The algorithm can be implemented using a stack data structure. Each entry has the following attributes.

- ID
- Place
- Type
- Processed
- TrueLabel: Represents the label to jump to, if the expression is evaluated to true.
- FalseLabel: Represents the false label to jump to, if the expression is evaluated to false.
- NextLabel: Represents the label that is the start of the next statement.
- BeginLabel: Represents the beginning of a while loop.
- Code

```
while(a > b){
     while(c > d){
          t = 1 + 3 * e;
          t = 2;
     }
}
t = 3;
```

Stack Progression

ID	Place	Type	Processed	TrueLabel	FalseLabel	NextLabel	BeginLabel	Code
0	а	nd	0	-	-	-	-	-
1	b	nd	0	-	-	-	-	-

Next action: Reduction of "a > b" to "exp"

ID	Place	Type	Processed	TrueLabel	FalseLabel	NextLabel	BeginLabel	Code
0	а	nd	1	1	-	-	-	-
1	b	nd	1	-	-	-	-	-
2	a > b	nd	0	TO	T1	-	-	if(a > b) goto \$2.TrueLabel; goto \$2.FalseLabel;

Next action: Shift exp in rule "while(exp) block"

ID	Place	Type	Processed	TrueLabel	FalseLabel	NextLabel	BeginLabel	Code
0	а	nd	1	-	-	-	-	-
1	b	nd	1	-	-	-	-	-
2	a > b	exp	0	T0	T1	-	-	if(a > b) goto \$2.TrueLabel;
								goto \$2.FalseLabel;

ID	Place	Type	Processed	TrueLabel	FalseLabel	NextLabel	BeginLabel	Code
0	a	nd	1	-	-	-	-	-
1	b	nd	1	-	-	-	-	-
2	a > b	exp	0	ТО	T1	-	-	if(a > b) goto \$2.TrueLabel; goto \$2.FalseLabel;
3	С	nd	1	-	-	-	-	-
4	d	nd	1	-	-	-	-	-
5	c > d	ехр	0	T2	T3	-	-	<pre>if(c > d) goto \$5.TrueLabel; goto \$5.FalseLabel;</pre>

ID	Place	Type	Processed	TrueLabel	FalseLabel	NextLabel	BeginLabel	Code
0	а	nd	1	-	-	-	-	-
1	b	nd	1	-	-	-	-	-
2	a > b	exp	0	T0	T1	-	-	<pre>if(a > b) goto \$2.TrueLabel; goto \$2.FalseLabel;</pre>
3	С	nd	1	-	-	-	-	-
4	d	nd	1	-	-	-	-	-
5	c > d	exp	0	T2	T3	-	-	<pre>if(c > d) goto \$5.TrueLabel; goto \$5.FalseLabel;</pre>
6	t	nd	0	-	-	-	-	-
7	1	nd	0	-	-	-	-	-
8	3	nd	0	-	-	-	-	-
9	е	nd	0	-	-	-	-	-

ID	Place	Туре	Processed	TrueLabel	FalseLabel	NextLabel	BeginLabel	Code
0	а	nd	1	-	-	-	-	-
1	b	nd	1	-	-	-	-	-
2	a > b	exp	0	ТО	T1	-	-	<pre>if(a > b) goto \$2.TrueLabel; goto \$2.FalseLabel;</pre>
3	С	nd	1	-	-	-	-	-
4	d	nd	1	-	-	-	-	-
5	c > d	exp	0	T2	ТЗ	-	-	<pre>if(c > d) goto \$5.TrueLabel; goto \$5.FalseLabel;</pre>
6	t	nd	0	-	-	-	-	-
7	1	nd	0	-	-	-	-	-
8	3	nd	1	-	-	-	-	-
9	е	nd	1	-	-	-	-	-
10	T4	nd	0	-	-	-	-	T4 = 3 * e

