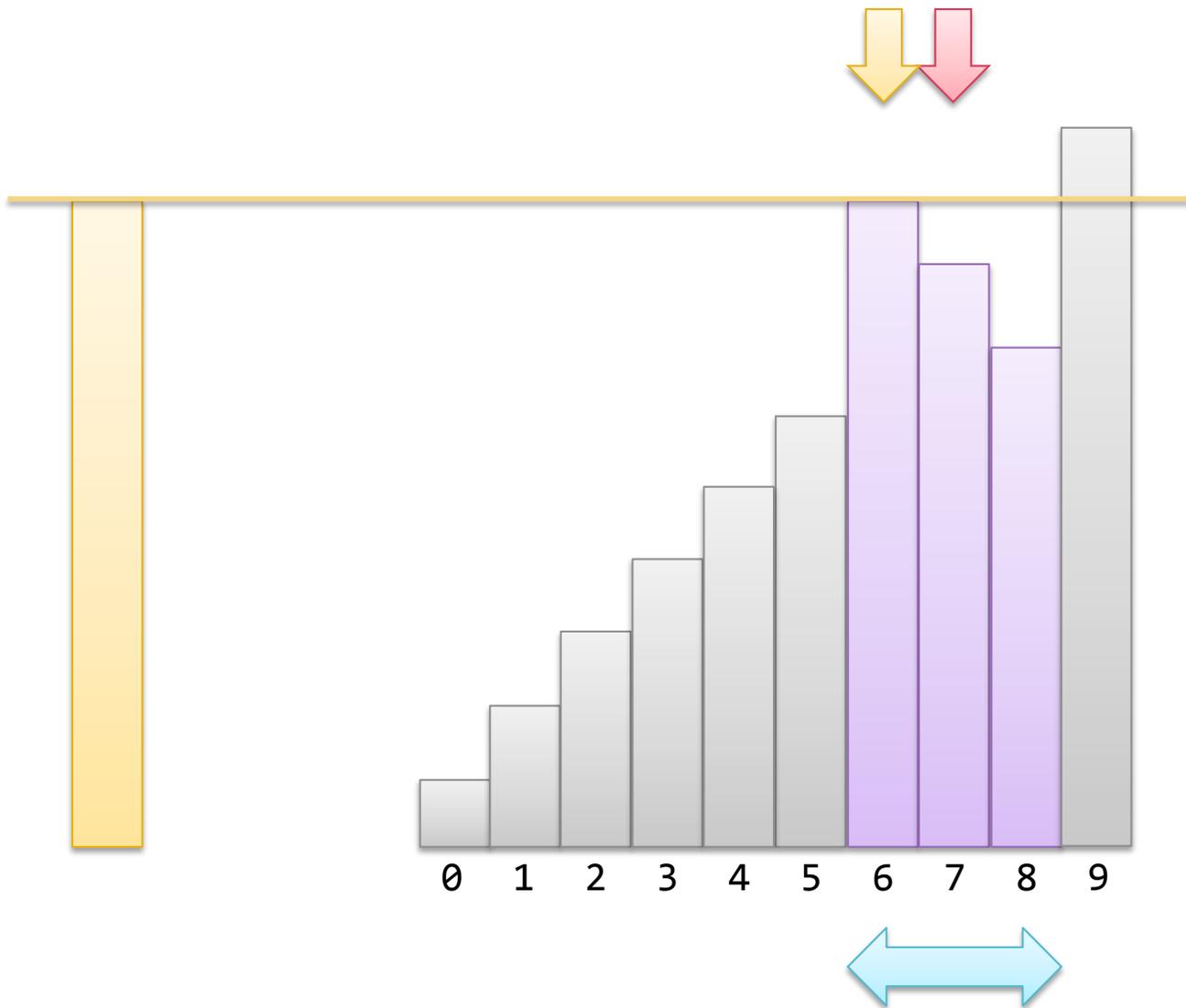


tri :
appel

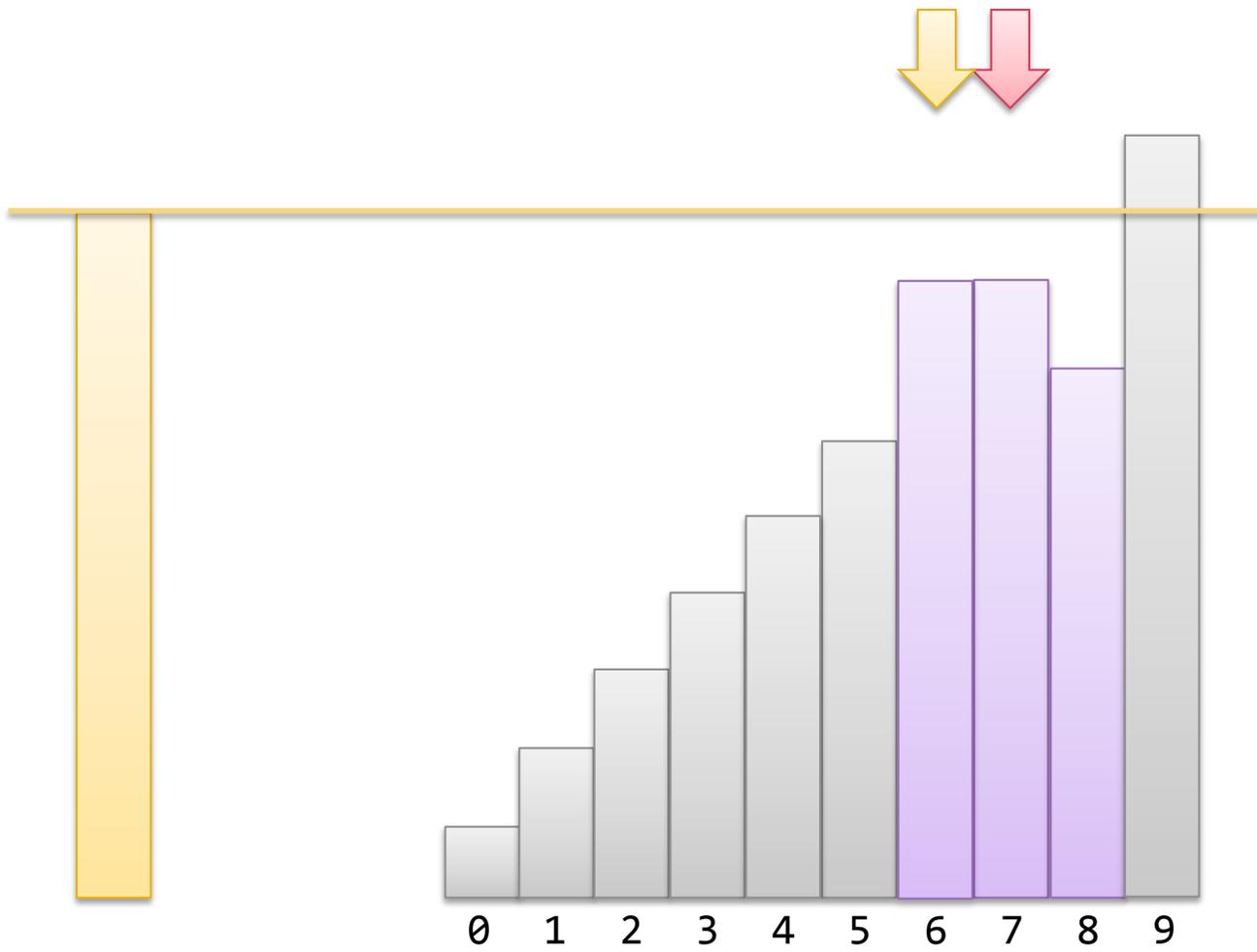




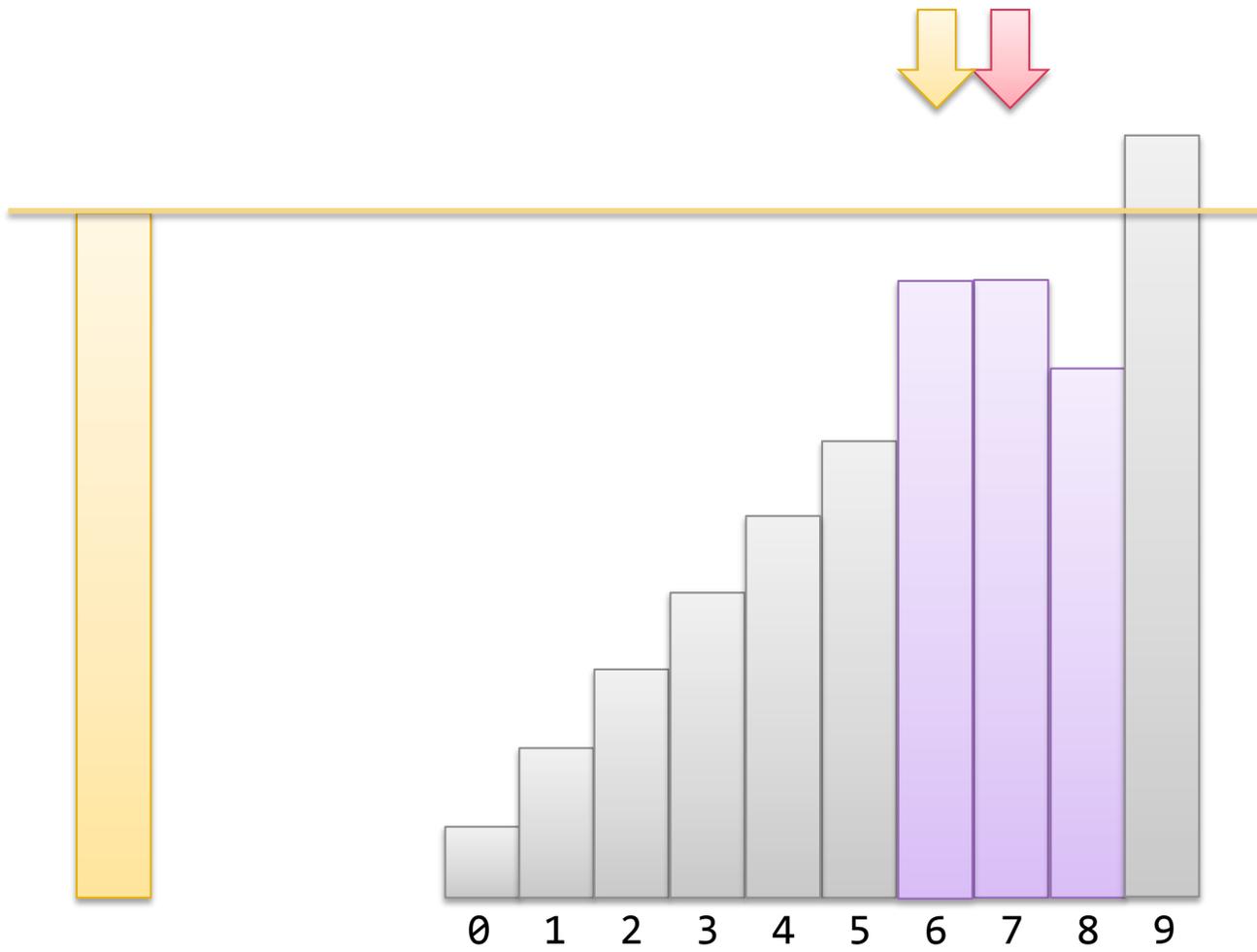
partition :
initialisation



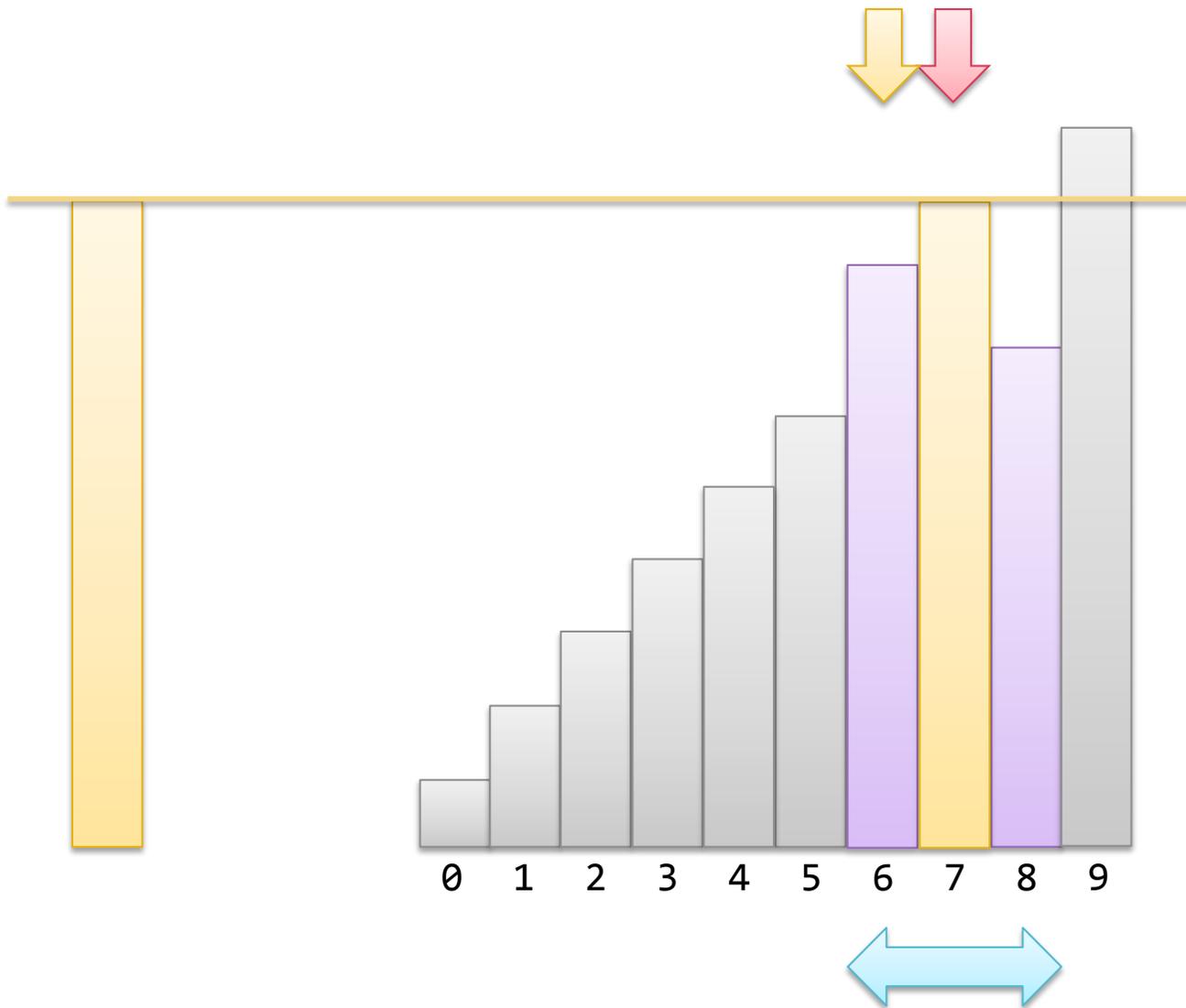
partition :
itération +
comparaison



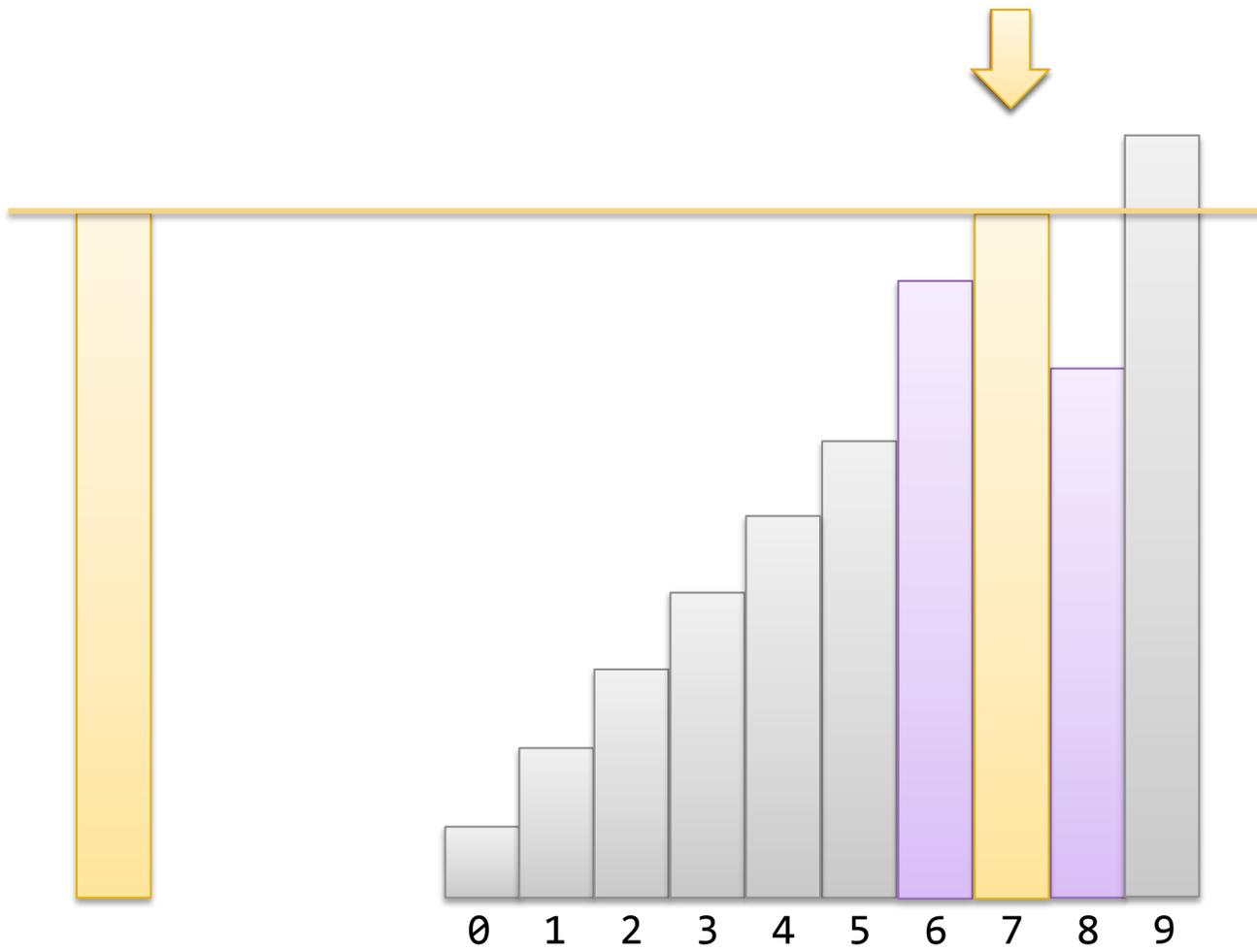
partition :
permutation



