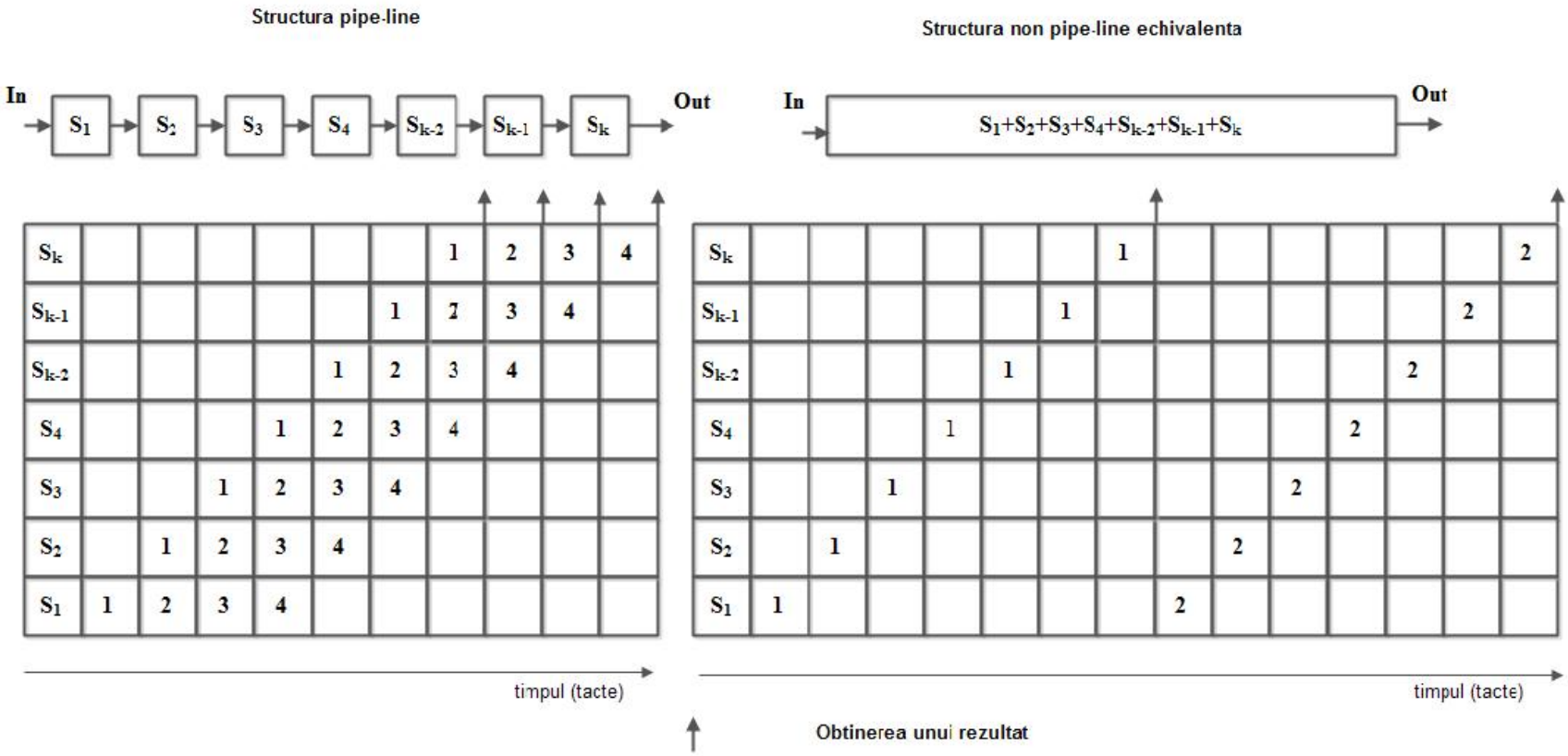


Figura 1. Cresterea vitezei de prelucrare intr-o structura pipe-line ideala

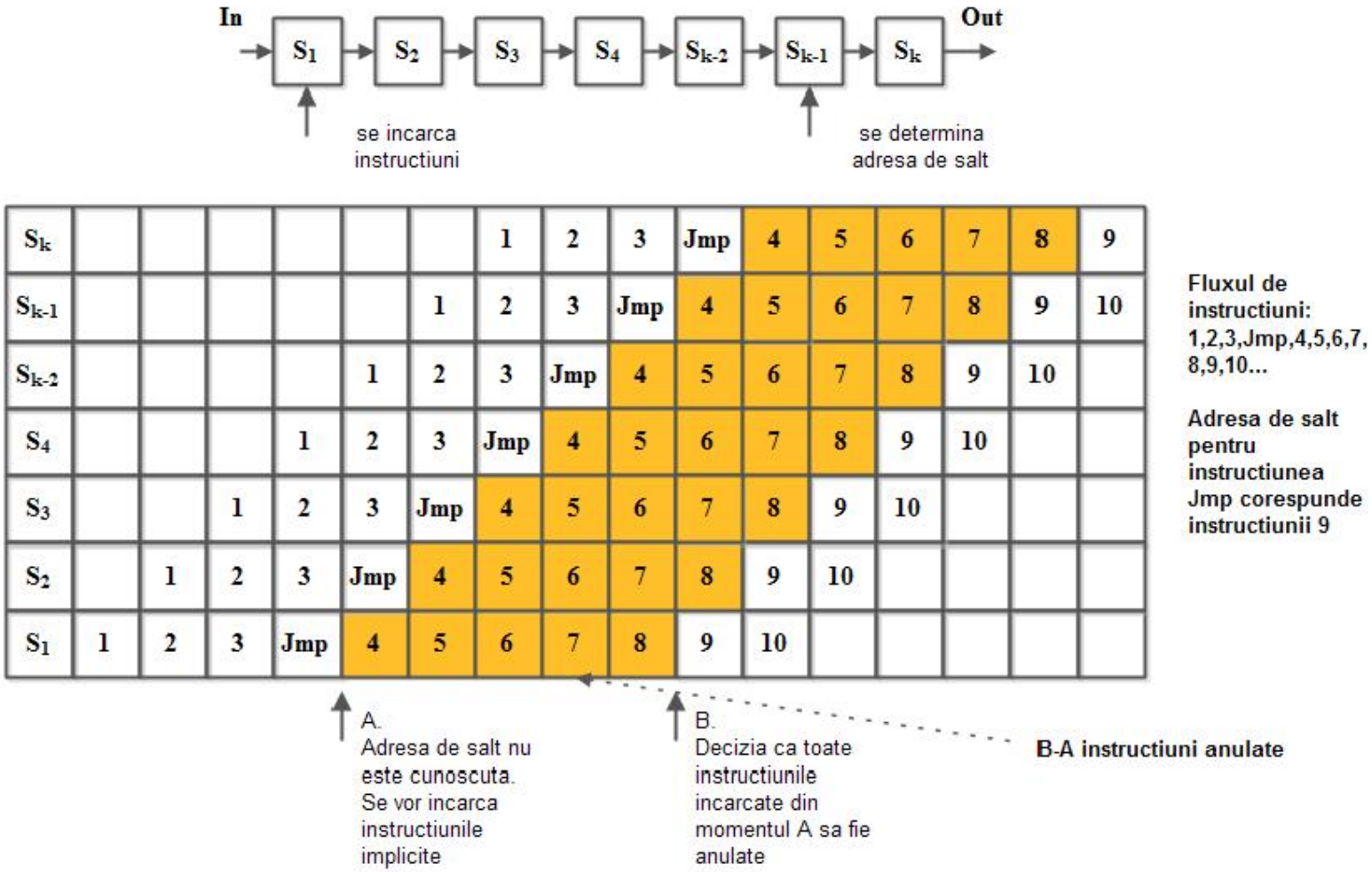


