CAFEBABE

Introduction

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Université de Namur

Plan

Architecture générale

- Diagramme de classes
- Workflow
- Le module de test

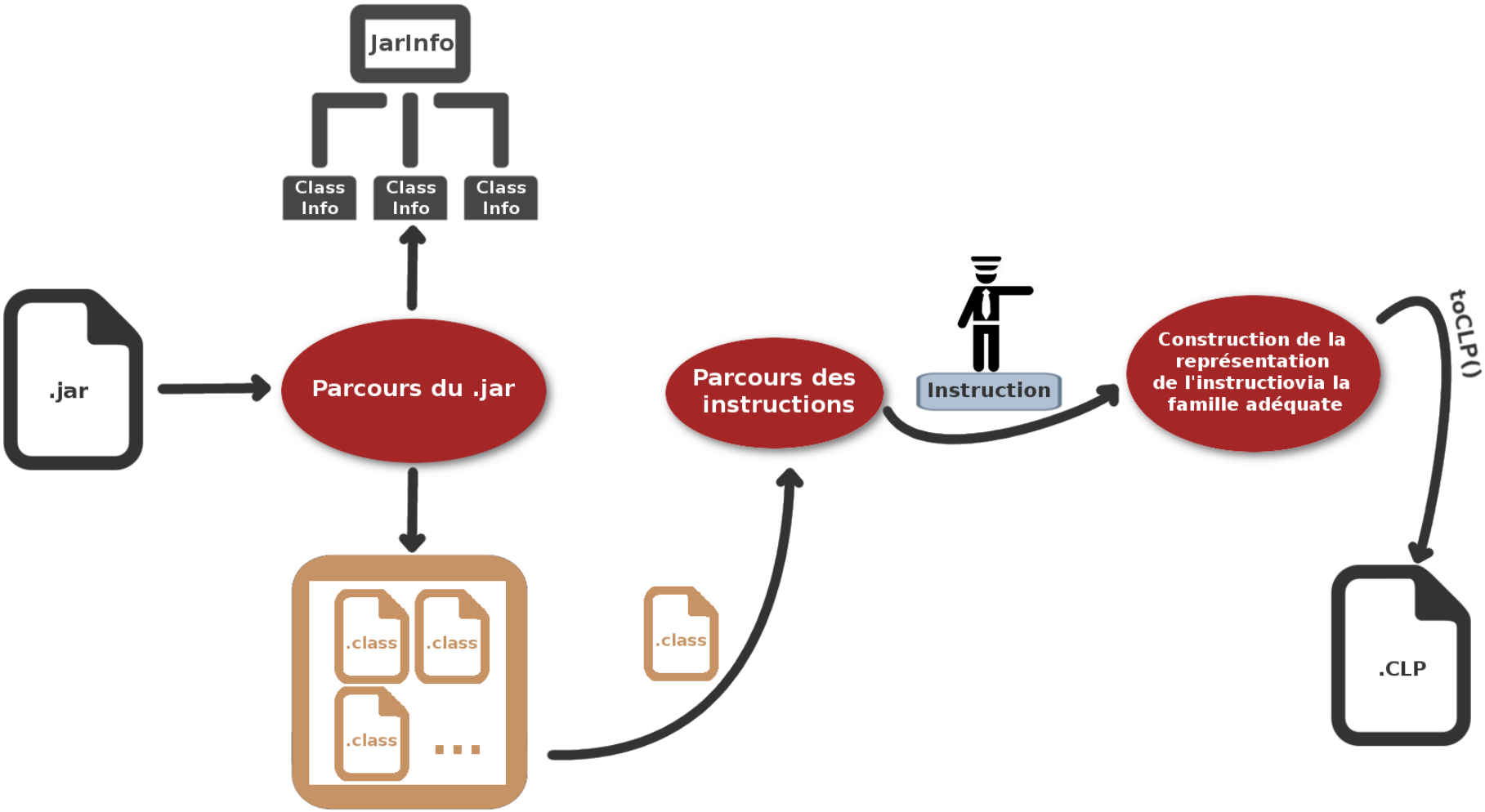
Les instructions

Démonstration

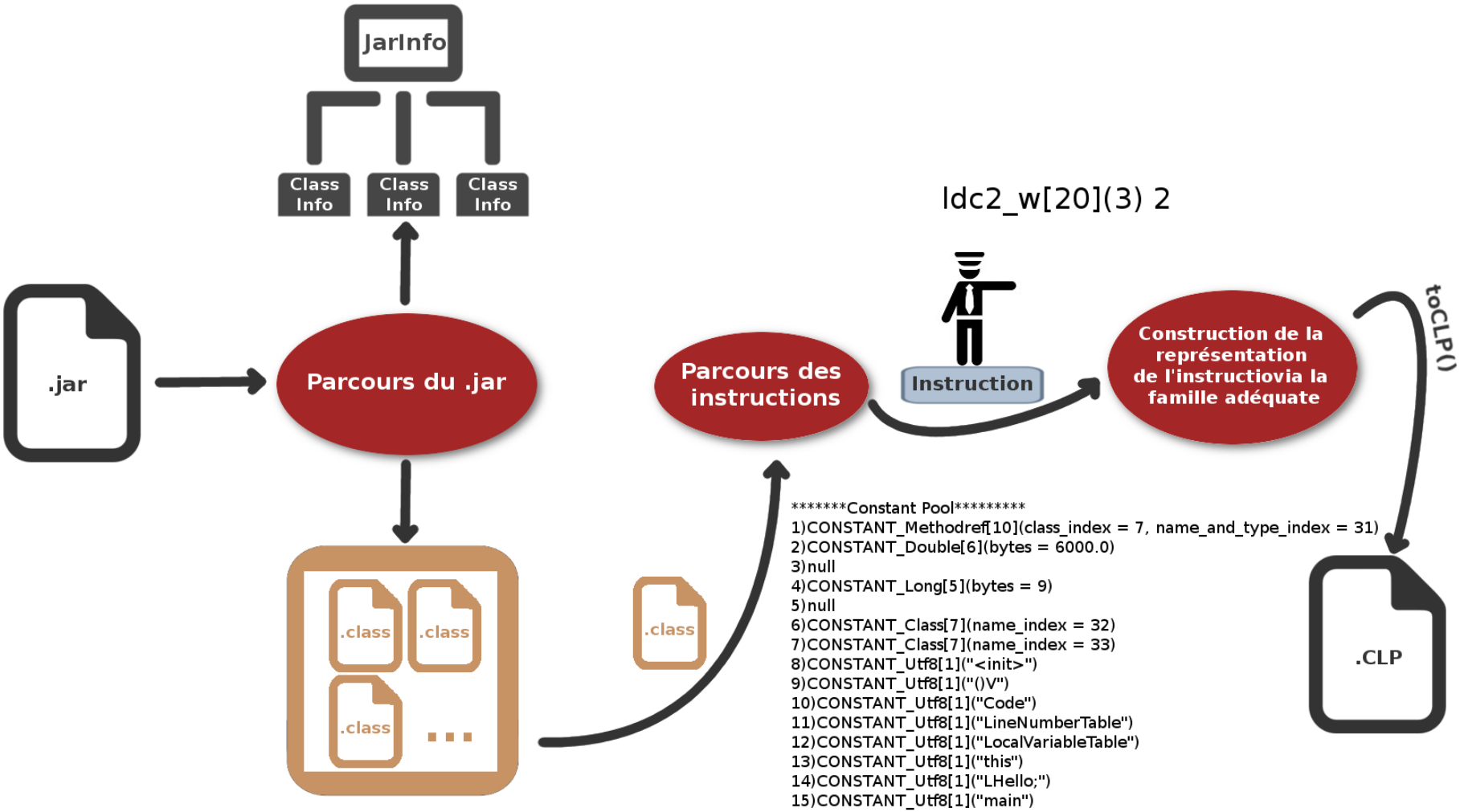
Architecture générale

Diagramme de classes

Workflow


JarInfo
Class Info
Class Info
Class Info
.jar
Parcours du .jar
.class
.class
.class
...
.class
Parcours des instructions
Instruction
Construction de la représentation de l'instructiovia la famille adéquate
toCLP()
.CLP

