S → if E then S_1
S.next / E.false: …

if c<d then x = y + z
print x

E.true:
E.code
S_1.code

E.false:
| … |

E.true:
c<d
x=y+z

E.false:
| print x |

if c<d goto __
goto __
L1: x=y+z
L2: print x
…

if c<d goto L1
goto L2
L1: x=y+z
L2: print x
…

S → if E then S_1 else S_2
S.next: …

if c<d then
    x = y + z
else
    x = y - z
print x

E.true:
E.code
S_1.code
goto S.next

E.false:
| S_2.code |

S.next:
| … |

E.true:
c < d
x = y + z
goto S.next

E.false:
| x = y - z |

S.next:
| print x |

if c<d goto __
goto __
L1: x=y+z
goto __
L2: x=y-z
L3: print x

if c<d goto L1
goto L2
L1: x=y+z
goto L3
L2: x=y-z
L3: print x

S → while E do S_1
S.next: …

While c<d
    x = y + z
print x

S.begin:
E.code

E.true:
| S_1.code |
| goto S.begin |

S.next:
| … |

S.begin:
c<d

E.true:
| x=y+z |
| goto S.begin |

S.next:
| print x |

L1: if c<d goto __
goto __
L2: x=y+z
goto L1
L3: print x

L1: if c<d goto L2
goto L3
L2: x=y+z
goto L1
L3: print x

Expression E: a < b or c < d and e < f = (a < b) or (c < d and e < f)

Step 1	Step 2	Step 3	Step 4
if a<b then goto E.true	if a<b then L2	if a<b then L2	if a<b then L2
if c<d then goto L1	if c<d then L1	if c<d then L1	if c<d then L1
goto E.false	goto E.false	goto L3	goto L3
L1: if e<f then goto E.true	L1: if e<f goto L2	L1: if e<f then L2	L1: if e<f then L2
goto E.false	goto E.false	goto L3	goto L3
E.true: ….	L2: ….	L2: ….	L2: ….
goto E.next	goto E.next	goto E.next	goto L4
E.false: …	E.false: …	L3: …	L3: …
E.next: ….	E.next: ….	E.next: ….	L4: ….

while a<b	L1: if a<b goto L2	100: if a<b goto 102
if c<d then	goto LNext	101: goto 108
x = y + z	L2: if c<d goto L3	102: if c<d goto 104
else	goto L4	103: goto 106
x = y - z	L3: x = y + z	104: x = y + z
	goto L1	105: goto 100
	L4: x = y - z	106: x = y - z
	goto L1	107: goto 100
	LNext: …	108: …

Expression E: a < b or c < d and e < f = a < b or (c < d and e < f)

100: if a<b goto __	100: if a<b goto __	100: if a<b goto __	100: if a<b goto 106
101: goto __	101: goto __	101: goto 102	101: goto 102
102: if c<d goto __	102: if c<d goto 104	102: if c<d goto 104	102: if c<d goto 104
103: goto __	103: goto __	103: goto __	103: goto 108
104: if e<f goto __	104: if e<f goto __	104: if e<f goto __	104: if e<f goto 106
105: goto __	105: goto __	105: goto __	105: goto 108
			106: x=y+z
			107: goto 109
			108: x=y-z
			109: nop