Figura 2. Aparitia instructiunilor de salt intr-o structura pipe-line

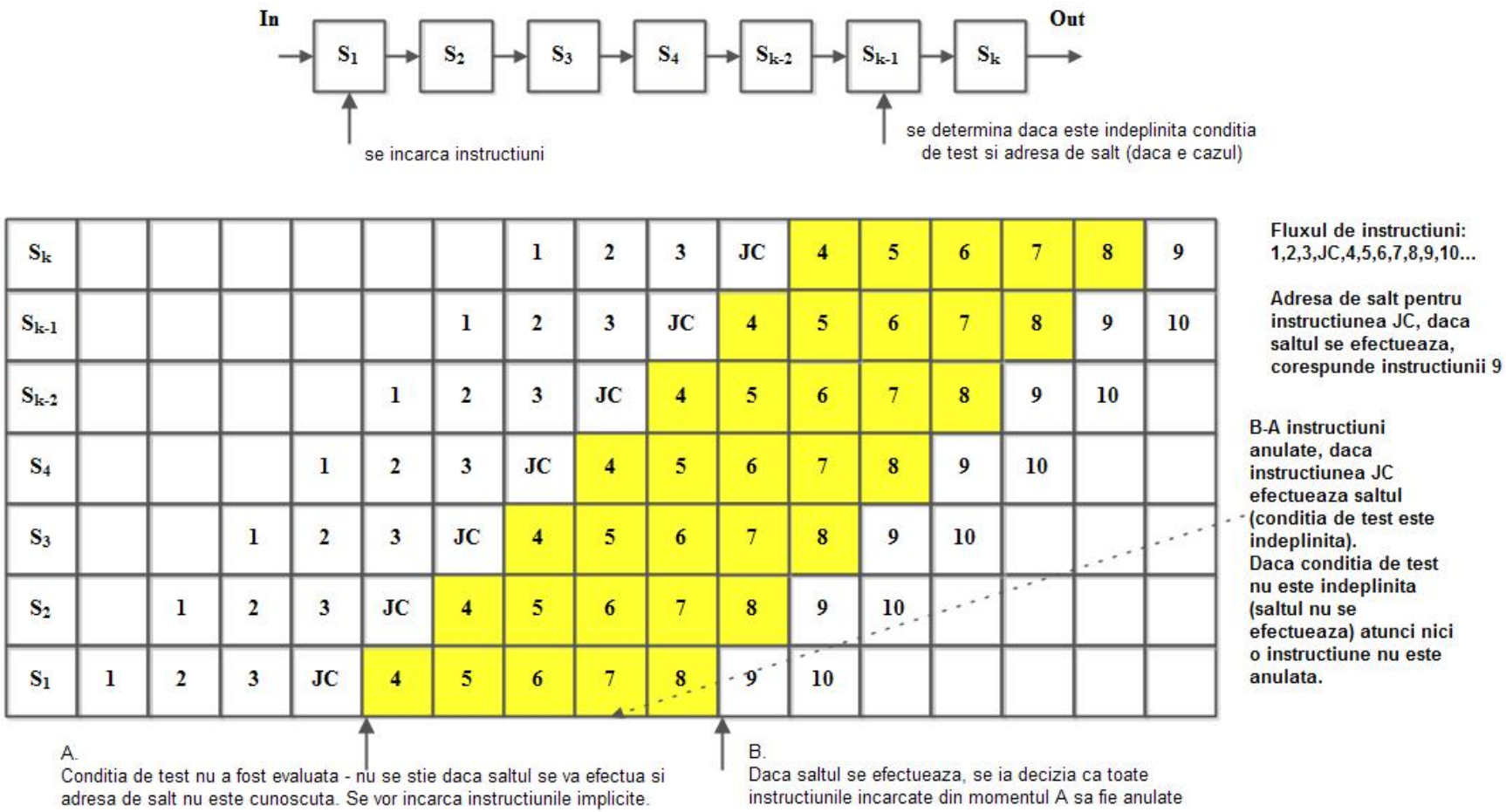


Figura 3. Aparitia instructiunilor de salt conditionat intr-o structura pipe-line