Workflow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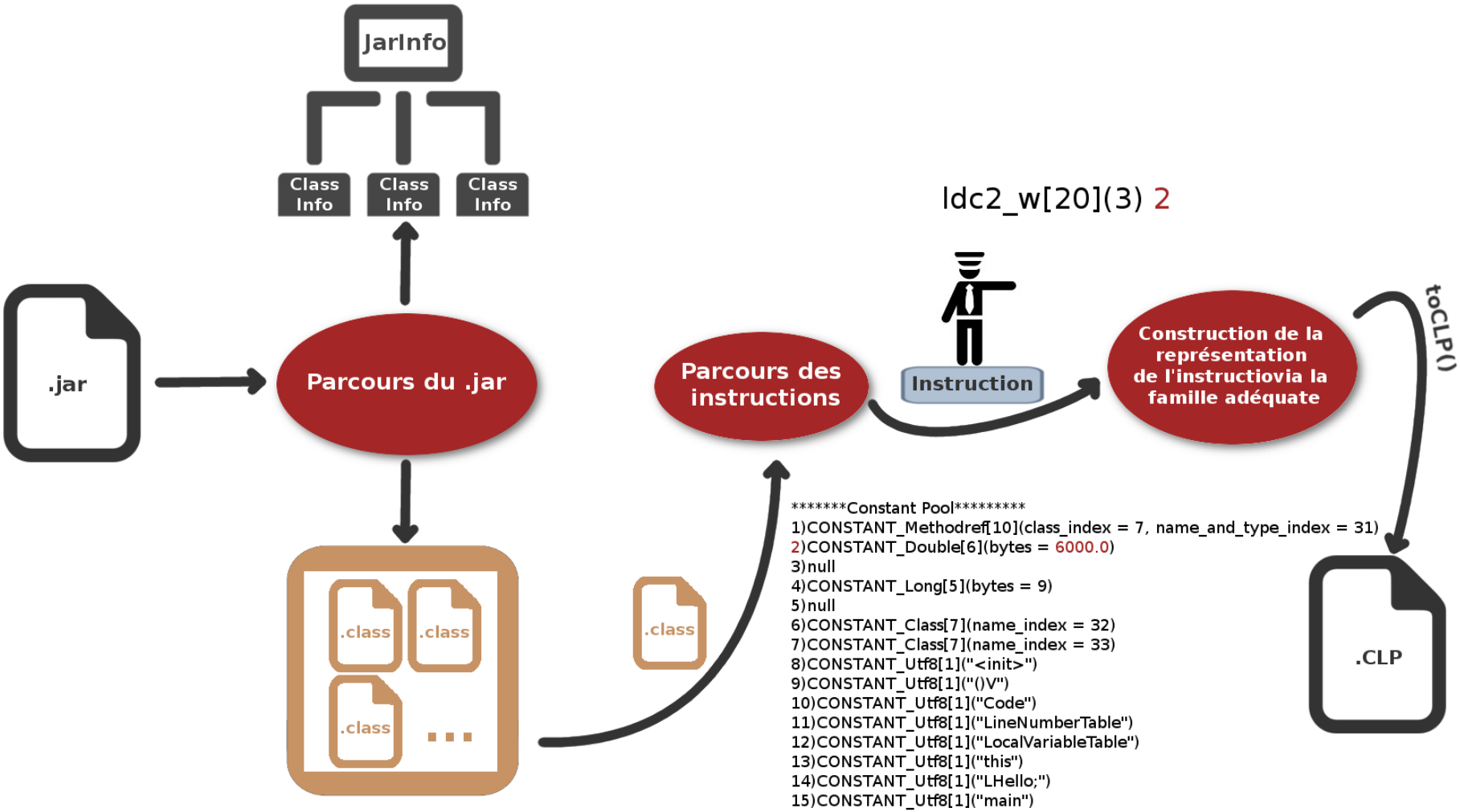
...
.class
ldc2_w[20](3) 2
Parcours des instructions
Instruction
Construction de la représentation de l'instructiovia la famille adéquate
toCLP()
.CLP
*******Constant Pool*********
1)CONSTANT_Methodref[10](class_index = 7, name_and_type_index = 31)
2)CONSTANT_Double[6](bytes = 6000.0)
3)null
4)CONSTANT_Long[5](bytes = 9)
5)null
6)CONSTANT_Class[7](name_index = 32)
7)CONSTANT_Class[7](name_index = 33)
8)CONSTANT_Utf8[1]("<init>")
9)CONSTANT_Utf8[1]("()V")
10)CONSTANT_Utf8[1]("Code")
11)CONSTANT_Utf8[1]("LineNumberTable")
12)CONSTANT_Utf8[1]("LocalVariableTable")
13)CONSTANT_Utf8[1]("this")
14)CONSTANT_Utf8[1]("LHello;")
15)CONSTANT_Utf8[1]("main")
16)CONSTANT_Utf8[1]("([Ljava/lang/String;)V")
17)CONSTANT_Utf8[1]("args")
...

Workflow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15)CONSTANT_Utf8[1]("main")
16)CONSTANT_Utf8[1]("([Ljava/lang/String;)V")
17)CONSTANT_Utf8[1]("args")
...

Workflow

Construction d'un arbre (Structure JarInfo)

Permet de représenter et calculer à l'avance les informations qui seront utiles pour la traduction. Permet une traduction séquentielle des instructions à la volée.

Ex : Nombre de registre pour les appels de méthode.

Module de traduction indépendant

Analyse, extraction et représentation interne des informations source découplée du processus traduction (toCLP). Facilite l'ajout et/ou le changement de représentation cible.

Ex : Changement de représentation pour dynamiser la stack.

Workflow

Vérification des inputs

Consistance des inputs.

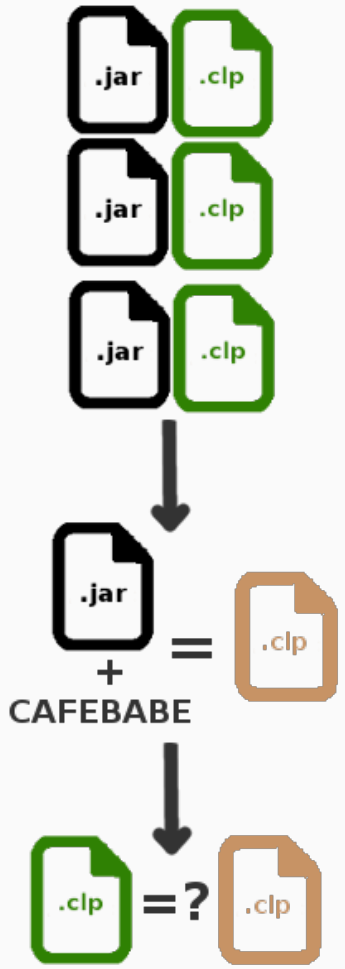
Détection d'instructions inexistantes, méthodes ou classes absentes, fichier corrompu ,erreurs syntaxiques, etc..

Quid des classes non comprises dans le .jar ?