ID	Place	Туре	Processed	TrueLabel	FalseLabel	NextLabel	BeginLabel	Code
0	а	nd	1	-	-	-	-	-
1	b	nd	1	-	-	-	-	-
2	a > b	exp	0	ТО	T1	-	-	if(a > b) goto \$2.TrueLabel; goto \$2.FalseLabel;
3	С	nd	1	-	-	-	-	-
4	d	nd	1	-	-	-	-	-
5	c > d	exp	0	T2	T3	-	-	<pre>if(c > d) goto \$5.TrueLabel; goto \$5.FalseLabel;</pre>
6	t	nd	1	-	-	-	-	-
7	1	nd	1	-	-	-	-	-
8	3	nd	1	-	-	-	-	-
9	е	nd	1	-	-	-	-	-
10	T4	nd	1	-	-	-	-	T4 = 3 * e
11	T5	nd	1	-	-	-	-	T4 = 3 * e
								T5 = 1 + T4
12	t = T5	nd	0	-	-	-	-	T4 = 3 * e
								T5 = 1 + T4
								t = T5

ID	Place	Type	Processed	TrueLabel	FalseLabel	NextLabel	BeginLabel	Code
0	а	nd	1	-	-	-	-	-
1	b	nd	1	-	-	-	-	-
2	a > b	exp	0	ТО	T1	-	-	if(a > b) goto \$2.TrueLabel; goto \$2.FalseLabel;
3	С	nd	1	-	-	-	-	-
4	d	nd	1		-	-	-	-
5	c > d	exp	0	T2	ТЗ	-	-	<pre>if(c > d) goto \$5.TrueLabel; goto \$5.FalseLabel;</pre>
6	t	nd	1	-	-	-	-	-
7	1	nd	1	-	-	-	-	-
8	3	nd	1	-	-	-	-	-
9	е	nd	1	ı	-	-	-	-
10	T4	nd	1	ı	-	-	-	T4 = 3 * e
11	T5	nd	1	1	-	-	-	T4 = 3 * e T5 = 1 + T4
12	t = T5	nd	0	-	-	-	-	T4 = 3 * e T5 = 1 + T4 t = T5
13	t	nd	1	ı	-	-	-	-
14	2	nd	1	-	-	-	-	-
15	t = 2	nd	0	-	-	-	-	t = 2

ID	Place	Туре	Processed	TrueLabel	FalseLabel	NextLabel	BeginLabel	Code
0	а	nd	1	-	-	-	-	-
1	b	nd	1	-	-	-	-	-
2	a > b	exp	0	TO	T1	-	-	<pre>if(a > b) goto \$2.TrueLabel; goto \$2.FalseLabel;</pre>
3	С	nd	1	ı	-	-	-	-
4	d	nd	1	ı	-	-	-	-
5	c > d	exp	0	T2	T3	-	-	<pre>if(c > d) goto \$5.TrueLabel; goto \$5.FalseLabel;</pre>
6	t	nd	1	-	-	-	-	-
7	1	nd	1	-	-	-	-	-
8	3	nd	1		-	-	-	-
9	е	nd	1	ı	-	-	-	-
10	T4	nd	1	ı	-	-	-	T4 = 3 * e;
11	T5	nd	1	-	-	-	-	T4 = 3 * e; T5 = 1 + T4;
12	t = T5	nd	1	-	-	-	-	T4 = 3 * e; T5 = 1 + T4; t = T5;
13	t	nd	1	-	-	-	-	-
14	2	nd	1	-	-	-	-	-
15	t = 2	nd	1	-	-	-	-	t = 2;
16	s1	block	0	-	-	Т6	-	T4 = 3 * e; T5 = 1 + T4; t = T5; t = 2;