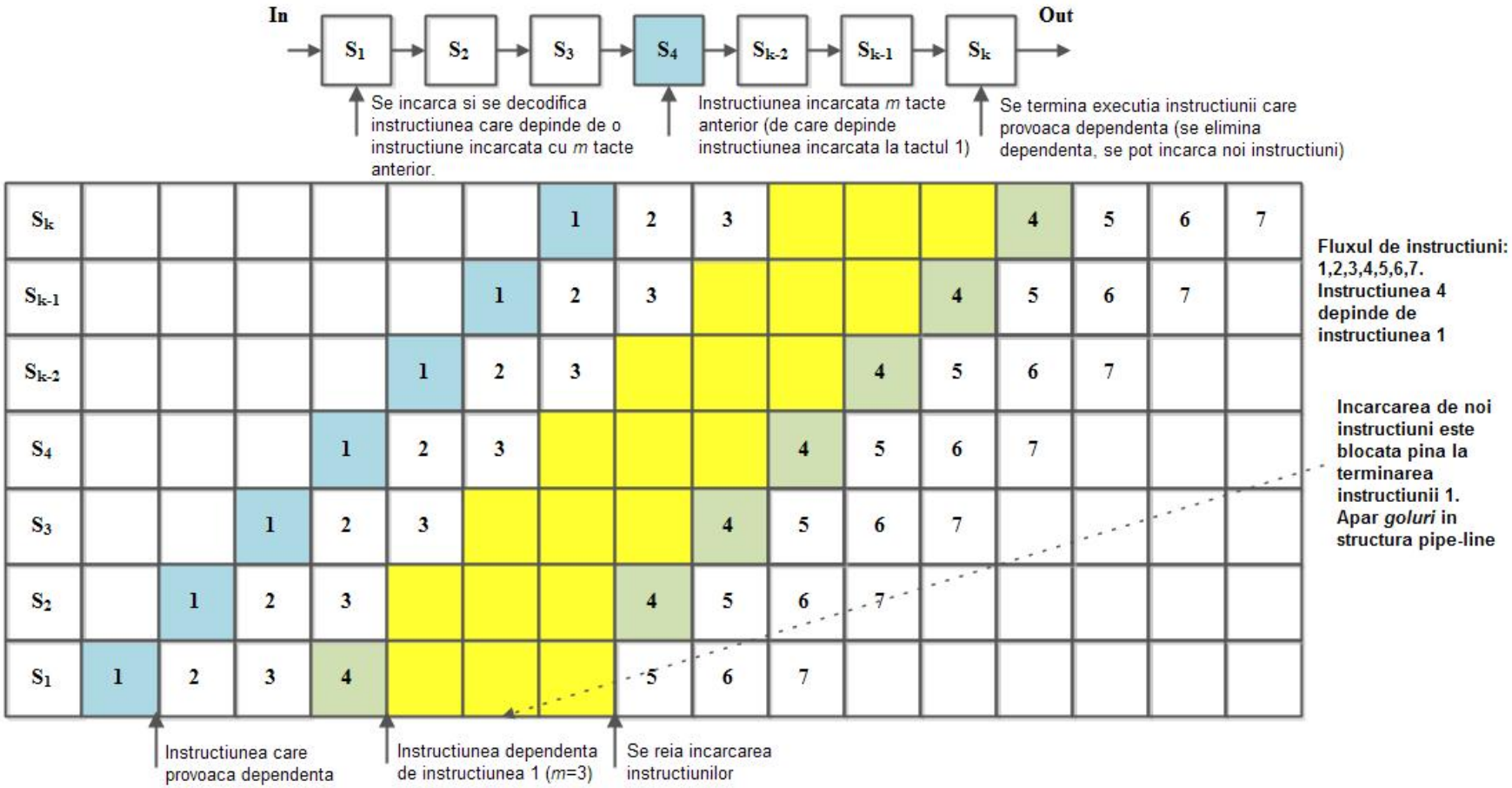


Figura 4. Aparitia instructiunilor dependente intr-o structura pipe-line

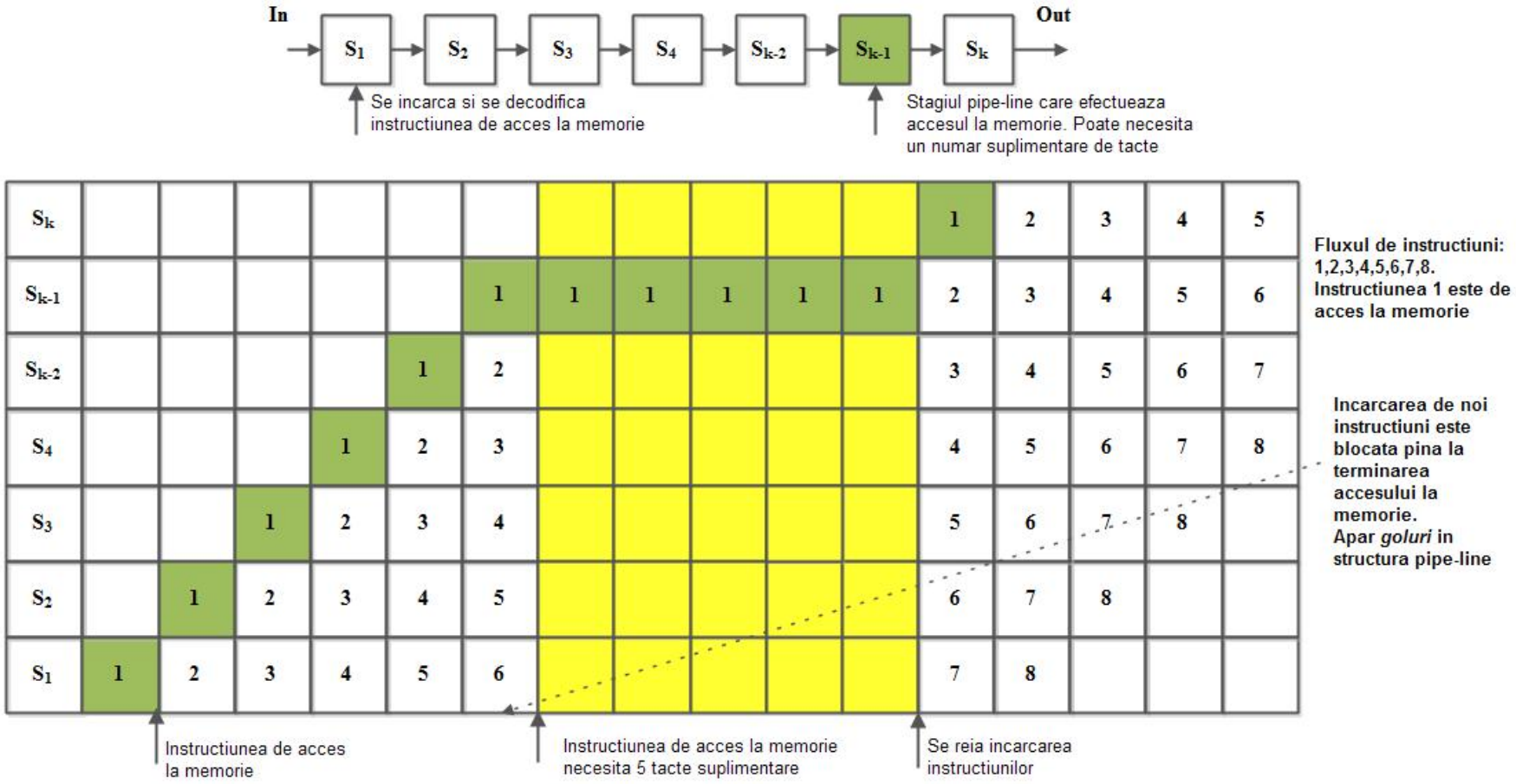


Figura 5. Aparitia instructiunilor de acces la memorie intr-o structura pipe-line

