



Conception Avancée de Bases de Données

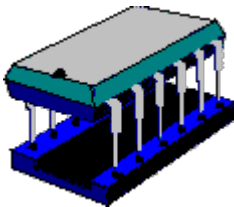
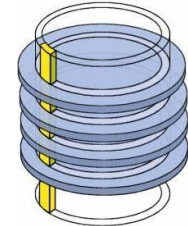


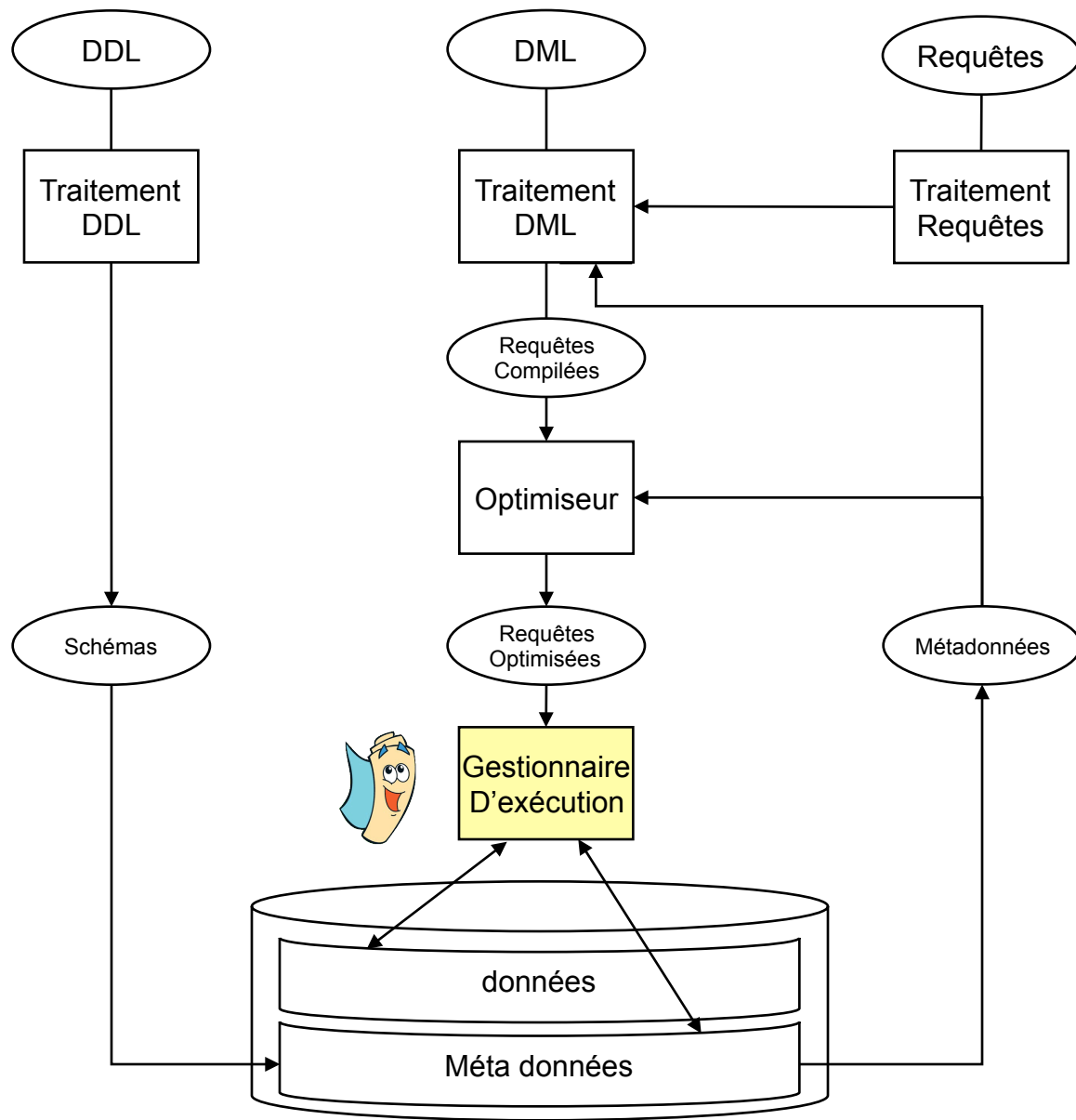
Lab Model

“Disk” Nested Loop Join

“External” Nested Loop Join

Jointure en “mémoire externe”

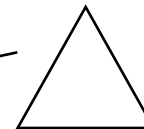
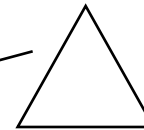
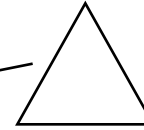
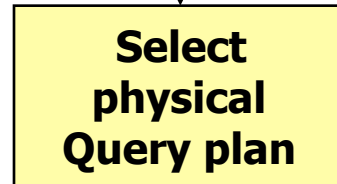
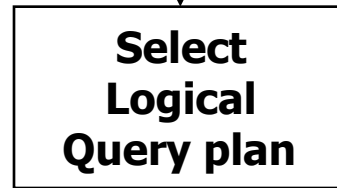
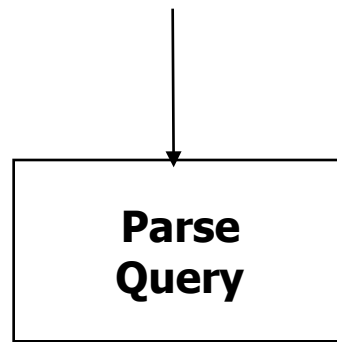
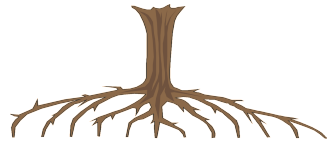
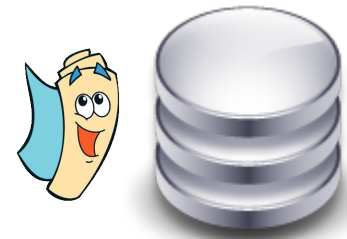




D'après C.J DATE

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

From Ullman



Query expression tree

Logical Query Plan tree

Physical Query Plan tree

Du modèle au code



Modèle

...
...
...
...
...
...
...

