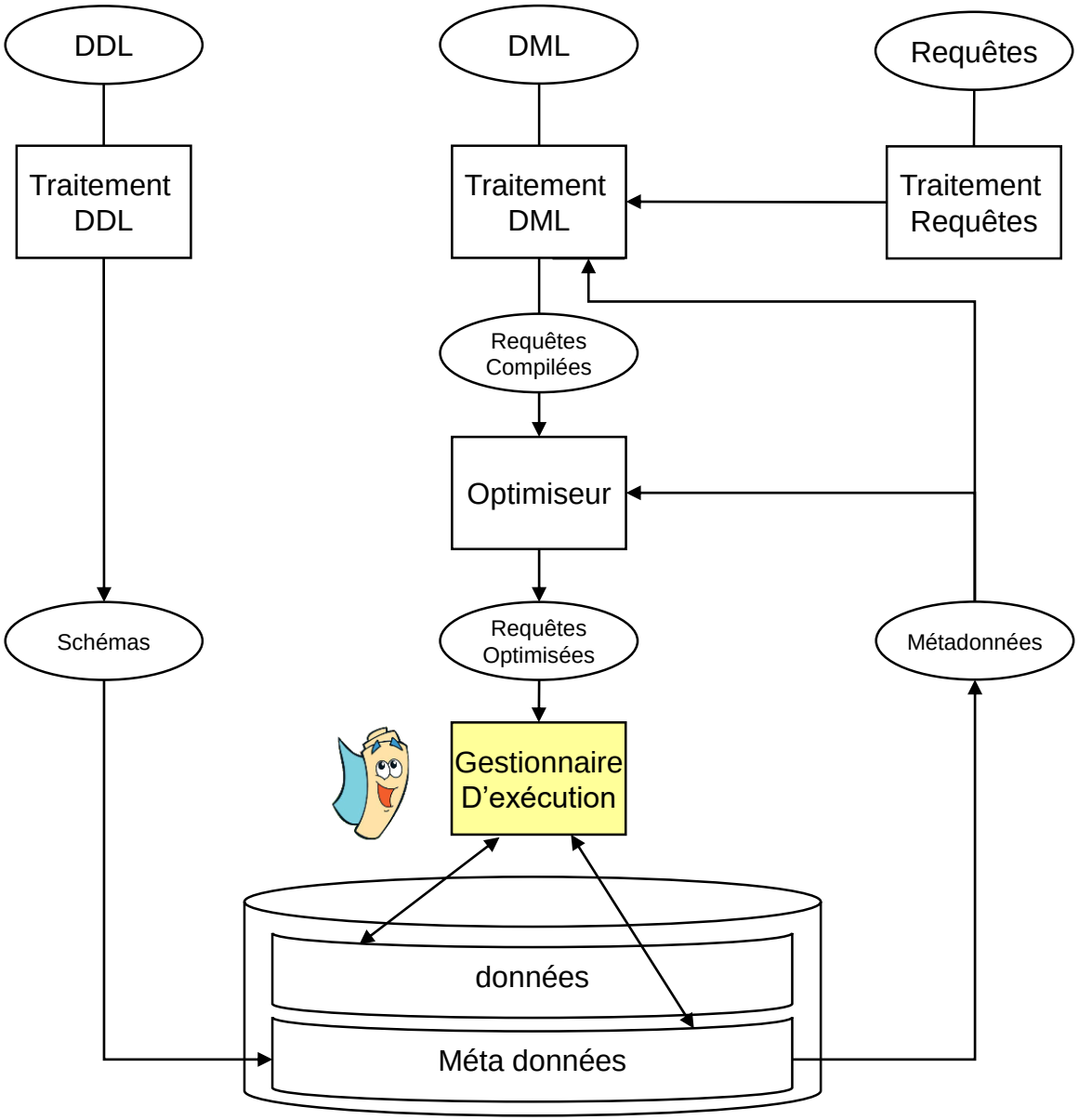
Architectures des Systèmes de Bases de Données

Merge Join without duplicates

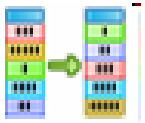


D'après C.J DATE

DDL : langage de définition des données; DML : langage de manipulation des données