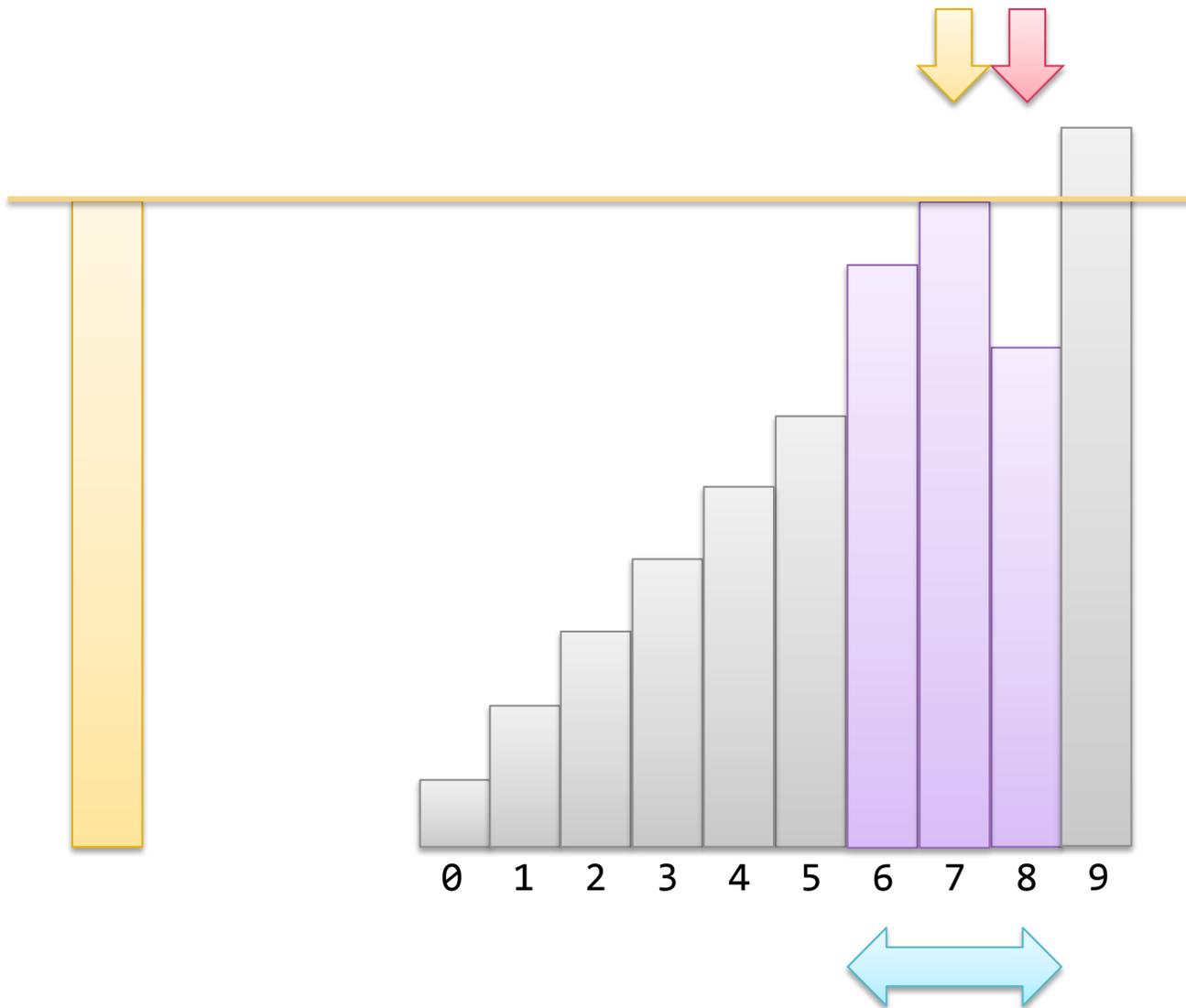
partition :
permutation



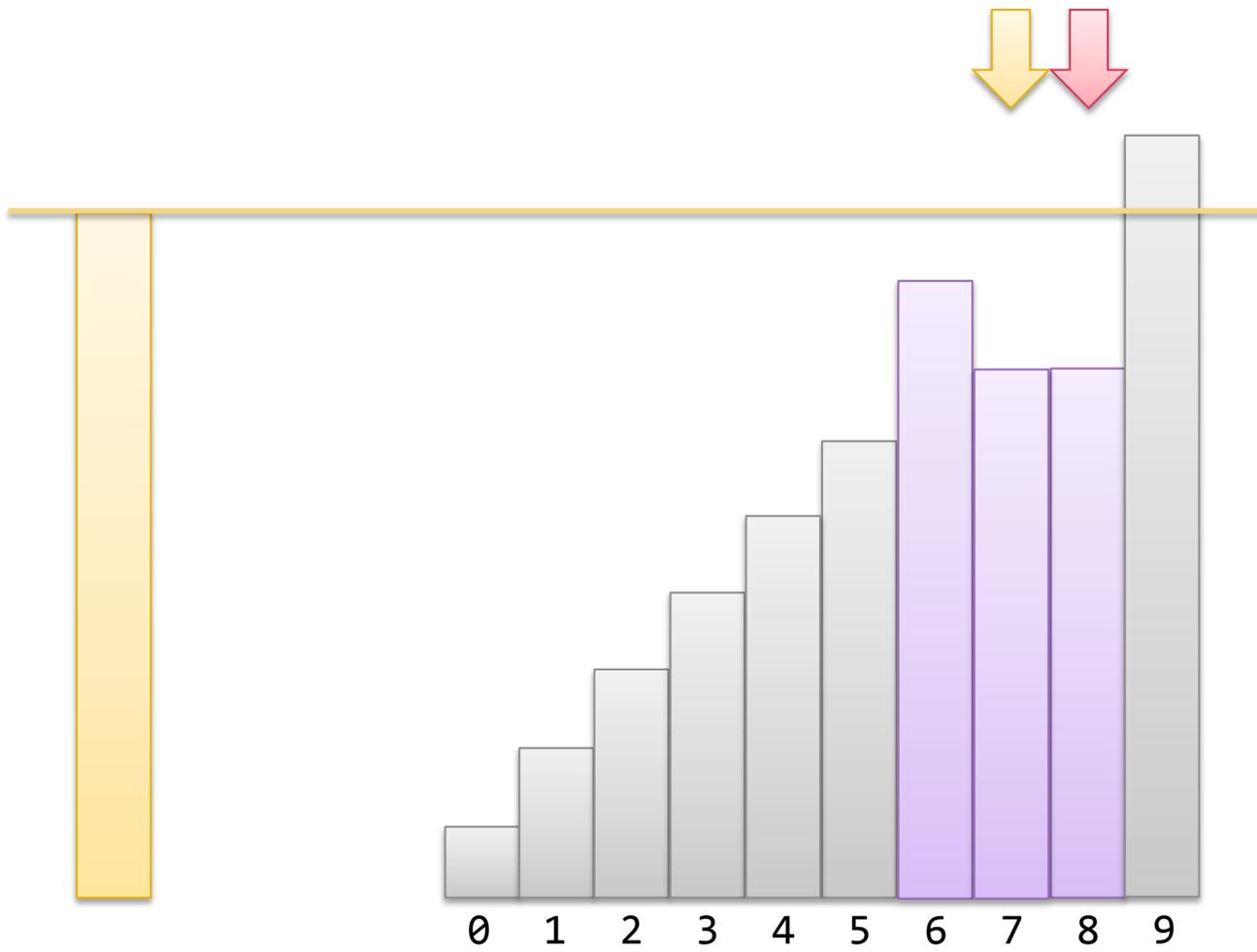
partition :
permutation



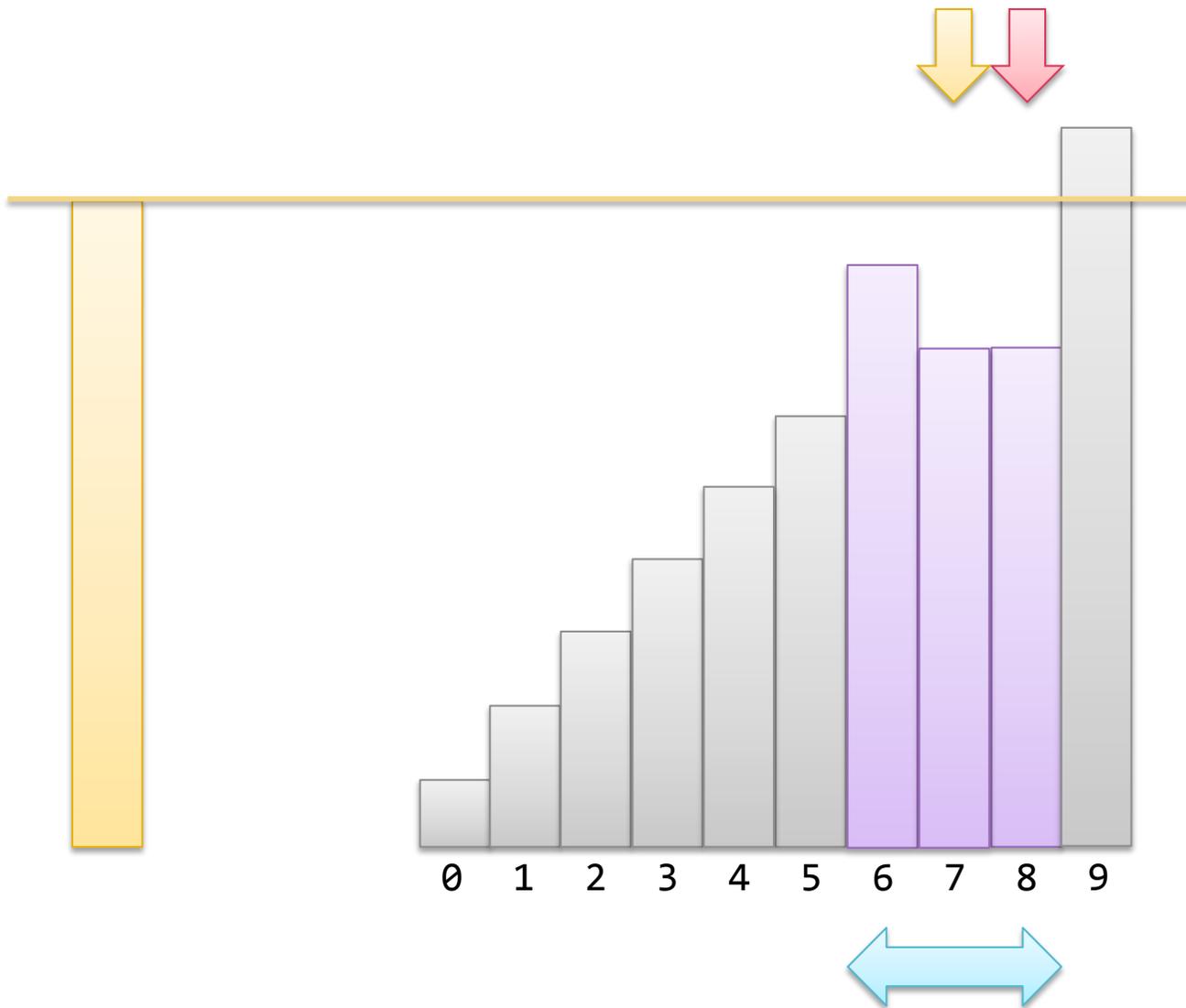
partition :
permutation



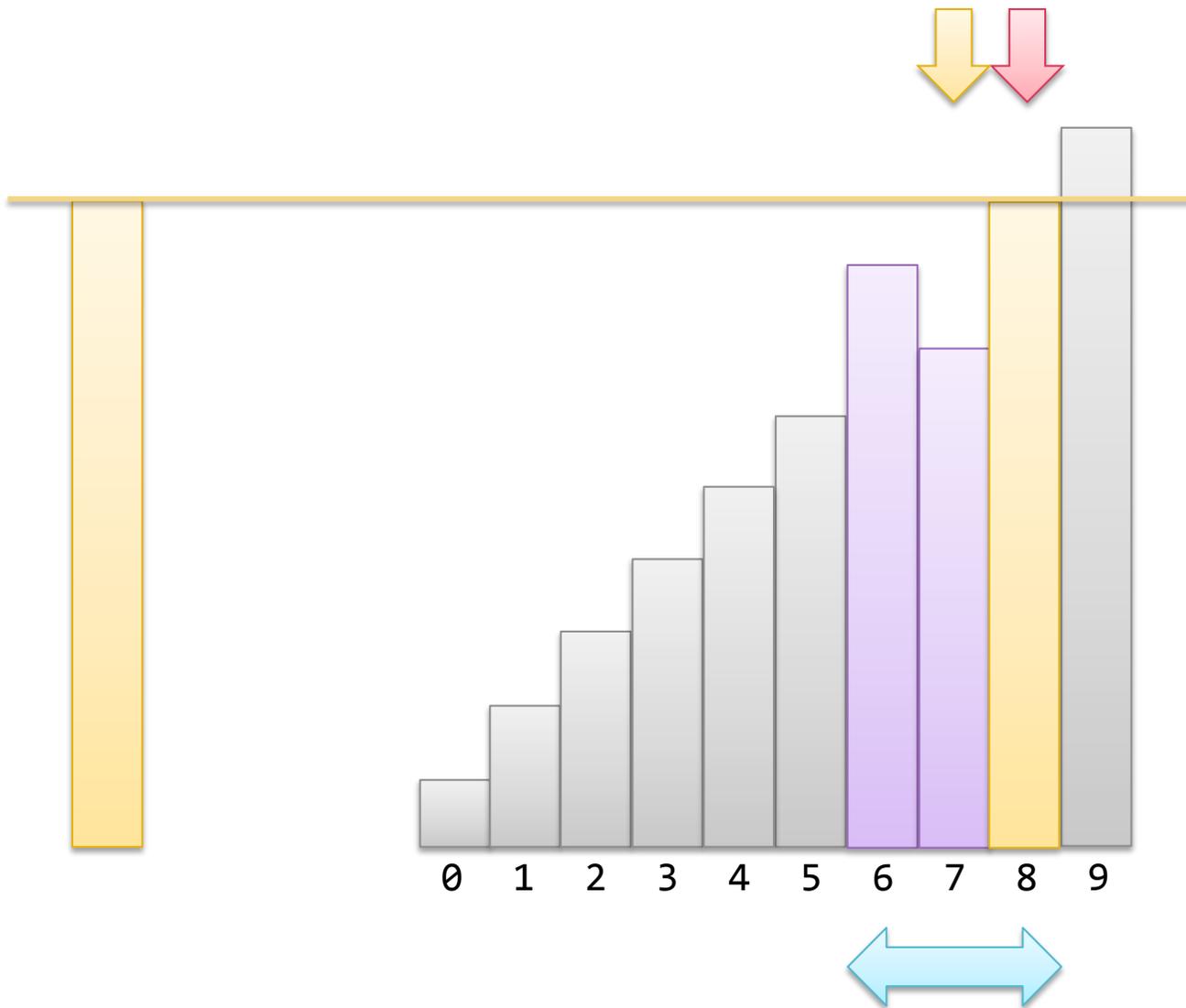
partition :
itération +
comparaison



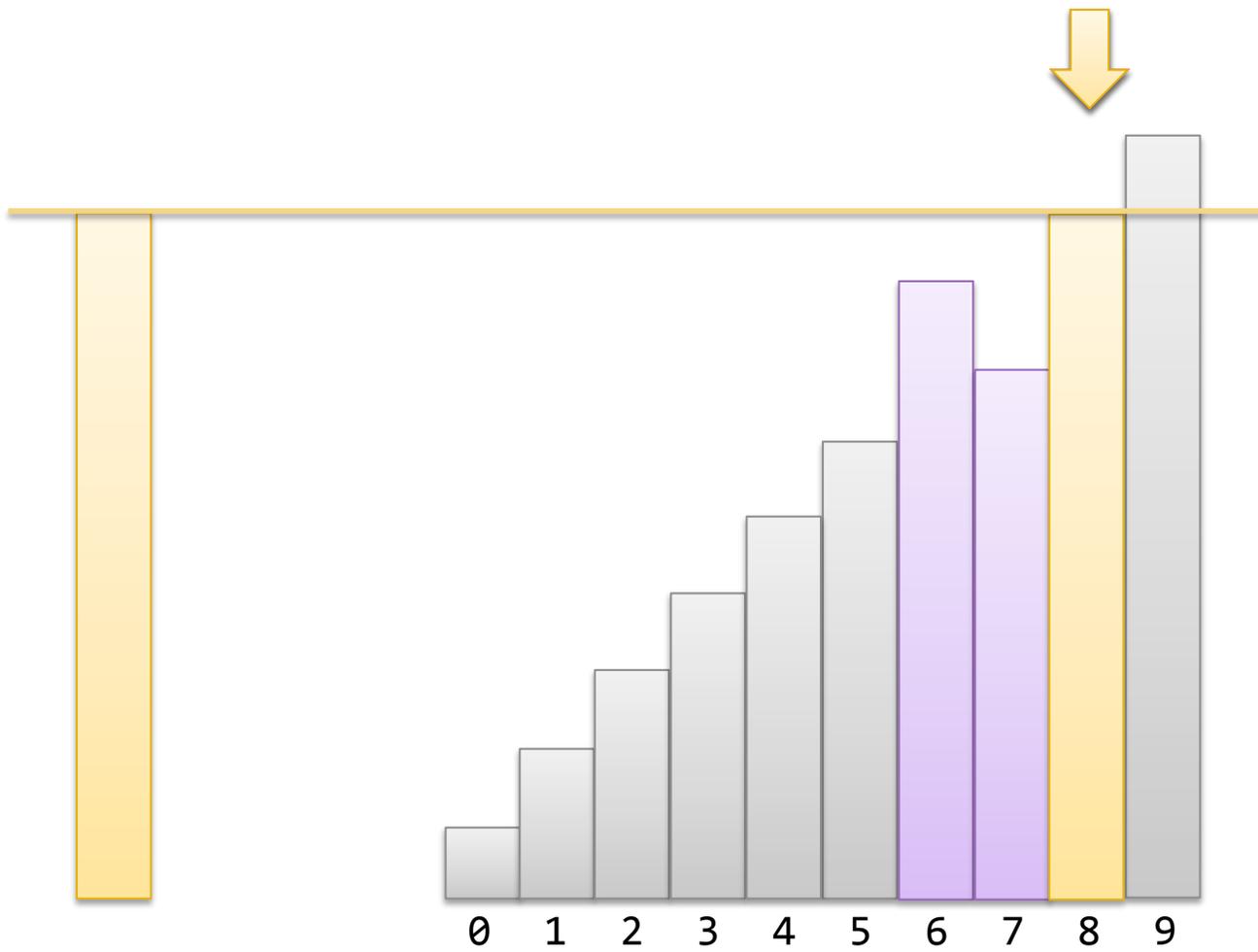