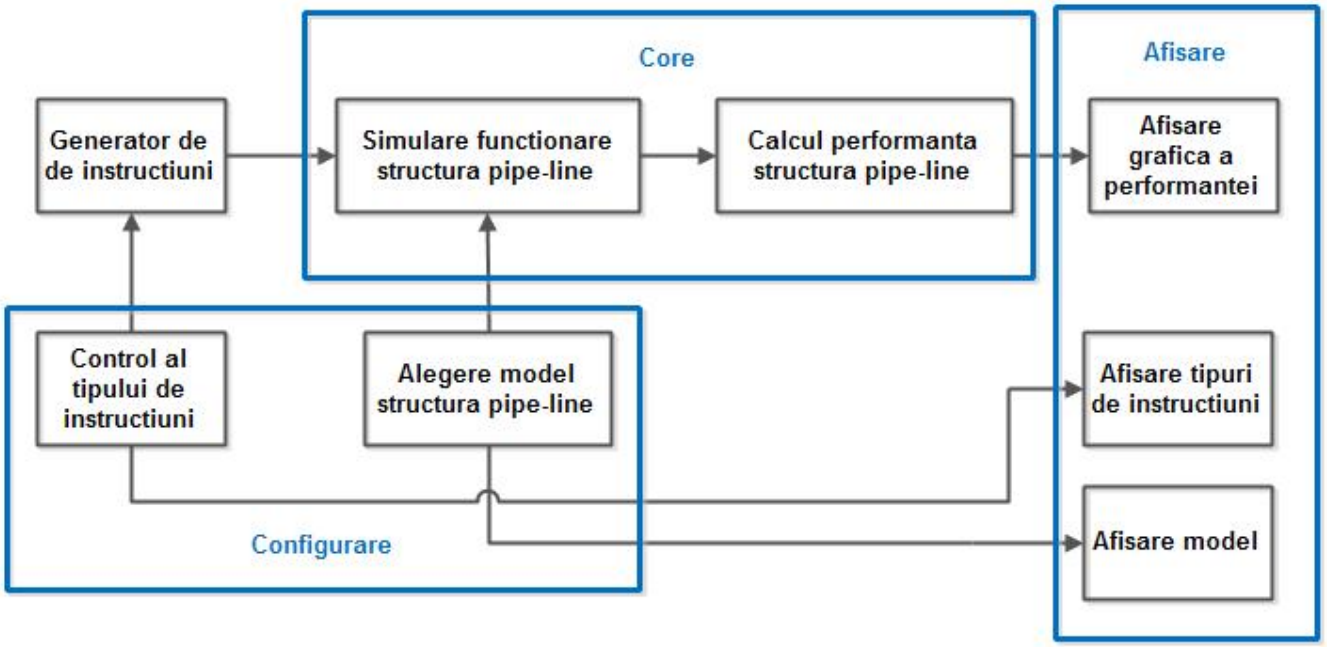


Figura 6. Structura simulatorului **simpl** (**SIM**ulator **P**ipe-**L**ine)

MODELUL 1

Decizia de efectuare a salturilor conditionate

Instructiuni simulate:

- salturi neconditionate: JMP
- salturi conditionate neefectuate (not taken): JCondNT
- salturi conditionate efectuate (taken): JCondT

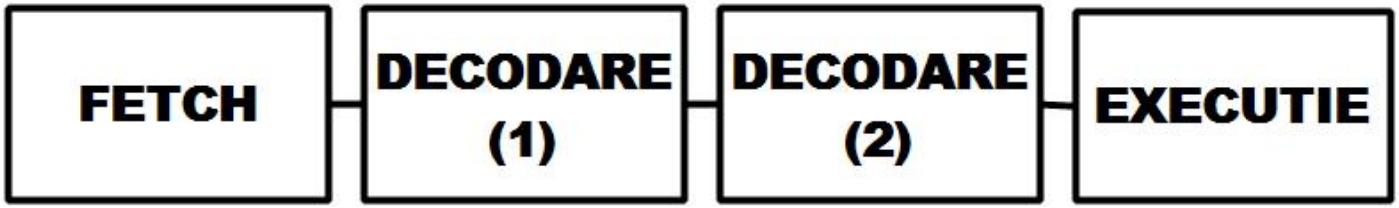
MODELUL 2

Instructiuni simulate:

- salturi neconditionate: JMP
- salturi conditionate neefectuate (not taken): JCondNT
- salturi conditionate efectuate (taken): JCondT

Decizia de efectuare a salturilor conditionate

MODELUL 3

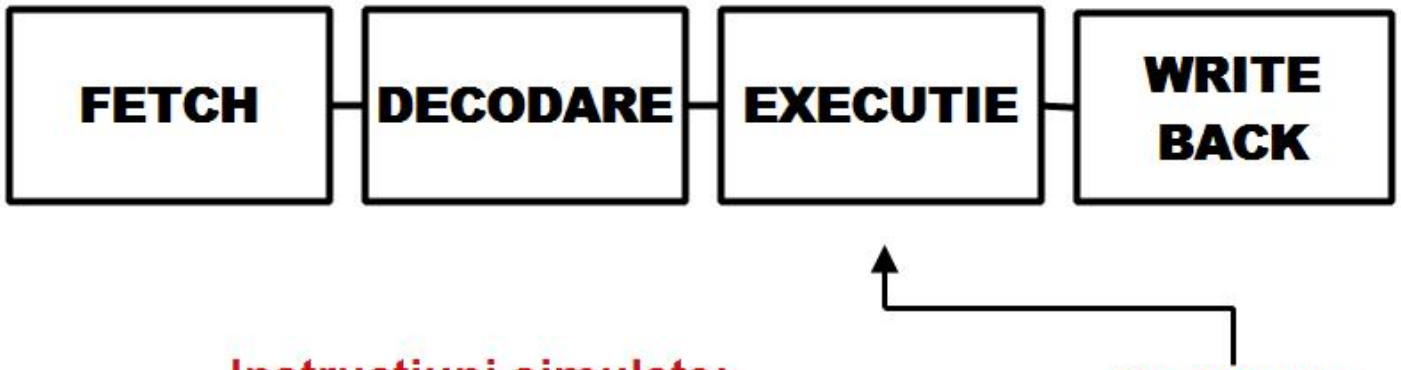


Decizia de efectuare a salturilor conditionate

Instructiuni simulate:

- salturi neconditionate: JMP
- salturi conditionate neefectuate (not taken): JCondNT
- salturi conditionate efectuate (taken): JCondT

MODELUL 4

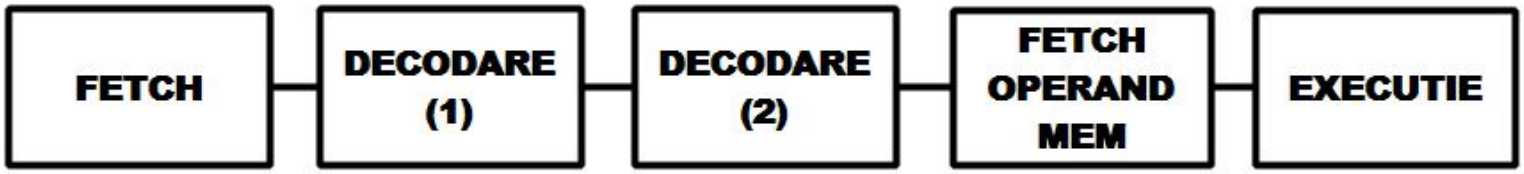


Decizia de efectuare a salturilor conditionate

Instructiuni simulate:

- salturi neconditionate: JMP
- salturi conditionate neefectuate (not taken): JCondNT
- salturi conditionate efectuate (taken): JCondT

MODELUL 5



Instructiuni simulate:

- salturi neconditionate: JMP
- salturi conditionate neefectuate (not taken): JCondNT
- salturi conditionate efectuate (taken): JCondT
- acces la memorie
- instructiuni dependente

