

Appendix to
Stack Automata and the
Ginsburg, Greibach and Harrison Compiler

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A Output from checking integer multiplication

t_0	1	$Z_0\downarrow$	$\downarrow\check{c}111 \times 1111 = 11111111111\$$
t_1	2	$Z_0\downarrow$	$\check{c}\downarrow111 \times 1111 = 11111111111\$$
t_2	3,9	$Z_0\downarrow$	$\check{c}\downarrow111 \times 1111 = 11111111111\$$
t_3	3,9	$Z_0 * \downarrow$	$\check{c}1\downarrow11 \times 1111 = 11111111111\$$
t_4	3,9	$Z_0 * * \downarrow$	$\check{c}11\downarrow1 \times 1111 = 11111111111\$$
t_5	3,9	$Z_0 * * * \downarrow$	$\check{c}111\downarrow \times 1111 = 11111111111\$$
t_6	3	$Z_0 * * * \downarrow$	$\check{c}111\downarrow \times 1111 = 11111111111\$$
t_7	4	$Z_0 * * * \downarrow$	$\check{c}111 \times \downarrow1111 = 11111111111\$$
t_8	5,10	$Z_0 * * * \downarrow$	$\check{c}111 \times \downarrow1111 = 11111111111\$$
t_9	5,10	$Z_0 * * * \downarrow$	$\check{c}111 \times 1\downarrow111 = 11111111111\$$
t_{10}	5,10	$Z_0 * * * \downarrow$	$\check{c}111 \times 11\downarrow11 = 11111111111\$$
t_{11}	5,10	$Z_0 * * * \downarrow$	$\check{c}111 \times 111\downarrow1 = 11111111111\$$
t_{12}	5,10	$Z_0 * * * \downarrow$	$\check{c}111 \times 1111\downarrow = 11111111111\$$
t_{13}	5	$Z_0 * * * \downarrow$	$\check{c}111 \times 1111 = \downarrow11111111111\$$
t_{14}	6	$Z_0 * * \downarrow$	$\check{c}111 \times 1111\downarrow = 11111111111\$$
t_{15}	6	$Z_0 * * \downarrow$	$\check{c}111 \times 111\downarrow1 = 11111111111\$$
t_{16}	6	$Z_0 * * s\downarrow$	$\check{c}111 \times 11\downarrow11 = 11111111111\$$
t_{17}	6	$Z_0 * * ss\downarrow$	$\check{c}111 \times 1\downarrow111 = 11111111111\$$
t_{18}	6	$Z_0 * * sss\downarrow$	$\check{c}111 \times \downarrow1111 = 11111111111\$$
t_{19}	6	$Z_0 * * ssss\downarrow$	$\check{c}111\downarrow \times 1111 = 11111111111\$$
t_{20}	7	$Z_0 * * ssss\downarrow$	$\check{c}111 \times \downarrow1111 = 11111111111\$$
t_{21}	8,10	$Z_0 * * ssss\downarrow$	$\check{c}111 \times \downarrow1111 = 11111111111\$$
t_{22}	8,10	$Z_0 * * ssss\downarrow$	$\check{c}111 \times 1\downarrow111 = 11111111111\$$
t_{23}	8,10	$Z_0 * * ssss\downarrow$	$\check{c}111 \times 11\downarrow11 = 11111111111\$$
t_{24}	8,10	$Z_0 * * ssss\downarrow$	$\check{c}111 \times 111\downarrow1 = 11111111111\$$
t_{25}	8,10	$Z_0 * * ssss\downarrow$	$\check{c}111 \times 1111\downarrow = 11111111111\$$
t_{26}	8	$Z_0 * * ssss\downarrow$	$\check{c}111 \times 1111 = \downarrow11111111111\$$
t_{27}	8	$Z_0 * * ssss\downarrow$	$\check{c}111 \times 1111 = 1\downarrow11111111111\$$
t_{28}	8	$Z_0 * * ss\downarrow$	$\check{c}111 \times 1111 = 11\downarrow11111111111\$$
t_{29}	8	$Z_0 * * s\downarrow$	$\check{c}111 \times 1111 = 111\downarrow11111111111\$$
t_{30}	8	$Z_0 * * \downarrow$	$\check{c}111 \times 1111 = 1111\downarrow11111111111\$$
t_{31}	5	$Z_0 * * \downarrow$	$\check{c}111 \times 1111 = 1111\downarrow11111111111\$$
t_{32}	6	$Z_0 * \downarrow$	$\check{c}111 \times 1111 = 111\downarrow11111111111\$$
t_{33}	6	$Z_0 * s\downarrow$	$\check{c}111 \times 1111 = 11\downarrow11111111111\$$