Algèbre

$$\sigma_{\text{owner1}=\text{owner2}} (\text{Cats} \otimes \text{Dogs}) = \text{Cat} \bowtie \text{Dogs}$$

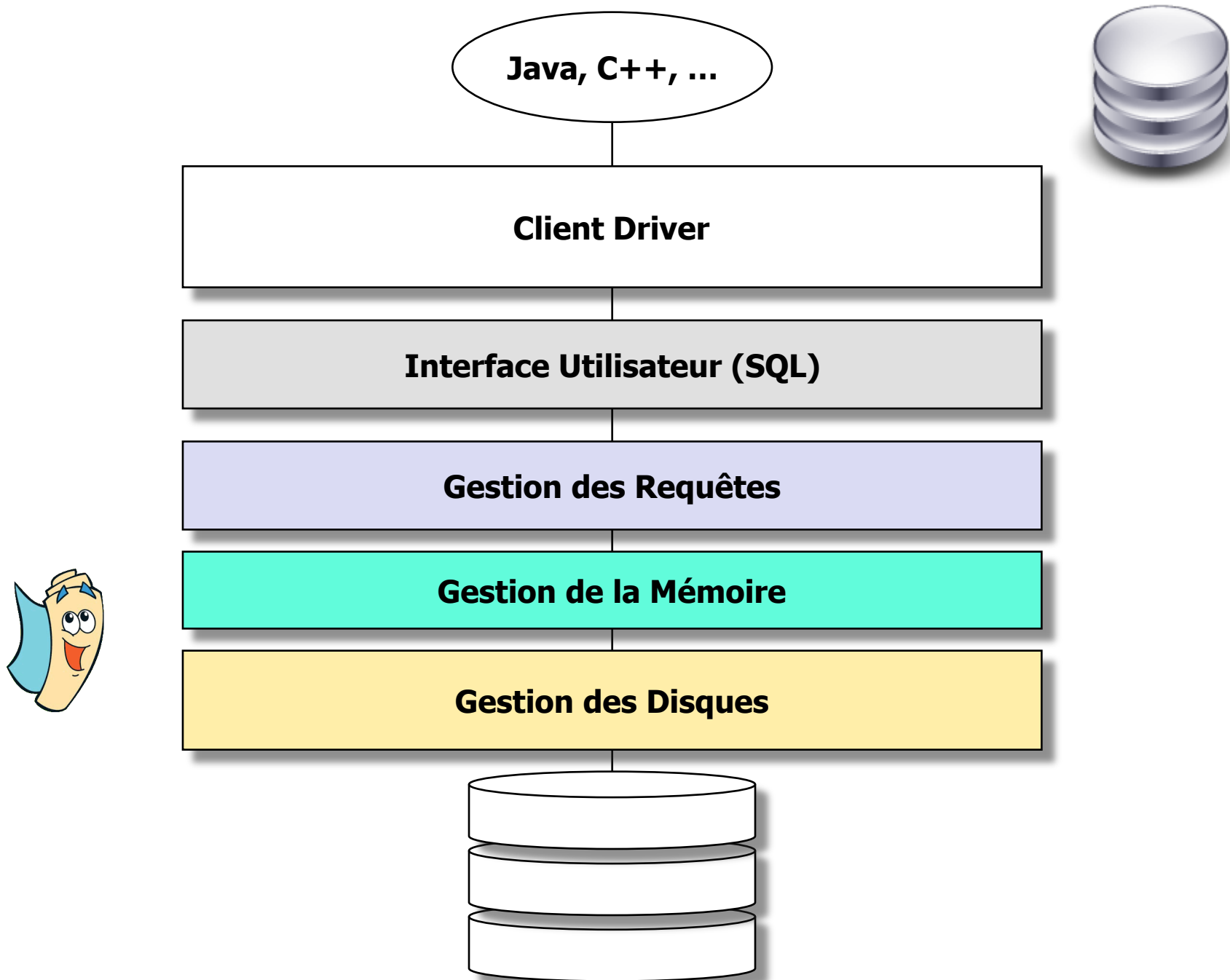


Logiciel

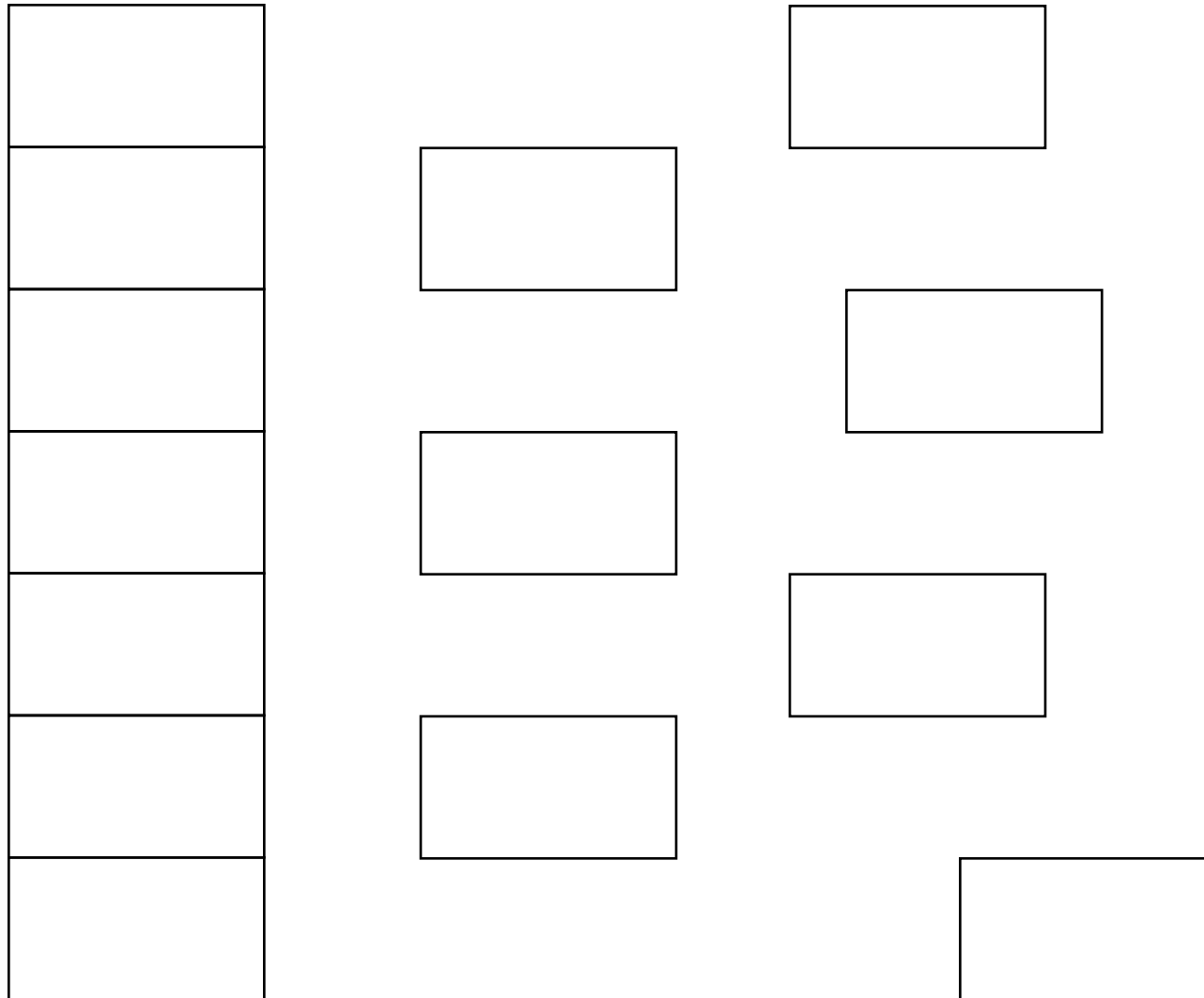
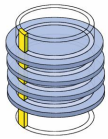


Java, C++, ..