Decizia de efectuare a salturilor conditionate

Bloc lent daca instructiunea este de acces la memorie

Dependenta eliminata

timp de acces la memorie >> tactul pipe-line

timp de asteptare a executiei instructiunii care produce dependenta

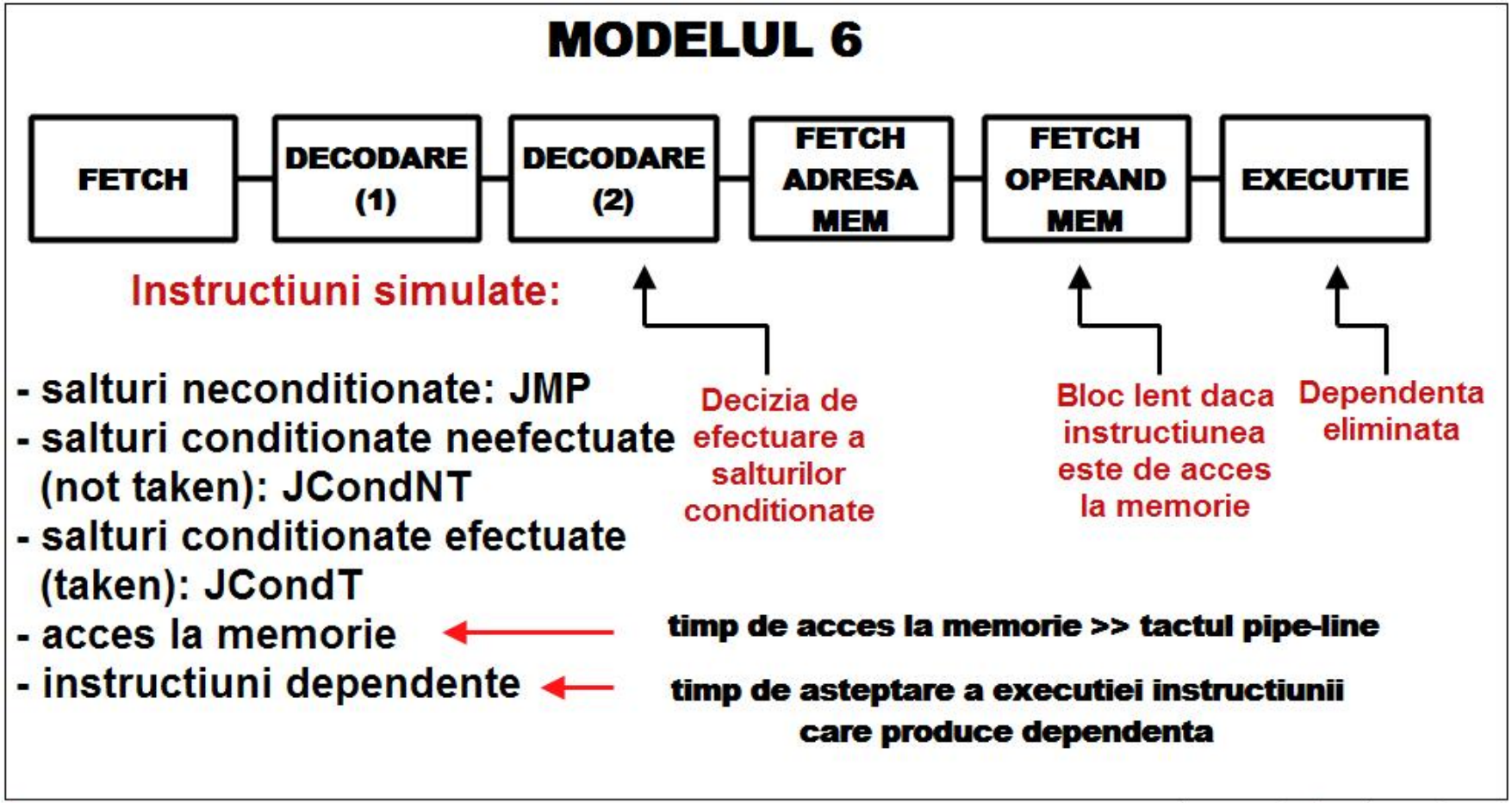


Figura 7. Modelele structurilor pipe-line simulate in simulatorul **simpl**

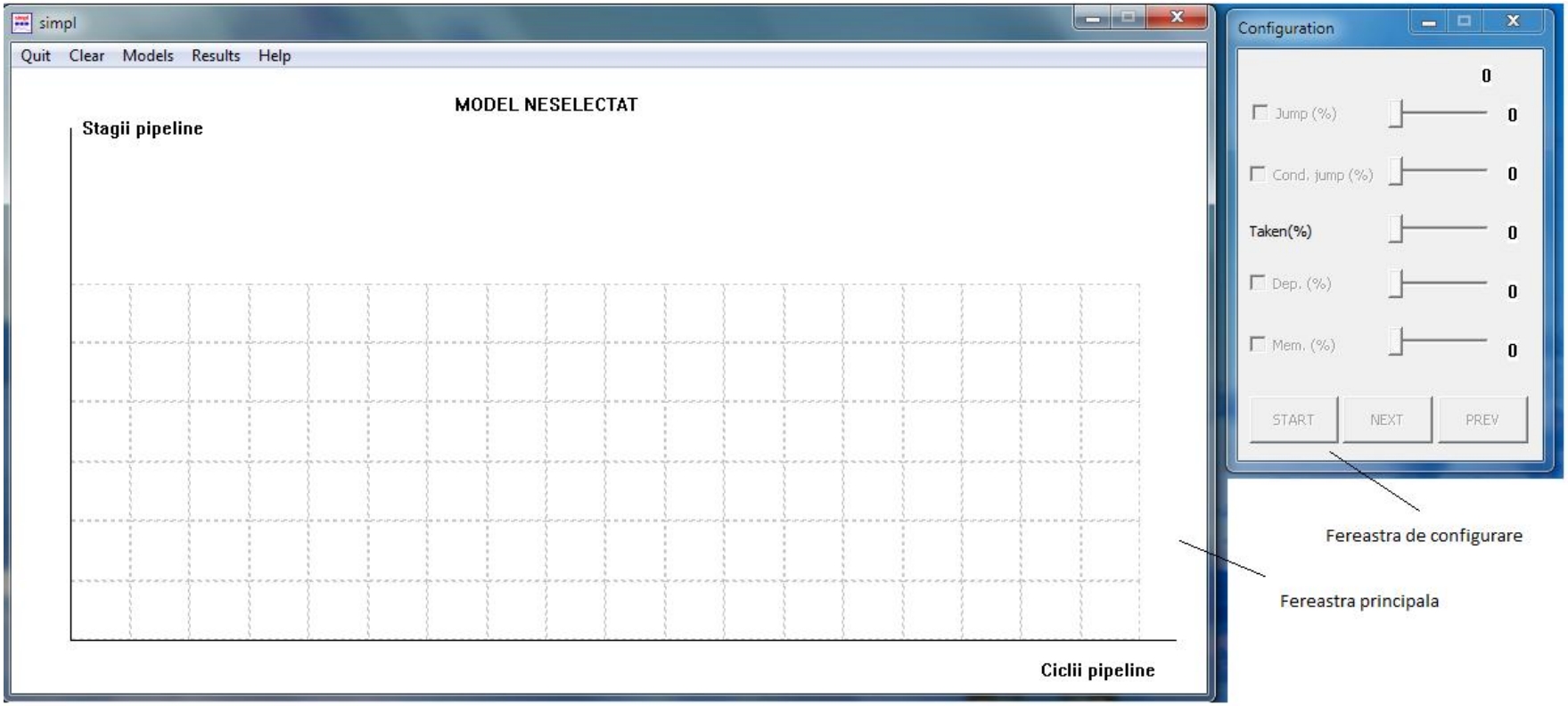