t_{34}	6	$Z_0 * ss\downarrow$	$\check{c}111 \times 1111 = 1\downarrow11111111111\$$
t_{35}	6	$Z_0 * sss\downarrow$	$\check{c}111 \times 1111 = \downarrow11111111111\$$
t_{36}	6	$Z_0 * ssss\downarrow$	$\check{c}111 \times 1111\downarrow = 11111111111\$$
t_{37}	6	$Z_0 * ssss\downarrow$	$\check{c}111 \times 111\downarrow1 = 11111111111\$$
t_{38}	6	$Z_0 * ssss\downarrow$	$\check{c}111 \times 11\downarrow11 = 11111111111\$$
t_{39}	6	$Z_0 * ssss\downarrow$	$\check{c}111 \times 1\downarrow111 = 11111111111\$$
t_{40}	6	$Z_0 * ssss\downarrow$	$\check{c}111 \times \downarrow1111 = 11111111111\$$
t_{41}	6	$Z_0 * ssss\downarrow$	$\check{c}111\downarrow \times 1111 = 11111111111\$$
t_{42}	7	$Z_0 * ssss\downarrow$	$\check{c}111 \times \downarrow1111 = 11111111111\$$
t_{43}	8,10	$Z_0 * ssss\downarrow$	$\check{c}111 \times \downarrow1111 = 11111111111\$$
t_{44}	8,10	$Z_0 * ssss\downarrow$	$\check{c}111 \times 1\downarrow111 = 11111111111\$$
t_{45}	8,10	$Z_0 * ssss\downarrow$	$\check{c}111 \times 11\downarrow11 = 11111111111\$$
t_{46}	8,10	$Z_0 * ssss\downarrow$	$\check{c}111 \times 111\downarrow1 = 11111111111\$$
t_{47}	8,10	$Z_0 * ssss\downarrow$	$\check{c}111 \times 1111\downarrow = 11111111111\$$
t_{48}	8	$Z_0 * ssss\downarrow$	$\check{c}111 \times 1111 = \downarrow11111111111\$$
t_{49}	8	$Z_0 * ssss\downarrow$	$\check{c}111 \times 1111 = 1\downarrow11111111111\$$
t_{50}	8	$Z_0 * ssss\downarrow$	$\check{c}111 \times 1111 = 11\downarrow11111111111\$$

t_{51}	8	$Z_0 * sssss1$	$\zeta111 \times 1111 = 111\uparrow111111111\$$
t_{52}	8	$Z_0 * ssss1$	$\zeta111 \times 1111 = 1111\uparrow1111111\$$
t_{53}	8	$Z_0 * sss1$	$\zeta111 \times 1111 = 11111\uparrow111111\$$
t_{54}	8	$Z_0 * ss1$	$\zeta111 \times 1111 = 111111\uparrow11111\$$
t_{55}	8	$Z_0 * s1$	$\zeta111 \times 1111 = 1111111\uparrow1111\$$
t_{56}	8	$Z_0 * 1$	$\zeta111 \times 1111 = 11111111\uparrow111\$$
t_{57}	5	$Z_0 * 1$	$\zeta111 \times 1111 = 11111111\uparrow111\$$
t_{58}	6	Z_01	$\zeta111 \times 1111 = 1111111\uparrow1111\$$
t_{59}	6	Z_0s1	$\zeta111 \times 1111 = 111111\uparrow11111\$$
t_{60}	6	Z_0ss1	$\zeta111 \times 1111 = 11111\uparrow111111\$$
t_{61}	6	Z_0sss1	$\zeta111 \times 1111 = 1111\uparrow1111111\$$
t_{62}	6	Z_0ssss1	$\zeta111 \times 1111 = 111\uparrow11111111\$$
t_{63}	6	$Z_0sssss1$	$\zeta111 \times 1111 = 11\uparrow111111111\$$
t_{64}	6	$Z_0ssssss1$	$\zeta111 \times 1111 = 1\uparrow1111111111\$$
t_{65}	6	$Z_0sssssss1$	$\zeta111 \times 1111 = \uparrow11111111111\$$
t_{66}	6	$Z_0ssssssss1$	$\zeta111 \times 1111\uparrow = 11111111111\$$
t_{67}	6	$Z_0ssssssss1$	$\zeta111 \times 111\uparrow1 = 11111111111\$$
t_{68}	6	$Z_0ssssssss1$	$\zeta111 \times 11\uparrow11 = 11111111111\$$
t_{69}	6	$Z_0ssssssss1$	$\zeta111 \times 1\uparrow111 = 11111111111\$$
t_{70}	6	$Z_0ssssssss1$	$\zeta111 \times \uparrow1111 = 11111111111\$$
t_{71}	6	$Z_0ssssssss1$	$\zeta111\uparrow \times 1111 = 11111111111\$$
t_{72}	7	$Z_0ssssssss1$	$\zeta111 \times \uparrow1111 = 11111111111\$$
t_{73}	8,10	$Z_0ssssssss1$	$\zeta111 \times \uparrow1111 = 11111111111\$$
t_{74}	8,10	$Z_0ssssssss1$	$\zeta111 \times 1\uparrow111 = 11111111111\$$