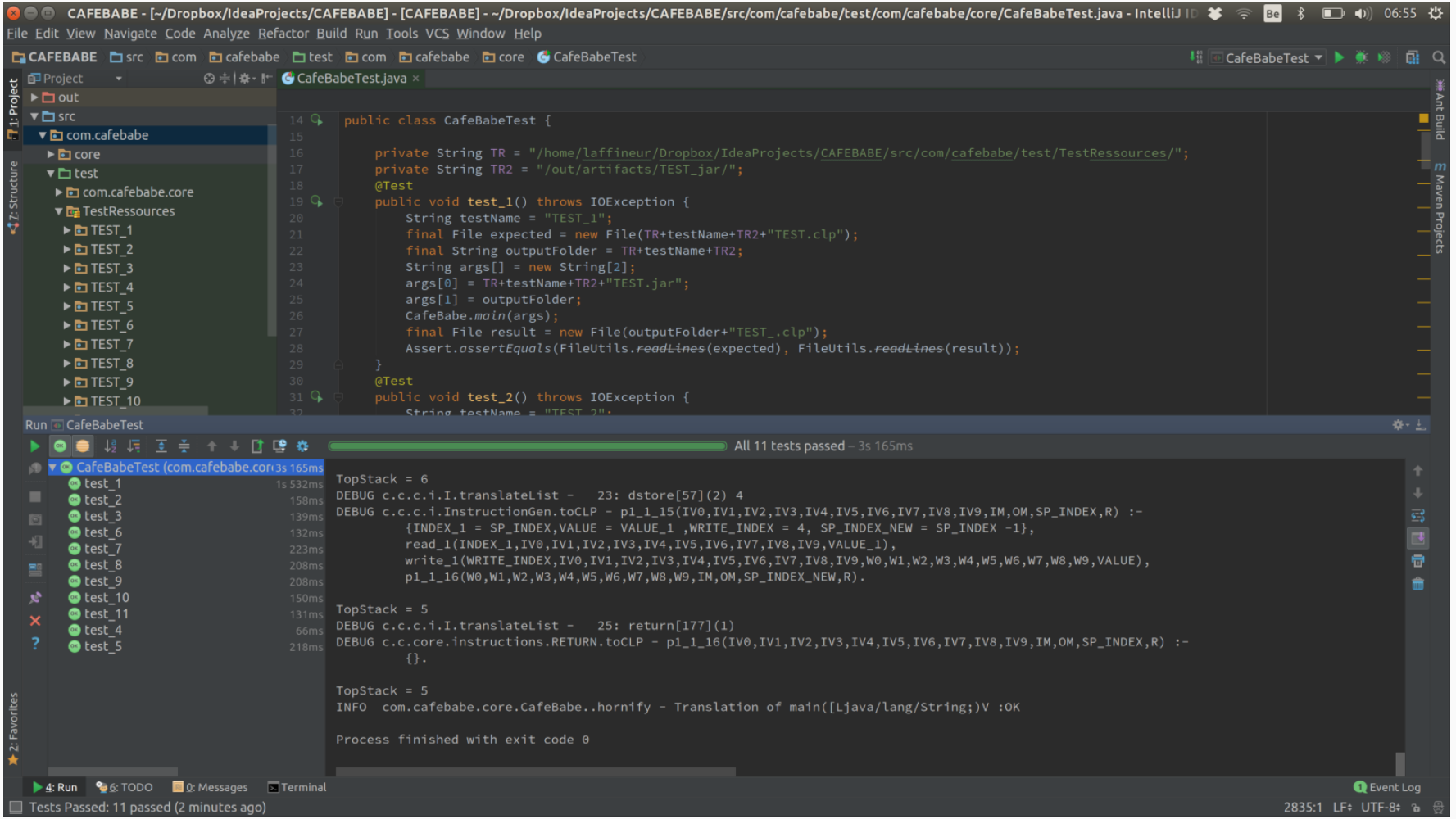
Le module de test

Junit

Utilisation d'un framework de test automatique. Module inclus dans le projet qui permet d'effectuer les tests de manière automatique et répétable.



Le module de test



Les instructions

Instructions implémentées

Pour tous les types primitifs (int,long,double,short,..) :

Chargement de constantes

Opérations arithmétiques

Structures conditionnelles

Gestion des boucles

Instructions liées à la gestion des variables

Instructions implémentées

ADD	dadd, fadd, iadd, ladd
SWAP	swap
SUB	dsub,fsub,isub,lsub
DIV	ddiv,fdiv,idiv,ldiv
DUP	dup,dup_x1,dup_x2
DUP2	dup2,dup2_x1,dup2_x2
GOTO	goto
INC	iinc

Instructions implémentées

MUL	dmul,fmul,imul,lmul
NEG	dneg,fneg,ineg,lneg
NOTHING	nop,pop,pop2
MODULO	drem,frem,irem,lrem
CONVERT	d2f,d2i,d2l,f2d,f2i,f2l,i2b,i2d,i2f,i2l,i2s,l2d,l2f,l2i
COMPARE	dcmpg,dcmpl,fcmpg,fcmpl, lcmpl ,lcmpg
IFCMP	if_acmpeq,if_acmpne,if_icmpeq,if_icmpne,ifeq,ifge,ifgt, iflt, ifle,ifne,ifnonnull,ifnull

Instructions implémentées

CONST lconst_0,lconst_1,iconst_0,iconst_1,iconst_2,iconst_3, iconst_4,iconst_5,dconst_0,dconst_1,fconst_0, fconst_1,fconst_2,ldc2_w

STORE astore_0,astore_1,astore_2,astore_3, astore, dstore, dstore_0,dstore_1,dstore_2,dstore_3,fstore,fstore_0, fstore_1,fstore_2,fstore_3,istore,istore_0,istore_1, istore_2,istore_3,lstore,lstore_0,lstore_1, lstore_2,lstore_3

LOAD aload_0,aload_1,aload_2,aload_3,aconst_null, aload, fload, fload_0,fload_1,fload_2,fload_3,iload, iload_0,iload_1,iload_2,iload_3, lload, lload_0,lload_1,lload_2,lload_3

Reste à implémenter

Les opérateurs bitwise

La gestion des tableaux

Les appels de méthodes

La gestion des objets

Optimisations liées à l'absence de registres en bytecode

Démonstration

Input

```
public static void main(String args[]){
    long a = 1;
    double b = 6000;
    int c = 2;
    short i = 0;

    while(i < c){
        if (b == 6000) {b = b/c;} else{a=a+9;}
        i++;
    }
    c = -c;
}//RESULT :: a=10 b=3000.0 c=-2 i=2
```

Analyse de l'output [Les prédicats read et write]

Read

read_1(SP,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IV0) :- {SP = 0}.
read_1(SP,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IV1) :- {SP = 1}.
..

Write

write_1(SP,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W0,W1,W2,W3,W4,W5,W6,W7,W8,VAL) :-
{SP = 0,W0=VAL,W1=IV1,W2=IV2,W3=IV3,W4=IV4,W5=IV5,W6=IV6,W7=IV7,W8=IV8}.
write_1(SP,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W0,W1,W2,W3,W4,W5,W6,W7,W8,VAL) :-
{SP = 1,W0=IV0,W1=VAL,W2=IV2,W3=IV3,W4=IV4,W5=IV5,W6=IV6,W7=IV7,W8=IV8}.
..

Analyse de l'output [Place la valeur 1 dans le IV5]

%METHOD:main([Ljava/lang/String;)V
% 0: lconst_1[10](1)
p1_1_0(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{VALUE = 1,SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_1(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 1: lstore_1[64](1)
p1_1_1(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX,VALUE = VALUE_1 ,WRITE_INDEX = 1, SP_INDEX_NEW =
SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_2(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 2: ldc2_w[20](3) 2
p1_1_2(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{VALUE = 6000.0,SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_3(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 5: dstore_3[74](1)
p1_1_3(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX,VALUE = VALUE_1 ,WRITE_INDEX = 2,
SP_INDEX_NEW = SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_4(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).

Registre	Valeur
IV0(args)	/
IV1(a)	/
IV2(b)	/
IV3(c)	/
IV4(i)	/
IV5	1
IV6	/
IV7	/
IV8	/
SP_INDEX	4

Analyse de l'output [Copie la valeur de IV5 dans IV1]

%METHOD:main([Ljava/lang/String;)V
% 0: lconst_1[10](1)
p1_1_0(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{VALUE = 1,SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_1(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 1: lstore_1[64](1)
p1_1_1(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX,VALUE = VALUE_1 ,WRITE_INDEX = 1, SP_INDEX_NEW =
SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_2(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 2: ldc2_w[20](3) 2
p1_1_2(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{VALUE = 6000.0,SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_3(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 5: dstore_3[74](1)
p1_1_3(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX,VALUE = VALUE_1 ,WRITE_INDEX = 2,
SP_INDEX_NEW = SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_4(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).

Registre	Valeur
IV0(args)	/
IV1(a)	1
IV2(b)	/
IV3(c)	/
IV4(i)	/
IV5	1
IV6	/
IV7	/
IV8	/
SP_INDEX	5

Analyse de l'output [Place la valeur 6000.0 dans IV5]

%METHOD:main([Ljava/lang/String;)V
% 0: lconst_1[10](1)
p1_1_0(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{VALUE = 1,SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_1(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 1: lstore_1[64](1)
p1_1_1(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX,VALUE = VALUE_1 ,WRITE_INDEX = 1, SP_INDEX_NEW =
SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_2(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 2: ldc2_w[20](3) 2
p1_1_2(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{VALUE = 6000.0,SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_3(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 5: dstore_3[74](1)
p1_1_3(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX,VALUE = VALUE_1 ,WRITE_INDEX = 2,
SP_INDEX_NEW = SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_4(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).

Registre	Valeur
IV0(args)	/
IV1(a)	1
IV2(b)	/
IV3(c)	/
IV4(i)	/
IV5	6000.0
IV6	/
IV7	/
IV8	/
SP_INDEX	4

Analyse de l'output [Copie la valeur de IV5 dans IV2]

%METHOD:main([Ljava/lang/String;)V
% 0: lconst_1[10](1)
p1_1_0(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{VALUE = 1,SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_1(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 1: lstore_1[64](1)
p1_1_1(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX,VALUE = VALUE_1 ,WRITE_INDEX = 1, SP_INDEX_NEW =
SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_2(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 2: ldc2_w[20](3) 2
p1_1_2(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{VALUE = 6000.0,SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_3(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 5: dstore_3[74](1)
p1_1_3(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX,VALUE = VALUE_1 ,WRITE_INDEX = 2,
SP_INDEX_NEW = SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_4(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).

