

Aufgabe 14

- (a) Im Folgenden seien s, t temporäre Variablen (d.h. sie liegen an Adressen im Speicher, die sich nicht mit den Operanden $a, b, x \dots$ überschneiden).

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|------------------------------|------------------------------|
| (i) STJ $a, a, .+1$ | STJ $s, t, .+1$ |
| | STJ $a, s, .+1$ |
| (ii) STJ $t, t, .+1$ | |
| STJ $t, 1, .+1$ | (vii) STJ $t, t, .+1$ |
| STJ $a, t, .+1$ | STJ $t, b, .+1$ |
| | STJ $a, t, .+1$ |
| (iii) STJ $a, b, .+1$ | |
| | (viii) STJ $0, 0, x$ |
| (iv) STJ $a, a, .+1$ | |
| STJ $a, b, .+1$ | (ix) STJ $a, 0, x$ |
| | |
| (v) STJ $t, t, .+1$ | (x) STJ $0, a, x$ |
| STJ $t, b, .+1$ | |
| STJ $a, a, .+1$ | (xi) STJ $a, 0, .+2$ |
| STJ $a, t, .+1$ | STJ $0, 0, .+2$ |
| | STJ $0, a, x$ |
| (vi) STJ $t, t, .+1$ | |
| STJ $t, a, .+1$ | (xii) STJ b, a, x |
| STJ $s, s, .+1$ | |

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| (b) (i) $a := 0$ | 12 $c := -c$ |
| if $(b \geq 0)$ then goto $.+3$ | 13 $a := 0$ |
| $b := -b$ | 14 $a := a - 1$ |
| $c := -c$ | 15 $b := b + c$ |
| if $(b \leq 0)$ then goto $.+4$ | 16 if $(b \geq 0)$ goto 18 |
| $a := a + c$ | 17 goto 14 |
| $b := b - 1$ | |
| goto $.-3$ | (iv) $a := b$ |
| | if $(c = 0)$ goto $.+4$ |
| (ii) if $(b \geq 0)$ then goto $.+2$ | $a := b \text{ div } c$ |
| $b := -b$ | $a := c * a$ |
| | $a := b - a$ |
| (iii) | |
| 1 if $(b \geq 0)$ then goto 10 | (v) $a := b$ |
| 2 if $(c \geq 0)$ then goto 13 | if $(c \geq b)$ goto $.+2$ |
| 3 $b := -b$ | $a := c$ |
| 4 $c := -c$ | |
| 5 $a := -1$ | (vi) if $(c = 0)$ goto $.+5$ |
| 6 $a := a + 1$ | $t := c$ |
| 7 $b := b - c$ | $c := b \text{ mod } c$ |
| 8 if $(b \geq 0)$ then goto 6 | $b := t$ |
| 9 goto 18 | goto $.-4$ |
| 10 if $(c \geq 0)$ goto 6 | $a := b$ |
| 11 $b := -b$ | |