t_{75}	8,10	$Z_0ssssssss1$	$\zeta111 \times 11\uparrow11 = 11111111111\$$
t_{76}	8,10	$Z_0ssssssss1$	$\zeta111 \times 111\uparrow1 = 11111111111\$$
t_{77}	8,10	$Z_0ssssssss1$	$\zeta111 \times 1111\uparrow = 11111111111\$$
t_{78}	8	$Z_0ssssssss1$	$\zeta111 \times 1111 = \uparrow11111111111\$$
t_{79}	8	$Z_0ssssssss1$	$\zeta111 \times 1111 = 1\uparrow1111111111\$$
t_{80}	8	$Z_0ssssssss1$	$\zeta111 \times 1111 = 11\uparrow111111111\$$
t_{81}	8	$Z_0ssssssss1$	$\zeta111 \times 1111 = 111\uparrow11111111\$$
t_{82}	8	$Z_0ssssss1$	$\zeta111 \times 1111 = 1111\uparrow1111111\$$
t_{83}	8	$Z_0ssssss1$	$\zeta111 \times 1111 = 11111\uparrow111111\$$
t_{84}	8	Z_0ssss1	$\zeta111 \times 1111 = 111111\uparrow11111\$$
t_{85}	8	Z_0ssss1	$\zeta111 \times 1111 = 1111111\uparrow1111\$$
t_{86}	8	Z_0sss1	$\zeta111 \times 1111 = 11111111\uparrow111\$$
t_{87}	8	Z_0ss1	$\zeta111 \times 1111 = 11111111\uparrow11\$$
t_{88}	8	Z_0s1	$\zeta111 \times 1111 = 11111111\uparrow1\$$
t_{89}	8	Z_01	$\zeta111 \times 1111 = 11111111\uparrow\$$
t_{90}	8	Z_01	$\zeta111 \times 1111 = 11111111\uparrow\$$
t_{91}	5	Z_01	$\zeta111 \times 1111 = 11111111\uparrow\$$
t_{92}	OK	Z_01	$\zeta111 \times 1111 = 11111111\uparrow\$$

B Output from copying a stack segment

t_0	1	$Z_0tBu_1u_2u_3u_4u_5u_6u_7B\rfloor$	$\rfloor\dot{c} \times \times + + \times + + \$$
t_1	2	$Z_0tBu_1u_2u_3u_4u_5u_6u_7B\rfloor$	$\rfloor\dot{c} \times \times + + \times + + \$$
t_2	3	$Z_0tBu_1u_2u_3u_4u_5u_6u_7BB'\rfloor$	$\rfloor\dot{c} \times \times + + \times + + \$$
t_3	4	$Z_0tBu_1u_2u_3u_4u_5u_6u_7BB'\rfloor$	$\rfloor\dot{c} \times \times + + \times + + \$$
t_4	4	$Z_0tBu_1u_2u_3u_4u_5u_6u_7B\rfloor B'$	$\rfloor\dot{c} \times \times + + \times + + \$$
t_5	5	$Z_0tBu_1u_2u_3u_4u_5u_6u_7\rfloor BB'$	$\rfloor\dot{c} \times \times + + \times + + \$$
t_6	5	$Z_0tBu_1u_2u_3u_4u_5u_6\rfloor u_7BB'$	$\rfloor\dot{c} \times \times + + \times + + \$$
t_7	5	$Z_0tBu_1u_2u_3u_4u_5\rfloor u_6u_7BB'$	$\rfloor\dot{c} \times \times + + \times + + \$$
t_8	5	$Z_0tBu_1u_2u_3u_4\rfloor u_5u_6u_7BB'$	$\rfloor\dot{c} \times \times + + \times + + \$$
t_9	5	$Z_0tBu_1u_2u_3\rfloor u_4u_5u_6u_7BB'$	$\rfloor\dot{c} \times \times + + \times + + \$$
t_{10}	5	$Z_0tBu_1u_2\rfloor u_3u_4u_5u_6u_7BB'$	$\rfloor\dot{c} \times \times + + \times + + \$$
t_{11}	5	$Z_0tBu_1\rfloor u_2u_3u_4u_5u_6u_7BB'$	$\rfloor\dot{c} \times \times + + \times + + \$$
t_{12}	5	$Z_0tB\rfloor u_1u_2u_3u_4u_5u_6u_7BB'$	$\rfloor\dot{c} \times \times + + \times + + \$$
t_{13}	6	$Z_0tB\rfloor u_1u_2u_3u_4u_5u_6u_7BB'$	$\rfloor\dot{c} \times \times + + \times + + \$$
t_{14}	7	$Z_0tBu_1\rfloor u_2u_3u_4u_5u_6u_7BB'$	$\rfloor\dot{c} \times \times + + \times + + \$$
t_{15}	8	$Z_0tBu_1\rfloor u_2u_3u_4u_5u_6u_7BB'$	$\rfloor\dot{c} \times \times + + \times + + \$$
t_{16}	9	$u_1 Z_0tBu_1\rfloor u_2u_3u_4u_5u_6u_7BB'$	$\rfloor\dot{c} \times \times + + \times + + \$$
t_{17}	9	$u_1 Z_0tBu_1u_2\rfloor u_3u_4u_5u_6u_7BB'$	$\rfloor\dot{c} \times \times + + \times + + \$$
t_{18}	9	$u_1 Z_0tBu_1u_2u_3\rfloor u_4u_5u_6u_7BB'$	$\rfloor\dot{c} \times \times + + \times + + \$$