Registre	Valeur
IV0(args)	/
IV1(a)	1
IV2(b)	6000.0
IV3(c)	/
IV4(i)	/
IV5	6000.0
IV6	/
IV7	/
IV8	/
SP_INDEX	5

Analyse de l'output [Place la valeur 2 dans IV5]

% 6: iconst_2[5](1)
p1_1_4(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{VALUE = 2,SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_5(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 7: istore[54](2) 5
p1_1_5(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX,VALUE = VALUE_1 ,WRITE_INDEX = 3, SP_INDEX_NEW =
SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_6(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 9: iconst_0[3](1)
p1_1_6(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{VALUE = 0,SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_7(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 10: istore[54](2) 6
p1_1_7(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX,VALUE = VALUE_1 ,WRITE_INDEX = 4, SP_INDEX_NEW =
SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_8(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).

Registre	Valeur
IV0(args)	/
IV1(a)	1
IV2(b)	6000.0
IV3(c)	/
IV4(i)	/
IV5	2
IV6	/
IV7	/
IV8	/
SP_INDEX	4

Analyse de l'output [Copie la valeur de IV5 dans IV3]

% 6: iconst_2[5](1)
p1_1_4(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{VALUE = 2,SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_5(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 7: istore[54](2) 5
p1_1_5(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX,VALUE = VALUE_1 ,WRITE_INDEX = 3, SP_INDEX_NEW =
SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_6(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 9: iconst_0[3](1)
p1_1_6(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{VALUE = 0,SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_7(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 10: istore[54](2) 6
p1_1_7(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX,VALUE = VALUE_1 ,WRITE_INDEX = 4, SP_INDEX_NEW =
SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_8(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).

Registre	Valeur
IV0(args)	/
IV1(a)	1
IV2(b)	6000.0
IV3(c)	2
IV4(i)	/
IV5	2
IV6	/
IV7	/
IV8	/
SP_INDEX	5

Analyse de l'output [Place la valeur 0 dans IV5]

```
% 6: iconst_2[5](1)
p1_1_4(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{VALUE = 2,SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_5(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 7: istore[54](2) 5
p1_1_5(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX,VALUE = VALUE_1 ,WRITE_INDEX = 3, SP_INDEX_NEW =
SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_6(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 9: iconst_0[3](1)
p1_1_6(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{VALUE = 0,SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_7(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 10: istore[54](2) 6
p1_1_7(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX,VALUE = VALUE_1 ,WRITE_INDEX = 4, SP_INDEX_NEW =
SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_8(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
```

Registre	Valeur
IV0(args)	/
IV1(a)	1
IV2(b)	6000.0
IV3(c)	2
IV4(i)	/
IV5	0
IV6	/
IV7	/
IV8	/
SP_INDEX	4

Analyse de l'output [Copie de la valeur de IV5 dans IV4]

```
% 6: iconst_2[5](1)
p1_1_4(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{VALUE = 2,SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_5(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 7: istore[54](2) 5
p1_1_5(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX,VALUE = VALUE_1 ,WRITE_INDEX = 3, SP_INDEX_NEW =
SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_6(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 9: iconst_0[3](1)
p1_1_6(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{VALUE = 0,SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_7(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 10: istore[54](2) 6
p1_1_7(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX,VALUE = VALUE_1 ,WRITE_INDEX = 4, SP_INDEX_NEW =
SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_8(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
```

Registre	Valeur
IV0(args)	/
IV1(a)	1
IV2(b)	6000.0
IV3(c)	2
IV4(i)	0
IV5	0
IV6	/
IV7	/
IV8	/
SP_INDEX	5

Analyse de l'output

```
public static void main(String args[]){
    long a = 1;
    double b = 6000;
    int c = 2;
    short i = 0;
<<<<<WE ARE HERE>>>>>
    while(i < c){
        if (b == 6000) {b = b/c;} else{a=a+9;}
        i++;
    }
    c = -c;
}//RESULT :: a=10 b=3000.0 c=-2 i=2
```

Analyse de l'output [Copie de la valeur de IV4 dans IV5]

% 12: iload[21](2) 6
p1_1_8(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =4, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX =
SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_9(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 14: iload[21](2) 5
p1_1_9(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =3, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX =
SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_10(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 16: if_icmpge[162](3) -⟨ 52
p1_1_10(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX -1,SP_INDEX_NEW = SP_INDEX -2,
VALUE_2 ⟨ VALUE_1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
read_1(INDEX_2,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_2),
p1_1_11(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
p1_1_10(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX -1,SP_INDEX_NEW = SP_INDEX -2,
VALUE2 ⟩= VALUE_1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
read_1(INDEX_2,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_2),
p1_1_31(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).

Registre	Valeur
IV0(args)	/
IV1(a)	1
IV2(b)	6000.0
IV3(c)	2
IV4(i)	0
IV5	0
IV6	/
IV7	/
IV8	/
SP_INDEX	4

Analyse de l'output [Copie de la valeur de IV3 dans IV6]

% 12: iload[21](2) 6
p1_1_8(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =4, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX =
SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_9(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 14: iload[21](2) 5
p1_1_9(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =3, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX =
SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_10(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 16: if_icmpge[162](3) -⟨ 52
p1_1_10(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX -1,SP_INDEX_NEW = SP_INDEX -2,
VALUE_2 ⟨ VALUE_1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
read_1(INDEX_2,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_2),
p1_1_11(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
p1_1_10(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX -1,SP_INDEX_NEW = SP_INDEX -2,
VALUE2 ⟩= VALUE_1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
read_1(INDEX_2,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_2),
p1_1_31(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).

Registre	Valeur
IV0(args)	/
IV1(a)	1
IV2(b)	6000.0
IV3(c)	2
IV4(i)	0
IV5	0
IV6	2
IV7	/
IV8	/
SP_INDEX	5

Analyse de l'output [val@IV6 est supérieur à val@IV5]

% 12: iload[21](2) 6
p1_1_8(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =4, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_9(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 14: iload[21](2) 5
p1_1_9(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =3, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_10(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 16: if_icmpge[162](3) -⟨ 52
p1_1_10(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX -1,SP_INDEX_NEW = SP_INDEX -2,
VALUE_2 ⟨ VALUE_1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
read_1(INDEX_2,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_2),
p1_1_11(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
p1_1_10(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX -1,SP_INDEX_NEW = SP_INDEX -2,
VALUE2 ⟩= VALUE_1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
read_1(INDEX_2,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_2),
p1_1_31(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).

Registre	Valeur
IV0(args)	/
IV1(a)	1
IV2(b)	6000.0
IV3(c)	2
IV4(i)	0
IV5	0
IV6	2
IV7	/
IV8	/
SP_INDEX	6

Analyse de l'output [Copie de la valeur de IV2 dans IV5]

% 19: dload_3[41](1)
p1_1_11(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =2, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX =
SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_12(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 20: ldc2_w[20](3) 2
p1_1_12(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{VALUE = 6000.0,SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_13(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 23: dcmpl[151](1)
p1_1_13(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX -1,SP_INDEX_NEW = SP_INDEX -1,
WRITE_INDEX = SP_INDEX -1, VALUE_2 $\rangle$ VALUE_1, VALUE = 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
read_1(INDEX_2,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_2),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_14(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
p1_1_13(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX -1,SP_INDEX_NEW = SP_INDEX -1,
WRITE_INDEX = SP_INDEX -1, VALUE_2 = VALUE_1, VALUE = 0},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
read_1(INDEX_2,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_2),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_14(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
p1_1_13(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX -1,SP_INDEX_NEW = SP_INDEX -1,
WRITE_INDEX = SP_INDEX -1, VALUE_2 $\langle$ VALUE_1, VALUE = -1},

Registre	Valeur
IV0(args)	/
IV1(a)	1
IV2(b)	6000.0
IV3(c)	2
IV4(i)	0
IV5	6000.0
IV6	2
IV7	/
IV8	/
SP_INDEX	4

Analyse de l'output [Place la valeur 6000.0 dans IV6]

% 19: dload_3[41](1)
p1_1_11(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =2, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX =
SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_12(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 20: ldc2_w[20](3) 2
p1_1_12(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{VALUE = 6000.0,SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_13(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 23: dcmpl[151](1)
p1_1_13(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX -1,SP_INDEX_NEW = SP_INDEX -1,
WRITE_INDEX = SP_INDEX -1, VALUE_2 ⟩ VALUE_1, VALUE = 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
read_1(INDEX_2,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_2),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_14(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
p1_1_13(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX -1,SP_INDEX_NEW = SP_INDEX -1,
WRITE_INDEX = SP_INDEX -1, VALUE_2 = VALUE_1, VALUE = 0},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
read_1(INDEX_2,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_2),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_14(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
p1_1_13(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX -1,SP_INDEX_NEW = SP_INDEX -1,
WRITE_INDEX = SP_INDEX -1, VALUE_2 ⟨ VALUE_1, VALUE = -1},