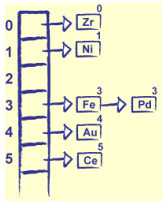
Memory join algorithms

- Nested loop



- Merge join

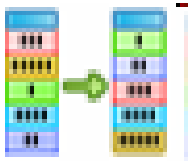
- Hash join

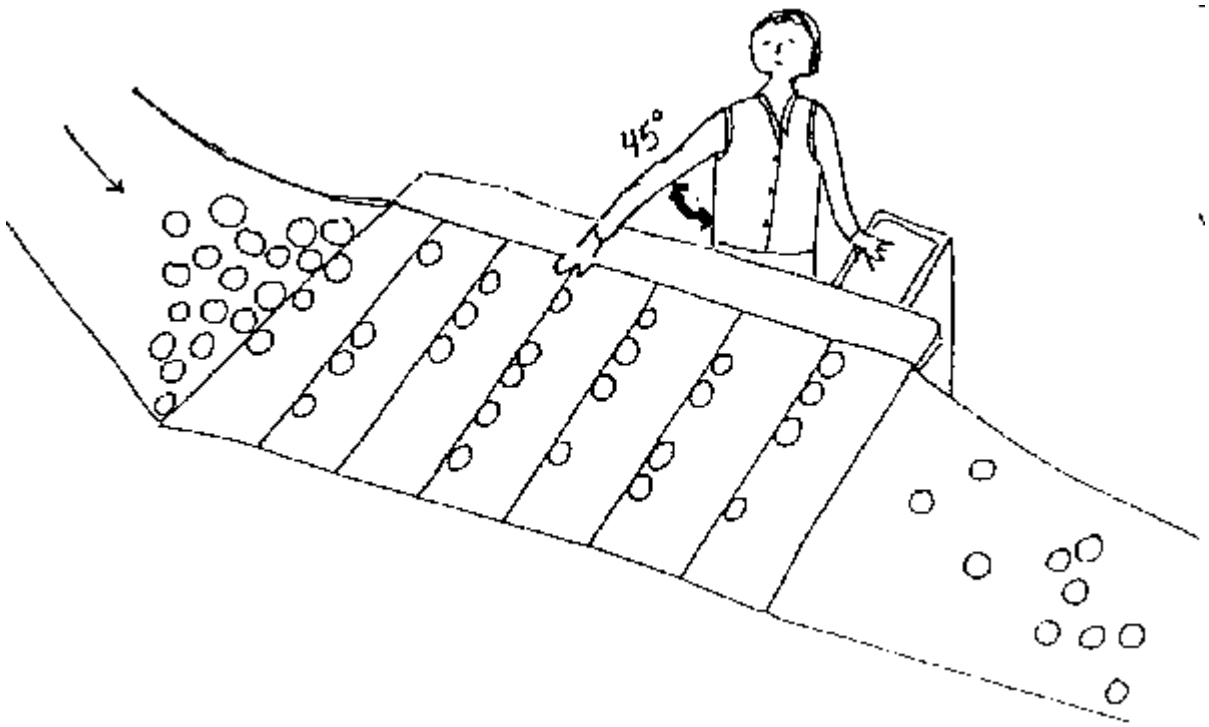


Où sont les problèmes de performances ?

- Dans les opérations de comparaisons (Tests).
- NestedLoop (boucles imbriquées)
  - Complexité O(n2)
- Optimisation :
  - Comment réduire le nombre de tests ?

Il faut trier !!!!





Merge Join

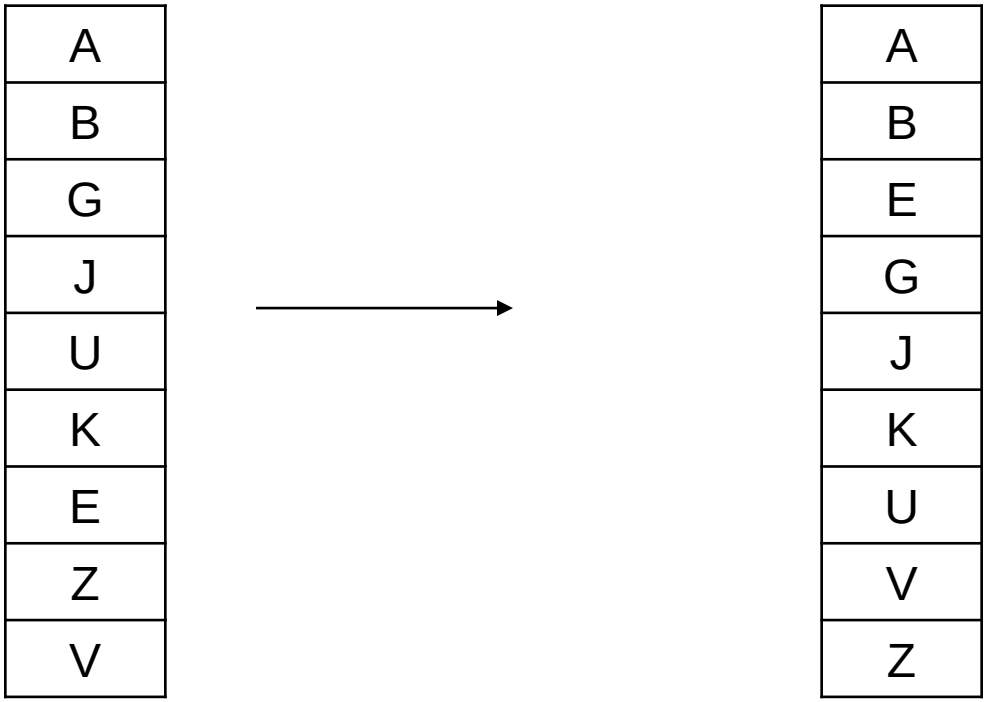
- Quand les tableaux sont triés l'opération de jointure s'appelle:

Merge Join

Principe

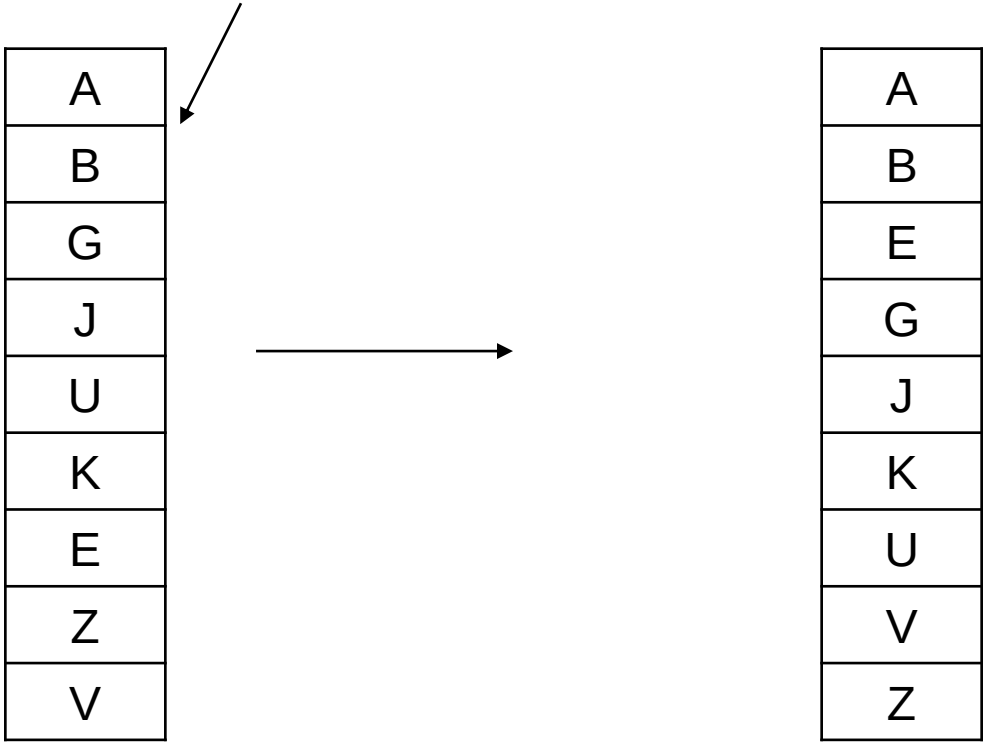
- 1) trier les tableaux
- 2) fusionner les tableaux