t_{19}	9	$u_1 Z_0tBu_1u_2u_3u_4\rfloor u_5u_6u_7BB'$	$\rfloor\dot{c} \times \times + + \times + + \$$
t_{20}	9	$u_1 Z_0tBu_1u_2u_3u_4u_5\rfloor u_6u_7BB'$	$\rfloor\dot{c} \times \times + + \times + + \$$
t_{21}	9	$u_1 Z_0tBu_1u_2u_3u_4u_5u_6\rfloor u_7BB'$	$\rfloor\dot{c} \times \times + + \times + + \$$
t_{22}	9	$u_1 Z_0tBu_1u_2u_3u_4u_5u_6u_7\rfloor BB'$	$\rfloor\dot{c} \times \times + + \times + + \$$
t_{23}	9	$u_1 Z_0tBu_1u_2u_3u_4u_5u_6u_7B\rfloor B'$	$\rfloor\dot{c} \times \times + + \times + + \$$
t_{24}	9	$u_1 Z_0tBu_1u_2u_3u_4u_5u_6u_7BB'\rfloor$	$\rfloor\dot{c} \times \times + + \times + + \$$
t_{25}	10	$u_1 Z_0tBu_1u_2u_3u_4u_5u_6u_7BB'\rfloor$	$\rfloor\dot{c} \times \times + + \times + + \$$
t_{26}	11	$Z_0tBu_1u_2u_3u_4u_5u_6u_7Bu_1B'\rfloor$	$\rfloor\dot{c} \times \times + + \times + + \$$
t_{27}	12	$Z_0tBu_1u_2u_3u_4u_5u_6u_7Bu_1\rfloor B'$	$\rfloor\dot{c} \times \times + + \times + + \$$
t_{28}	12	$Z_0tBu_1u_2u_3u_4u_5u_6u_7B\rfloor u_1B'$	$\dot{c}\rfloor \times \times + + \times + + \$$
t_{29}	13	$Z_0tBu_1u_2u_3u_4u_5u_6u_7B\rfloor u_1B'$	$\dot{c}\rfloor \times \times + + \times + + \$$
t_{30}	14	$Z_0tBu_1u_2u_3u_4u_5u_6u_7B\rfloor u_1B'$	$\dot{c}\rfloor \times \times + + \times + + \$$
t_{31}	15	$Z_0tBu_1u_2u_3u_4u_5u_6u_7B\rfloor u_1B'$	$\dot{c}\rfloor \times \times + + \times + + \$$
t_{32}	16	$Z_0tBu_1u_2u_3u_4u_5u_6u_7\rfloor Bu_1B'$	$\dot{c}\rfloor \times \times + + \times + + \$$
t_{33}	16	$Z_0tBu_1u_2u_3u_4u_5u_6\rfloor u_7Bu_1B'$	$\dot{c}\rfloor \times \times + + \times + + \$$
t_{34}	16	$Z_0tBu_1u_2u_3u_4u_5\rfloor u_6u_7Bu_1B'$	$\dot{c}\rfloor \times \times + + \times + + \$$
t_{35}	16	$Z_0tBu_1u_2u_3u_4\rfloor u_5u_6u_7Bu_1B'$	$\dot{c}\rfloor \times \times + + \times + + \$$
t_{36}	16	$Z_0tBu_1u_2u_3\rfloor u_4u_5u_6u_7Bu_1B'$	$\dot{c}\rfloor \times \times + + \times + + \$$
t_{37}	16	$Z_0tBu_1u_2\rfloor u_3u_4u_5u_6u_7Bu_1B'$	$\dot{c}\rfloor \times \times + + \times + + \$$
t_{38}	16	$Z_0tBu_1\rfloor u_2u_3u_4u_5u_6u_7Bu_1B'$	$\dot{c}\rfloor \times \times + + \times + + \$$
t_{39}	16	$Z_0tB\rfloor u_1u_2u_3u_4u_5u_6u_7Bu_1B'$	$\dot{c}\rfloor \times \times + + \times + + \$$
t_{40}	17	$Z_0tBu_1\rfloor u_2u_3u_4u_5u_6u_7Bu_1B'$	$\dot{c}\rfloor \times \times + + \times + + \$$
t_{41}	18	$Z_0tBu_1\rfloor u_2u_3u_4u_5u_6u_7Bu_1B'$	$\dot{c}\rfloor \times \times + + \times + + \$$
t_{42}	18	$Z_0tBu_1u_2\rfloor u_3u_4u_5u_6u_7Bu_1B'$	$\rfloor\dot{c} \times \times + + \times + + \$$
t_{43}	19	$Z_0tBu_1u_2\rfloor u_3u_4u_5u_6u_7Bu_1B'$	$\rfloor\dot{c} \times \times + + \times + + \$$
t_{44}	7	$Z_0tBu_1u_2\rfloor u_3u_4u_5u_6u_7Bu_1B'$	$\rfloor\dot{c} \times \times + + \times + + \$$
t_{45}	8	$Z_0tBu_1u_2\rfloor u_3u_4u_5u_6u_7Bu_1B'$	$\rfloor\dot{c} \times \times + + \times + + \$$
t_{46}	9	$u_2 Z_0tBu_1u_2\rfloor u_3u_4u_5u_6u_7Bu_1B'$	$\rfloor\dot{c} \times \times + + \times + + \$$
t_{47}	9	$u_2 Z_0tBu_1u_2u_3\rfloor u_4u_5u_6u_7Bu_1B'$	$\rfloor\dot{c} \times \times + + \times + + \$$
t_{48}	9	$u_2 Z_0tBu_1u_2u_3u_4\rfloor u_5u_6u_7Bu_1B'$	$\rfloor\dot{c} \times \times + + \times + + \$$