Registre	Valeur
IV0(args)	/
IV1(a)	1
IV2(b)	6000.0
IV3(c)	2
IV4(i)	0
IV5	6000.0
IV6	6000.0
IV7	/
IV8	/
SP_INDEX	5

Analyse de l'output [val@IV6 = val@IV5, on place 0 dans IV5]

% 20: ldc2_w[20](3) 2
p1_1_12(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{VALUE = 6000.0,SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_13(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 23: dcmpl[151](1)
p1_1_13(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX -1,SP_INDEX_NEW = SP_INDEX -1,
WRITE_INDEX = SP_INDEX -1, VALUE_2 ⟩ VALUE_1, VALUE = 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
read_1(INDEX_2,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_2),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_14(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
p1_1_13(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX -1,SP_INDEX_NEW = SP_INDEX -1,
WRITE_INDEX = SP_INDEX -1, VALUE_2 = VALUE_1, VALUE = 0},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
read_1(INDEX_2,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_2),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_14(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
p1_1_13(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX -1,SP_INDEX_NEW = SP_INDEX -1,
WRITE_INDEX = SP_INDEX -1, VALUE_2 ⟨ VALUE_1, VALUE = -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
read_1(INDEX_2,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_2),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_14(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).

Registre	Valeur
IV0(args)	/
IV1(a)	1
IV2(b)	6000.0
IV3(c)	2
IV4(i)	0
IV5	0
IV6	6000.0
IV7	/
IV8	/
SP_INDEX	6

Analyse de l'output [val@IV5 != 0, on ne branche pas]

% 24: ifne[154](3) -⟩ 36
p1_1_14(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX,SP_INDEX_NEW = SP_INDEX -1, VALUE_1 = 0},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
p1_1_15(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
p1_1_14(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX,SP_INDEX_NEW = SP_INDEX -1, VALUE_1 =\= 0},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
p1_1_21(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 27: dload_3[41](1)
p1_1_15(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =2, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX =
SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_16(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 28: iload[21](2) 5
p1_1_16(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =3, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX =
SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_17(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 30: i2d[135](1)
p1_1_17(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{},
p1_1_18(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R).

Registre	Valeur
IV0(args)	/
IV1(a)	1
IV2(b)	6000.0
IV3(c)	2
IV4(i)	0
IV5	0
IV6	6000.0
IV7	/
IV8	/
SP_INDEX	5

Analyse de l'output [Copie de la valeur de IV2 dans IV5]

```
% 24: ifne[154](3) -⟩ 36
p1_1_14(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX,SP_INDEX_NEW = SP_INDEX -1, VALUE_1 = 0},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
p1_1_15(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
p1_1_14(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX,SP_INDEX_NEW = SP_INDEX -1, VALUE_1 =\= 0},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
p1_1_21(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 27: dload_3[41](1)
p1_1_15(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =2, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX =
SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_16(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 28: iload[21](2) 5
p1_1_16(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =3, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX =
SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_17(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 30: i2d[135](1)
p1_1_17(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{},
p1_1_18(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R).
```

Registre	Valeur
IV0(args)	/
IV1(a)	1
IV2(b)	6000.0
IV3(c)	2
IV4(i)	0
IV5	6000.0
IV6	6000.0
IV7	/
IV8	/
SP_INDEX	4

Analyse de l'output [Copie de la valeur de IV3 dans IV6]

% 24: ifne[154](3) -⟩ 36
p1_1_14(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX,SP_INDEX_NEW = SP_INDEX -1, VALUE_1 = 0},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
p1_1_15(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
p1_1_14(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX,SP_INDEX_NEW = SP_INDEX -1, VALUE_1 =\= 0},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
p1_1_21(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 27: dload_3[41](1)
p1_1_15(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =2, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX =
SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_16(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 28: iload[21](2) 5
p1_1_16(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =3, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX =
SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_17(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 30: i2d[135](1)
p1_1_17(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{},
p1_1_18(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R).

Registre	Valeur
IV0(args)	/
IV1(a)	1
IV2(b)	6000.0
IV3(c)	2
IV4(i)	0
IV5	6000.0
IV6	2
IV7	/
IV8	/
SP_INDEX	5

Analyse de l'output [Conversion (Ne fait rien)]

```
% 24: ifne[154](3) -⟩ 36
p1_1_14(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX,SP_INDEX_NEW = SP_INDEX -1, VALUE_1 = 0},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
p1_1_15(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
p1_1_14(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX,SP_INDEX_NEW = SP_INDEX -1, VALUE_1 =\= 0},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
p1_1_21(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 27: dload_3[41](1)
p1_1_15(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =2, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX =
SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_16(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 28: iload[21](2) 5
p1_1_16(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =3, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX =
SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_17(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 30: i2d[135](1)
p1_1_17(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{},
p1_1_18(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R).
```

Registre	Valeur
IV0(args)	/
IV1(a)	1
IV2(b)	6000.0
IV3(c)	2
IV4(i)	0
IV5	6000.0
IV6	2
IV7	/
IV8	/
SP_INDEX	6

Analyse de l'output [Division de IV5 par IV6, resultat dans IV5]

% 31: ddiv[111](1)
p1_1_18(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX - 1, VALUE = VALUE_1 / VALUE_2,
SP_INDEX_NEW = SP_INDEX -1, WRITE_INDEX = SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
read_1(INDEX_2,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_2),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_19(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 32: dstore_3[74](1)
p1_1_19(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX,VALUE = VALUE_1 ,WRITE_INDEX = 2, SP_INDEX_NEW =
SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_20(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 33: goto[167](3) -⟩ 42
p1_1_20(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{},
p1_1_25(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R).
% 36: lload_1[31](1)
p1_1_21(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =1, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX =
SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_22(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 37: ldc2_w[20](3) 4
p1_1_22(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{VALUE = 9,SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),

Registre	Valeur
IV0(args)	/
IV1(a)	1
IV2(b)	6000.0
IV3(c)	2
IV4(i)	0
IV5	3000
IV6	2
IV7	/
IV8	/
SP_INDEX	6

Analyse de l'output [Copie de la IV5 dans IV2]

% 31: ddiv[111](1)
p1_1_18(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX - 1, VALUE = VALUE_1 / VALUE_2,
SP_INDEX_NEW = SP_INDEX -1, WRITE_INDEX = SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
read_1(INDEX_2,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_2),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_19(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 32: dstore_3[74](1)
p1_1_19(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX,VALUE = VALUE_1 ,WRITE_INDEX = 2, SP_INDEX_NEW =
SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_20(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 33: goto[167](3) -⟩ 42
p1_1_20(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{},
p1_1_25(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R).
% 36: lload_1[31](1)
p1_1_21(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =1, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX =
SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_22(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 37: ldc2_w[20](3) 4
p1_1_22(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{VALUE = 9,SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),

Registre	Valeur
IV0(args)	/
IV1(a)	1
IV2(b)	3000
IV3(c)	2
IV4(i)	0
IV5	3000
IV6	2
IV7	/
IV8	/
SP_INDEX	5

Analyse de l'output [Branche à l'instruction spécifiée]

% 31: ddiv[111](1)
p1_1_18(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX - 1, VALUE = VALUE_1 / VALUE_2,
SP_INDEX_NEW = SP_INDEX -1, WRITE_INDEX = SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
read_1(INDEX_2,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_2),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_19(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 32: dstore_3[74](1)
p1_1_19(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX,VALUE = VALUE_1 ,WRITE_INDEX = 2, SP_INDEX_NEW =
SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_20(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 33: goto[167](3) -⟩ 42
p1_1_20(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{},
p1_1_25(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R).
% 36: lload_1[31](1)
p1_1_21(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =1, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX =
SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_22(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 37: ldc2_w[20](3) 4
p1_1_22(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{VALUE = 9,SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),

Registre	Valeur
IV0(args)	/
IV1(a)	1
IV2(b)	3000
IV3(c)	2
IV4(i)	0
IV5	3000
IV6	2
IV7	/
IV8	/
SP_INDEX	4

Analyse de l'output [Copie de la valeur de IV4 dans IV5]

```
% 42: iload[21](2) 6
p1_1_25(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =4, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX =
SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_26(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 44: iconst_1[4](1)
p1_1_26(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{VALUE = 1,SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_27(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 45: iadd[96](1)
p1_1_27(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX - 1, VALUE = VALUE_1 + VALUE_2,
SP_INDEX_NEW = SP_INDEX -1, WRITE_INDEX = SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
read_1(INDEX_2,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_2),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_28(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 46: i2s[147](1)
p1_1_28(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{},
p1_1_29(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R).
```