R Triée



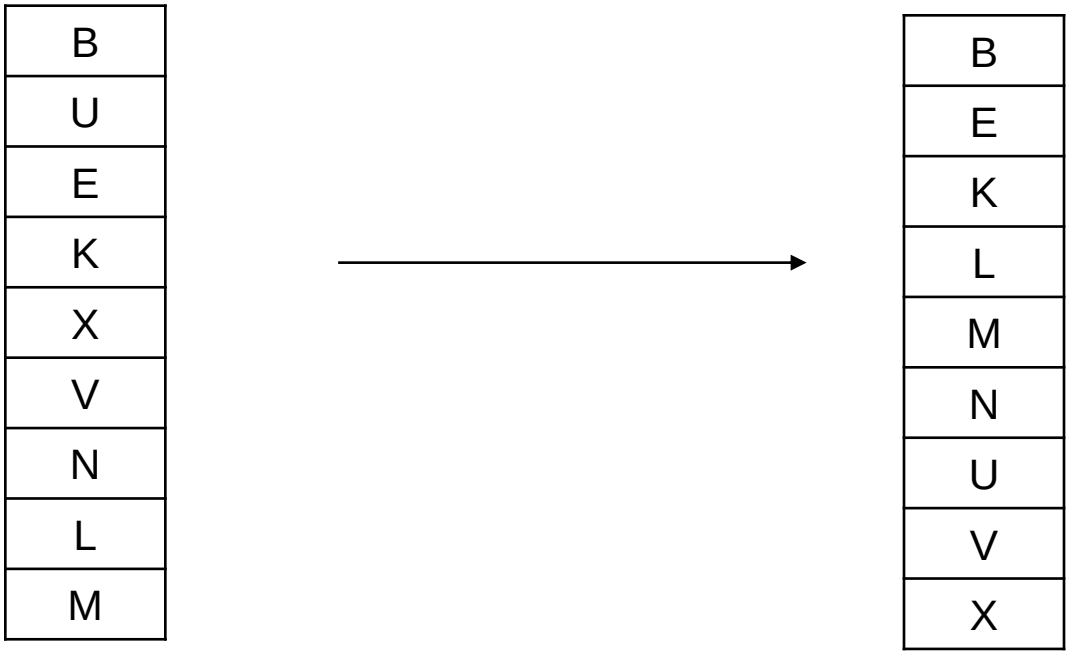
R Triée

no duplicates



without duplicates

S triée



S triée

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