partition :
permutation



partition :
permutation

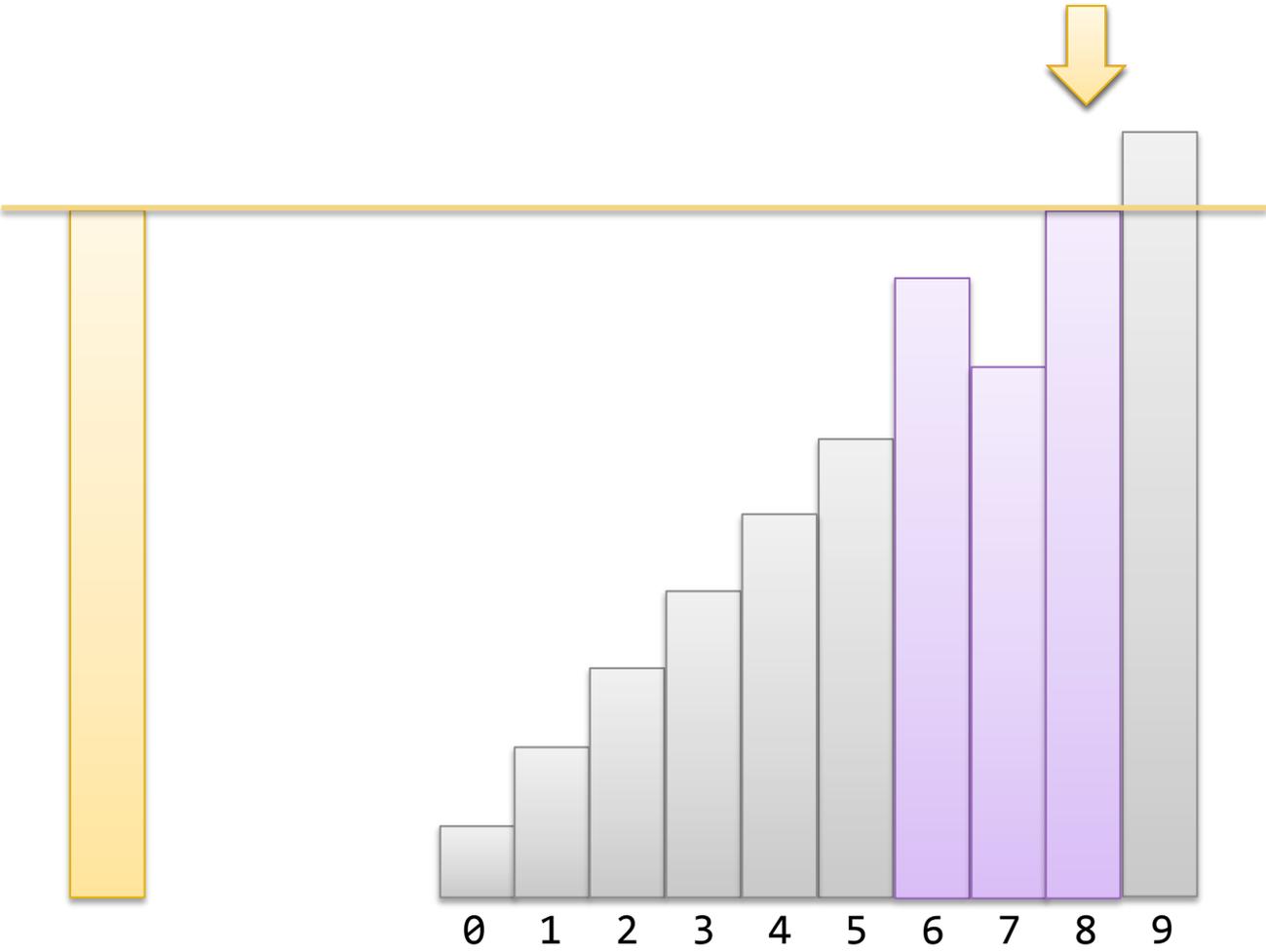


partition :
permutation



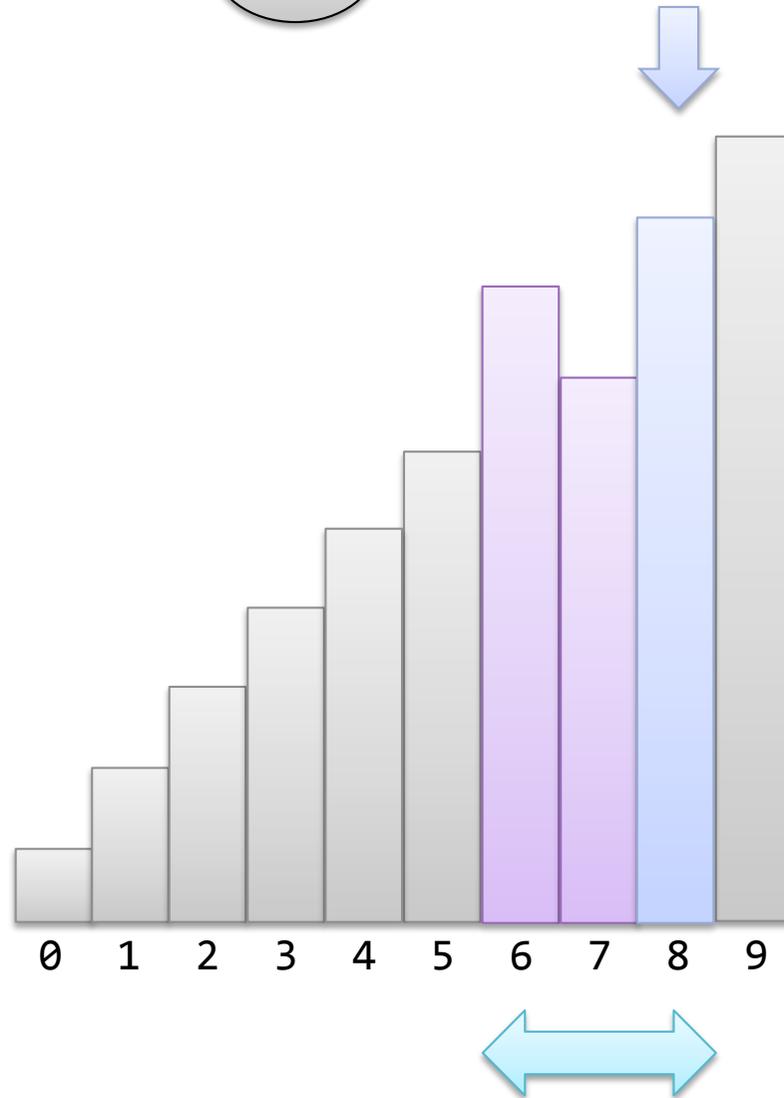
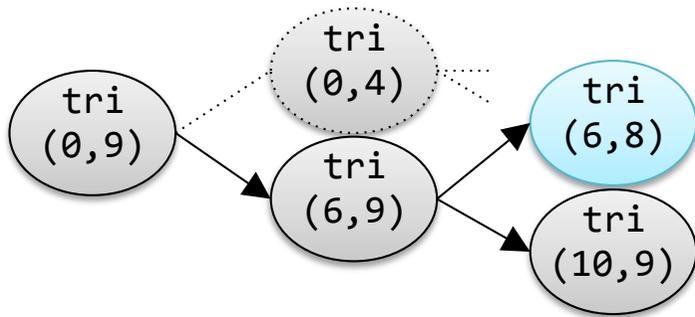
partition :
permutation



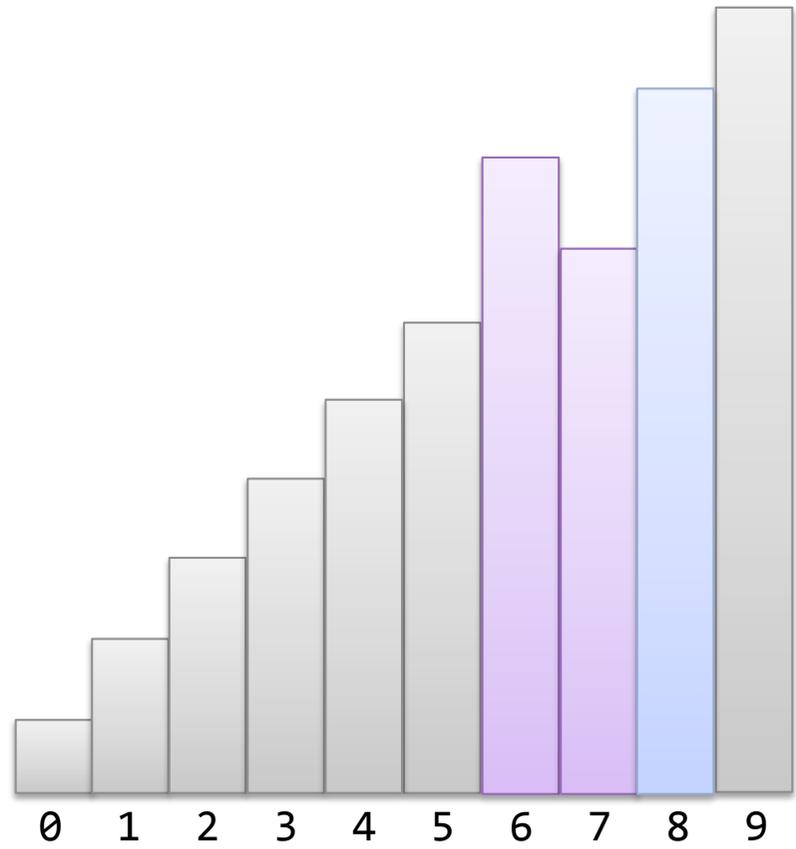
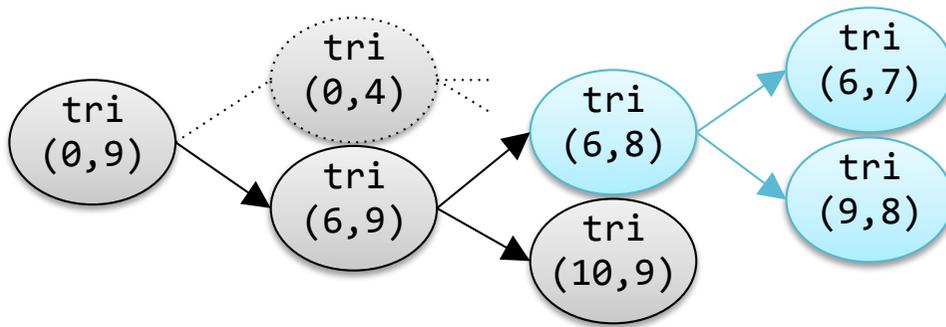