Registre	Valeur
IV0(args)	/
IV1(a)	1
IV2(b)	3000
IV3(c)	2
IV4(i)	0
IV5	0
IV6	2
IV7	/
IV8	/
SP_INDEX	4

Analyse de l'output [Place la valeur 1 dans IV6]

```
% 42: iload[21](2) 6
p1_1_25(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =4, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX =
SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_26(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 44: iconst_1[4](1)
p1_1_26(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{VALUE = 1,SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_27(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 45: iadd[96](1)
p1_1_27(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX - 1, VALUE = VALUE_1 + VALUE_2,
SP_INDEX_NEW = SP_INDEX -1, WRITE_INDEX = SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
read_1(INDEX_2,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_2),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_28(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 46: i2s[147](1)
p1_1_28(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{},
p1_1_29(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R).
```

Registre	Valeur
IV0(args)	/
IV1(a)	1
IV2(b)	3000
IV3(c)	2
IV4(i)	0
IV5	0
IV6	1
IV7	/
IV8	/
SP_INDEX	5

Analyse de l'output [Somme de IV6 et IV5, résultat dans IV5]

% 42: iload[21](2) 6
p1_1_25(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =4, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_26(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 44: iconst_1[4](1)
p1_1_26(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{VALUE = 1,SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_27(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 45: iadd[96](1)
p1_1_27(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX - 1, VALUE = VALUE_1 + VALUE_2,
SP_INDEX_NEW = SP_INDEX -1, WRITE_INDEX = SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
read_1(INDEX_2,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_2),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_28(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 46: i2s[147](1)
p1_1_28(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{},
p1_1_29(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R).

Registre	Valeur
IV0(args)	/
IV1(a)	1
IV2(b)	3000
IV3(c)	2
IV4(i)	0
IV5	1
IV6	1
IV7	/
IV8	/
SP_INDEX	6

Analyse de l'output [Conversion (Ne fait rien)]

```
% 42: iload[21](2) 6
p1_1_25(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =4, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX =
SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_26(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 44: iconst_1[4](1)
p1_1_26(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{VALUE = 1,SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_27(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 45: iadd[96](1)
p1_1_27(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX - 1, VALUE = VALUE_1 + VALUE_2,
SP_INDEX_NEW = SP_INDEX -1, WRITE_INDEX = SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
read_1(INDEX_2,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_2),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_28(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 46: i2s[147](1)
p1_1_28(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{},
p1_1_29(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R).
```

Registre	Valeur
IV0(args)	/
IV1(a)	1
IV2(b)	3000
IV3(c)	2
IV4(i)	0
IV5	1
IV6	1
IV7	/
IV8	/
SP_INDEX	5

Analyse de l'output [Copie de la valeur de IV5 dans IV4]

% 47: istore[54](2) 6
p1_1_29(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX,VALUE = VALUE_1 ,WRITE_INDEX = 4, SP_INDEX_NEW =
SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_30(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 49: goto[167](3) -⟩ 12
p1_1_30(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{},
p1_1_8(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R).
% 52: iload[21](2) 5
p1_1_31(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =3, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX =
SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_32(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 54: ineg[116](1)
p1_1_32(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, VALUE = 0 - VALUE_1, WRITE_INDEX = SP_INDEX,
SP_INDEX_NEW = SP_INDEX},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_33(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).

Registre	Valeur
IV0(args)	/
IV1(a)	1
IV2(b)	3000
IV3(c)	2
IV4(i)	1
IV5	1
IV6	1
IV7	/
IV8	/
SP_INDEX	5

Analyse de l'output [Branche à l'instruction spécifiée]

```
% 47: istore[54](2) 6
p1_1_29(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX,VALUE = VALUE_1 ,WRITE_INDEX = 4, SP_INDEX_NEW =
SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_30(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 49: goto[167](3) -⟩ 12
p1_1_30(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{},
p1_1_8(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R).
% 52: iload[21](2) 5
p1_1_31(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =3, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX =
SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_32(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 54: ineg[116](1)
p1_1_32(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, VALUE = 0 - VALUE_1, WRITE_INDEX = SP_INDEX,
SP_INDEX_NEW = SP_INDEX},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_33(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
```

Registre	Valeur
IV0(args)	/
IV1(a)	1
IV2(b)	3000
IV3(c)	2
IV4(i)	1
IV5	1
IV6	1
IV7	/
IV8	/
SP_INDEX	4

Analyse de l'output [Copie de la valeur de IV4 dans IV5]

% 12: iload[21](2) 6
p1_1_8(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =4, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX =
SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_9(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 14: iload[21](2) 5
p1_1_9(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =3, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX =
SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_10(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 16: if_icmpge[162](3) -⟩ 52
p1_1_10(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX -1,SP_INDEX_NEW = SP_INDEX -2, VALUE_2
⟨ VALUE_1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
read_1(INDEX_2,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_2),
p1_1_11(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
p1_1_10(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX -1,SP_INDEX_NEW = SP_INDEX -2, VALUE2
⟩= VALUE_1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
read_1(INDEX_2,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_2),
p1_1_31(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).

Registre	Valeur
IV0(args)	/
IV1(a)	1
IV2(b)	3000
IV3(c)	2
IV4(i)	1
IV5	1
IV6	1
IV7	/
IV8	/
SP_INDEX	4

Analyse de l'output [Copie de la valeur de IV3 dans IV6]

% 12: iload[21](2) 6
p1_1_8(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =4, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_9(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 14: iload[21](2) 5
p1_1_9(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =3, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_10(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 16: if_icmpge[162](3) -⟩ 52
p1_1_10(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX -1,SP_INDEX_NEW = SP_INDEX -2, VALUE_2 ⟨ VALUE_1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
read_1(INDEX_2,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_2),
p1_1_11(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
p1_1_10(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX -1,SP_INDEX_NEW = SP_INDEX -2, VALUE2 ⟩= VALUE_1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
read_1(INDEX_2,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_2),
p1_1_31(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).

Registre	Valeur
IV0(args)	/
IV1(a)	1
IV2(b)	3000
IV3(c)	2
IV4(i)	1
IV5	1
IV6	2
IV7	/
IV8	/
SP_INDEX	5

Analyse de l'output [val@IV6 est supérieure val@IV5]

% 12: iload[21](2) 6
p1_1_8(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =4, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_9(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 14: iload[21](2) 5
p1_1_9(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =3, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_10(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 16: if_icmpge[162](3) -⟩ 52
p1_1_10(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX -1,SP_INDEX_NEW = SP_INDEX -2,
VALUE_2 ⟨ VALUE_1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
read_1(INDEX_2,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_2),
p1_1_11(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
p1_1_10(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX -1,SP_INDEX_NEW = SP_INDEX -2, VALUE2 ⟩= VALUE_1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
read_1(INDEX_2,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_2),
p1_1_31(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).

Registre	Valeur
IV0(args)	/
IV1(a)	1
IV2(b)	3000
IV3(c)	2
IV4(i)	1
IV5	1
IV6	2
IV7	/
IV8	/
SP_INDEX	6

Analyse de l'output [Copie de la valeur de IV2 dans IV5]

```
% 19: dload_3[41](1)
p1_1_11(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =2, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX =
SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_12(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 20: ldc2_w[20](3) 2
p1_1_12(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{VALUE = 6000.0,SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_13(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
```

Registre	Valeur
IV0(args)	/
IV1(a)	1
IV2(b)	3000
IV3(c)	2
IV4(i)	1
IV5	3000
IV6	2
IV7	/
IV8	/
SP_INDEX	4

Analyse de l'output [Place la valeur 6000.0 dans IV6]

```
% 19: dload_3[41](1)
p1_1_11(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =2, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX =
SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_12(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 20: ldc2_w[20](3) 2
p1_1_12(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{VALUE = 6000.0,SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_13(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
```

Registre	Valeur
IV0(args)	/
IV1(a)	1
IV2(b)	3000
IV3(c)	2
IV4(i)	1
IV5	3000
IV6	6000
IV7	/
IV8	/
SP_INDEX	5