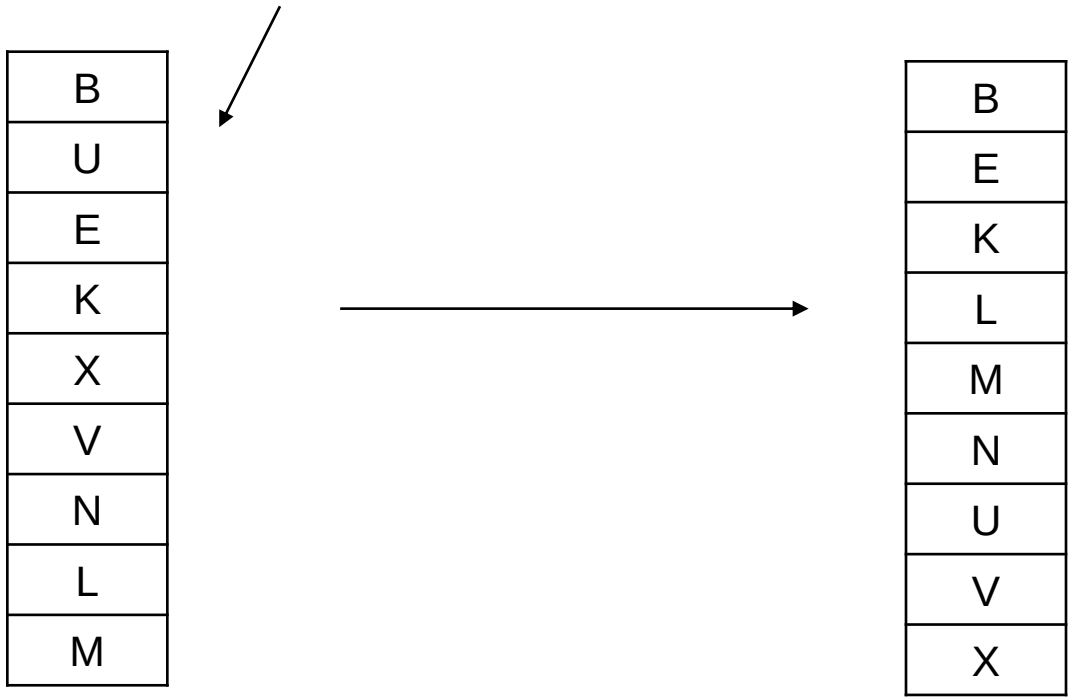
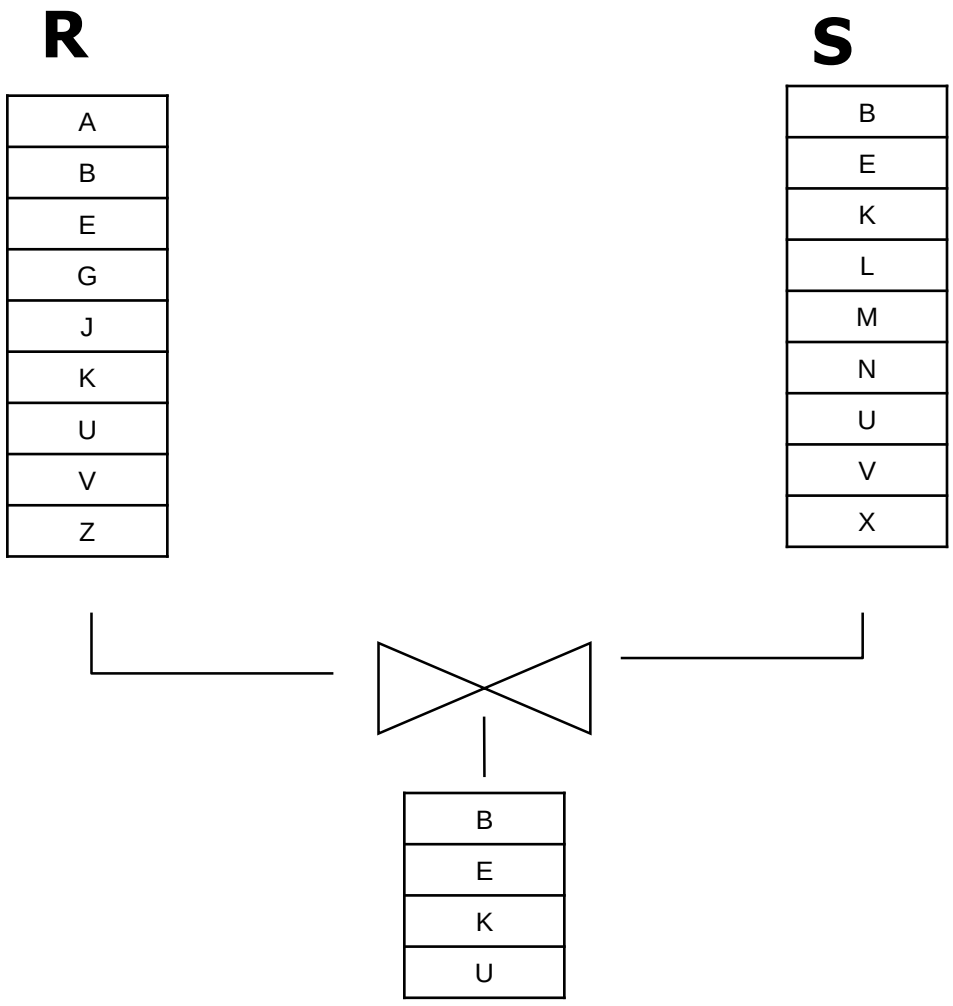
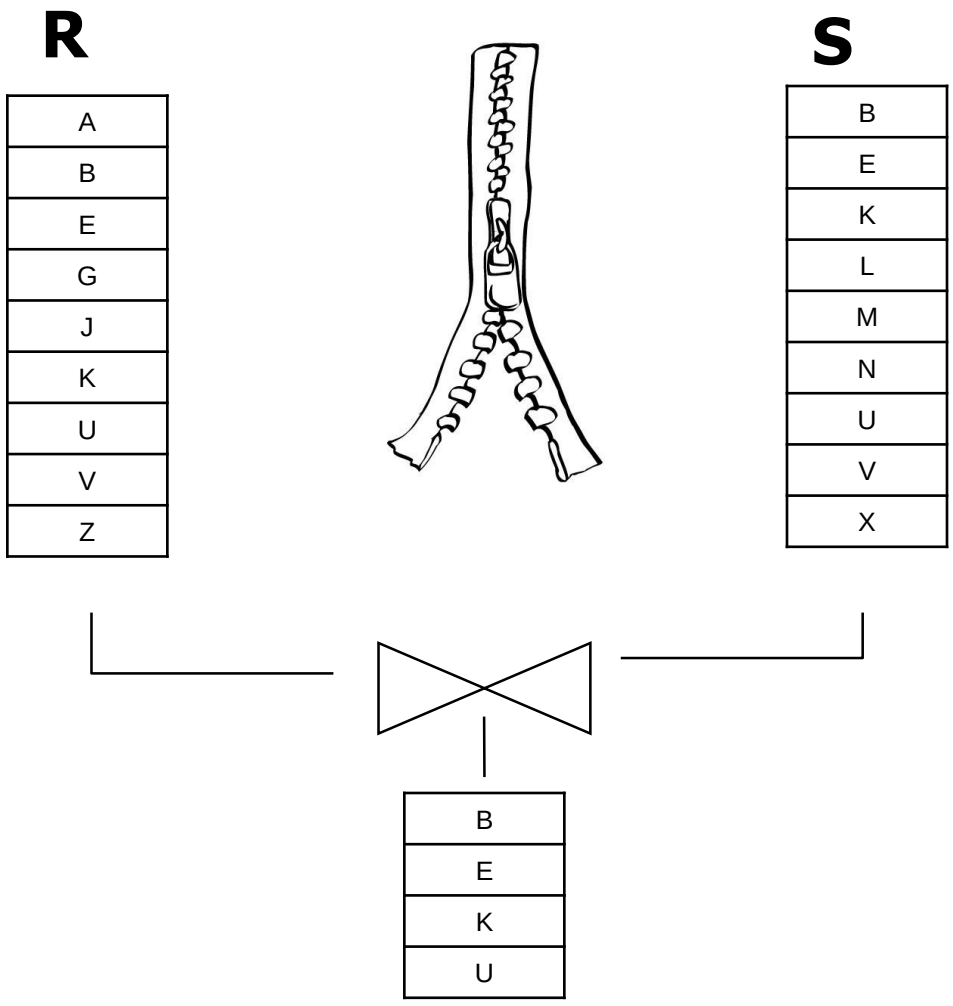