t_{49}	9	$u_2 Z_0tBu_1u_2u_3u_4u_5\rfloor u_6u_7Bu_1B'$	$\rfloor\dot{c} \times \times + + \times + + \$$
t_{50}	9	$u_2 Z_0tBu_1u_2u_3u_4u_5u_6\rfloor u_7Bu_1B'$	$\rfloor\dot{c} \times \times + + \times + + \$$

APP-GGH – 5 May 2, 2012

[illegible]

t_{267}	20	$Z_0 t B u_1 u_2 u_3 u_4 u_5 u_6 u_7 B \uparrow u_1 u_2 u_3 u_4 u_5 u_6 u_7 B'$	$\uparrow \dot{c} \times \times + + \times + + \$$
t_{268}	21	$Z_0 t B u_1 u_2 u_3 u_4 u_5 u_6 u_7 B \uparrow u_1 u_2 u_3 u_4 u_5 u_6 u_7 B'$	$\uparrow \dot{c} \times \times + + \times + + \$$
t_{269}	21	$Z_0 t B u_1 u_2 u_3 u_4 u_5 u_6 u_7 B u_1 \uparrow u_2 u_3 u_4 u_5 u_6 u_7 B'$	$\uparrow \dot{c} \times \times + + \times + + \$$
t_{270}	21	$Z_0 t B u_1 u_2 u_3 u_4 u_5 u_6 u_7 B u_1 u_2 \uparrow u_3 u_4 u_5 u_6 u_7 B'$	$\uparrow \dot{c} \times \times + + \times + + \$$
t_{271}	21	$Z_0 t B u_1 u_2 u_3 u_4 u_5 u_6 u_7 B u_1 u_2 u_3 \uparrow u_4 u_5 u_6 u_7 B'$	$\uparrow \dot{c} \times \times + + \times + + \$$
t_{272}	21	$Z_0 t B u_1 u_2 u_3 u_4 u_5 u_6 u_7 B u_1 u_2 u_3 u_4 \uparrow u_5 u_6 u_7 B'$	$\uparrow \dot{c} \times \times + + \times + + \$$
t_{273}	21	$Z_0 t B u_1 u_2 u_3 u_4 u_5 u_6 u_7 B u_1 u_2 u_3 u_4 u_5 \uparrow u_6 u_7 B'$	$\uparrow \dot{c} \times \times + + \times + + \$$
t_{274}	21	$Z_0 t B u_1 u_2 u_3 u_4 u_5 u_6 u_7 B u_1 u_2 u_3 u_4 u_5 u_6 \uparrow u_7 B'$	$\uparrow \dot{c} \times \times + + \times + + \$$
t_{275}	21	$Z_0 t B u_1 u_2 u_3 u_4 u_5 u_6 u_7 B u_1 u_2 u_3 u_4 u_5 u_6 u_7 \uparrow B'$	$\uparrow \dot{c} \times \times + + \times + + \$$
t_{276}	21	$Z_0 t B u_1 u_2 u_3 u_4 u_5 u_6 u_7 B u_1 u_2 u_3 u_4 u_5 u_6 u_7 B' \uparrow$	$\uparrow \dot{c} \times \times + + \times + + \$$
t_{277}	22	$Z_0 t B u_1 u_2 u_3 u_4 u_5 u_6 u_7 B u_1 u_2 u_3 u_4 u_5 u_6 u_7 B \uparrow$	$\uparrow \dot{c} \times \times + + \times + + \$$
t_{278}	OK	$Z_0 t B u_1 u_2 u_3 u_4 u_5 u_6 u_7 B u_1 u_2 u_3 u_4 u_5 u_6 u_7 B \uparrow$	$\uparrow \dot{c} \times \times + + \times + + \$$

C Output from consulting the symbol table of an Algol program

t_0	1	$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\beta Z_1\uparrow$	$\dots\uparrow; XY := JK; \dots$
t_1	2,8	$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\beta Z_1\uparrow$	$\dots; \uparrow XY := JK; \dots$
t_2	2,9	$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\beta Z_1Z_2\uparrow$	$\dots; X\uparrow Y := JK; \dots$
t_3	2,9	$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\beta Z_1Z_2\uparrow$	$\dots; XY\uparrow := JK; \dots$
t_4	2	$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\beta Z_1\uparrow Z_2$	$\dots; XY\uparrow := JK; \dots$
t_5	3,10	$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\beta Z_1\uparrow Z_2$	$\dots; XY\uparrow := JK; \dots$
t_6	3,10	$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\beta\uparrow Z_1Z_2$	$\dots; XY\uparrow := JK; \dots$
t_7	3,11	$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\uparrow\beta Z_1Z_2$	$\dots; X\uparrow Y := JK; \dots$
t_8	3,12	$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\uparrow\beta Z_1Z_2$	$\dots; X\uparrow Y := JK; \dots$