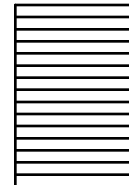
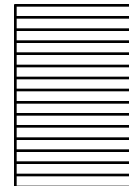
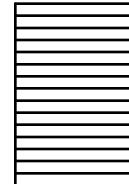
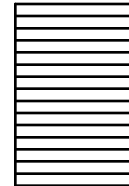
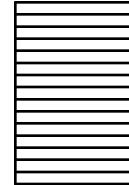
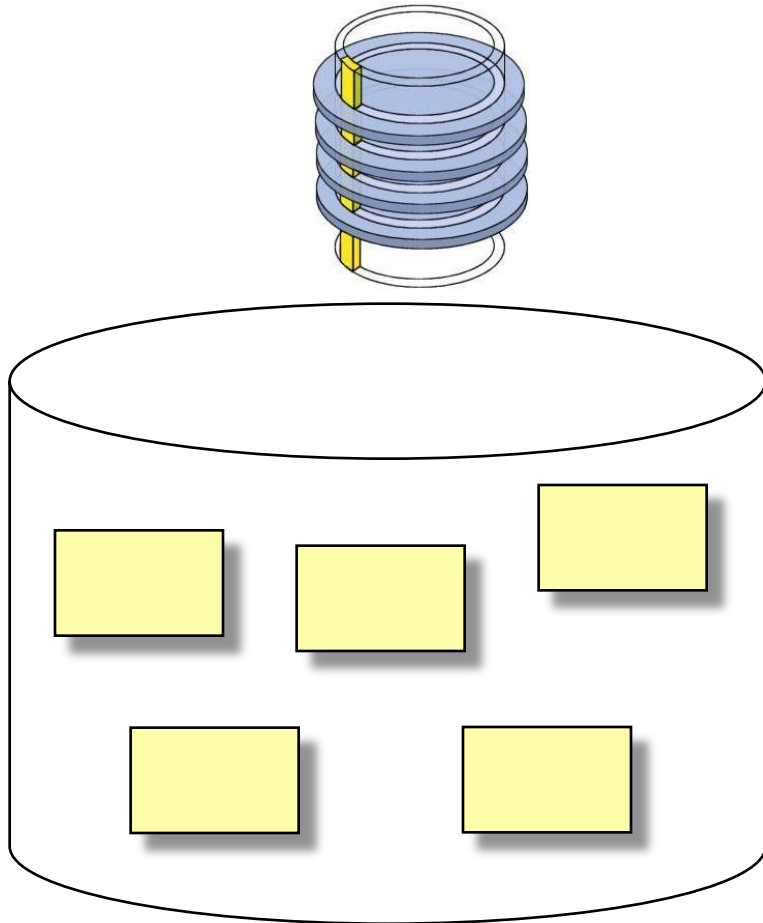




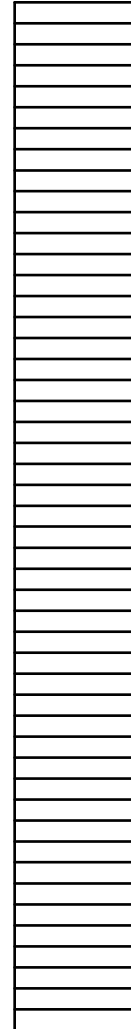
1 Fichier = N Blocks Disques



Relations et blocks disques

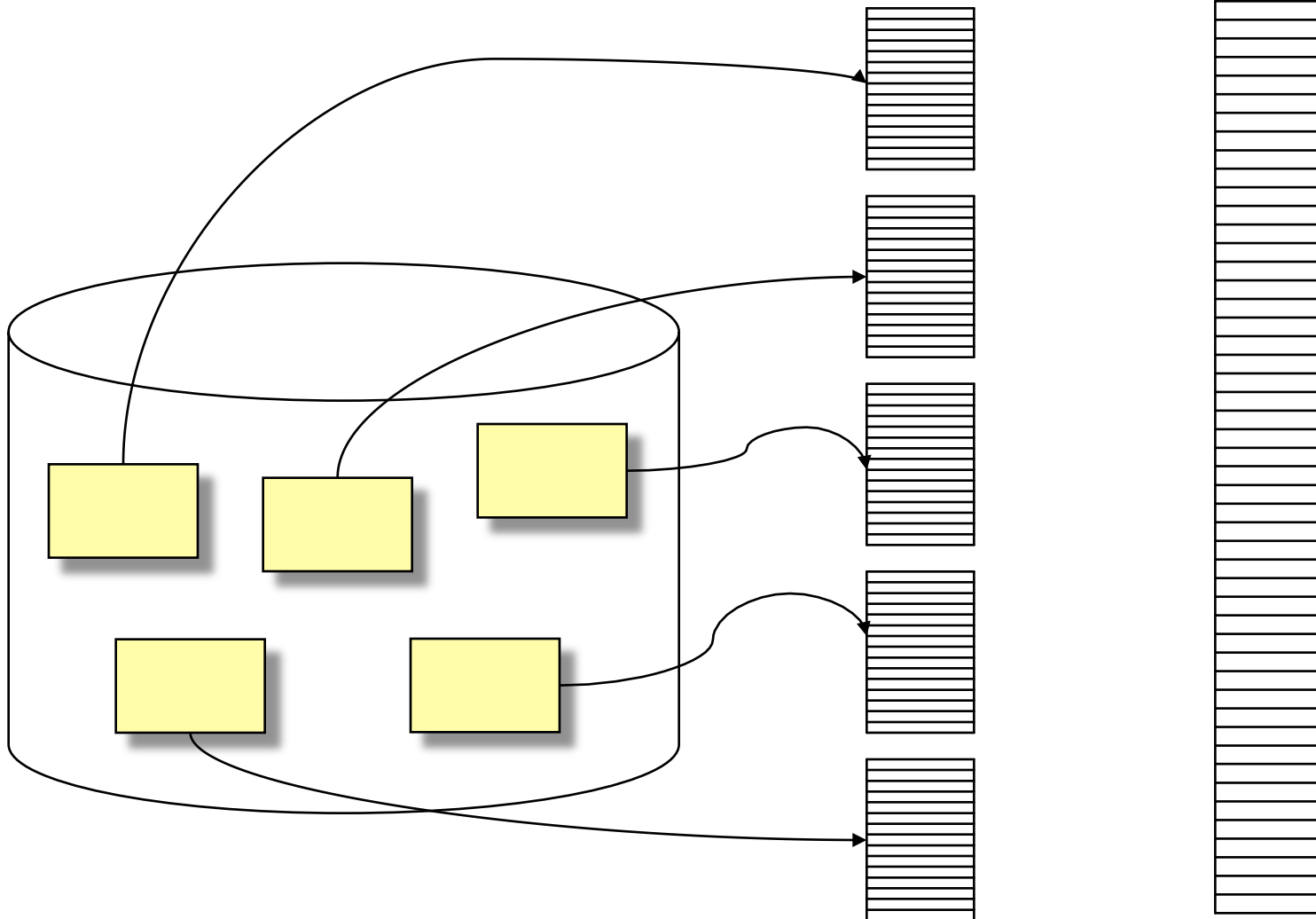


R



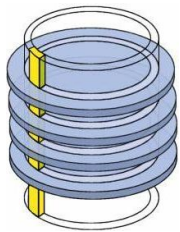
Relations et blocks disques

R

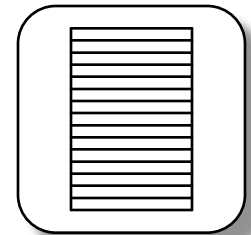


Modèle de contrainte mémoire et disque

- Mémoire
- Disque



T10



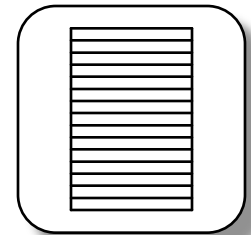
Modèle de contrainte mémoire et disque



- Nous disposons de 3 pages mémoires de 10 éléments.
- Modélisées pour les besoins du TP sous la forme de tableaux "C" de 10 éléments.