Figura 8. Ferestrele afisate dupa lansarea programului **simpl**

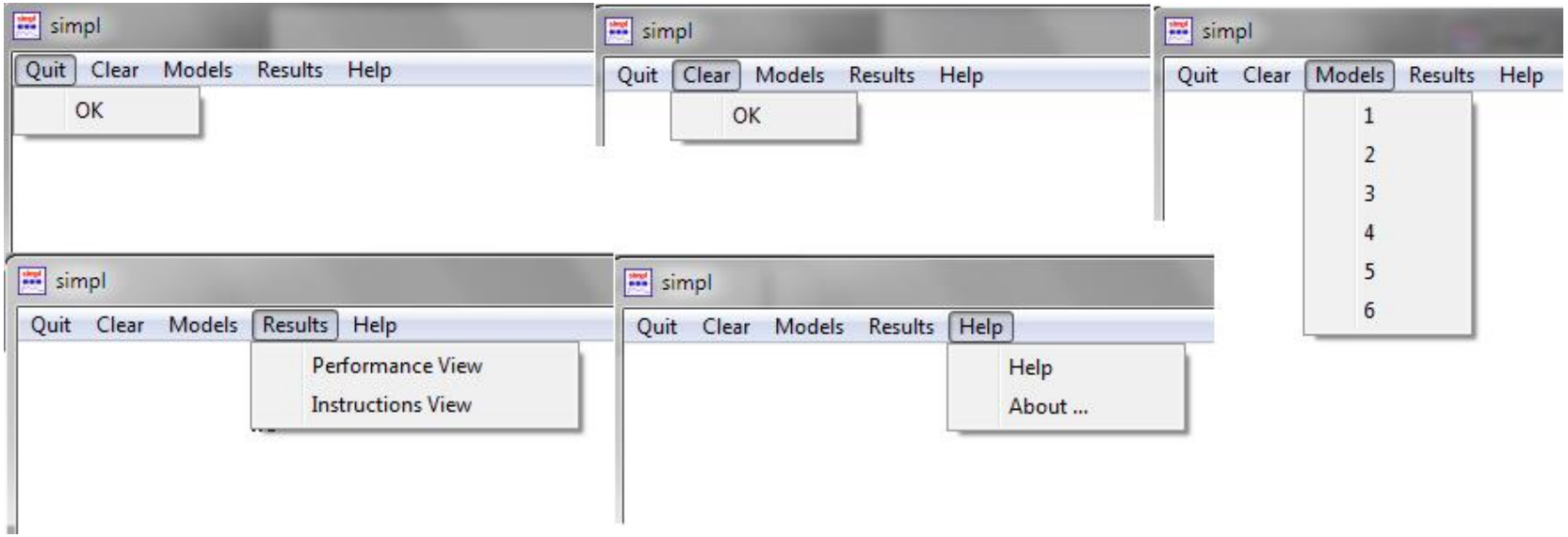


Figura 9. Meniurile ferestrei principale a programului **simpl**

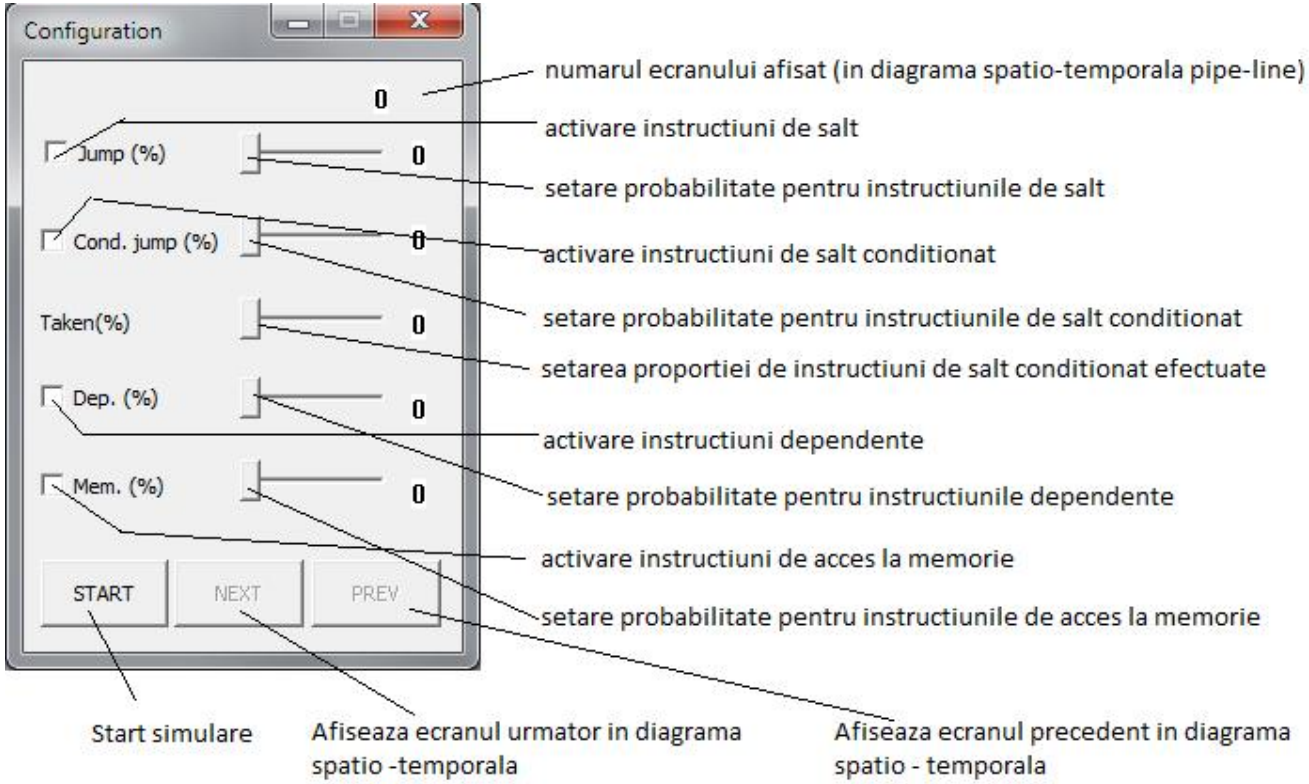


Figura 10. Meniurile ferestrei de configurare a programului **simpl**

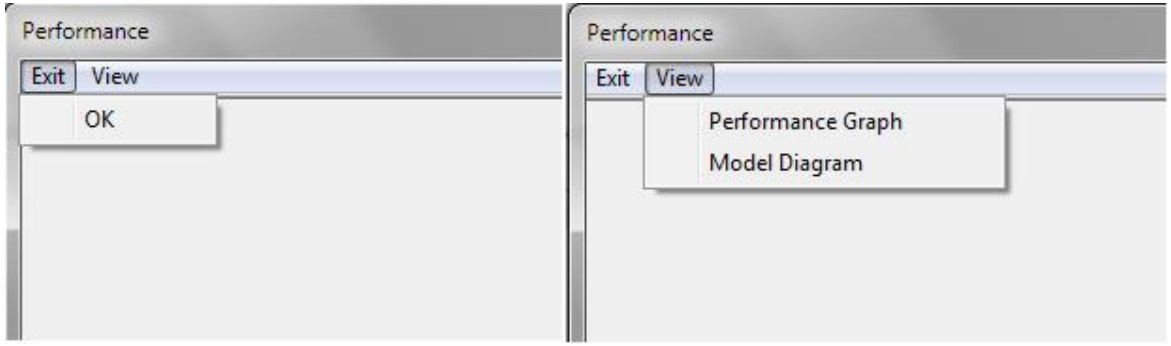


Figura 11. Meniurile ferestrei de afisare a performantelor a programului **simpl**