partition :
fin

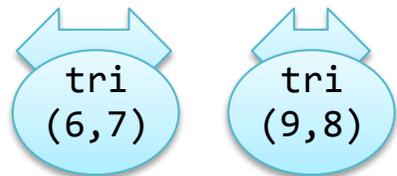


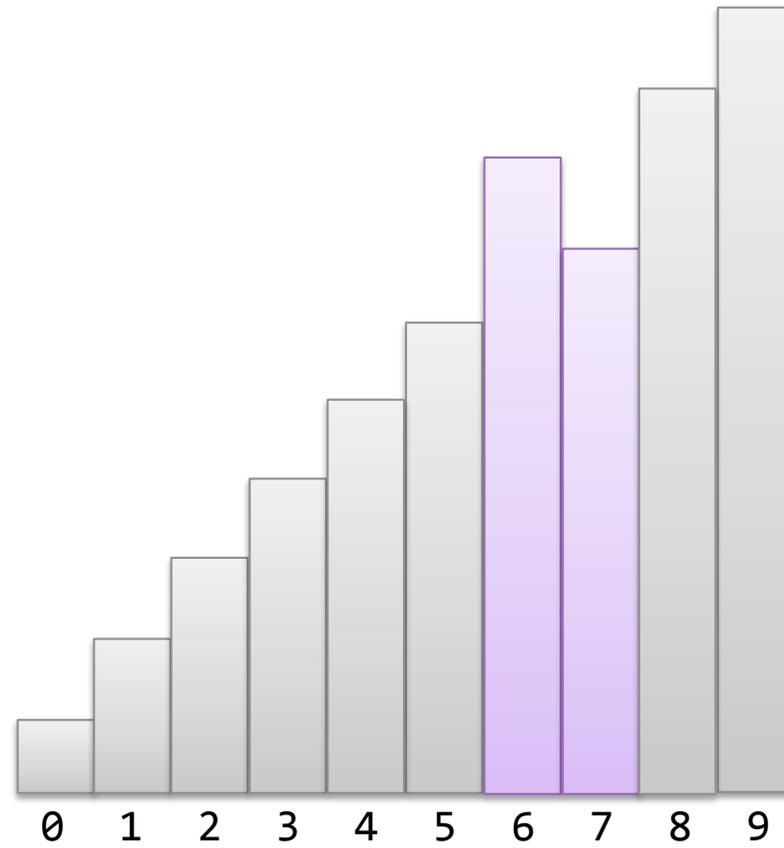
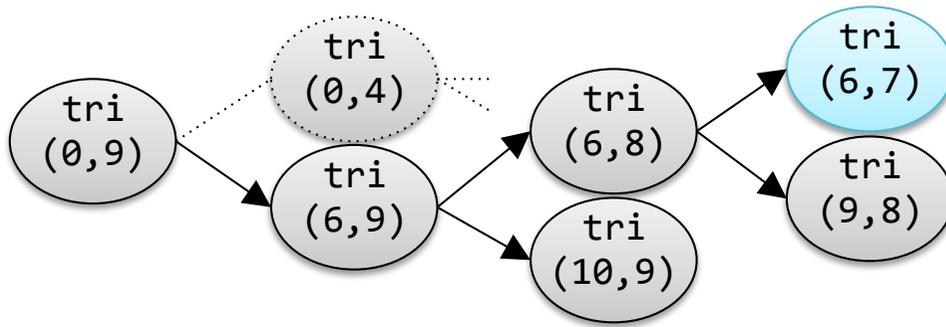