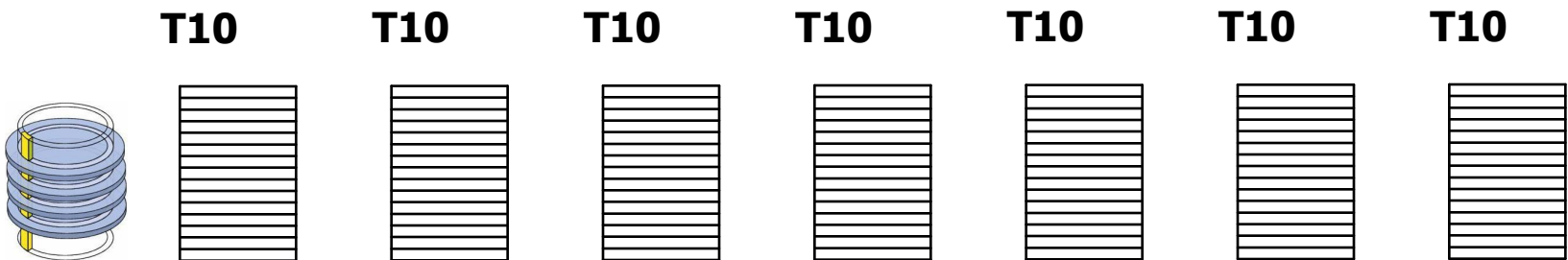
T10



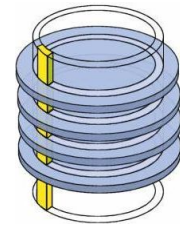
Modèle de contrainte mémoire et disque



- Les tables sont rangées sur disque dans des fichiers constitués de blocks disque.
- Un block disque contient 10 éléments
 - C'est une simplification, on pourrait tout aussi bien prendre une taille de 20,...
- Les blocks disques sont modélisés sous la forme de fichiers texte de 10 éléments.



Relations sur disque disques



Relation



**Segments
De relation**



Relations sur disque



Relation

**Segments
De relation**

Block 2

X
V
D
I
GG
S
P
JJ
PP
Q

Block 3

CC
W
NN
DD
EE
R
T
HH
O
A

Block 1

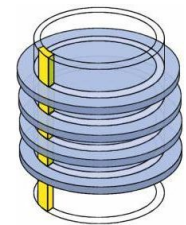
II
N
M
Y
K
OO
E
Z
U
NN

Block 4

BB
C
H
QQ
F
J
AA
FF
B
MM

Block 5

G
KK
LL
L



II
N
M
Y
K
OO
E
Z
U
NN
X
V
D
I
GG
S
P
JJ
PP
Q
CC
W
NN
DD
EE
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O
A
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H
QQ
F
J
AA
FF
B
MM
G
KK
LL
L

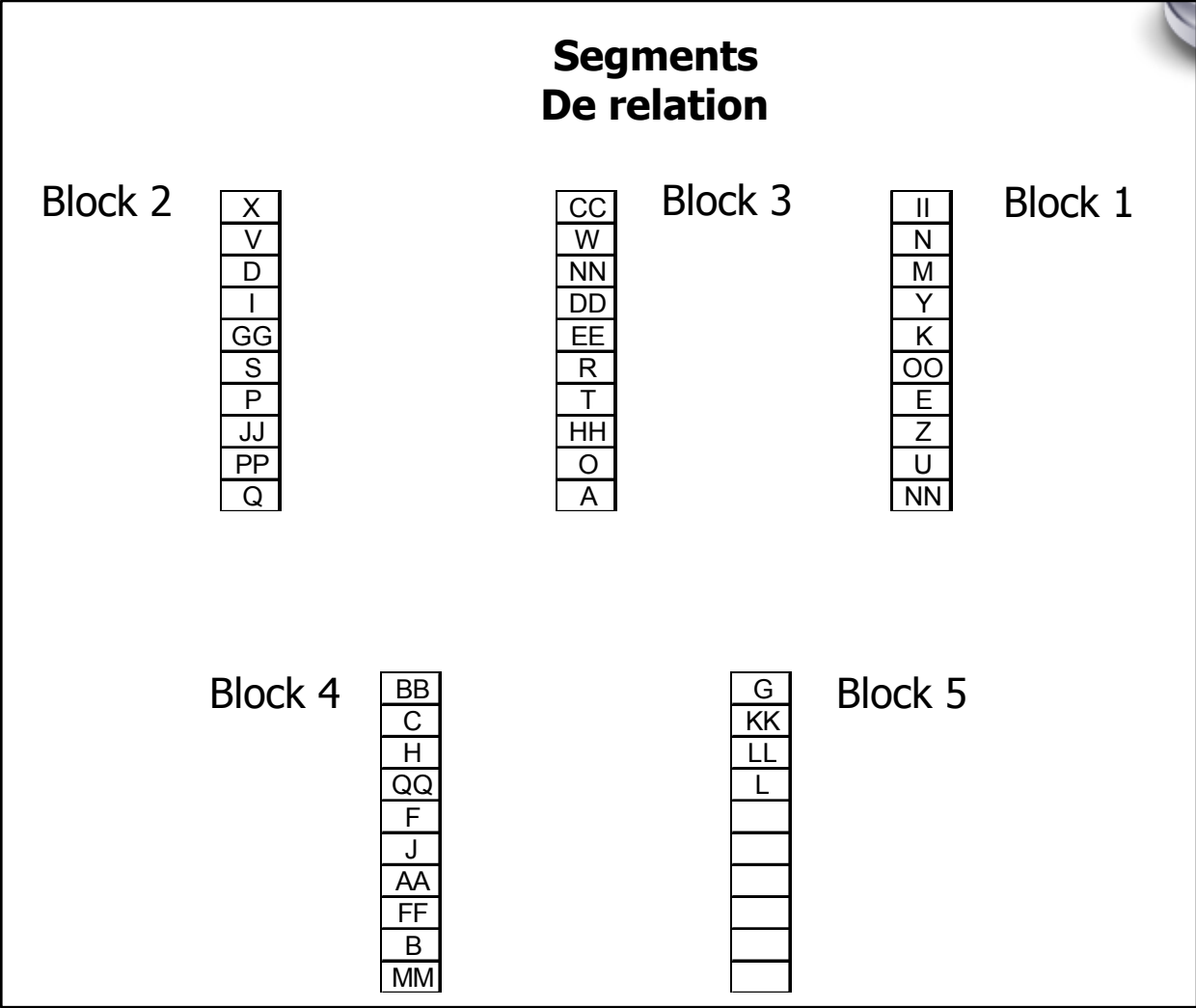
II
NN
MM
YY
KK
OO
EE
ZZ
UU
NN
XX
VV
DD
II
GG
SS
PP
JJ
PP
QQ
CC
WW
NN
DD
EE
RR
TT
HH
OO
AA
BB
CC
HH
QQ
FF
JJ
AA
FF
BB
MM
GG
KK
LL
LL