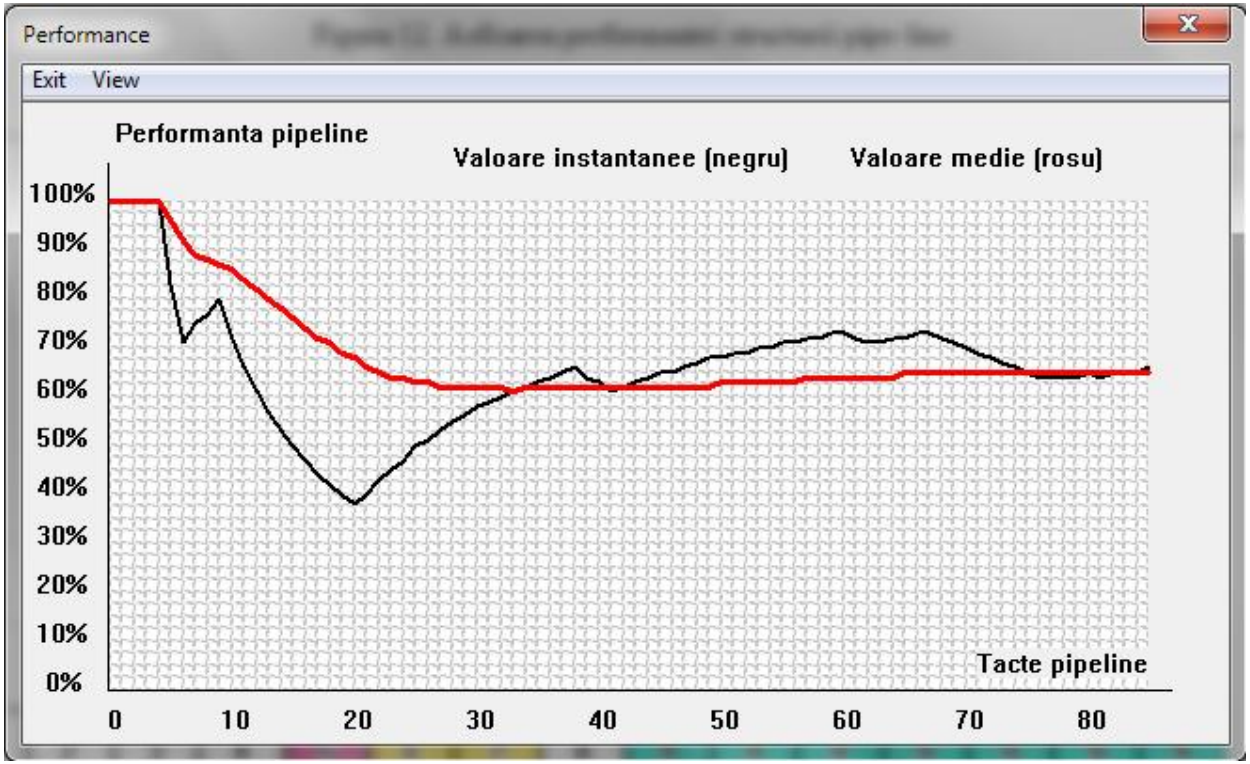
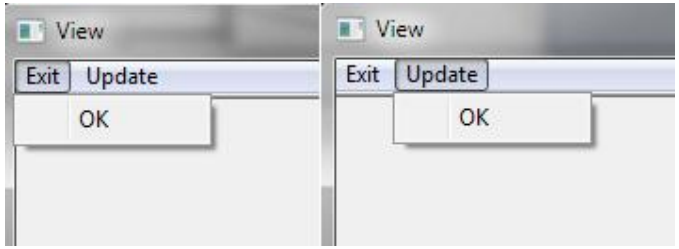
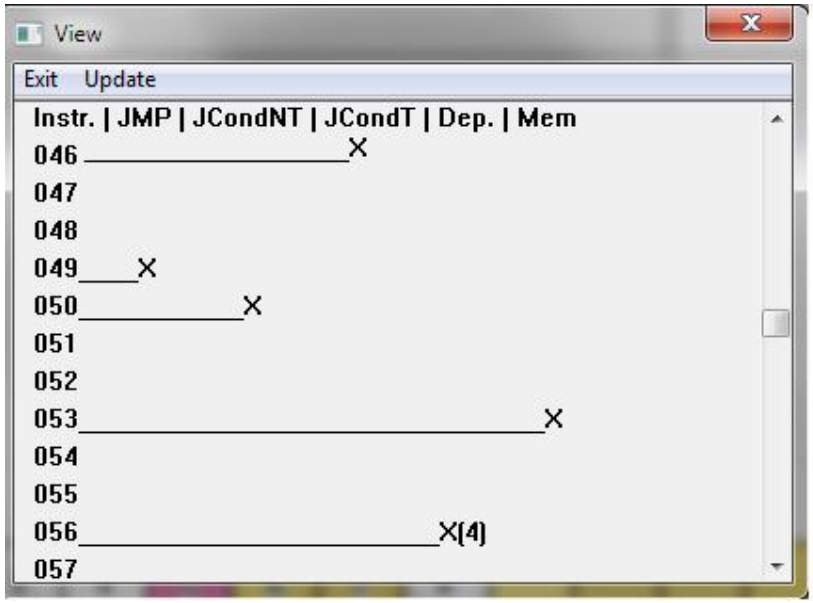