ID	Place	Туре	Processed	TrueLabel	FalseLabel	NextLabel	BeginLabel	Code
0	а	nd	1	-	-	-	-	-
1	b	nd	1	-	-	-	-	-
2	a > b	exp	0	T0	T1	-	-	if(a > b) goto \$2.TrueLabel;
								goto \$2.FalseLabel;
3	С	nd	1	-	-	-	-	-
4	d	nd	1	-	-	-	-	-
5	c > d	exp	1	L1	Т6	-	-	if(c > d) goto \$5.TrueLabel; goto \$5.FalseLabel;
6	t	nd	1	-	-	-	-	-
7	1	nd	1	-	-	-	-	-
8	3	nd	1	-	-	-	-	-
9	е	nd	1	-	-	-	-	-
10	T4	nd	1	-	-	-	-	T4 = 3 * e;
11	T5	nd	1	-	-	-	-	T4 = 3 * e;
								T5 = 1 + T4;
12	t = T5	nd	1	-	-	-	-	T4 = 3 * e;
								T5 = 1 + T4;
								t = T5;
13	t	nd	1	-	-	-	-	-
14	2	nd	1	-	-	-	-	-
15	t = 2	nd	1	-	-	-	-	t = 2;
16	s1	block	1	-	-	-	-	T4 = 3 * e;
								T5 = 1 + T4;
								t = T5;
47	1.11.4					T C		t = 2;
17	while1	nd	0	-	-	T6	LO	\$17.BeginLabel: if(c > d) goto \$5.TrueLabel;
								goto \$5.FalseLabel;
								\$5.TrueLabel : T4 = 3 * e;
								T5 = 1 + T4;
								t = T5;
								t = 2;
								goto \$17.BeginLabel;

ID	Place	Туре	Processed	TrueLabel	FalseLabel	NextLabel	BeginLabel	Code
0	а	nd	1	-	-	-	-	-
1	b	nd	1	-	-	-	-	-
2	a > b	ехр	0	T0	T1	-	-	if(a > b) goto \$2.TrueLabel;
								goto \$2.FalseLabel;
3	С	nd	1	-	-	-	-	-
4	d	nd	1	-	-	-	-	-
5	c > d	exp	1	L1	T6	-	-	if(c > d) goto \$5.TrueLabel; goto \$5.FalseLabel;
6	t	nd	1	-	-	-	-	-
7	1	nd	1	-	-	-	-	-
8	3	nd	1	-	-	-	-	-
9	е	nd	1	-	-	-	-	-
10	T4	nd	1	-	-	-	-	T4 = 3 * e;
11	T5	nd	1	-	-	-	-	T4 = 3 * e;
								T5 = 1 + T4;
12	t = T5	nd	1	-	-	-	-	T4 = 3 * e;
								T5 = 1 + T4;
								t = T5;
13	t	nd	1	-	-	-	-	-
14	2	nd	1	-	-	-	-	-
15	t = 2	nd	1	-	-	-	-	t = 2;
16	s1	block	1	-	-	-	-	T4 = 3 * e;
								T5 = 1 + T4;
								t = T5;
								t = 2;
17	while1	nd	1	-	-	T6	LO	\$17.BeginLabel : if(c > d) goto \$5.TrueLabel;
								goto \$5.FalseLabel;
								\$5.TrueLabel : T4 = 3 * e;
								T5 = 1 + T4;
								t = T5;
								t = 2;
								goto \$17.BeginLabel;
18	s2	block	0	-	-	T6	-	\$17.BeginLabel : if(c > d) goto \$5.TrueLabel;
								goto \$5.FalseLabel;
								\$5.TrueLabel : T4 = 3 * e;
								T5 = 1 + T4;
								t = T5;
								t = 2;
								goto \$17.BeginLabel;