Relations sur disque

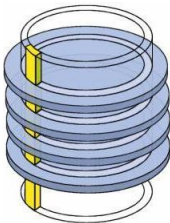


Relation

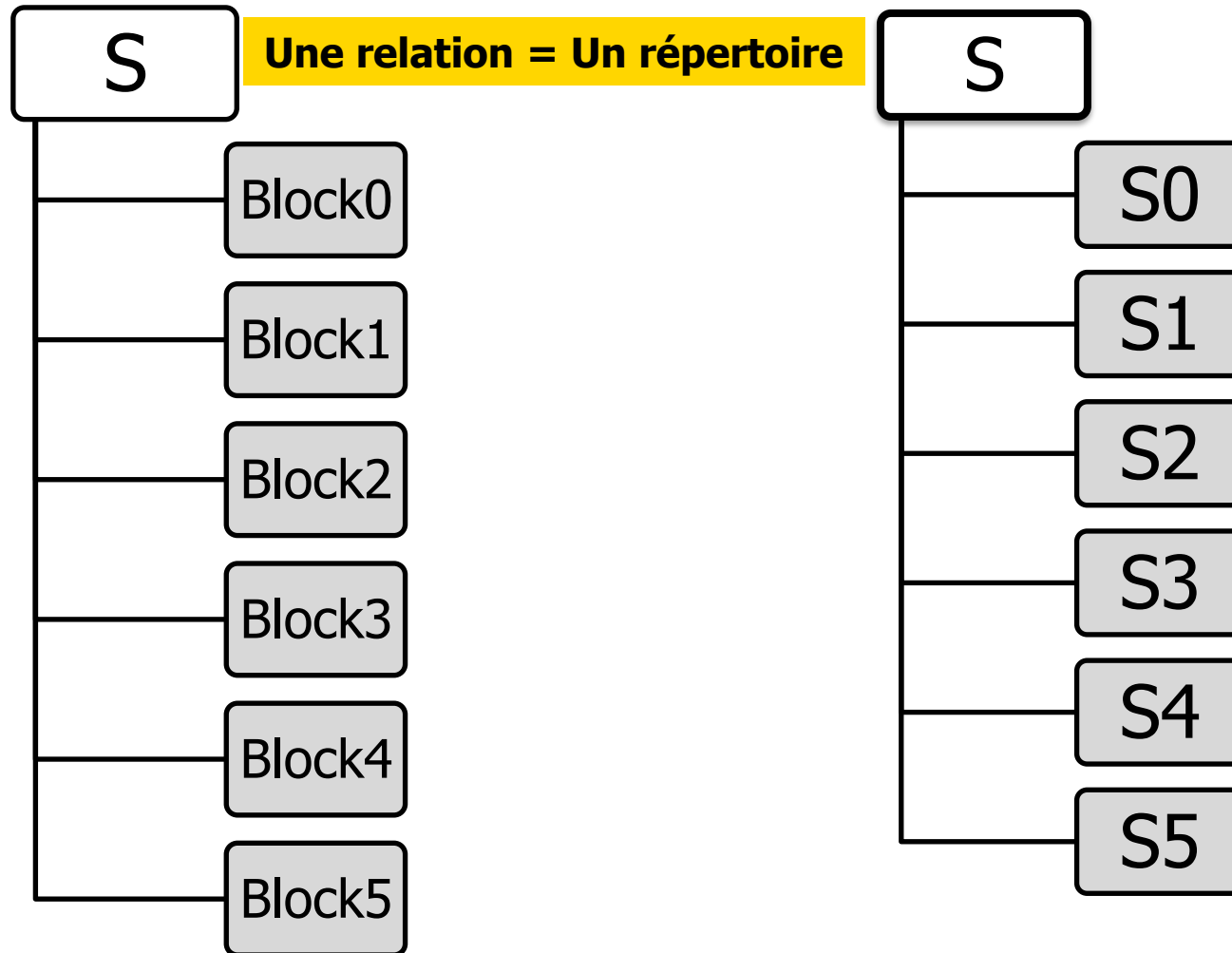
**Segments
De relation**



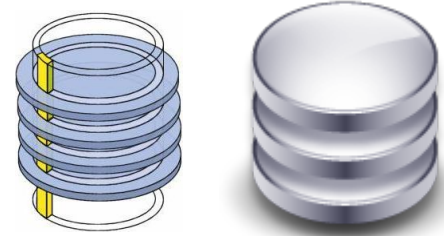
Une relation = Un répertoire



Relations sur disque

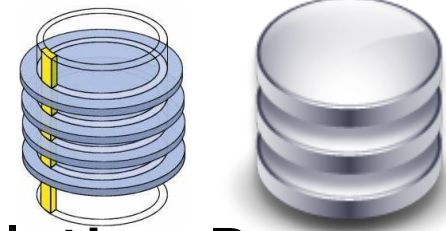


Relation sur disques

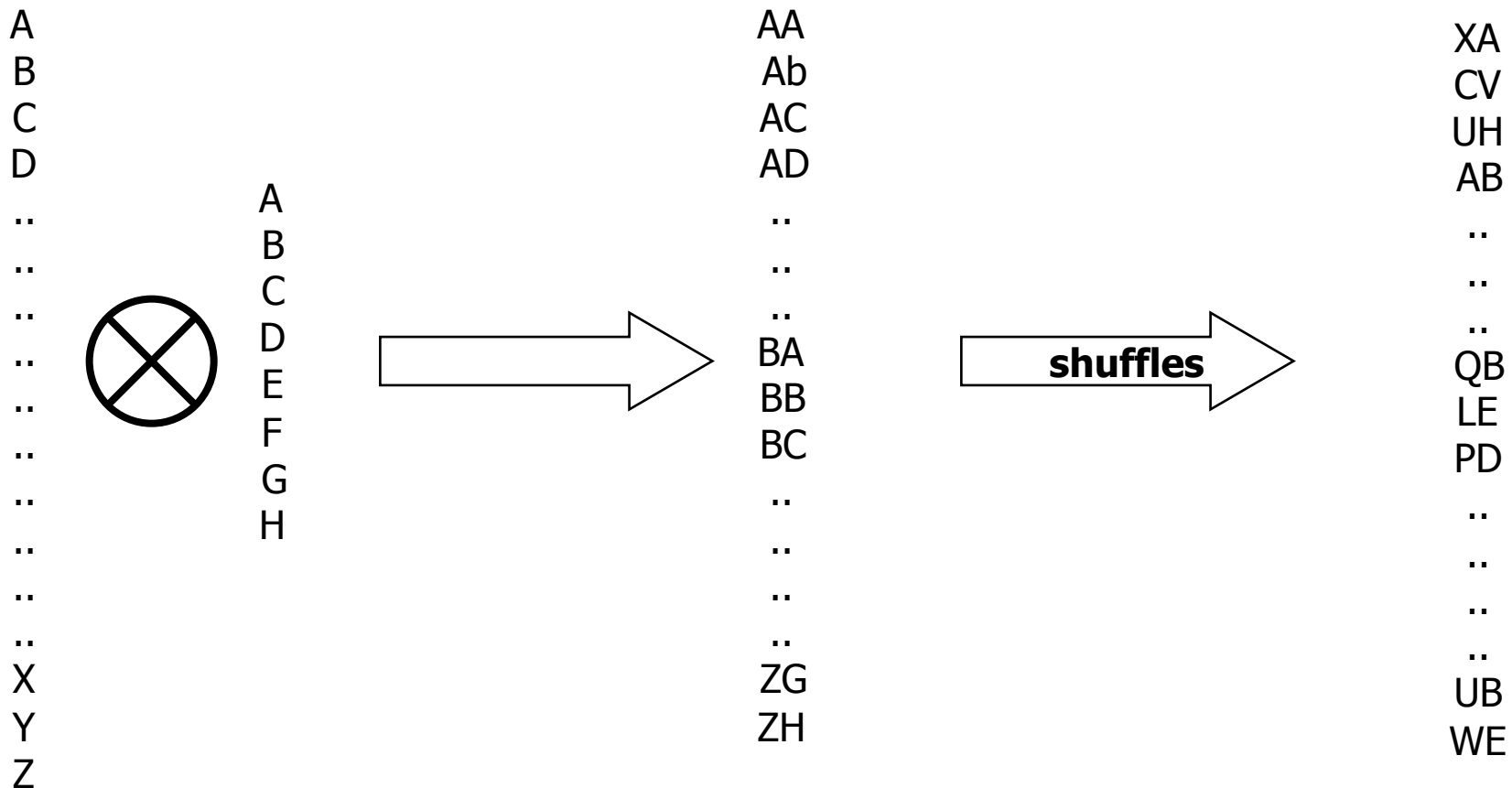


- R et S sont constituées d'une seule colonne contenant deux lettres :
 - 676 éléments possibles.
 - Dans un premier temps, on se limite à 208 pour que notre programme ne prenne pas trop de temps à mettre au point.
 - $200 + 8$ pour avoir un block disque partiellement rempli.
 - On prend l'alphabet une fois (A..Z) et les 8 premières lettres (A..H) pour la deuxième lettre.

Génération de R