t_9	3,13	$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\uparrow\beta Z_1Z_2$	$\dots; X\uparrow Y := JK; \dots$
t_{10}	3,13	$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#I\uparrow K\beta Z_1Z_2$	$\dots; X\uparrow Y := JK; \dots$
t_{11}	3,13	$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#\uparrow IK\beta Z_1Z_2$	$\dots; X\uparrow Y := JK; \dots$
t_{12}	3,13	$Z_0R_0\#XY\beta I_0\#JK\beta B_0\uparrow\#IK\beta Z_1Z_2$	$\dots; X\uparrow Y := JK; \dots$
t_{13}	3,13	$Z_0R_0\#XY\beta I_0\#JK\beta\uparrow B_0\#IK\beta Z_1Z_2$	$\dots; X\uparrow Y := JK; \dots$
t_{14}	3,14	$Z_0R_0\#XY\beta I_0\#JK\uparrow\beta B_0\#IK\beta Z_1Z_2$	$\dots; X\uparrow Y := JK; \dots$
t_{15}	3,14	$Z_0R_0\#XY\beta I_0\#JK\uparrow\beta B_0\#IK\beta Z_1Z_2$	$\dots; XY\uparrow := JK; \dots$
t_{16}	3,11	$Z_0R_0\#XY\beta I_0\#JK\uparrow\beta B_0\#IK\beta Z_1Z_2$	$\dots; X\uparrow Y := JK; \dots$
t_{17}	3,12	$Z_0R_0\#XY\beta I_0\#JK\uparrow\beta B_0\#IK\beta Z_1Z_2$	$\dots; X\uparrow Y := JK; \dots$
t_{18}	3,13	$Z_0R_0\#XY\beta I_0\#JK\uparrow\beta B_0\#IK\beta Z_1Z_2$	$\dots; X\uparrow Y := JK; \dots$
t_{19}	3,13	$Z_0R_0\#XY\beta I_0\#J\uparrow K\beta B_0\#IK\beta Z_1Z_2$	$\dots; X\uparrow Y := JK; \dots$
t_{20}	3,13	$Z_0R_0\#XY\beta I_0\#\uparrow JK\beta B_0\#IK\beta Z_1Z_2$	$\dots; X\uparrow Y := JK; \dots$
t_{21}	3,13	$Z_0R_0\#XY\beta I_0\uparrow\#JK\beta B_0\#IK\beta Z_1Z_2$	$\dots; X\uparrow Y := JK; \dots$
t_{22}	3,13	$Z_0R_0\#XY\beta\uparrow I_0\#JK\beta B_0\#IK\beta Z_1Z_2$	$\dots; X\uparrow Y := JK; \dots$
t_{23}	3,14	$Z_0R_0\#XY\uparrow\beta I_0\#JK\beta B_0\#IK\beta Z_1Z_2$	$\dots; X\uparrow Y := JK; \dots$
t_{24}	3,14	$Z_0R_0\#XY\uparrow\beta I_0\#JK\beta B_0\#IK\beta Z_1Z_2$	$\dots; XY\uparrow := JK; \dots$
t_{25}	3,11	$Z_0R_0\#XY\uparrow\beta I_0\#JK\beta B_0\#IK\beta Z_1Z_2$	$\dots; X\uparrow Y := JK; \dots$
t_{26}	3,11	$Z_0R_0\#X\uparrow Y\beta I_0\#JK\beta B_0\#IK\beta Z_1Z_2$	$\dots; \uparrow XY := JK; \dots$
t_{27}	3,11	$Z_0R_0\#\uparrow XY\beta I_0\#JK\beta B_0\#IK\beta Z_1Z_2$	$\dots\uparrow; XY := JK; \dots$
t_{28}	3,12	$Z_0R_0\#\uparrow XY\beta I_0\#JK\beta B_0\#IK\beta Z_1Z_2$	$\dots\uparrow; XY := JK; \dots$
t_{29}	3,15	$Z_0R_0\uparrow\#XY\beta I_0\#JK\beta B_0\#IK\beta Z_1Z_2$	$\dots\uparrow; XY := JK; \dots$
t_{30}	3,16 R_0	$Z_0R_0\uparrow\#XY\beta I_0\#JK\beta B_0\#IK\beta Z_1Z_2$	$\dots\uparrow; XY := JK; \dots$
t_{31}	3,16 R_0	$Z_0R_0\#\uparrow XY\beta I_0\#JK\beta B_0\#IK\beta Z_1Z_2$	$\dots\uparrow; XY := JK; \dots$
t_{32}	3,16 R_0	$Z_0R_0\#X\uparrow Y\beta I_0\#JK\beta B_0\#IK\beta Z_1Z_2$	$\dots\uparrow; XY := JK; \dots$
t_{33}	3,16 R_0	$Z_0R_0\#XY\uparrow\beta I_0\#JK\beta B_0\#IK\beta Z_1Z_2$	$\dots\uparrow; XY := JK; \dots$
t_{34}	3,16 R_0	$Z_0R_0\#XY\beta\uparrow I_0\#JK\beta B_0\#IK\beta Z_1Z_2$	$\dots\uparrow; XY := JK; \dots$
t_{35}	3,16 R_0	$Z_0R_0\#XY\beta I_0\uparrow\#JK\beta B_0\#IK\beta Z_1Z_2$	$\dots\uparrow; XY := JK; \dots$
t_{36}	3,16 R_0	$Z_0R_0\#XY\beta I_0\#\uparrow JK\beta B_0\#IK\beta Z_1Z_2$	$\dots\uparrow; XY := JK; \dots$