ID	Place	Type	Processed	TrueLabel	FalseLabel	NextLabel	BeginLabel	Code
0	а	nd	1	-	-	-	-	-
1	b	nd	1	_	-	-	-	-
2	a > b	exp	1	L3	T7	-		if(a > b) goto \$2.TrueLabel; goto \$2.FalseLabel;
3	С	nd	1	_	-	-	_	-
4	d	nd	1	_	_	-	_	_
5	c > d	exp	1	L1	T6	-		if(c > d) goto \$5.TrueLabel; goto \$5.FalseLabel;
6	t	nd	1	-	-	-	-	-
7	1	nd	1	_	-	-	-	-
8	3	nd	1	_	-	-	-	-
9	е	nd	1	_	-	-	-	-
10	T4	nd	1	-	_	-	_	T4 = 3 * e;
11	T5	nd	1	_	_	-		T4 = 3 * e;
			_					T5 = 1 + T4;
12	t = T5	nd	1	_	_	-		T4 = 3 * e;
			_					T5 = 1 + T4;
								t = T5;
13	t	nd	1	_	_	-	_	-
14	2	nd	1	_	_	-	_	-
15	t = 2	nd	1	_	_	-	_	t = 2;
16	s1	block	1	_	_	_		T4 = 3 * e;
10	31	Siden						T5 = 1 + T4;
								t = T5;
								t = 2;
17	while1	nd	1	_	_	T6	1	\$17.BeginLabel : if(c > d) goto \$5.TrueLabel;
			_					goto \$5.FalseLabel;
								\$5.TrueLabel : T4 = 3 * e;
								T5 = 1 + T4;
								t = T5;
								t = 2;
								goto \$17.BeginLabel;
18	s2	block	1	_	_	Т6	1	\$17.BeginLabel : if(c > d) goto \$5.TrueLabel;
	02	S.C.C.	_					goto \$5.FalseLabel;
								\$5.TrueLabel : T4 = 3 * e;
								T5 = 1 + T4;
								t = T5;
								t = 2;
								goto \$17.BeginLabel;
19	while2	nd	0	_	-	T7		\$19.BeginLabel : if(a > b) goto \$2.TrueLabel;
								goto \$2.FalseLabel;
								\$2.TrueLabel : \$17.BeginLabel : if(c > d) goto \$5.TrueLabel;
								goto \$5.FalseLabel;
								\$5.TrueLabel : T4 = 3 * e;
								T5 = 1 + T4;
								t = T5;
								t = 2;
								goto \$17.BeginLabel;
								\$18.NextLabel : goto \$19.BeginLabel;
	i l		1	Ì	<u> </u>	ı		1

ID	Place	Туре	Processed	Truel ahel	FalseLabel	Nevtlahel	BeginLabel	Code
0	a	nd	1	-	-	-	-	- -
1	b	nd	1	_	_	_	_	
2	a > b	exp	1	L3	T7	_	_	if(a > b) goto \$2.TrueLabel;
2	a > D	CVP	_	LJ		_		goto \$2.FalseLabel;
3	С	nd	1	_	_	_	_	-
4	d	nd	1	_	_	_	_	<u>-</u>
5	c > d	exp	1	L1	T6	_	_	if(c > d) goto \$5.TrueLabel;
J	C Z U	CVP	_	LI		_		goto \$5.FalseLabel;
6	t	nd	1	_	_	_	_	goto \$5.1 disetabel,
7	1	nd	1	_	_	_	_	
8	3	nd	1	_	_	_	-	_
9	e	nd	1	_	_	_	_	<u>-</u>
10	T4	nd	1	_	_	_	_	T4 = 3 * e;
11	T5	nd	1		_	_	_	T4 = 3 * e;
11	13	Hu	1	_	_	_	_	T5 = 1 + T4;
12	t = T5	nd	1	_	_	_	_	T4 = 3 * e;
12	1-13	Hu	1	_	_	_	_	T5 = 1 + T4;
								t = T5;
13	t	nd	1	_	_	_	_	<u>-</u>
14	2	nd	1	_	_	_	_	_
15	t = 2	nd	1	_	_	_	_	t = 2;
16	s1	block	1	_	_	_	_	T4 = 3 * e;
10	31	DIOCK	_					T5 = 1 + T4;
								t = T5;
								t = 2;
17	while1	nd	1	_	_	T6	LO	\$17.BeginLabel : if(c > d) goto \$5.TrueLabel;
	Willica	IIG	_					goto \$5.FalseLabel;
								\$5.TrueLabel : T4 = 3 * e;
								T5 = 1 + T4;
								t = T5;
								t = 2;
								goto \$17.BeginLabel;
18	s2	block	1	-	_	T6	_	\$17.BeginLabel : if(c > d) goto \$5.TrueLabel;
								goto \$5.FalseLabel;
								\$5.TrueLabel : T4 = 3 * e;
								T5 = 1 + T4;
								t = T5;
								t = 2;
								goto \$17.BeginLabel;
19	while2	nd	0	-	-	T7	L2	\$19.BeginLabel : if(a > b) goto \$2.TrueLabel;
								goto \$2.FalseLabel;
								\$2.TrueLabel : \$17.BeginLabel : if(c > d) goto \$5.TrueLabel;
								goto \$5.FalseLabel;
								\$5.TrueLabel : T4 = 3 * e;
								T5 = 1 + T4;
								t = T5;
								t = 2;
								goto \$17.BeginLabel;
								\$18.NextLabel : goto \$19.BeginLabel;
20	t	nd	1	-	_	-	-	-
21	3	nd	1	-	-	-	-	-
22	t = 3	nd	0	-	-	-	-	t = 3;