tri :
après partition



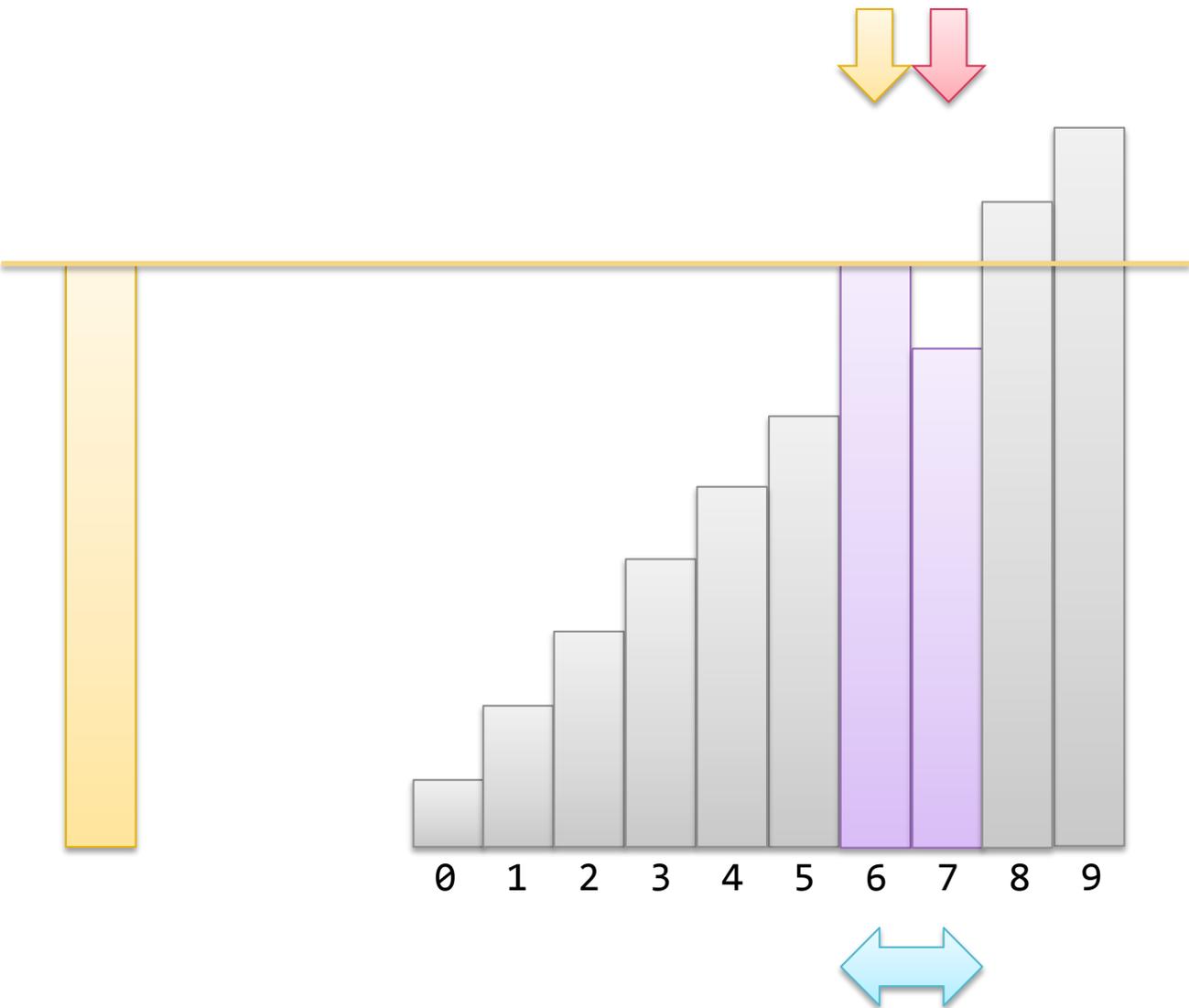
tri :
appels récurrents



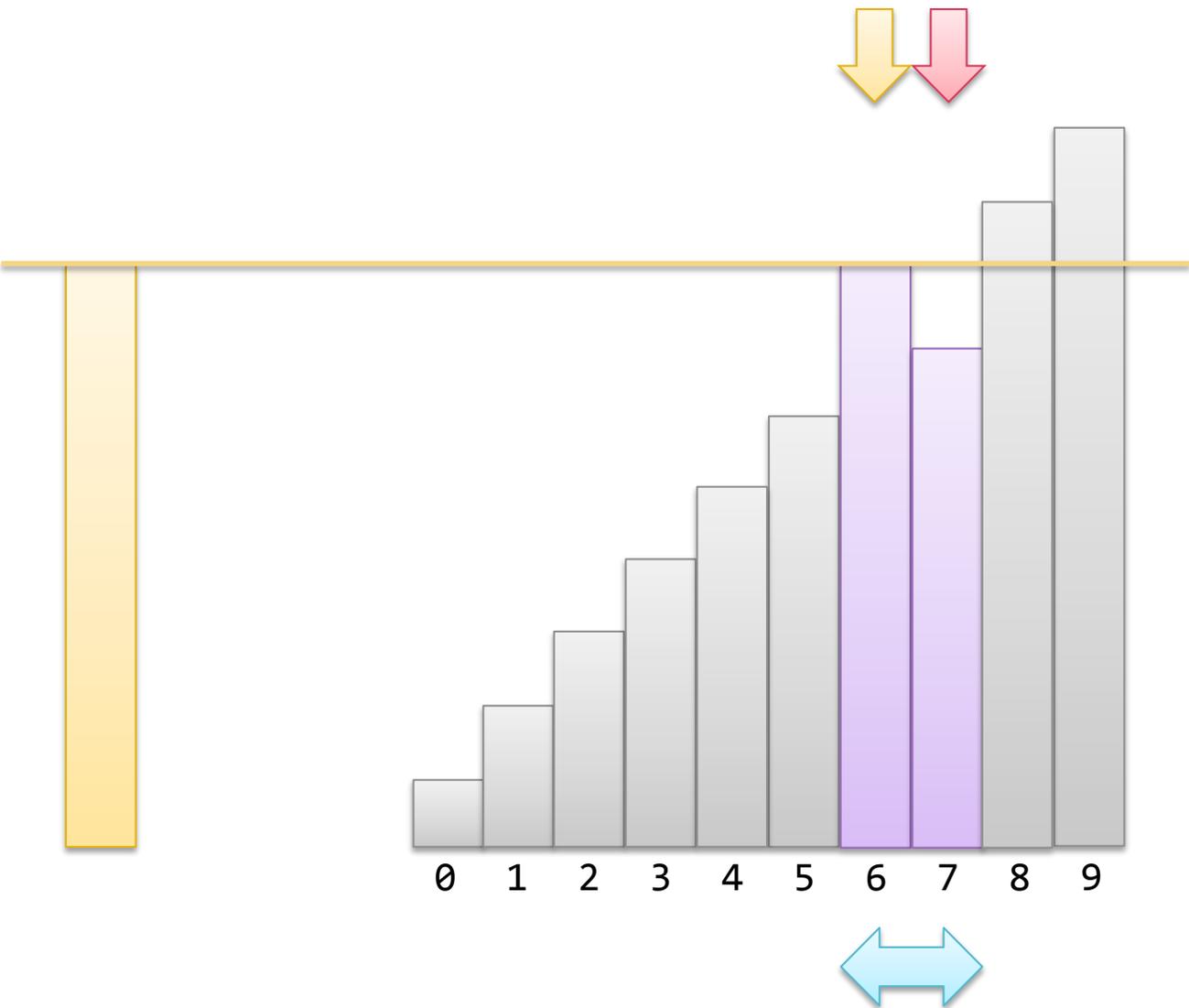


tri :
appel

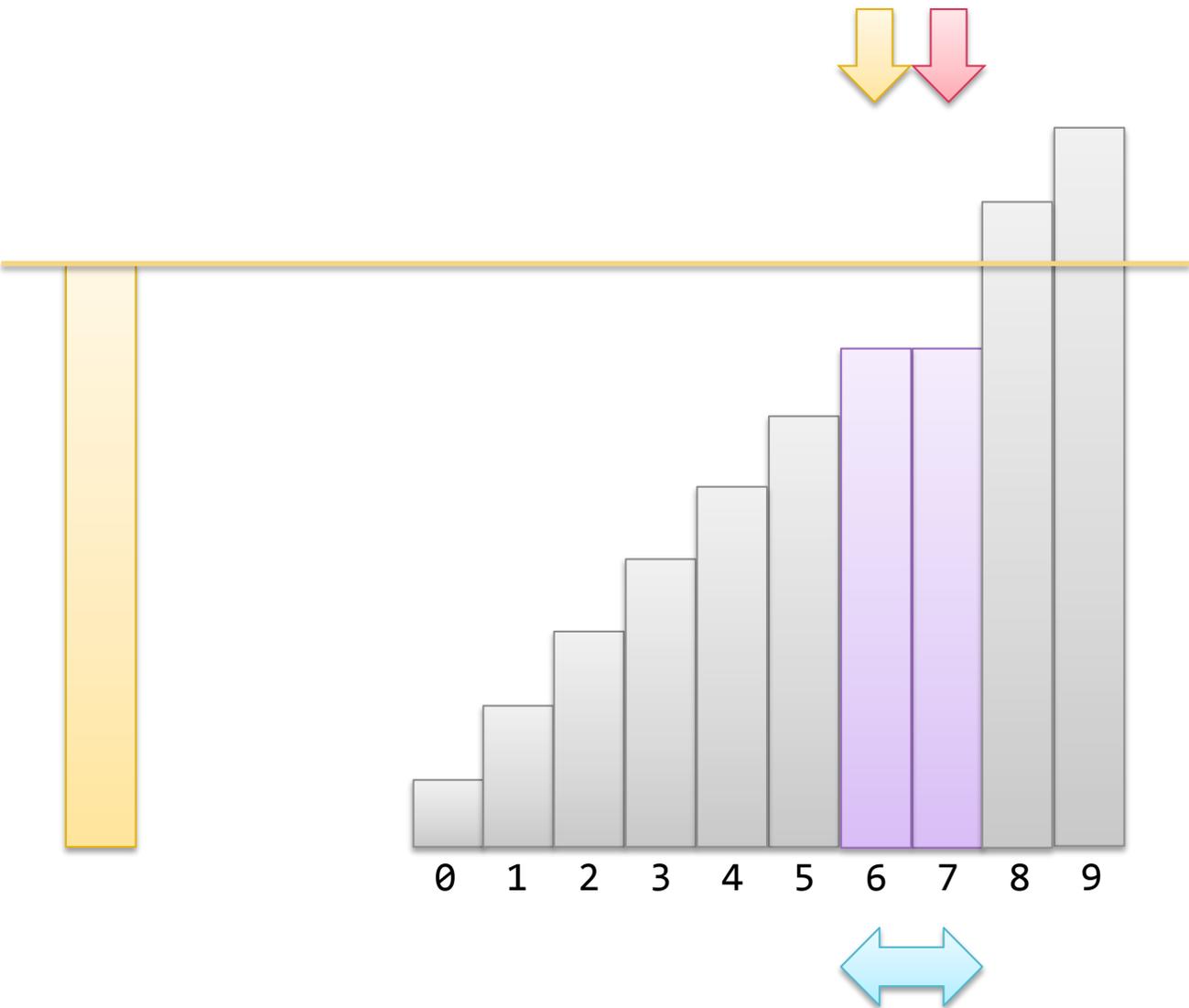




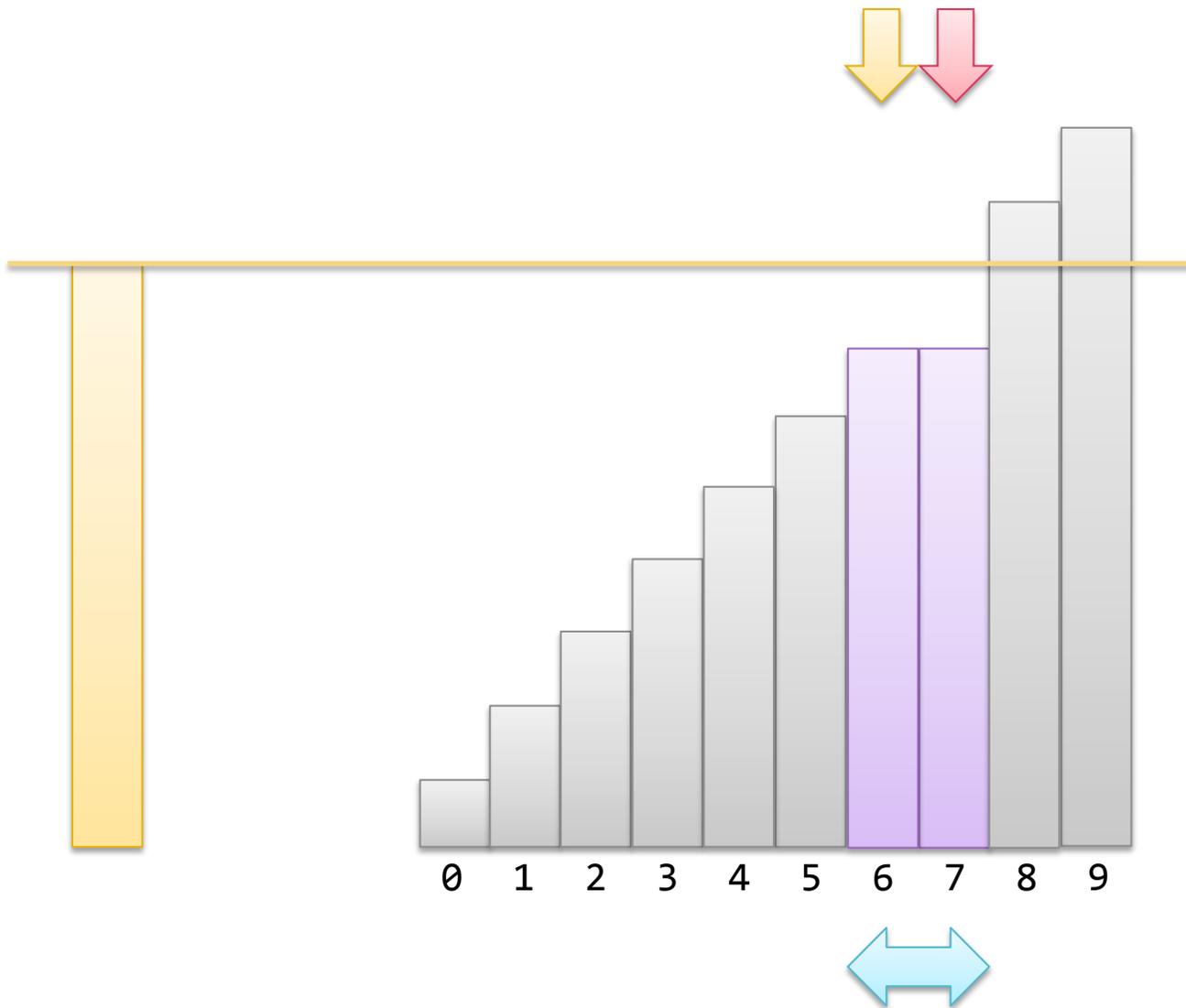
partition :
initialisation



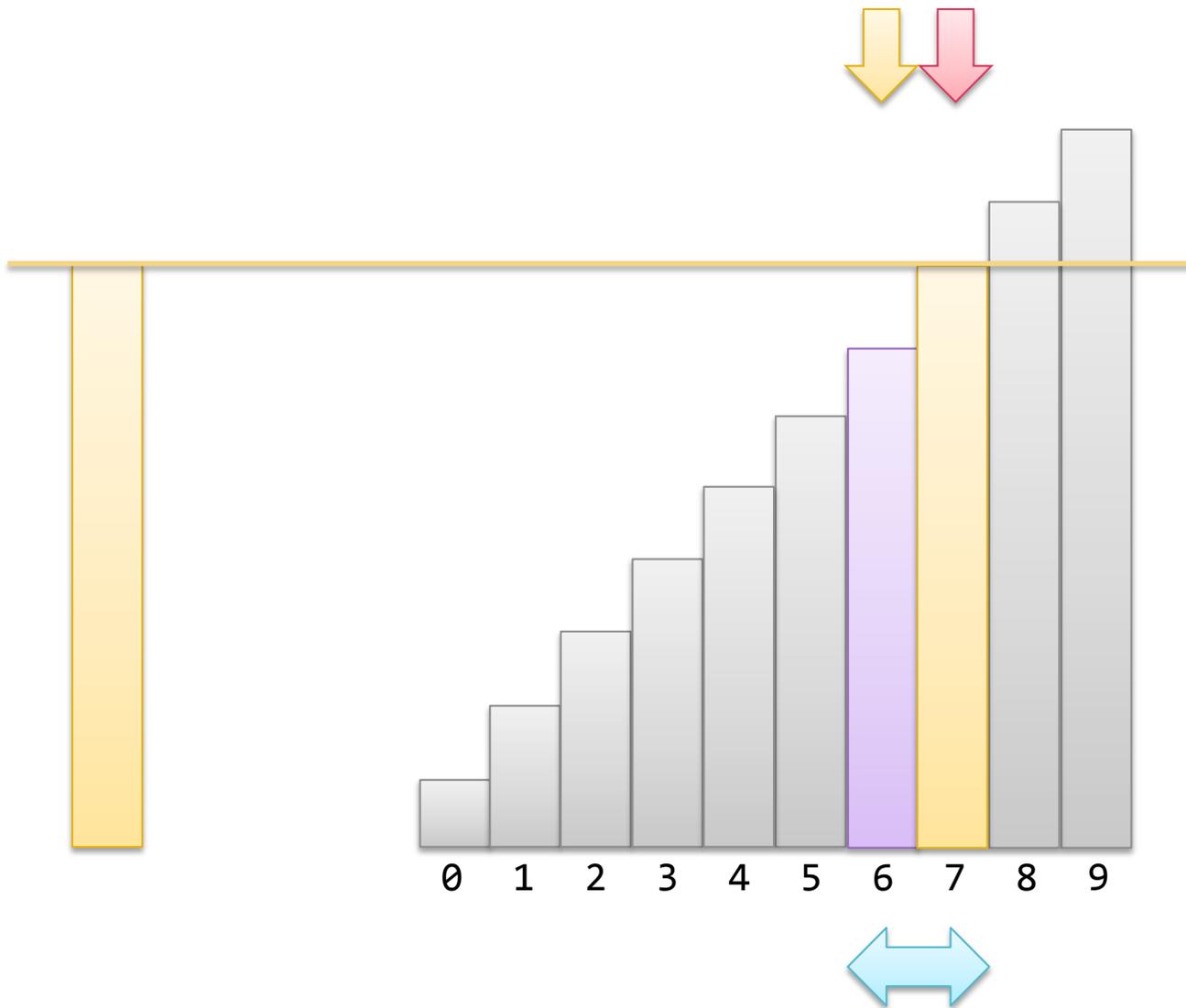
partition :
itération +
comparaison



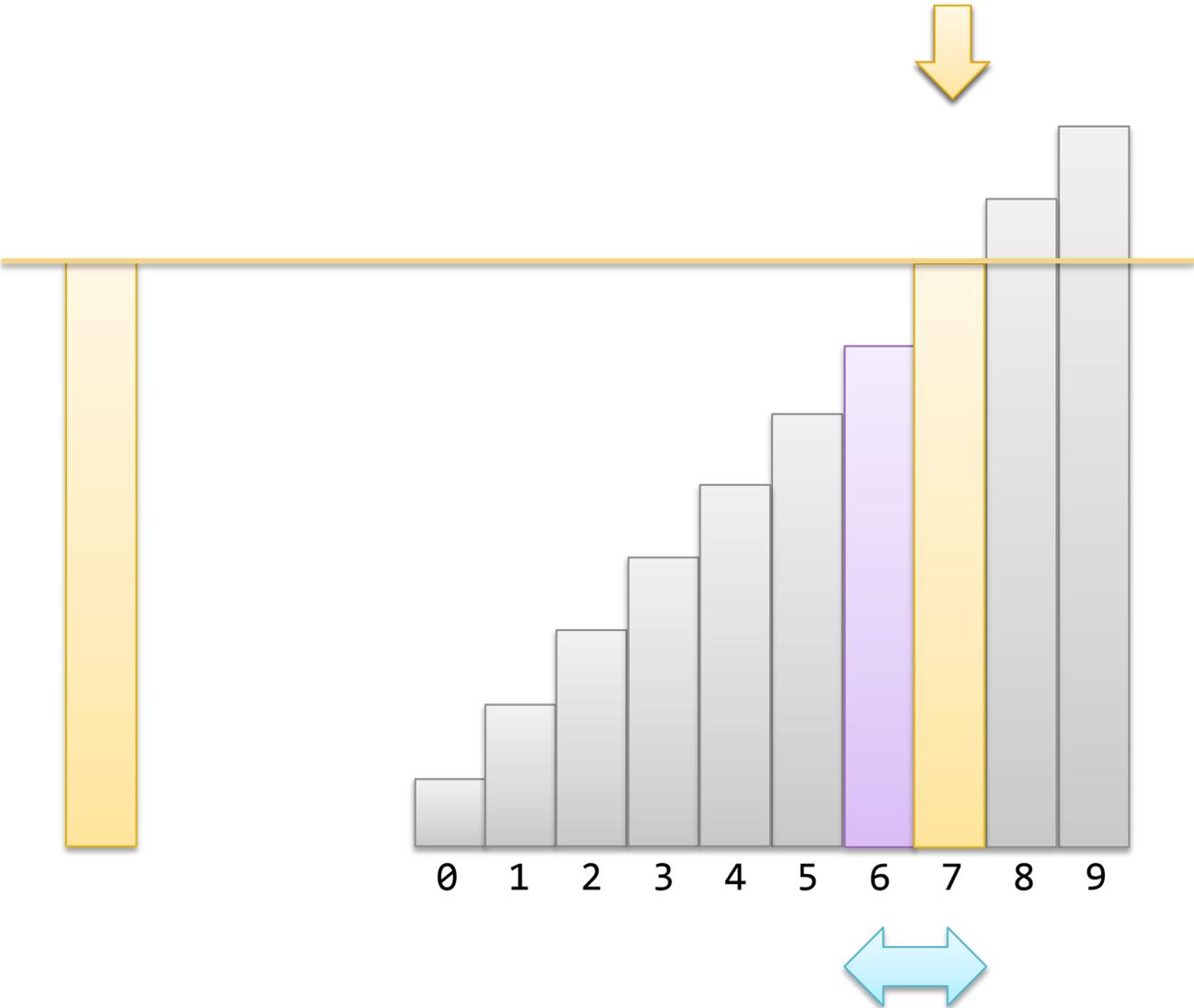
partition :
permutation



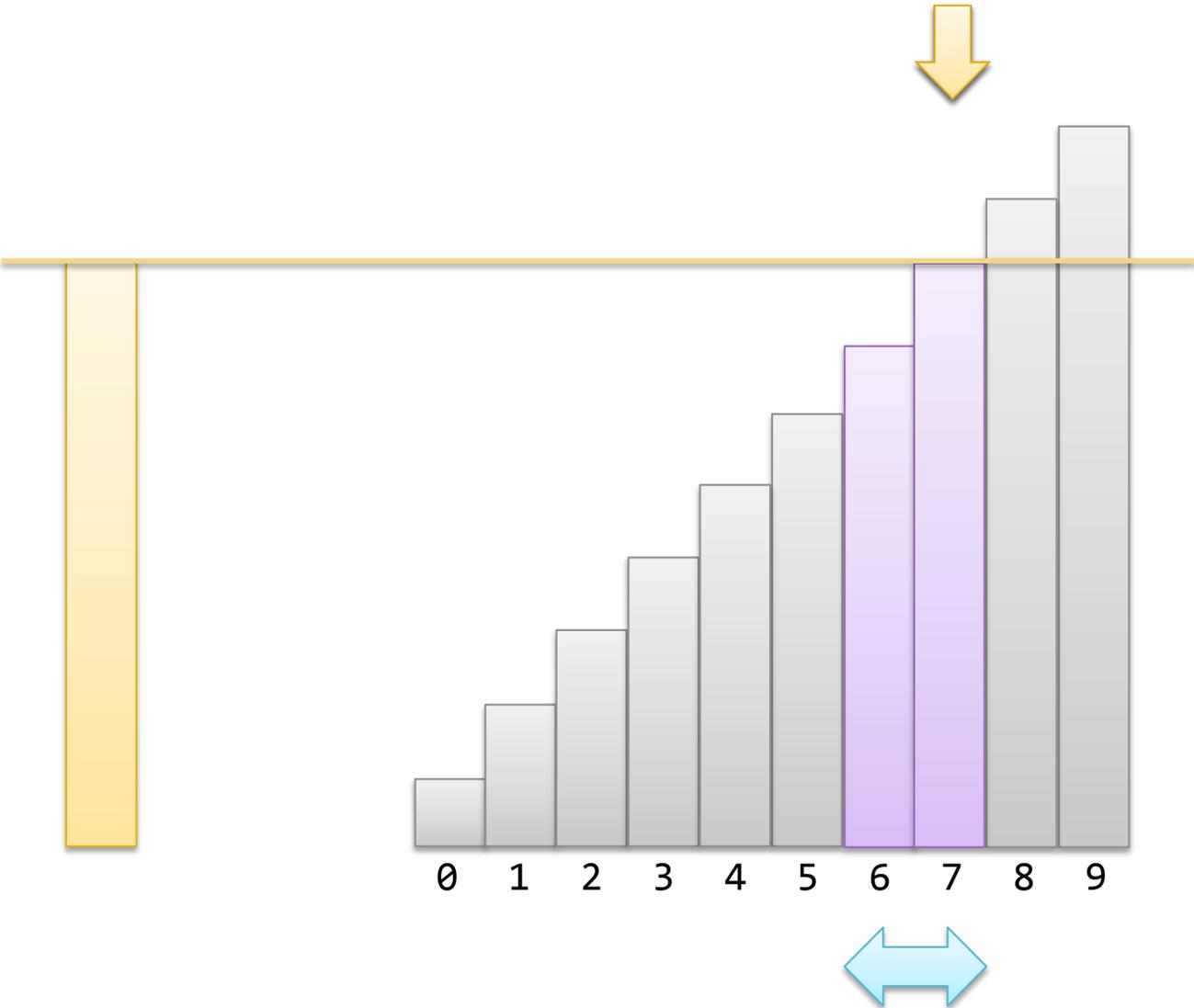
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permutation