- Écrivez un programme qui génère la relation R composée de 208 éléments non triés:



FE
YA
VC
QH
UF
JE
SB
DE
QC
PD
GF
RF
XH
FA
VG
MB
QG
HE
WB
FC
OD
AC
XC
FF
LD
RE
HF
BE
YH
DC
UE
UC
MF
EC
LG
PE
SC
YB
JG
TC

CD
CA
KE
YG
CE
PF
UH
PA
NH
OB
WF
RD
OA
TA
SE
MD
ND
DH
DD
TD
IF
XB
LF
BA
IG
GA
SH
OC
DA
TF
RB
YC
UA
EB
HA
KB
HB
PH
KA
UG

TB
NE
FG
XD
GD
JC
YE
NB
PG
LH
LA
GG
DF
PC
SD
IE
BG
HH
GB
ZF
JB
JD
NG
XA
UD
BC
RA
SA
KC
IC
ZD
OF
WE
JF
QF
CB
JH
QE
WA
AF

FH
AE
KG
AA
QB
DG
GC
KF
GH
BB
RC
AH
EH
HG
TG
WC
ZE
BD
SG
ME
HD
IB
SF
LB
PB
CH
IA
FD
CF
HC
KH
EG
KD
AB
VD
QA
FB
ZG
MA

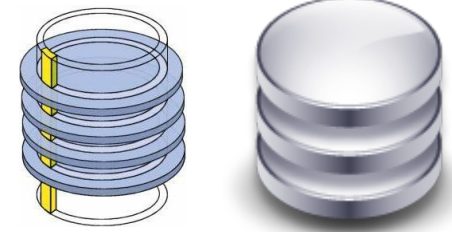
QD
JA
ZA
VA
LE
RG
XE
LC
AG
YD
WD
TH
ZC
ID
WG
OG
CC
CG
BF
YF
VE
UB
NA
IH
NF
VH
XG
EE
MH
MC
VF
EF
EA
RH
NC
MG
ZB
AD
GE
OH