ID	Place	Туре	Processed	TrueLabel	FalseLabel	NextLabel	BeginLabel	Code
0	а	nd	1	-	-	-	-	-
1	b	nd	1	-	-	-	-	-
2	a > b	exp	1	L3	T7	-	-	if(a > b) goto \$2.TrueLabel; goto \$2.FalseLabel;
3	С	nd	1	-	-	-	-	-
4	d	nd	1	-	-	-	-	-
5	c > d	exp	1	L1	T6	-	-	if(c > d) goto \$5.TrueLabel; goto \$5.FalseLabel;
6	t	nd	1	-	-	-	-	-
7	1	nd	1	-	-	-	-	-
8	3	nd	1	-	-	-	-	-
9	е	nd	1	-	-	-	-	-
10	T4	nd	1	-	-	-	-	T4 = 3 * e;
11	T5	nd	1	-	-	-	-	T4 = 3 * e; T5 = 1 + T4;
12	t = T5	nd	1	-	-	-	-	T4 = 3 * e; T5 = 1 + T4;
								t = T5;
13	t	nd	1	-	-	-	-	-
14	2	nd	1	-	-	-	-	-
15	t = 2	nd	1	-	-	-	-	t = 2;
16	s1	block	1	-	-	- TC	-	T4 = 3 * e; T5 = 1 + T4; t = T5; t = 2;
17	while1	nd	1	-	-	T6	LO	\$17.BeginLabel : if(c > d) goto \$5.TrueLabel; goto \$5.FalseLabel; \$5.TrueLabel : T4 = 3 * e; T5 = 1 + T4; t = T5; t = 2; goto \$17.BeginLabel;
18	s2	block	1	-	-	T6	-	\$17.BeginLabel : if(c > d) goto \$5.TrueLabel;
10	while?	nd	1			T7	12	goto \$5.FalseLabel; \$5.TrueLabel : T4 = 3 * e; T5 = 1 + T4; t = T5; t = 2; goto \$17.BeginLabel;
19	while2	nd	1	-	-	17	L2	\$19.BeginLabel: if(a > b) goto \$2.TrueLabel; goto \$2.FalseLabel; \$2.TrueLabel: \$17.BeginLabel: if(c > d) goto \$5.TrueLabel; goto \$5.FalseLabel; \$5.TrueLabel: T4 = 3 * e; T5 = 1 + T4; t = T5; t = 2; goto \$17.BeginLabel; \$18.NextLabel: goto \$19.BeginLabel;
20	t	nd	1	-	-	-	-	-
21	3	nd	1	-	-	-	-	-
22	t = 3	nd	1	-	-	-	-	t = 3;
23	Program	Program	0	-	-	-	-	\$19.BeginLabel: if(a > b) goto \$2.TrueLabel; goto \$2.FalseLabel; \$2.TrueLabel: \$17.BeginLabel: if(c > d) goto \$5.TrueLabel; goto \$5.FalseLabel; \$5.TrueLabel: T4 = 3 * e; T5 = 1 + T4; t = T5; t = 2; goto \$17.BeginLabel; \$18.NextLabel: goto \$19.BeginLabel; \$19.NextLabel: t = 3