without duplicates

Résultat de la jointure



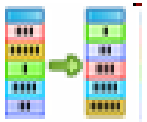
Résultat de la jointure



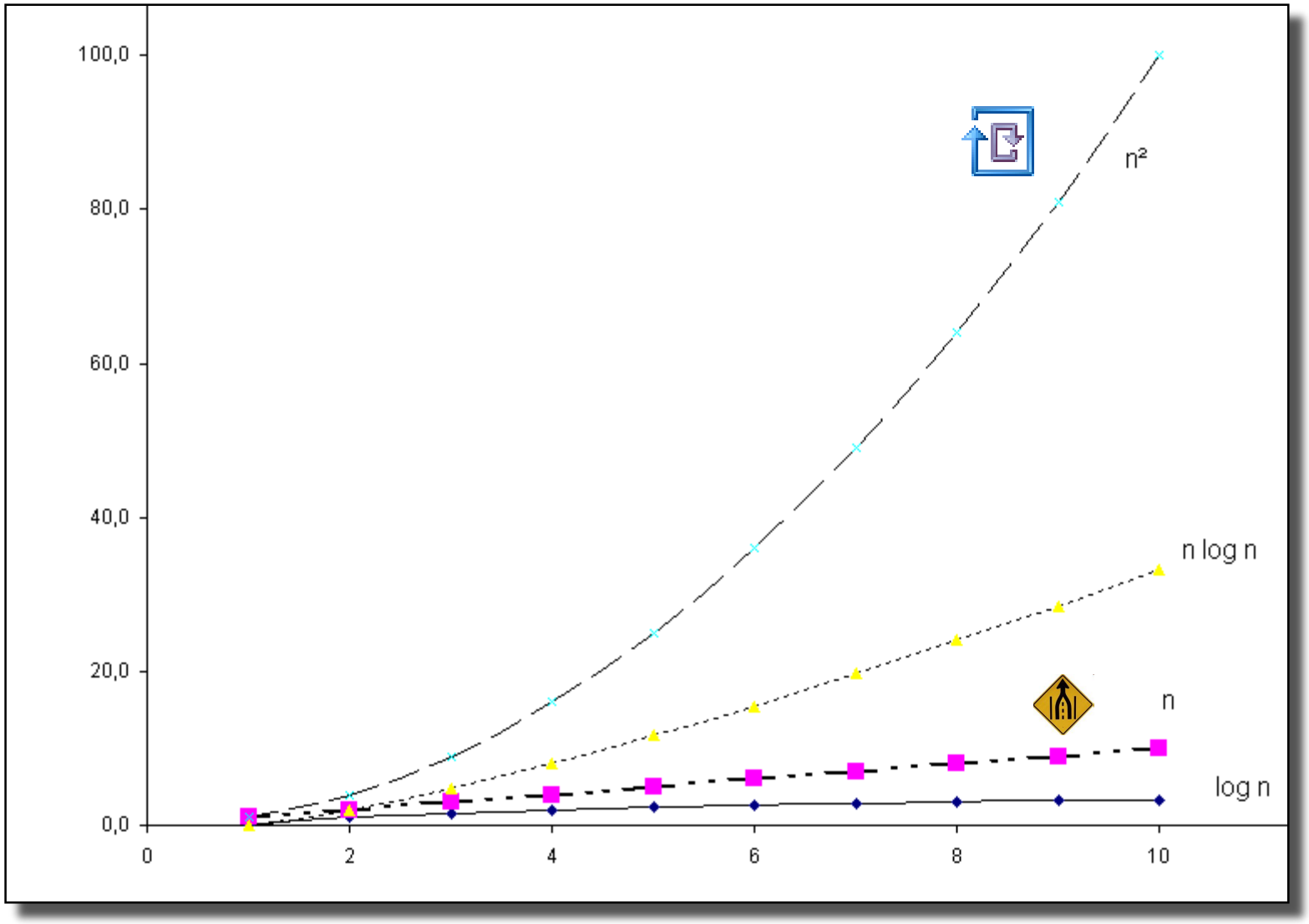
Complexity

- NestedLoop = R*S

- MergeJoin = R+S
  - Plus sort complexity.