Figura 12. Afisarea performantei structurii pipe-line

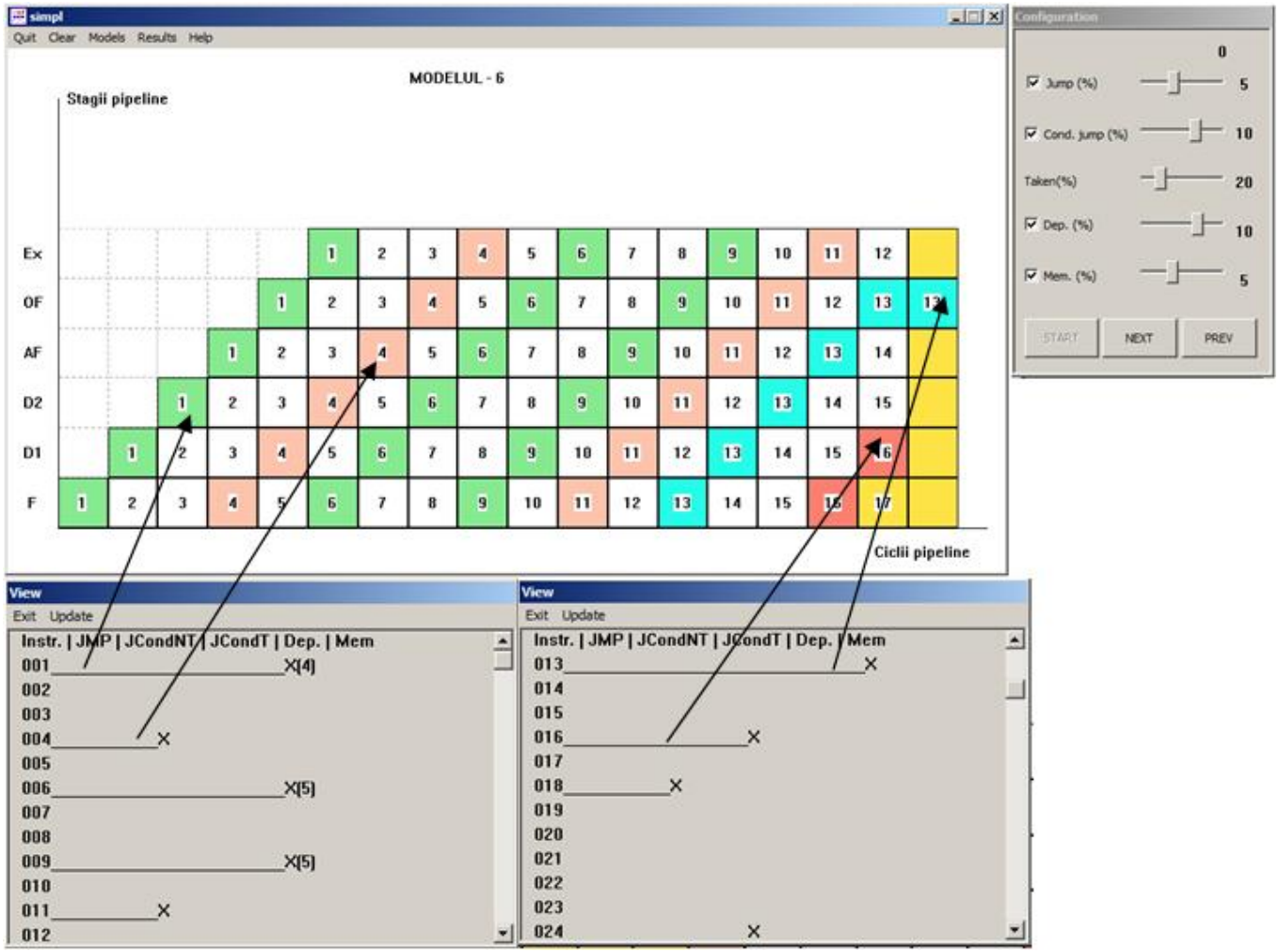




JMP - instructiune de salt
JCondNT - instructiune de salt conditionat ne-efectuata
JCondT - instructiune de salt conditionat efectuata
Dep - instructiune dependenta
Mem - instructiune de acces la memorie

Exemplu: instructiunea 56 este dependenta de o instructiune incarcata cu 4 tacte anterior (de instructiunea 52)

Figura 13. Meniurile ferestrei de afisare a instructiunilor in programului **simpl**


simpl
Quit Clear Models Results Help
MODELUL - 6
Stagii pipeline
Ex
OF
AF
D2
D1
F
Ciclii pipeline
Configuration
Jump (%)
Cond. jump (%)
Taken(%)
Dep. (%)
Mem. (%)
START
NEXT
PREV
View
Exit Update
Instr. | JMP | JCondNT | JCondT | Dep. | Mem
View
Exit Update
Instr. | JMP | JCondNT | JCondT | Dep. | Mem

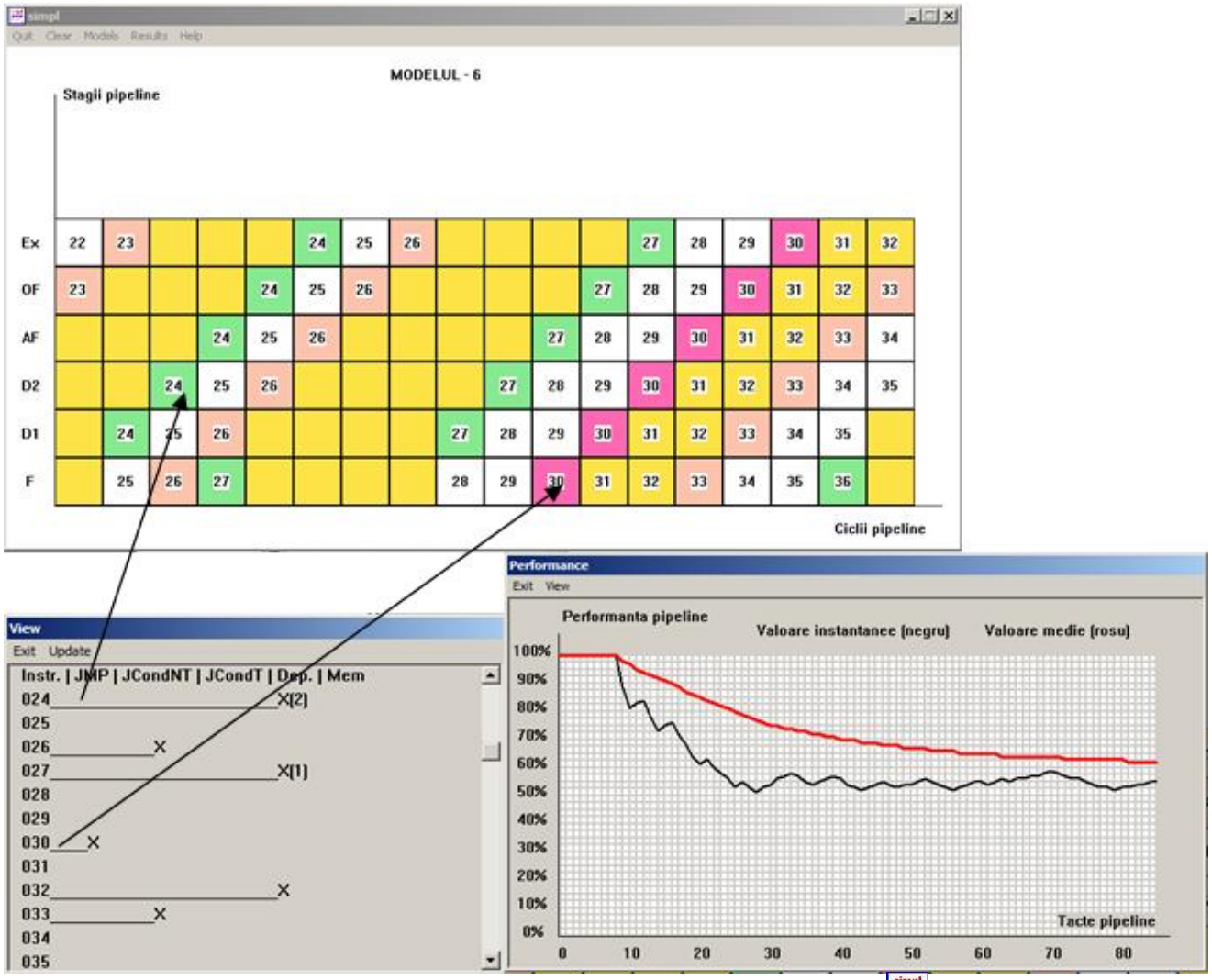


Figura 14. Exemplificarea utilizarii programului **simpl**.