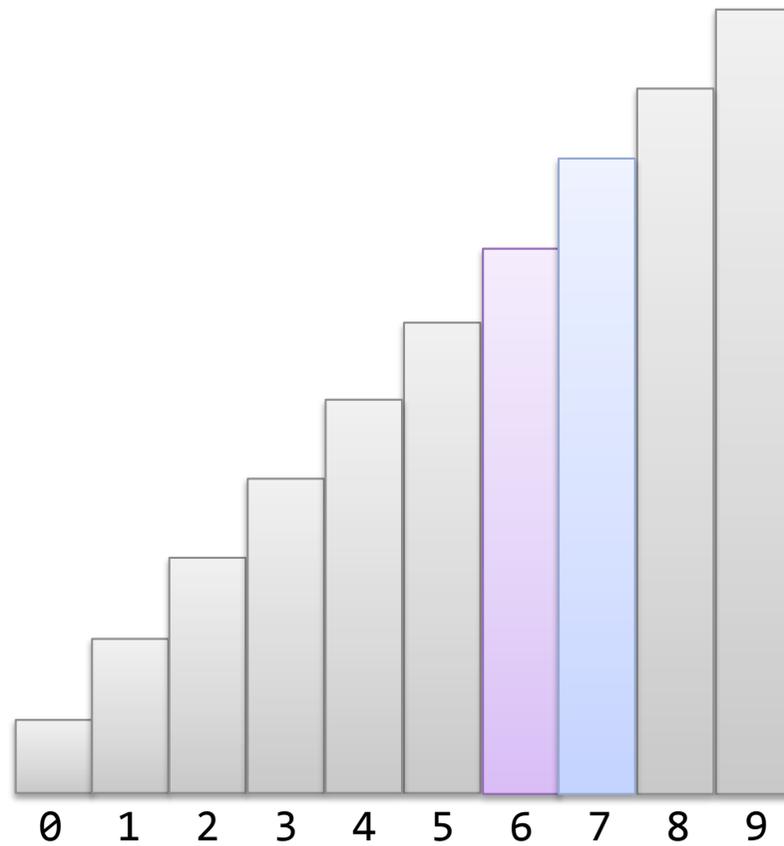
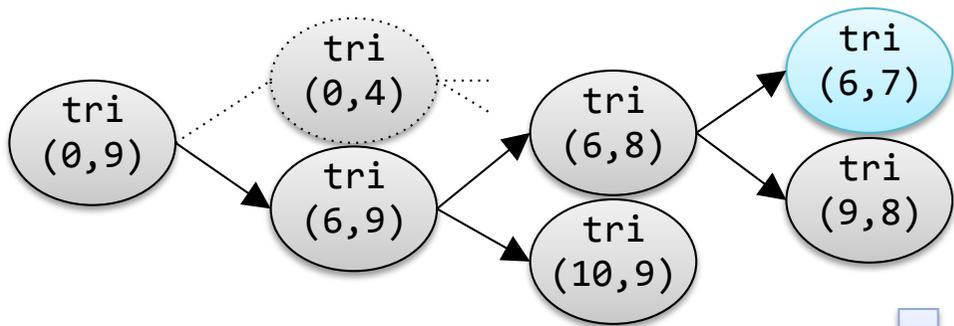
partition :
permutation



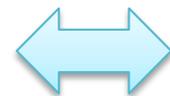
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permutation

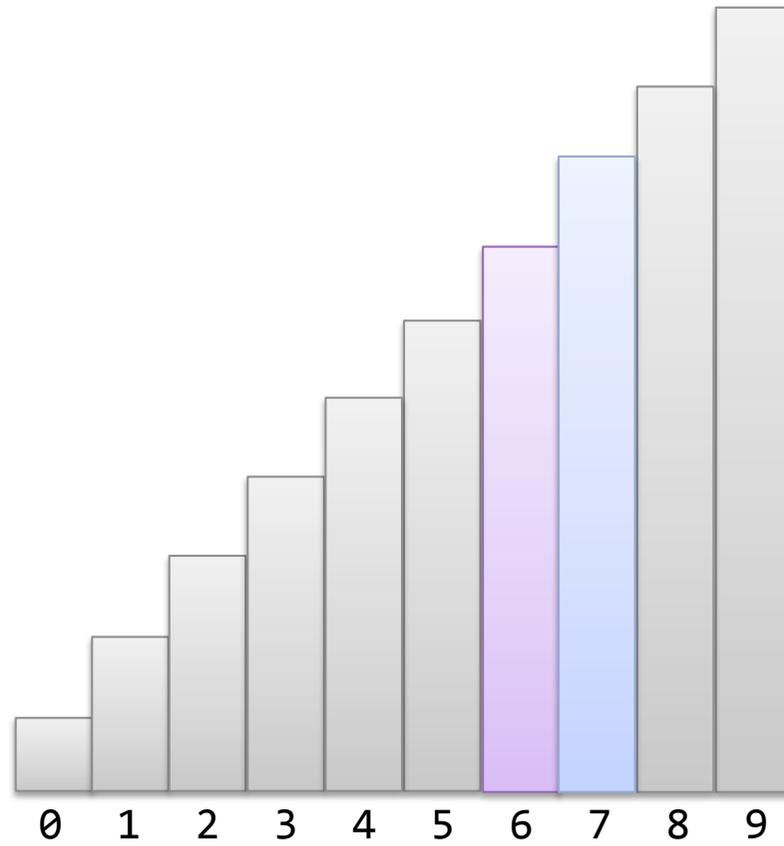
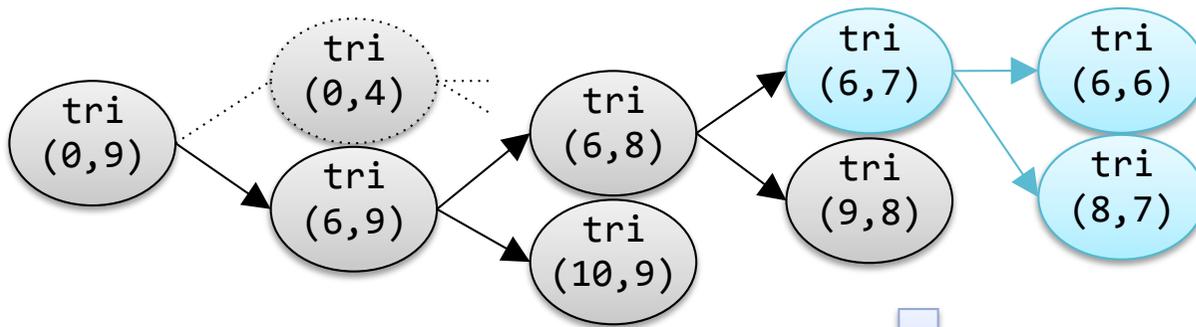


partition :
fin

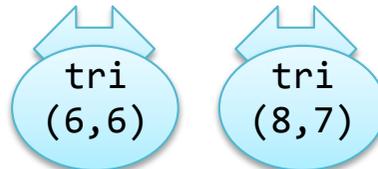


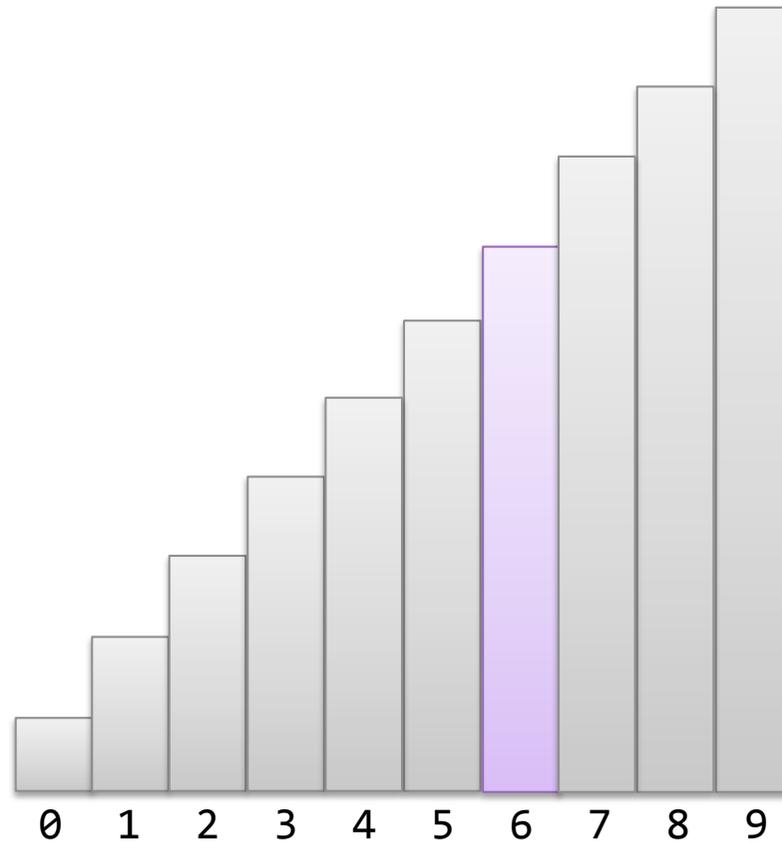
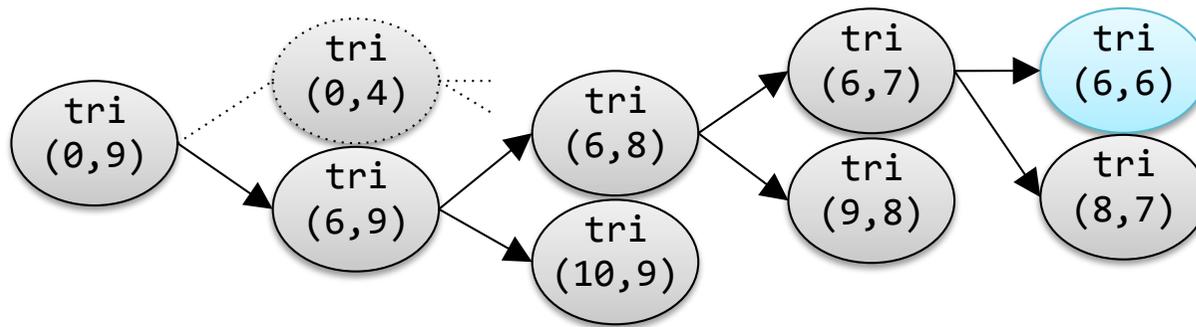
tri :
après partition





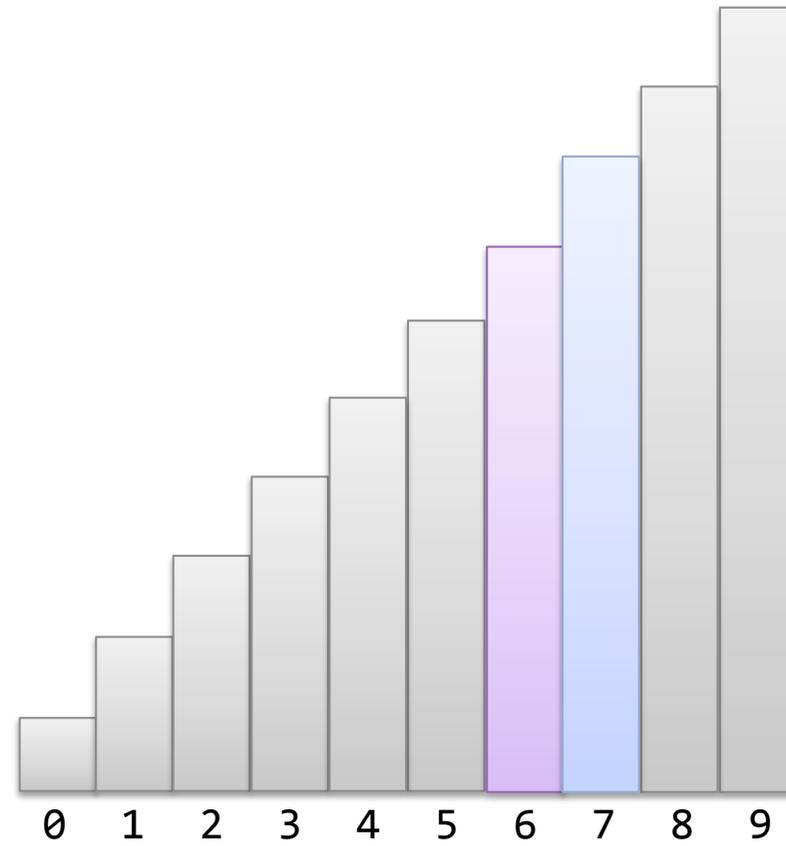
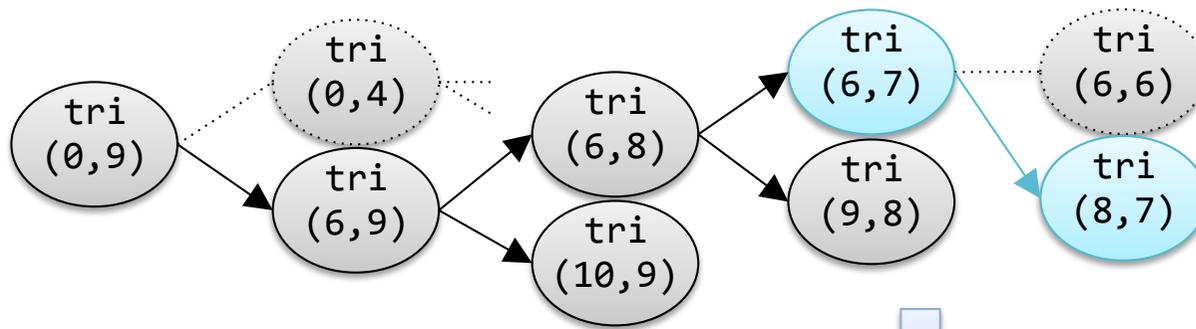
tri :
appels récurrents



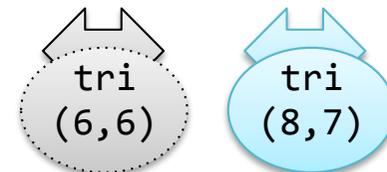


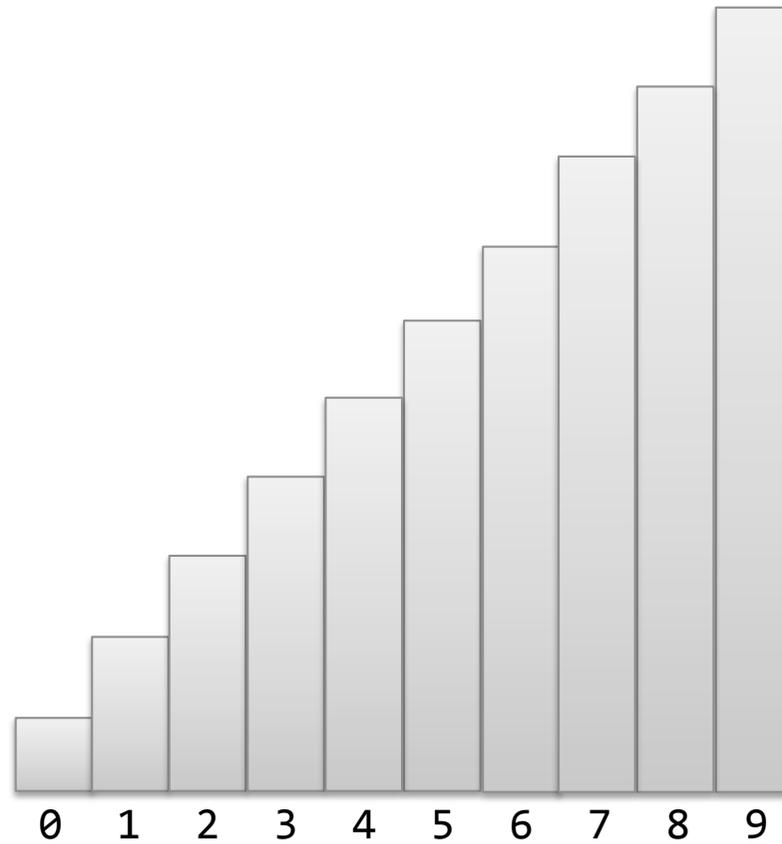
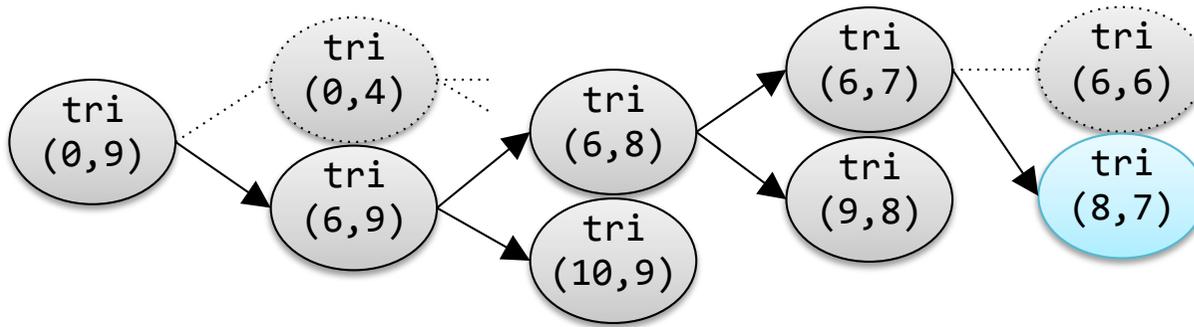
tri :
appel...
et fin !