Complexité



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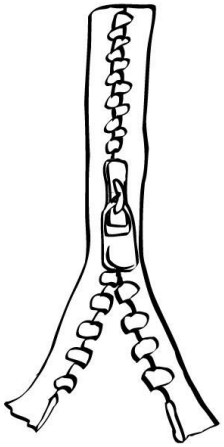

B
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U
V

without duplicates

Merge Join

Algorithme de Jointure sans doublon

Algo2

```
i=j=1

while  i < (#tuples in R) and j < (#tuples in S)
|
|       if R(i) = S(j) then
|       |               output(R(i), S(j))
|       |               i=i+1
|       endif
|
|       else if R(i) > S(j) then j=j+1
|
|       else R(i) < S(j) then i=i+1
|
end while
```

Merge Join

R Triée

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without duplicates

S triée

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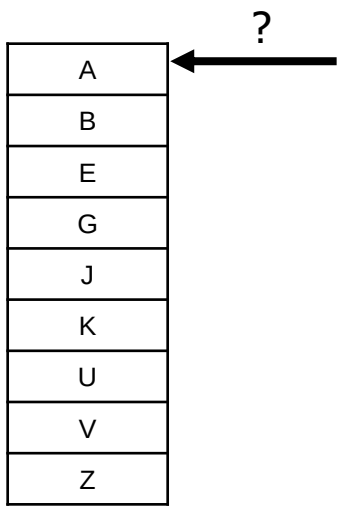
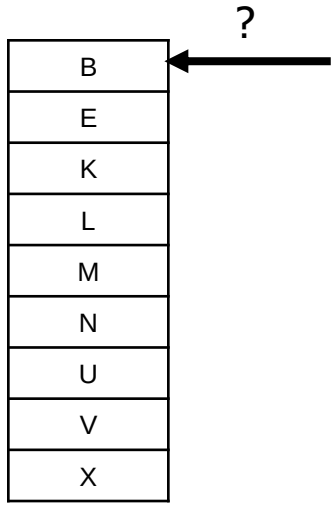
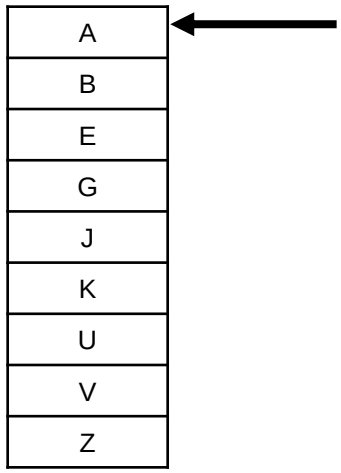
without duplicates