t_{37}	3,16 R_0	$Z_0R_0\#XY\beta I_0\#J\uparrow K\beta B_0\#IK\beta Z_1Z_2$	$\dots\uparrow; XY := JK; \dots$
t_{38}	3,16 R_0	$Z_0R_0\#XY\beta I_0\#JK\uparrow\beta B_0\#IK\beta Z_1Z_2$	$\dots\uparrow; XY := JK; \dots$
t_{39}	3,16 R_0	$Z_0R_0\#XY\beta I_0\#JK\beta\uparrow B_0\#IK\beta Z_1Z_2$	$\dots\uparrow; XY := JK; \dots$
t_{40}	3,16 R_0	$Z_0R_0\#XY\beta I_0\#JK\beta B_0\uparrow\#IK\beta Z_1Z_2$	$\dots\uparrow; XY := JK; \dots$
t_{41}	3,16 R_0	$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#\uparrow IK\beta Z_1Z_2$	$\dots\uparrow; XY := JK; \dots$
t_{42}	3,16 R_0	$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#I\uparrow K\beta Z_1Z_2$	$\dots\uparrow; XY := JK; \dots$
t_{43}	3,16 R_0	$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\uparrow\beta Z_1Z_2$	$\dots\uparrow; XY := JK; \dots$
t_{44}	3,16 R_0	$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\beta\uparrow Z_1Z_2$	$\dots\uparrow; XY := JK; \dots$
t_{45}	3,16 R_0	$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\beta Z_1\uparrow Z_2$	$\dots\uparrow; XY := JK; \dots$
t_{46}	3,16 R_0	$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\beta Z_1Z_2\uparrow$	$\dots\uparrow; XY := JK; \dots$
t_{47}	3,17	$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\beta Z_1R_0\uparrow$	$\dots; \uparrow XY := JK; \dots$
t_{48}	3,17	$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\beta Z_1R_0\uparrow$	$\dots; X\uparrow Y := JK; \dots$
t_{49}	3,17	$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\beta Z_1R_0\uparrow$	$\dots; XY\uparrow := JK; \dots$

C OUTPUT FROM CONSULTING THE SYMBOL TABLE OF AN
ALGOL PROGRAM

t_{50}	3		$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\beta Z_1R_0\downarrow$	...; $XY\uparrow := JK$; ...	
t_{51}	4,18		$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\beta Z_1R_0\downarrow$	...; $XY\uparrow := JK$; ...	
t_{52}	4		$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\beta Z_1R_0 := 1$	...; $XY := \downarrow JK$; ...	
t_{53}	5,8		$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\beta Z_1R_0 := 1$	...; $XY := \downarrow JK$; ...	
t_{54}	5,9		$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\beta Z_1R_0 := Z_2\downarrow$	...; $XY := J\downarrow K$; ...	
t_{55}	5,9		$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\beta Z_1R_0 := Z_2\downarrow$	...; $XY := JK\downarrow$; ...	
t_{56}	5		$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\beta Z_1R_0 := 1Z_2$	...; $XY := JK\downarrow$; ...	
t_{57}	6,10		$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\beta Z_1R_0 := 1Z_2$	...; $XY := JK\downarrow$; ...	
t_{58}	6,10		$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\beta Z_1R_0\downarrow := Z_2$	...; $XY := JK\downarrow$; ...	
t_{59}	6,10		$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\beta Z_1\downarrow R_0 := Z_2$	...; $XY := JK\downarrow$; ...	
t_{60}	6,10		$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\beta\downarrow Z_1R_0 := Z_2$	...; $XY := JK\downarrow$; ...	
t_{61}	6,11		$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\downarrow\beta Z_1R_0 := Z_2$	...; $XY := J\downarrow K$; ...	