Analyse de l'output [val@IV6 sup. val@IV5, place -1 dans IV5]

```
% 23: dcmpl[151](1)
p1_1_13(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX -1,SP_INDEX_NEW = SP_INDEX -1,
WRITE_INDEX = SP_INDEX -1, VALUE_2 ⟩ VALUE_1, VALUE = 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
read_1(INDEX_2,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_2),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_14(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
p1_1_13(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX -1,SP_INDEX_NEW = SP_INDEX -1,
WRITE_INDEX = SP_INDEX -1, VALUE_2 = VALUE_1, VALUE = 0},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
read_1(INDEX_2,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_2),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_14(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
 p1_1_13(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX -1,SP_INDEX_NEW = SP_INDEX -1,
WRITE_INDEX = SP_INDEX -1, VALUE_2 ⟨ VALUE_1, VALUE = -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
read_1(INDEX_2,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_2),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_14(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
```

Registre	Valeur
IV0(args)	/
IV1(a)	1
IV2(b)	3000
IV3(c)	2
IV4(i)	1
IV5	-1
IV6	6000
IV7	/
IV8	/
SP_INDEX	6

Analyse de l'output [La valeur de IV5 != 0, on branche]

% 24: ifne[154](3) -⟩ 36
p1_1_14(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX,SP_INDEX_NEW = SP_INDEX -1, VALUE_1 = 0},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
p1_1_15(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
p1_1_14(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX,SP_INDEX_NEW = SP_INDEX -1, VALUE_1 =\= 0},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
p1_1_21(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 27: dload_3[41](1)
p1_1_15(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =2, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX =
SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_16(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 28: iload[21](2) 5
p1_1_16(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =3, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX =
SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_17(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).

Registre	Valeur
IV0(args)	/
IV1(a)	1
IV2(b)	3000
IV3(c)	2
IV4(i)	1
IV5	-1
IV6	6000
IV7	/
IV8	/
SP_INDEX	5

Analyse de l'output [Copie la valeur de IV1 dans IV5]

% 36: lload_1[31](1)
p1_1_21(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =1, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_22(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 37: ldc2_w[20](3) 4
p1_1_22(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{VALUE = 9,SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_23(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 40: ladd[97](1)
p1_1_23(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX - 1, VALUE = VALUE_1 + VALUE_2,
SP_INDEX_NEW = SP_INDEX -1, WRITE_INDEX = SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
read_1(INDEX_2,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_2),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_24(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 41: lstore_1[64](1)
p1_1_24(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX,VALUE = VALUE_1 ,WRITE_INDEX = 1, SP_INDEX_NEW = SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_25(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).

Registre	Valeur
IV0(args)	/
IV1(a)	1
IV2(b)	3000
IV3(c)	2
IV4(i)	1
IV5	1
IV6	6000
IV7	/
IV8	/
SP_INDEX	4

Analyse de l'output [Place la valeur 9 dans IV6]

% 36: lload_1[31](1)
p1_1_21(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =1, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_22(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 37: ldc2_w[20](3) 4
p1_1_22(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{VALUE = 9,SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_23(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 40: ladd[97](1)
p1_1_23(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX - 1, VALUE = VALUE_1 + VALUE_2,
SP_INDEX_NEW = SP_INDEX -1, WRITE_INDEX = SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
read_1(INDEX_2,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_2),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_24(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 41: lstore_1[64](1)
p1_1_24(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX,VALUE = VALUE_1 ,WRITE_INDEX = 1, SP_INDEX_NEW = SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_25(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).

Registre	Valeur
IV0(args)	/
IV1(a)	1
IV2(b)	3000
IV3(c)	2
IV4(i)	1
IV5	1
IV6	9
IV7	/
IV8	/
SP_INDEX	5

Analyse de l'output [Somme de IV5 et IV6, résultat dans IV5]

% 36: lload_1[31](1)
p1_1_21(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =1, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX =
SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_22(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 37: ldc2_w[20](3) 4
p1_1_22(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{VALUE = 9,SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_23(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 40: ladd[97](1)
p1_1_23(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX - 1, VALUE = VALUE_1 + VALUE_2,
SP_INDEX_NEW = SP_INDEX -1, WRITE_INDEX = SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
read_1(INDEX_2,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_2),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_24(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 41: lstore_1[64](1)
p1_1_24(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX,VALUE = VALUE_1 ,WRITE_INDEX = 1, SP_INDEX_NEW =
SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_25(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).

Registre	Valeur
IV0(args)	/
IV1(a)	1
IV2(b)	3000
IV3(c)	2
IV4(i)	1
IV5	10
IV6	9
IV7	/
IV8	/
SP_INDEX	6

Analyse de l'output [Copie de la valeur de IV5 dans IV1]

% 36: lload_1[31](1)
p1_1_21(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =1, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX =
SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_22(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 37: ldc2_w[20](3) 4
p1_1_22(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{VALUE = 9,SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_23(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 40: ladd[97](1)
p1_1_23(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX - 1, VALUE = VALUE_1 + VALUE_2,
SP_INDEX_NEW = SP_INDEX -1, WRITE_INDEX = SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
read_1(INDEX_2,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_2),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_24(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 41: lstore_1[64](1)
p1_1_24(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX,VALUE = VALUE_1 ,WRITE_INDEX = 1, SP_INDEX_NEW =
SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_25(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).

Registre	Valeur
IV0(args)	/
IV1(a)	10
IV2(b)	3000
IV3(c)	2
IV4(i)	1
IV5	10
IV6	9
IV7	/
IV8	/
SP_INDEX	5

Analyse de l'output [Copie de la valeur de IV4 dans IV5]

```
% 42: iload[21](2) 6
p1_1_25(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =4, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX =
SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_26(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 44: iconst_1[4](1)
p1_1_26(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{VALUE = 1,SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_27(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 45: iadd[96](1)
p1_1_27(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX - 1, VALUE = VALUE_1 + VALUE_2,
SP_INDEX_NEW = SP_INDEX -1, WRITE_INDEX = SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
read_1(INDEX_2,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_2),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_28(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 46: i2s[147](1)
p1_1_28(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{},
p1_1_29(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R).
```

Registre	Valeur
IV0(args)	/
IV1(a)	10
IV2(b)	3000
IV3(c)	2
IV4(i)	1
IV5	1
IV6	9
IV7	/
IV8	/
SP_INDEX	4

Analyse de l'output [Place la valeur 1 dans IV6]

```
% 42: iload[21](2) 6
p1_1_25(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =4, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX =
SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_26(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 44: iconst_1[4](1)
p1_1_26(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{VALUE = 1,SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_27(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 45: iadd[96](1)
p1_1_27(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX - 1, VALUE = VALUE_1 + VALUE_2,
SP_INDEX_NEW = SP_INDEX -1, WRITE_INDEX = SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
read_1(INDEX_2,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_2),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_28(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 46: i2s[147](1)
p1_1_28(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{},
p1_1_29(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R).
```

Registre	Valeur
IV0(args)	/
IV1(a)	10
IV2(b)	3000
IV3(c)	2
IV4(i)	1
IV5	1
IV6	1
IV7	/
IV8	/
SP_INDEX	5

Analyse de l'output [Somme de IV5 et IV6, résultat dans IV5]

% 42: iload[21](2) 6
p1_1_25(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =4, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX =
SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_26(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 44: iconst_1[4](1)
p1_1_26(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{VALUE = 1,SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_27(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 45: iadd[96](1)
p1_1_27(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX - 1, VALUE = VALUE_1 + VALUE_2,
SP_INDEX_NEW = SP_INDEX -1, WRITE_INDEX = SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
read_1(INDEX_2,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_2),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_28(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 46: i2s[147](1)
p1_1_28(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{},
p1_1_29(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R).

Registre	Valeur
IV0(args)	/
IV1(a)	10
IV2(b)	3000
IV3(c)	2
IV4(i)	1
IV5	2
IV6	1
IV7	/
IV8	/
SP_INDEX	6

Analyse de l'output [Conversion (Ne fait rien)]

```
% 42: iload[21](2) 6
p1_1_25(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =4, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX =
SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_26(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 44: iconst_1[4](1)
p1_1_26(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{VALUE = 1,SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_27(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 45: iadd[96](1)
p1_1_27(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX - 1, VALUE = VALUE_1 + VALUE_2,
SP_INDEX_NEW = SP_INDEX -1, WRITE_INDEX = SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
read_1(INDEX_2,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_2),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_28(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 46: i2s[147](1)
p1_1_28(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{},
p1_1_29(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R).
```

Registre	Valeur
IV0(args)	/
IV1(a)	10
IV2(b)	3000
IV3(c)	2
IV4(i)	1
IV5	2
IV6	1
IV7	/
IV8	/
SP_INDEX	5

Analyse de l'output [Copie de la valeur de IV5 dans IV4]

% 47: istore[54](2) 6
p1_1_29(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX,VALUE = VALUE_1 ,WRITE_INDEX = 4, SP_INDEX_NEW =
SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_30(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 49: goto[167](3) -⟩ 12
p1_1_30(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{},
p1_1_8(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R).
% 52: iload[21](2) 5
p1_1_31(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =3, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX =
SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_32(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 54: ineg[116](1)
p1_1_32(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, VALUE = 0 - VALUE_1, WRITE_INDEX = SP_INDEX,
SP_INDEX_NEW = SP_INDEX},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_33(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).