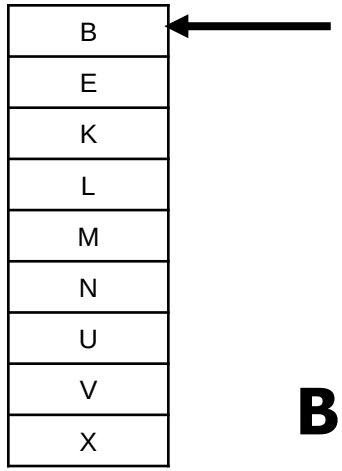




without duplicates

Merge Join

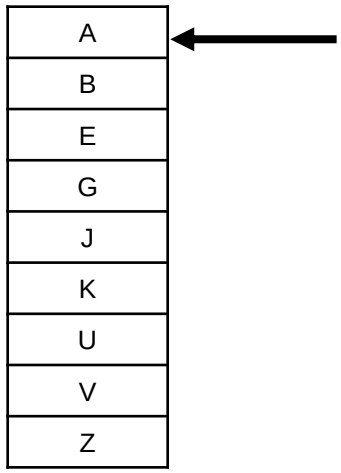


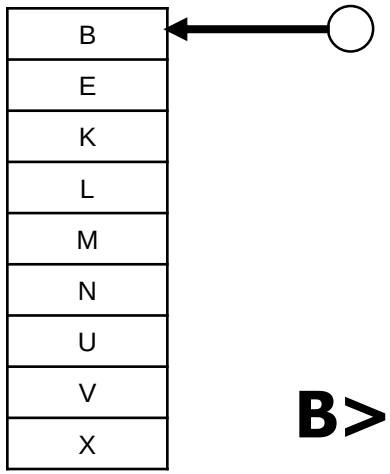


B>A

without duplicates

Merge Join

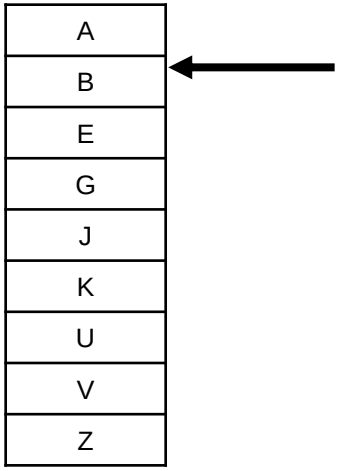


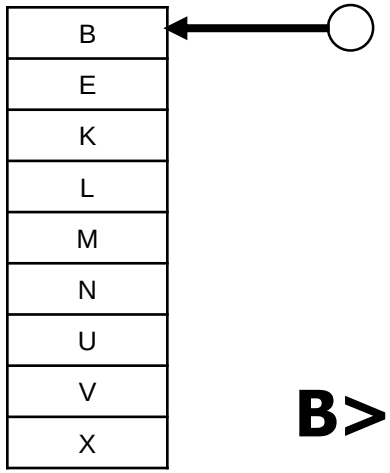


B>A

without duplicates

Merge Join

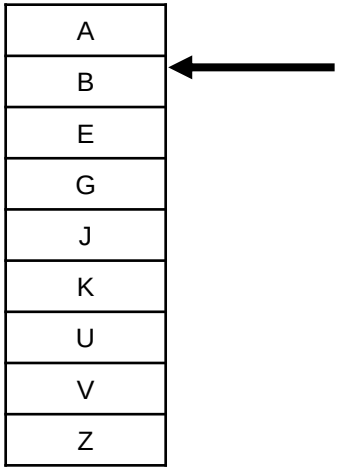


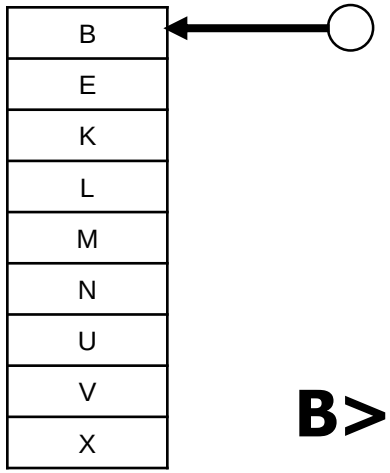


B>A

without duplicates

Merge Join

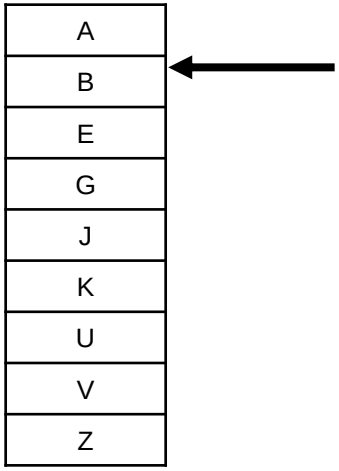


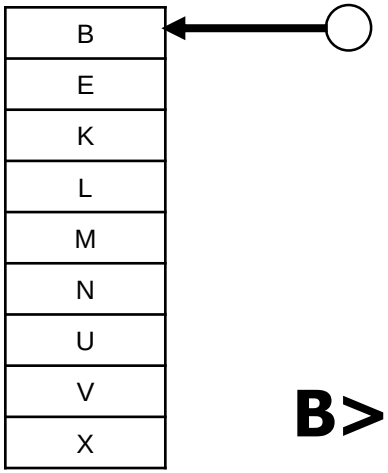


B>A

without duplicates

Merge Join



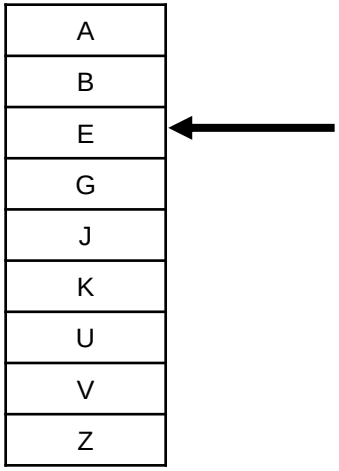


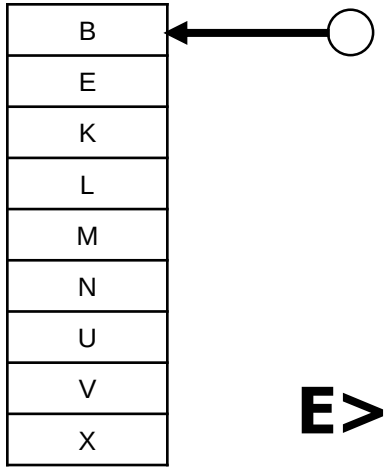
B>A

Match

without duplicates

Merge Join

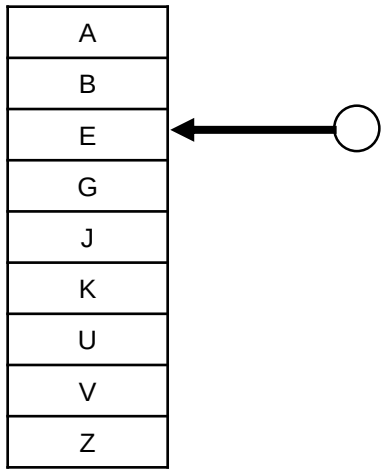


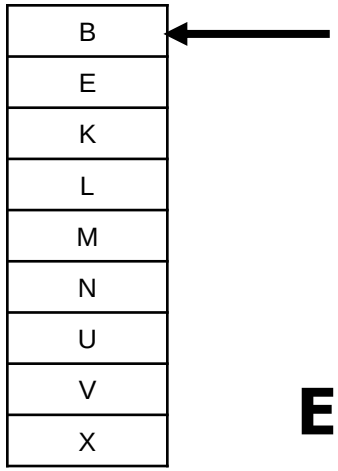


E>B

without duplicates

Merge Join

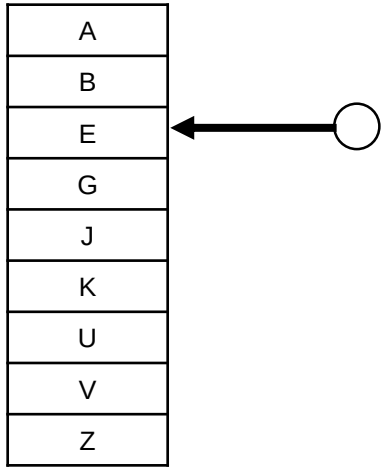


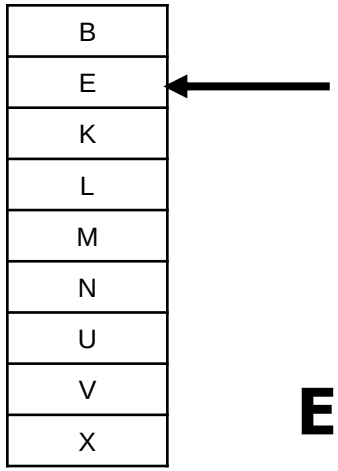


E>B

without duplicates

Merge Join





E>B

without duplicates

Merge Join

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Match

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without duplicates

Merge Join

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Merge Join

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without duplicates

Merge Join

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without duplicates