DB
ED
WH
ZH
TE
BH
OE
VB

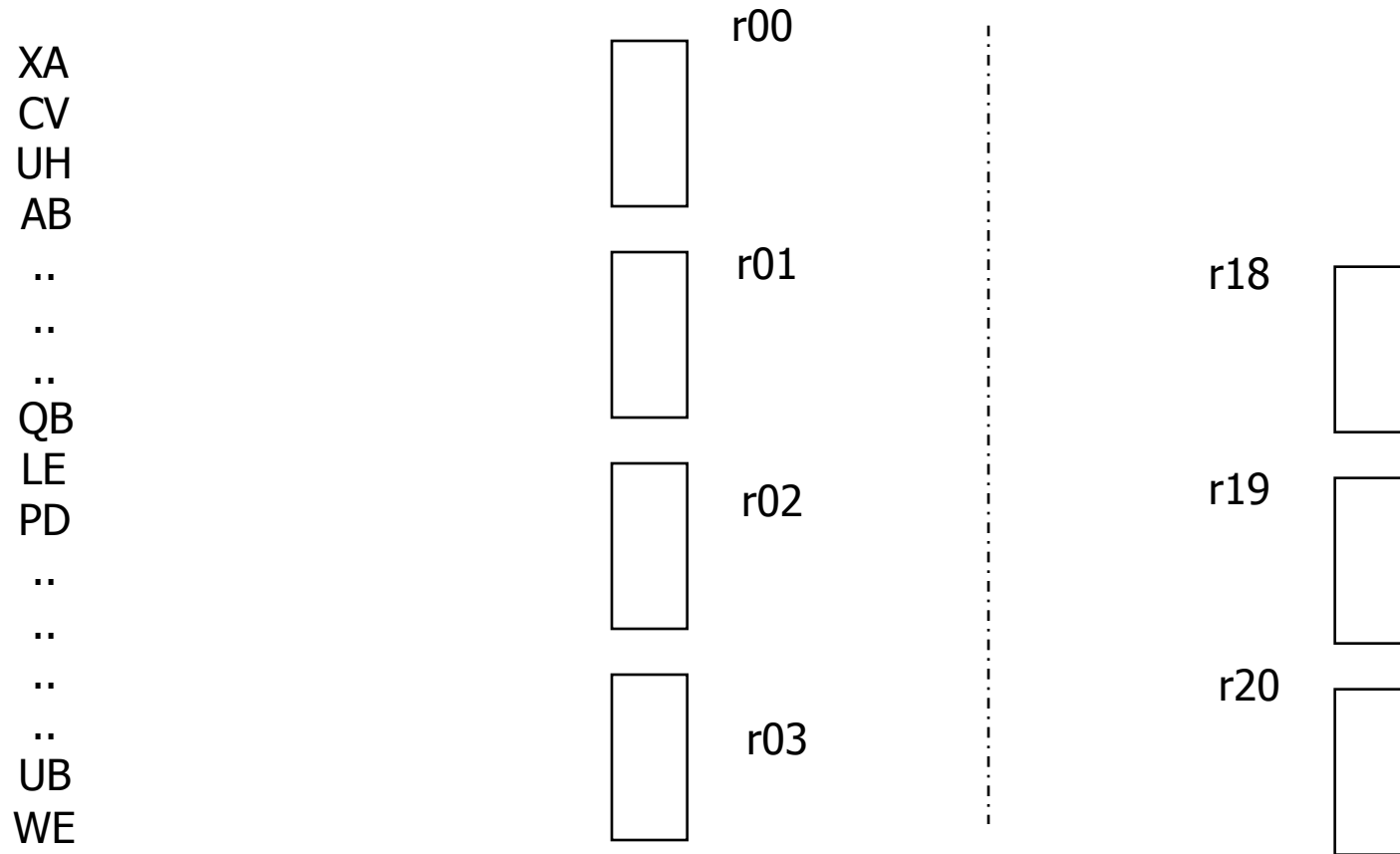


R

Génération de R

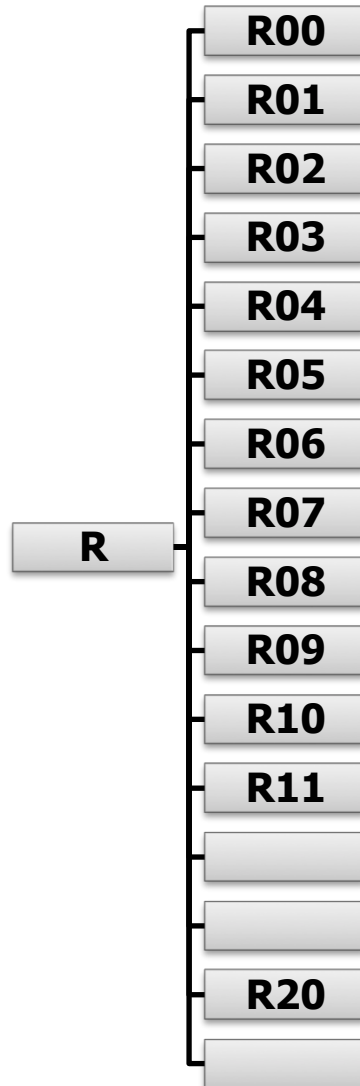


- Ranger dans 21 fichiers de 10 éléments.

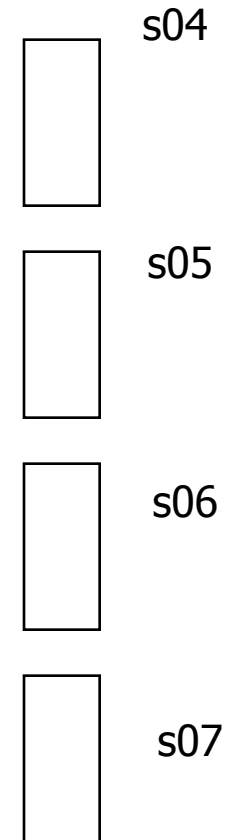
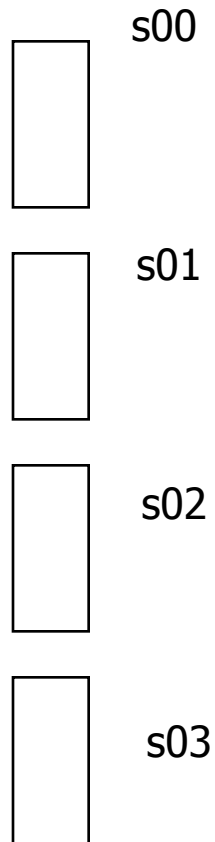
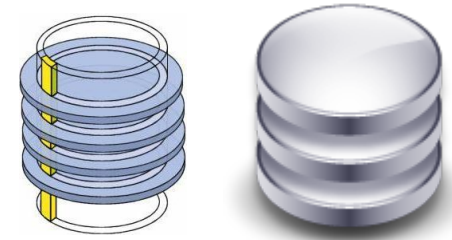