La condition
debut < fin
n'est pas vérifiée



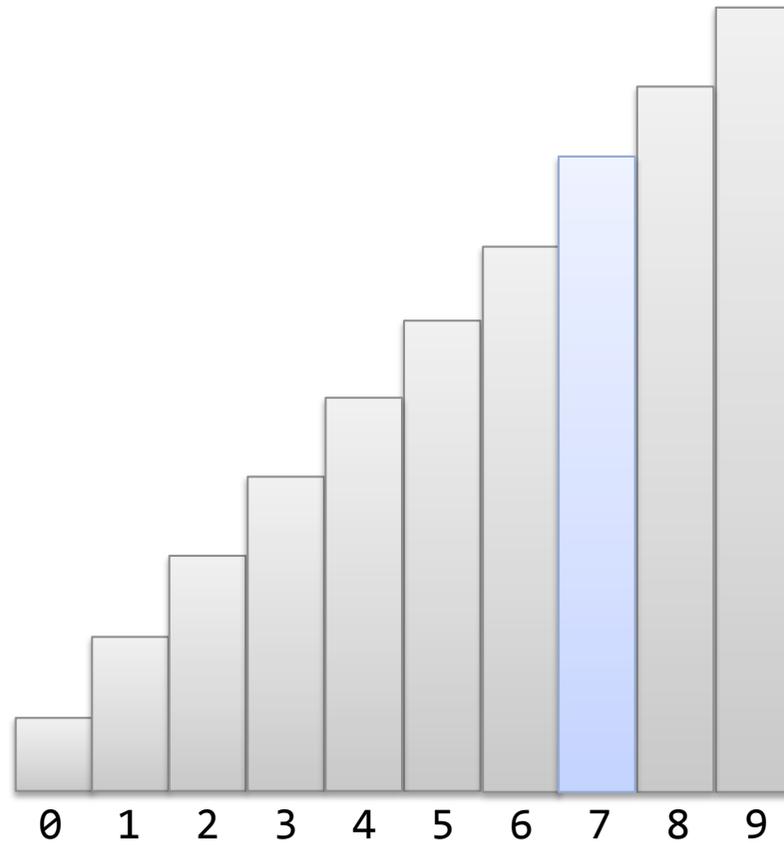
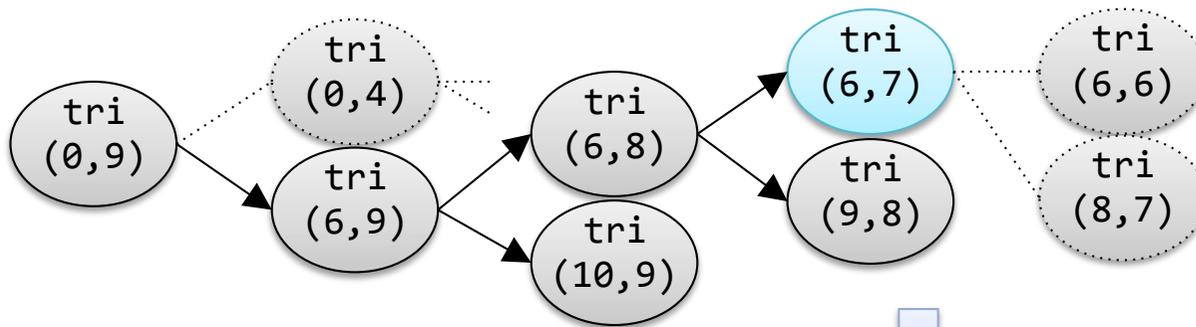
tri :
appels récurrents



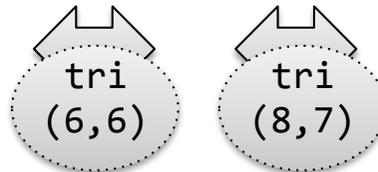


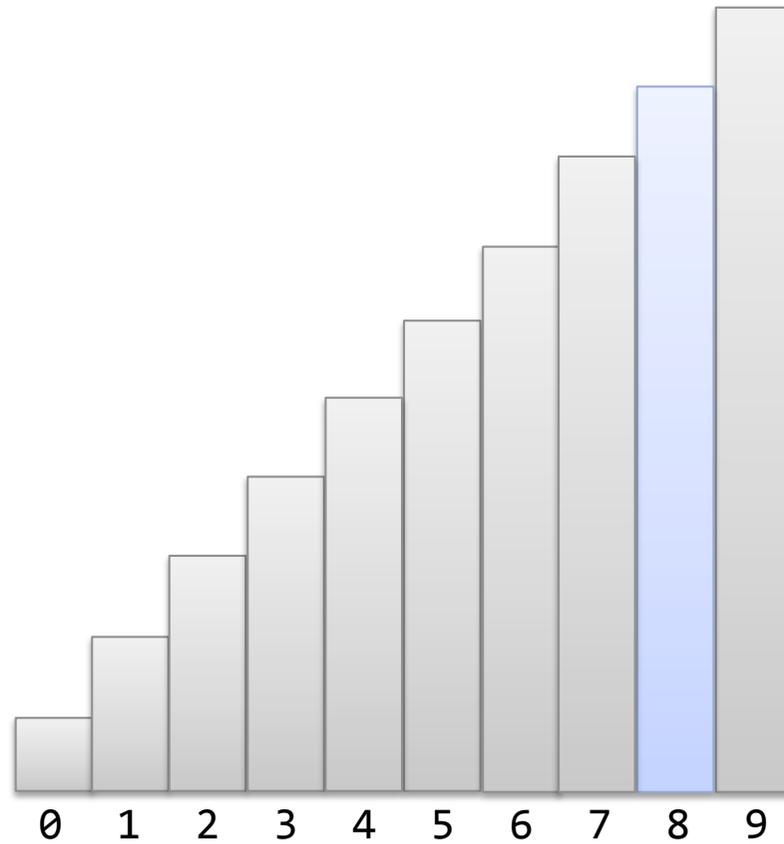
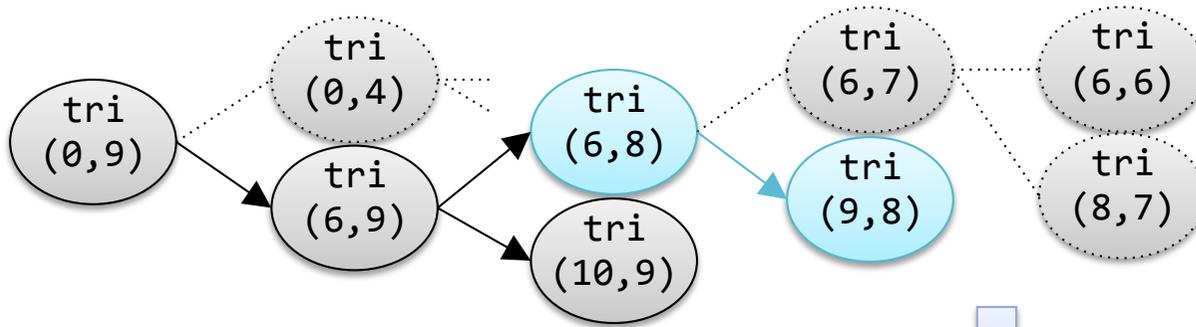
tri :
appel...
et fin !

La condition
debut < fin
n'est pas vérifiée

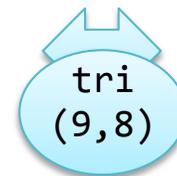
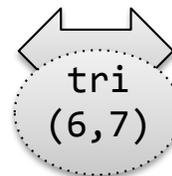


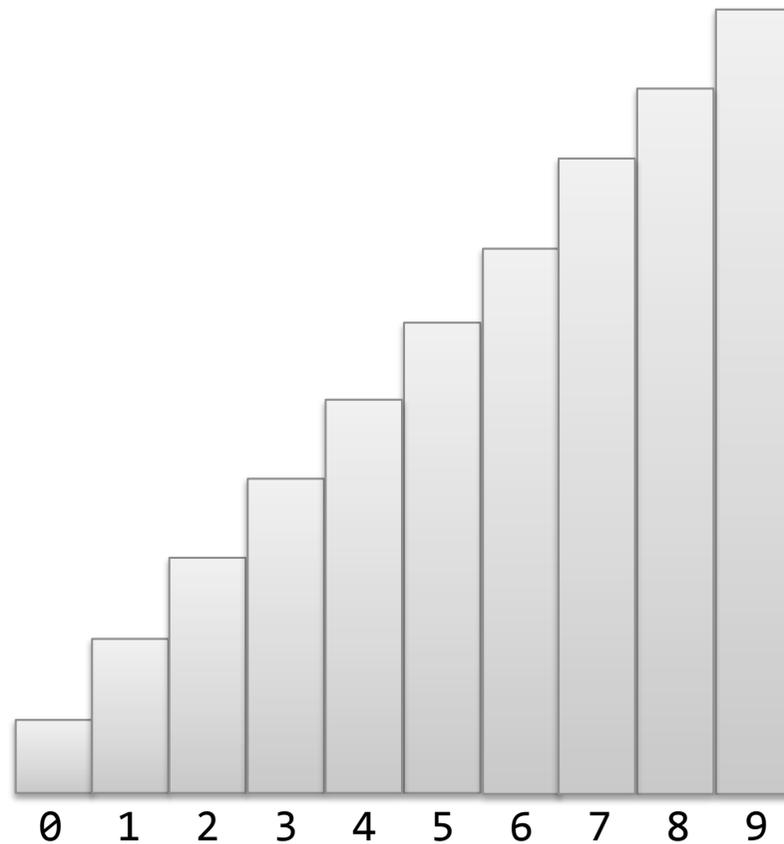
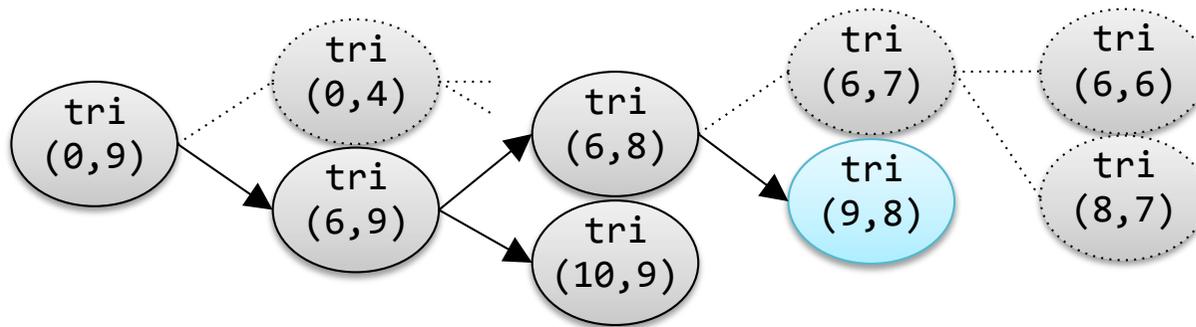
tri :
fin





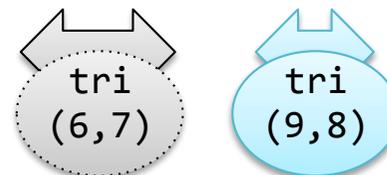
tri :
appels récurrents

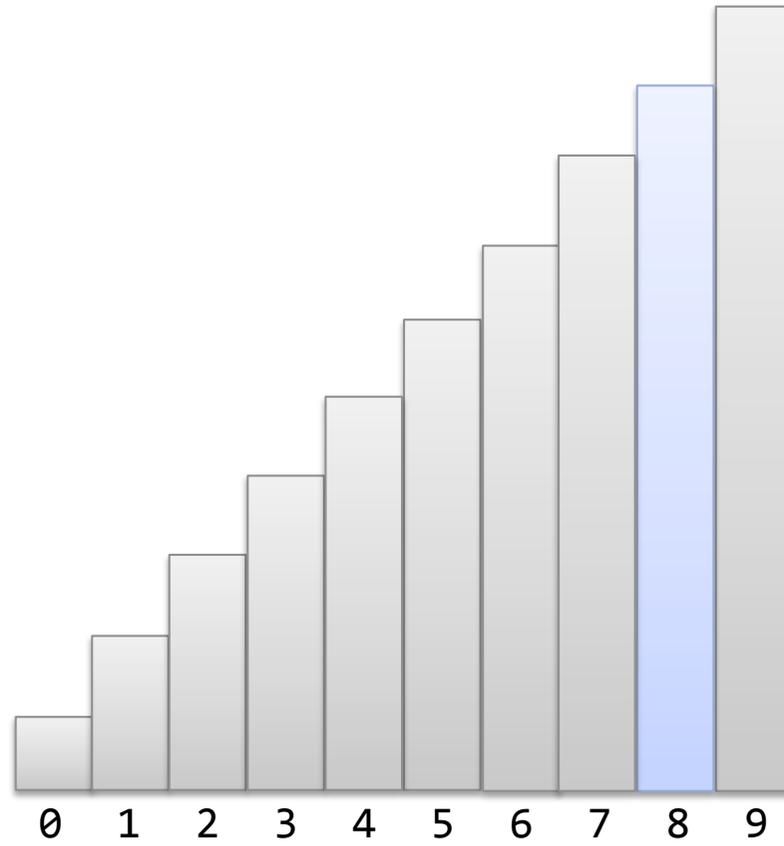
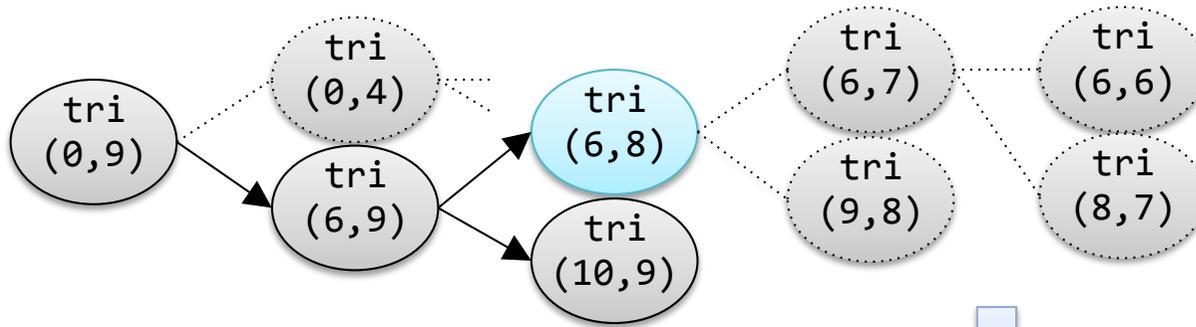




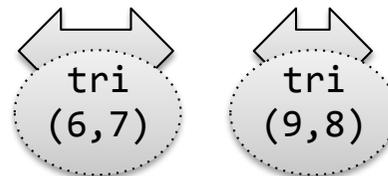
tri :
appel...
et fin !

