SVM's "bytecode" is the following:

Valid opcodes are:

**PUSHC <val>**: pushes the constant value <val> on the execution stack



**PUSHV <id>**: pushes the value of the identifier <id> on the execution stack



**SET <id>**: pops a value from the stack and sets <id> accordingly



**PRINT**: pops a value from the stack and prints it.

**ADD, SUB, MUL, DIV**: pops two values from the stack and pushes their

sum, difference, product, quotient respectively.

**USUB**: Changes the sign of the number on the top of the stack.

**JMP <tag>**: jumps to <tag>

**JIZ, JINZ <tag>**: if the top of the stack is (not) zero, jumps to <tag>

**Example**: this would be a valid "bytecode" file to print the numbers from 0 to 9:

PUSHC 0.0

SET a

JMP cond1

body1: PUSHV a

PRINT

PUSHV a

PUSHC 1.0

ADD

SET a

cond1: PUSHV a

PUSHC 10.0

SUB

JINZ body1

**3.2 Exemples de code généré:**

1. input0.txt

|  |  |
| --- | --- |
| print 1 | PUSHC 1.0  PRINT |

1. input1.txt

|  |  |
| --- | --- |
| **toto = 12\*-3+4;**  **a = toto+1**; print 2\*a;  b = a\*2;  print b | **PUSHC 12.0**  **PUSHC 3.0**  **USUB**  **MUL**  **PUSHC 4.0**  **ADD**  **SET toto**  PUSHV toto  PUSHC 1.0  ADD  SET a  PUSHC 2.0  PUSHV a  MUL  PRINT  PUSHV a  PUSHC 2.0  MUL  SET b  PUSHV b  PRINT |

c) input2.txt

|  |  |
| --- | --- |
| a=0;  **while (a-10) {**  print a;  a = a+1  } | PUSHC 0.0 **a=0**  SET a  **JMP cond1**  **body1:** PUSHV a **print a**  PRINT  PUSHV a **a=a+1**  PUSHC 1.0  ADD  SET a  **cond1:** PUSHV a **(a-10)**  PUSHC 10.0  SUB  **JINZ body1** |

D) input3.txt

|  |  |
| --- | --- |
| a=0;  **while (a-10)** {  b = 0;  **while (b-2)** {  print a;  print b;  b = b+1  };  a = a+1  };  print 100 | PUSHC 0.0 a=0  SET a  **JMP cond1**  **body1**: PUSHC 0.0 b = 0  SET b  **JMP cond2**  **body2:** PUSHV a print a  PRINT **"**  PUSHV b print b  PRINT "  PUSHV b b=b+1  PUSHC 1.0 "  ADD "  SET b "  **cond2: PUSHV b (b-2)**  PUSHC 2.0  SUB  **JINZ body2**  PUSHV a a=a+1  PUSHC 1.0 "  ADD "  SET a "  **cond1: PUSHV a (a-10)**  PUSHC 10.0 "  SUB "  **JINZ body1**  PUSHC 100.0  PRINT |