Merge Join

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without duplicates

Merge Join

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Merge Join

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Merge Join

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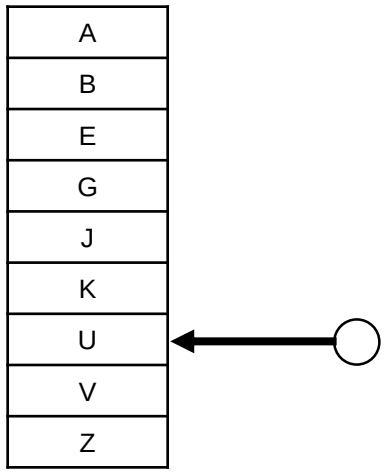
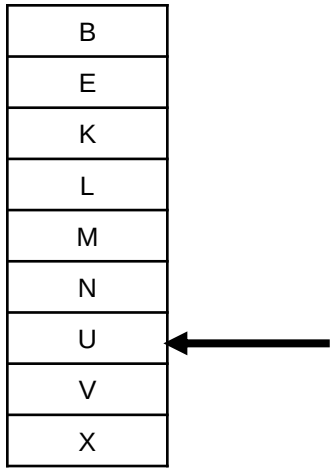
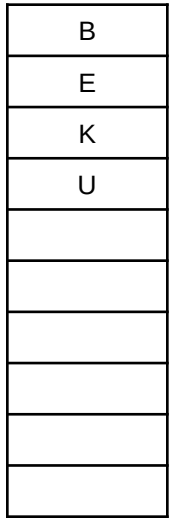
Merge Join





Match



without duplicates

Merge Join

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without duplicates

Merge Join

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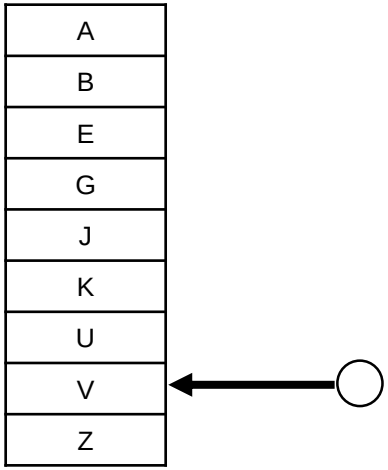
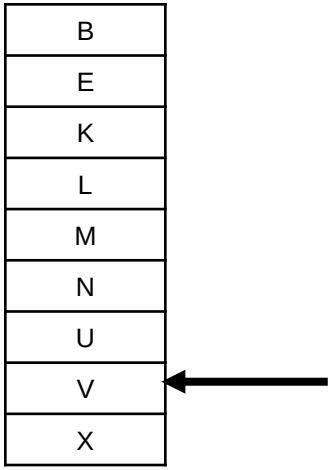
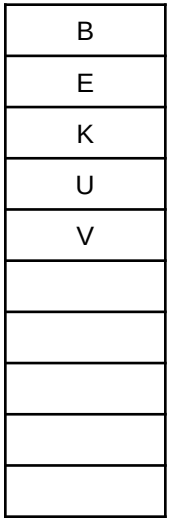
without duplicates

Merge Join



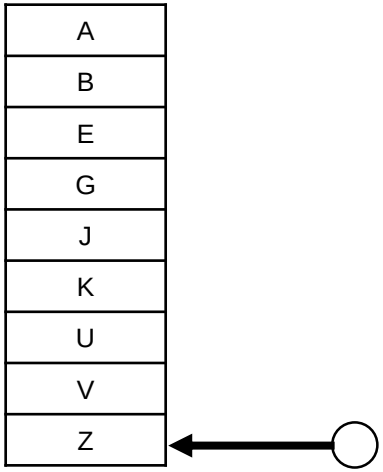


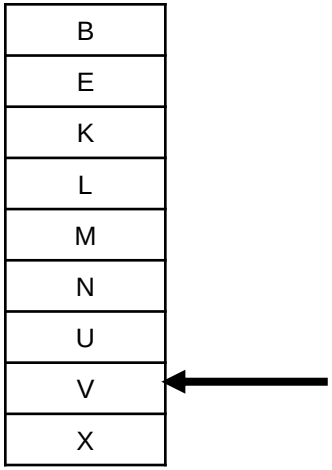
Match



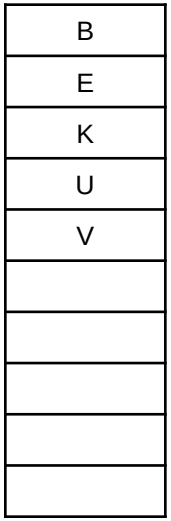
without duplicates

Merge Join





Z>V



without duplicates

Merge Join

A
B
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B
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Z>X

B
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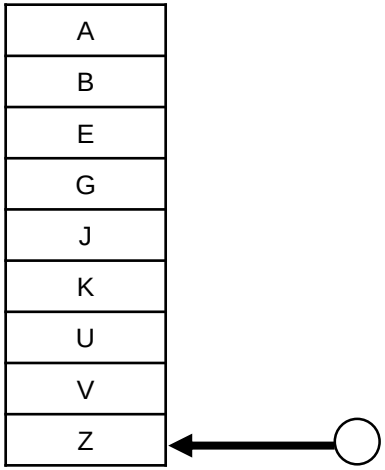
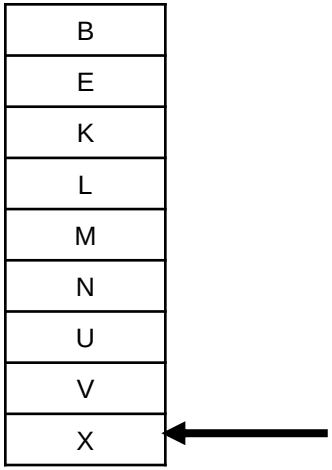
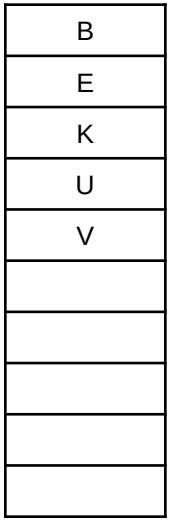
without duplicates

Merge Join





Fin



without duplicates

Merge Join