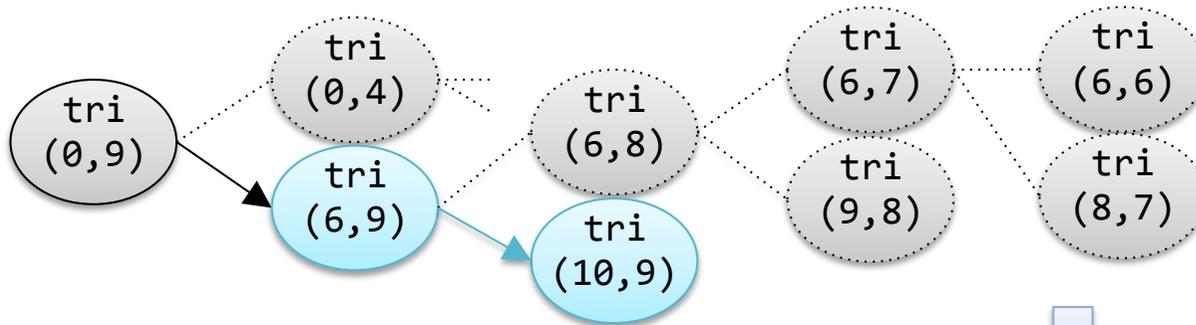
La condition
debut < fin
n'est pas vérifiée



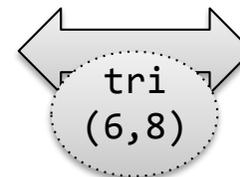
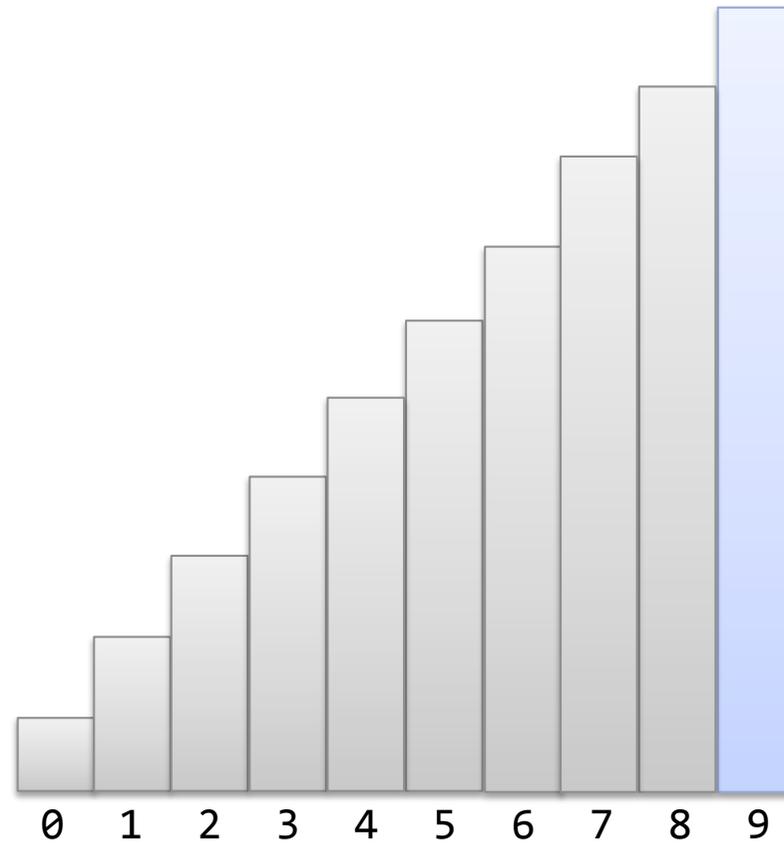


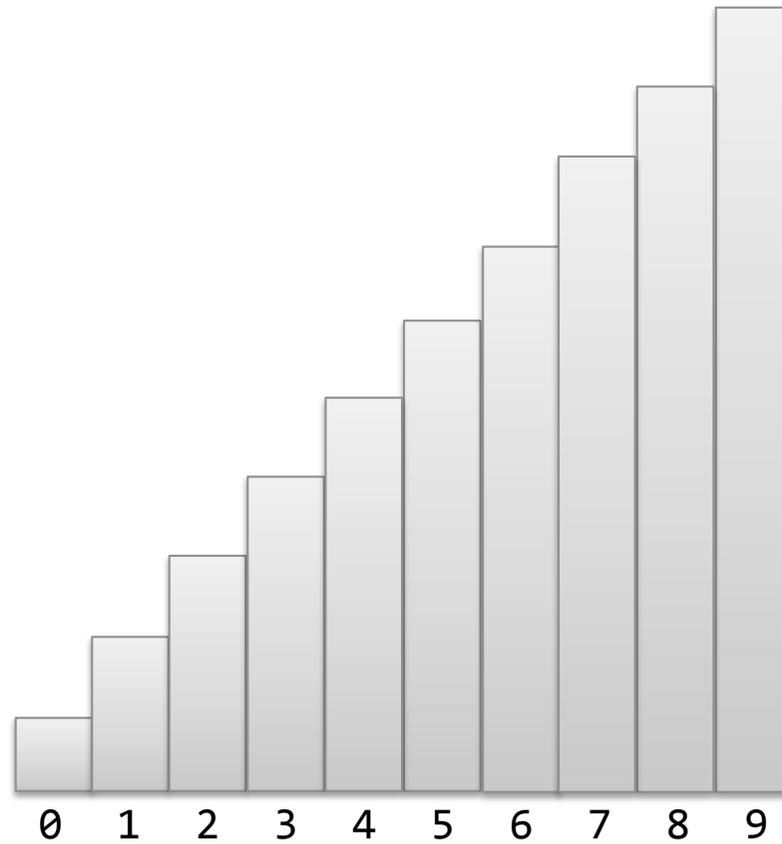
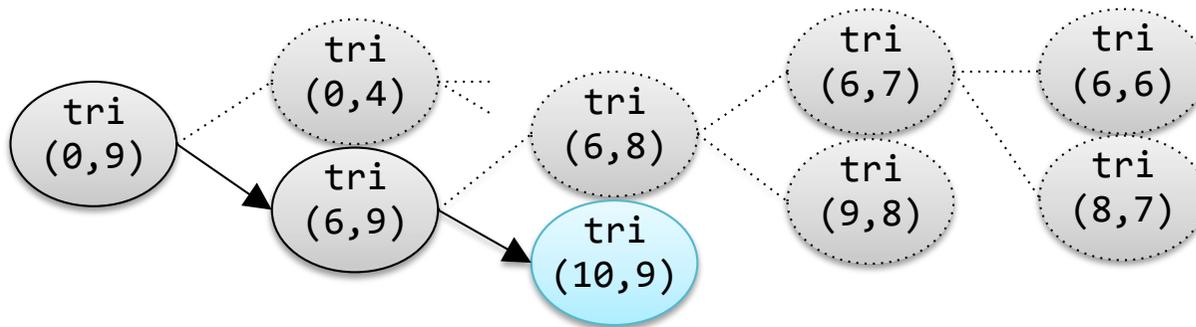
tri :
fin





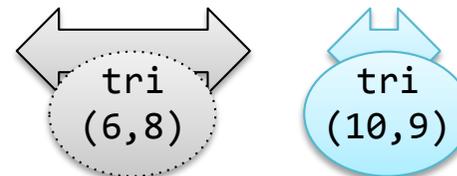
tri :
appels récurrents

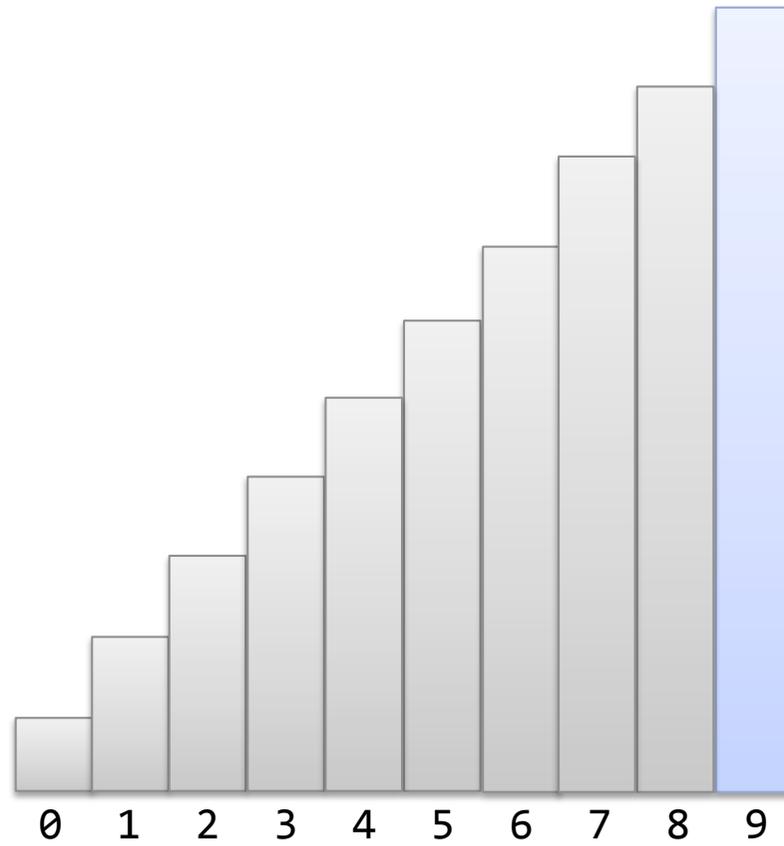
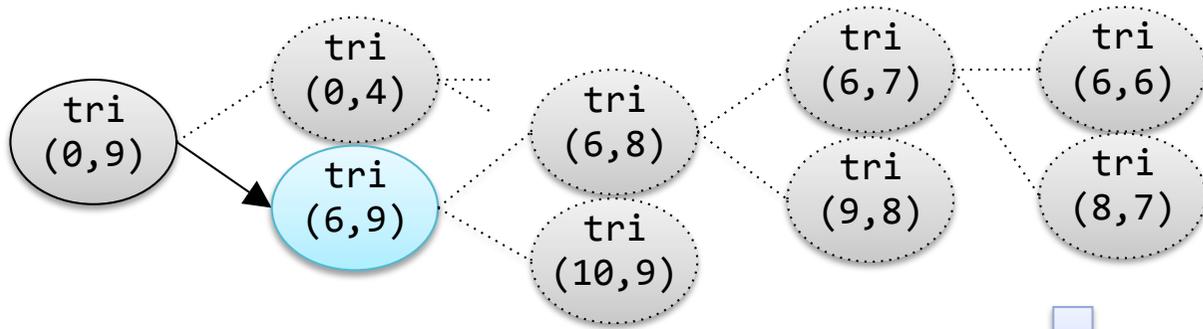




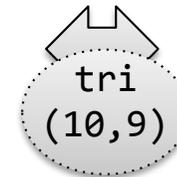
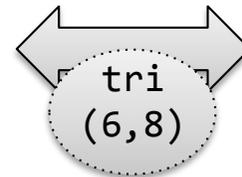
tri :
appel...
et fin !

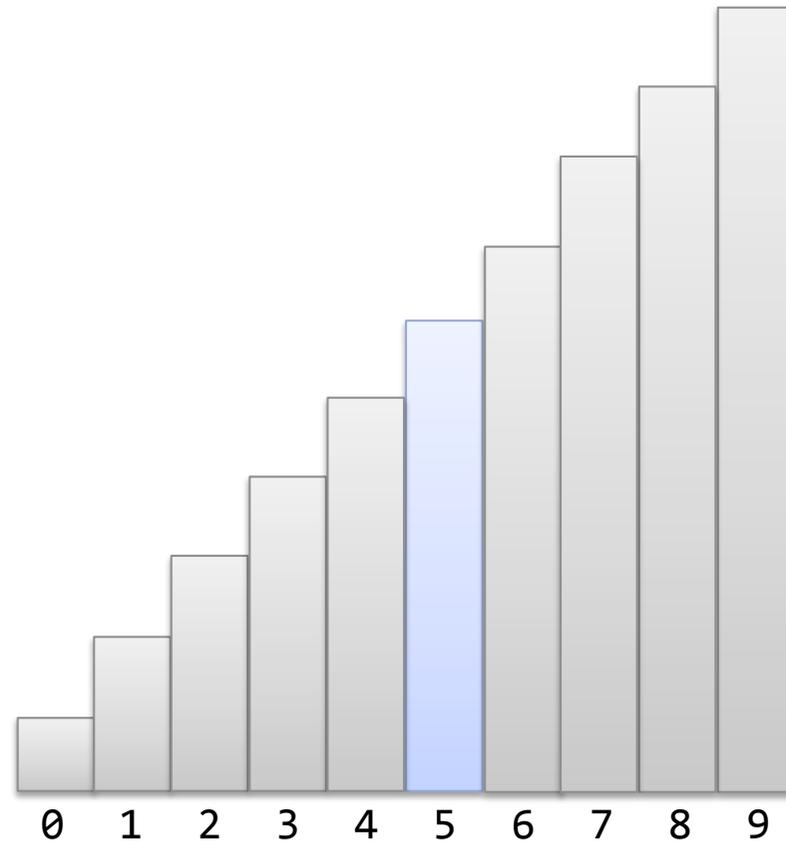
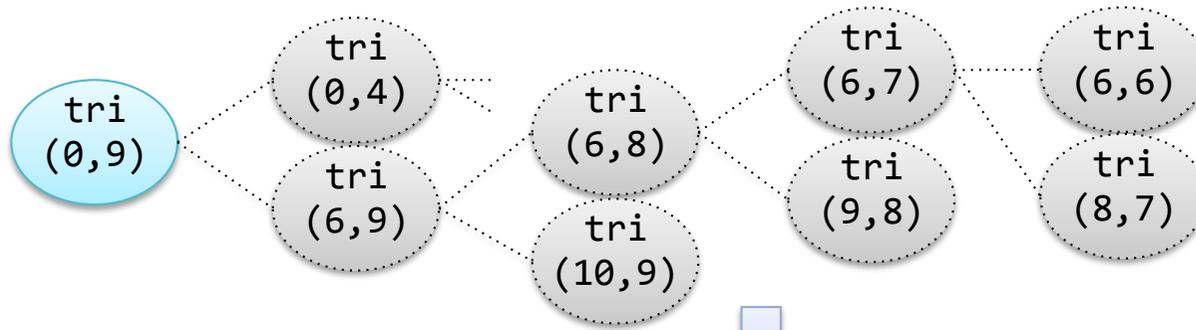
La condition
debut < fin
n'est pas vérifiée



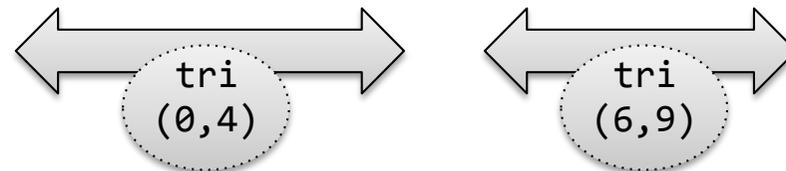


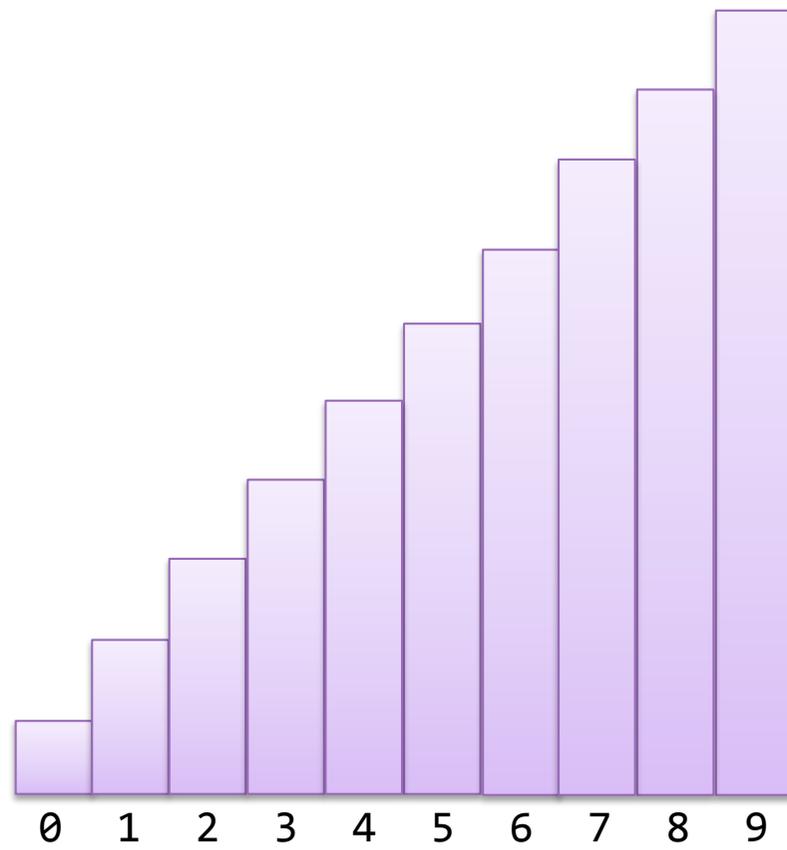
tri :
fin





tri :
fin





Arbre complet des appels récursifs