ID	Place	Туре	Processed	TrueLabel	FalseLabel	NextLabel	BeginLabel	Code
0	а	nd	1	-	-	-	-	-
1	b	nd	1	-	-	-	-	-
2	a > b	exp	1	L3	L4	-	-	if(a > b) goto \$2.TrueLabel; goto \$2.FalseLabel;
3	С	nd	1	-	-	_	-	-
4	d	nd	1	-	-	-	-	-
5	c > d	exp	1	L1	L5	-	-	if(c > d) goto \$5.TrueLabel; goto \$5.FalseLabel;
6	t	nd	1	-	-	_	_	-
7	1	nd	1	-	-	_	_	-
8	3	nd	1	-	-	_	-	-
9	е	nd	1	-	-	_	-	-
10	T4	nd	1	-	-	-	-	T4 = 3 * e;
11	T5	nd	1	-	-	-	-	T4 = 3 * e;
								T5 = 1 + T4;
12	t = T5	nd	1	-	-	-	-	T4 = 3 * e; T5 = 1 + T4;
								t = T5;
13	t	nd	1	-	-	-	-	-
14	2	nd	1	-	-	-	-	-
15	t = 2	nd	1	-	-	-	-	t = 2;
16	s1	block	1	-	-	-	-	T4 = 3 * e;
17	1:1.4						10	T5 = 1 + T4; t = T5; t = 2;
17	while1	nd	1	-	-	L5	LO	\$17.BeginLabel : if(c > d) goto \$5.TrueLabel; goto \$5.FalseLabel; \$5.TrueLabel : T4 = 3 * e; T5 = 1 + T4; t = T5; t = 2; goto \$17.BeginLabel;
18	s2	block	1	_	_	L5	_	\$17.BeginLabel : if(c > d) goto \$5.TrueLabel;
	<u> </u>	3.33 1.	_					goto \$5.FalseLabel; \$5.TrueLabel : T4 = 3 * e; T5 = 1 + T4; t = T5; t = 2; goto \$17.BeginLabel;
19	while2	nd	1	-	-	L4	L2	\$19.BeginLabel: if(a > b) goto \$2.TrueLabel; goto \$2.FalseLabel; \$2.TrueLabel: \$17.BeginLabel: if(c > d) goto \$5.TrueLabel; goto \$5.FalseLabel; \$5.TrueLabel: T4 = 3 * e; T5 = 1 + T4; t = T5; t = 2; goto \$17.BeginLabel; \$18.NextLabel: goto \$19.BeginLabel;
20	t	nd	1	-	-	-	-	-
21	3	nd	1	-	-	-	-	-
22	t = 3	nd	1	-	-	-	-	t = 3;
23	Program	Program	0	-	-	-	-	\$19.BeginLabel: if(a > b) goto \$2.TrueLabel; goto \$2.FalseLabel; \$2.TrueLabel: \$17.BeginLabel: if(c > d) goto \$5.TrueLabel; goto \$5.FalseLabel; \$5.TrueLabel: T4 = 3 * e; T5 = 1 + T4; t = T5; t = 2; goto \$17.BeginLabel; \$18.NextLabel: goto \$19.BeginLabel; \$19.NextLabel: t = 3;

```
L_2: if(a > b) goto L_3;

goto L_4;

L_3: L_0: if(c > d) goto L_1;

goto L_5;

L_1: T_4 = 3 * e;

T_5 = 1 + T_4;

t = T_5;

t = 2;

goto L_0;

L_5: goto L_2;
```

 $L_4: t = 3;$