Registre	Valeur
IV0(args)	/
IV1(a)	10
IV2(b)	3000
IV3(c)	2
IV4(i)	2
IV5	2
IV6	1
IV7	/
IV8	/
SP_INDEX	5

Analyse de l'output [Branchement à l'instruction spécifiée]

```
% 47: istore[54](2) 6
p1_1_29(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX,VALUE = VALUE_1 ,WRITE_INDEX = 4, SP_INDEX_NEW =
SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_30(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 49: goto[167](3) -⟩ 12
p1_1_30(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{},
p1_1_8(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R).
% 52: iload[21](2) 5
p1_1_31(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =3, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX =
SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_32(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 54: ineg[116](1)
p1_1_32(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, VALUE = 0 - VALUE_1, WRITE_INDEX = SP_INDEX,
SP_INDEX_NEW = SP_INDEX},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_33(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
```

Registre	Valeur
IV0(args)	/
IV1(a)	10
IV2(b)	3000
IV3(c)	2
IV4(i)	2
IV5	2
IV6	1
IV7	/
IV8	/
SP_INDEX	4

Analyse de l'output [Copie de la valeur de IV4 dans IV5]

% 12: iload[21](2) 6
p1_1_8(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =4, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX =
SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_9(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 14: iload[21](2) 5
p1_1_9(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =3, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX =
SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_10(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 16: if_icmpge[162](3) -⟩ 52
p1_1_10(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX -1,SP_INDEX_NEW = SP_INDEX -2, VALUE_2
⟨ VALUE_1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
read_1(INDEX_2,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_2),
p1_1_11(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
p1_1_10(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX -1,SP_INDEX_NEW = SP_INDEX -2, VALUE2
⟩= VALUE_1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
read_1(INDEX_2,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_2),
p1_1_31(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).

Registre	Valeur
IV0(args)	/
IV1(a)	10
IV2(b)	3000
IV3(c)	2
IV4(i)	2
IV5	2
IV6	1
IV7	/
IV8	/
SP_INDEX	4

Analyse de l'output [Copie de la valeur de IV3 dans IV6]

% 12: iload[21](2) 6
p1_1_8(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =4, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_9(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 14: iload[21](2) 5
p1_1_9(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =3, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_10(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 16: if_icmpge[162](3) -⟩ 52
p1_1_10(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX -1,SP_INDEX_NEW = SP_INDEX -2, VALUE_2 ⟨ VALUE_1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
read_1(INDEX_2,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_2),
p1_1_11(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
p1_1_10(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX -1,SP_INDEX_NEW = SP_INDEX -2, VALUE2 ⟩= VALUE_1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
read_1(INDEX_2,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_2),
p1_1_31(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).

Registre	Valeur
IV0(args)	/
IV1(a)	10
IV2(b)	3000
IV3(c)	2
IV4(i)	2
IV5	2
IV6	2
IV7	/
IV8	/
SP_INDEX	5

Analyse de l'output [val@IV6 sup. ou égal val@IV5, on branche]

% 12: iload[21](2) 6
p1_1_8(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =4, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_9(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 14: iload[21](2) 5
p1_1_9(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =3, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX = SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_10(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 16: if_icmpge[162](3) -⟩ 52
p1_1_10(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX -1,SP_INDEX_NEW = SP_INDEX -2,
VALUE_2 ⟨ VALUE_1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
read_1(INDEX_2,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_2),
p1_1_11(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
p1_1_10(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, INDEX_2 = SP_INDEX -1,SP_INDEX_NEW = SP_INDEX -2,
VALUE2 ⟩= VALUE_1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
read_1(INDEX_2,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_2),
p1_1_31(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).

Registre	Valeur
IV0(args)	/
IV1(a)	10
IV2(b)	3000
IV3(c)	2
IV4(i)	2
IV5	2
IV6	2
IV7	/
IV8	/
SP_INDEX	6

Analyse de l'output [Copie de la valeur de IV3 dans IV5]

```
% 52: iload[21](2) 5
p1_1_31(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =3, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX =
SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_32(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 54: ineg[116](1)
p1_1_32(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, VALUE = 0 - VALUE_1, WRITE_INDEX = SP_INDEX,
SP_INDEX_NEW = SP_INDEX},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_33(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 55: istore[54](2) 5
p1_1_33(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX,VALUE = VALUE_1 ,WRITE_INDEX = 3, SP_INDEX_NEW =
SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_34(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 57: return[177](1)
p1_1_34(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{}.
```

Registre	Valeur
IV0(args)	/
IV1(a)	10
IV2(b)	3000
IV3(c)	2
IV4(i)	2
IV5	2
IV6	2
IV7	/
IV8	/
SP_INDEX	4

Analyse de l'output [Négation de la valeur de IV5]

```
% 52: iload[21](2) 5
p1_1_31(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =3, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX =
SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_32(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 54: ineg[116](1)
p1_1_32(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, VALUE = 0 - VALUE_1, WRITE_INDEX = SP_INDEX,
SP_INDEX_NEW = SP_INDEX},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_33(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 55: istore[54](2) 5
p1_1_33(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX,VALUE = VALUE_1 ,WRITE_INDEX = 3, SP_INDEX_NEW =
SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_34(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 57: return[177](1)
p1_1_34(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{}.
```

Registre	Valeur
IV0(args)	/
IV1(a)	10
IV2(b)	3000
IV3(c)	2
IV4(i)	2
IV5	-2
IV6	2
IV7	/
IV8	/
SP_INDEX	5

Analyse de l'output [Copie de la valeur de IV5 dans IV3]

```
% 52: iload[21](2) 5
p1_1_31(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =3, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX =
SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_32(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 54: ineg[116](1)
p1_1_32(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, VALUE = 0 - VALUE_1, WRITE_INDEX = SP_INDEX,
SP_INDEX_NEW = SP_INDEX},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_33(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 55: istore[54](2) 5
p1_1_33(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX,VALUE = VALUE_1 ,WRITE_INDEX = 3, SP_INDEX_NEW =
SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_34(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 57: return[177](1)
p1_1_34(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{}.
```

Registre	Valeur
IV0(args)	/
IV1(a)	10
IV2(b)	3000
IV3(c)	-2
IV4(i)	2
IV5	-2
IV6	2
IV7	/
IV8	/
SP_INDEX	5

Analyse de l'output [Ne fait rien]

```
% 52: iload[21](2) 5
p1_1_31(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 =3, VALUE = VALUE_1, SP_INDEX_NEW = SP_INDEX + 1, WRITE_INDEX =
SP_INDEX + 1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_32(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 54: ineg[116](1)
p1_1_32(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX, VALUE = 0 - VALUE_1, WRITE_INDEX = SP_INDEX,
SP_INDEX_NEW = SP_INDEX},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_33(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 55: istore[54](2) 5
p1_1_33(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{INDEX_1 = SP_INDEX,VALUE = VALUE_1 ,WRITE_INDEX = 3, SP_INDEX_NEW =
SP_INDEX -1},
read_1(INDEX_1,IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,VALUE_1),
write_1(WRITE_INDEX,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,W1,W2,W3,W4,W5,W6,W7,W8,VALUE),
p1_1_34(W0,W1,W2,W3,W4,W5,W6,W7,W8,IM,OM,SP_INDEX_NEW,R).
% 57: return[177](1)
p1_1_34(IV0,IV1,IV2,IV3,IV4,IV5,IV6,IV7,IV8,IM,OM,SP_INDEX,R) :-
{}.
```

Registre	Valeur
IV0(args)	/
IV1(a)	10
IV2(b)	3000
IV3(c)	-2
IV4(i)	2
IV5	-2
IV6	2
IV7	/
IV8	/
SP_INDEX	4

Analyse de l'output [SUCCESS :-)]

```
public static void main(String args[]){
    long a = 1;
    double b = 6000;
    int c = 2;
    short i = 0;

    while(i < c){
        if (b == 6000) {b = b/c;} else{a=a+9;}
        i++;
    }
    c = -c;
}//RESULT :: a=10 b=3000.0 c=-2 i=2
```

Registre	Valeur
IV0(args)	/
IV1(a)	10
IV2(b)	3000
IV3(c)	-2
IV4(i)	2
IV5	-2
IV6	2
IV7	/
IV8	/
SP_INDEX	4