Relations sur disque

Une relation = Un répertoire

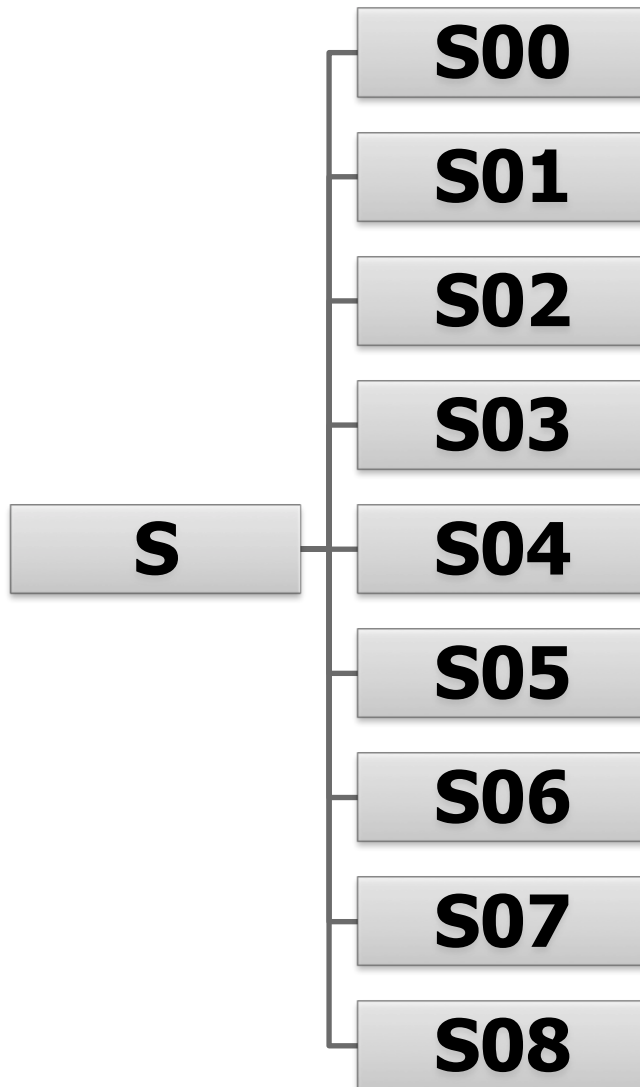


Je fournis S : 84 éléments



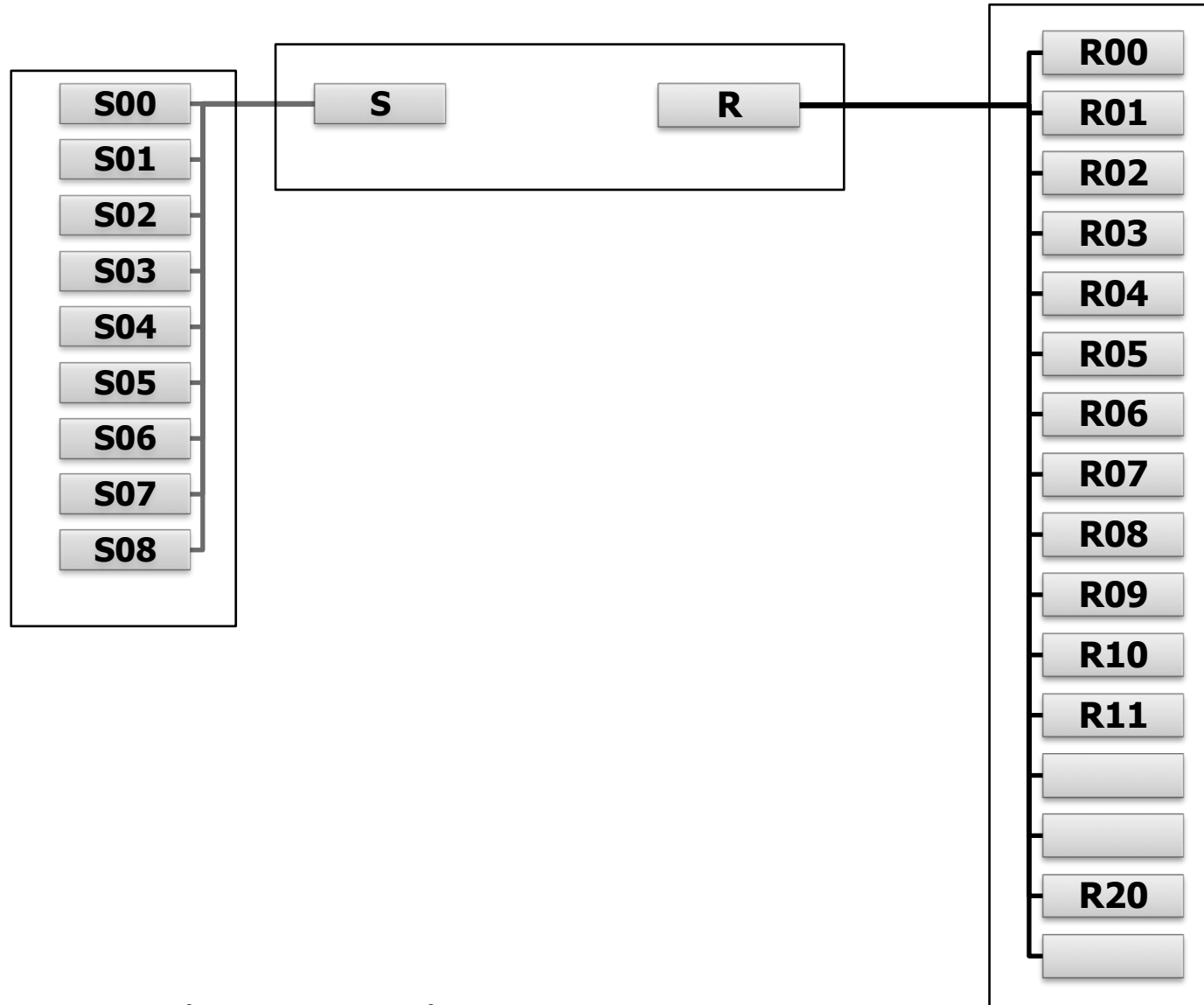
Relations sur disque

Une relation = Un répertoire



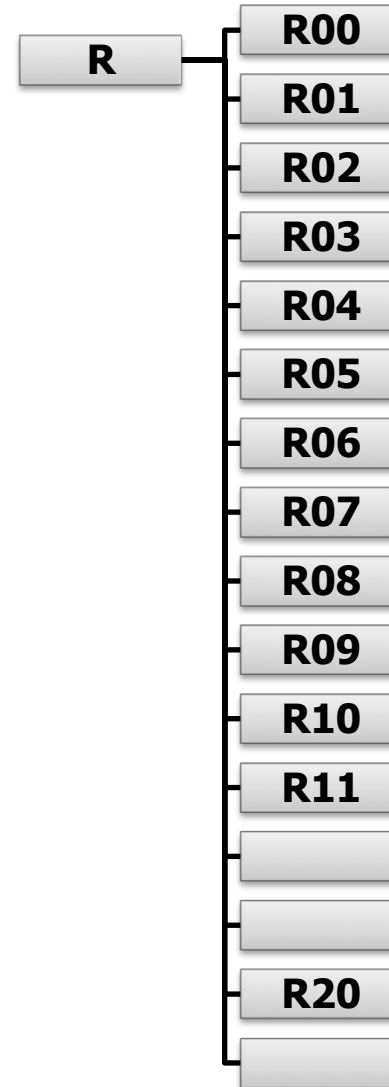
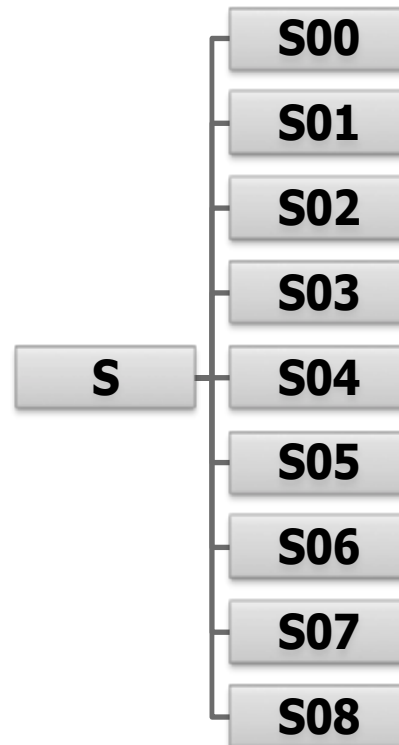
Relations sur disque

Une relation = Un répertoire



Relations sur disque

Une relation = Un répertoire



S



S0

GE
BE
KA
MD
AC
ZE
SA
FD
FF
DC

S1

IG
BG
RG
JA
YH
UE
NH
JC
LC
UH

S2

VF
TE
VC
AE
TF
RB
CA
DG
JE
ZF

S3

EH
RA
AF
ND
EB
IB
XG
OB
ZD
LE

S4

WA
QA
KB
DF
LB
AA
PC
JD
LH
RE

S5

XB
OF
QB
BF
FH
PG
ZH
GA
SE
ZA

S6

LA
YD
OH
BA
ZB
SF
UC
HH
XE
NA

S7

NC
IC
CD
HG
ZG
SB
DD
UB
YB
WH

S8

QF
BD
QC
MA

S



S

Une relation = Un répertoire

S0	S1	S2	S3	S4	S5	S6	S7	S8
GE BE KA MD AC ZE SA FD FF DC	IG BG RG JA YH UE NH JC LC UH	VF TE VC AE TF RB CA DG JE ZF	EH RA AF ND EB IB XG OB ZD LE	WA QA KB DF LB AA PC JD LH RE	XB OF QB BF FH PG ZH GA SE ZA	LA YD OH BA ZB SF UC HH XE NA	NC IC CD HG ZG SB DD UB YB WH	QF BD QC MA