t_{62}	6,11		$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#I\downarrow K\beta Z_1R_0 := Z_2$	...; $XY := \downarrow JK$; ...	
t_{63}	6,12		$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#I\downarrow K\beta Z_1R_0 := Z_2$	...; $XY := \downarrow JK$; ...	
t_{64}	6,13		$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#I\downarrow K\beta Z_1R_0 := Z_2$	...; $XY := \downarrow JK$; ...	
t_{65}	6,13		$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#\downarrow IK\beta Z_1R_0 := Z_2$	...; $XY := \downarrow JK$; ...	
t_{66}	6,13		$Z_0R_0\#XY\beta I_0\#JK\beta B_0\downarrow\#IK\beta Z_1R_0 := Z_2$	...; $XY := \downarrow JK$; ...	
t_{67}	6,13		$Z_0R_0\#XY\beta I_0\#JK\beta\downarrow B_0\#IK\beta Z_1R_0 := Z_2$	...; $XY := \downarrow JK$; ...	
t_{68}	6,14		$Z_0R_0\#XY\beta I_0\#JK\downarrow\beta B_0\#IK\beta Z_1R_0 := Z_2$	...; $XY := \downarrow JK$; ...	
t_{69}	6,14		$Z_0R_0\#XY\beta I_0\#JK\downarrow\beta B_0\#IK\beta Z_1R_0 := Z_2$	...; $XY := J\downarrow K$; ...	
t_{70}	6,14		$Z_0R_0\#XY\beta I_0\#JK\downarrow\beta B_0\#IK\beta Z_1R_0 := Z_2$	...; $XY := JK\downarrow$; ...	
t_{71}	6,11		$Z_0R_0\#XY\beta I_0\#JK\downarrow\beta B_0\#IK\beta Z_1R_0 := Z_2$	...; $XY := J\downarrow K$; ...	
t_{72}	6,11		$Z_0R_0\#XY\beta I_0\#J\downarrow K\beta B_0\#IK\beta Z_1R_0 := Z_2$	...; $XY := \downarrow JK$; ...	
t_{73}	6,11		$Z_0R_0\#XY\beta I_0\#\downarrow JK\beta B_0\#IK\beta Z_1R_0 := Z_2$	...; $XY\uparrow := JK$; ...	
t_{74}	6,12		$Z_0R_0\#XY\beta I_0\#\downarrow JK\beta B_0\#IK\beta Z_1R_0 := Z_2$	...; $XY\uparrow := JK$; ...	
t_{75}	6,15		$Z_0R_0\#XY\beta I_0\downarrow\#JK\beta B_0\#IK\beta Z_1R_0 := Z_2$	...; $XY\uparrow := JK$; ...	
t_{76}	6,16	I_0	$Z_0R_0\#XY\beta I_0\downarrow\#JK\beta B_0\#IK\beta Z_1R_0 := Z_2$	...; $XY\uparrow := JK$; ...	
t_{77}	6,16	I_0	$Z_0R_0\#XY\beta I_0\#\downarrow JK\beta B_0\#IK\beta Z_1R_0 := Z_2$	...; $XY\uparrow := JK$; ...	
t_{78}	6,16	I_0	$Z_0R_0\#XY\beta I_0\#J\downarrow K\beta B_0\#IK\beta Z_1R_0 := Z_2$	...; $XY\uparrow := JK$; ...	
t_{79}	6,16	I_0	$Z_0R_0\#XY\beta I_0\#JK\downarrow\beta B_0\#IK\beta Z_1R_0 := Z_2$	...; $XY\uparrow := JK$; ...	
t_{80}	6,16	I_0	$Z_0R_0\#XY\beta I_0\#JK\beta\downarrow B_0\#IK\beta Z_1R_0 := Z_2$	...; $XY\uparrow := JK$; ...	
t_{81}	6,16	I_0	$Z_0R_0\#XY\beta I_0\#JK\beta B_0\downarrow\#IK\beta Z_1R_0 := Z_2$	...; $XY\uparrow := JK$; ...	
t_{82}	6,16	I_0	$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#\downarrow IK\beta Z_1R_0 := Z_2$	...; $XY\uparrow := JK$; ...	
t_{83}	6,16	I_0	$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#I\downarrow K\beta Z_1R_0 := Z_2$	...; $XY\uparrow := JK$; ...	
t_{84}	6,16	I_0	$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\downarrow\beta Z_1R_0 := Z_2$	...; $XY\uparrow := JK$; ...	
t_{85}	6,16	I_0	$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\beta\downarrow Z_1R_0 := Z_2$	...; $XY\uparrow := JK$; ...	
t_{86}	6,16	I_0	$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\beta Z_1\downarrow R_0 := Z_2$	...; $XY\uparrow := JK$; ...	
t_{87}	6,16	I_0	$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\beta Z_1R_0\downarrow := Z_2$	...; $XY\uparrow := JK$; ...	
t_{88}	6,16	I_0	$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\beta Z_1R_0 := 1Z_2$	...; $XY\uparrow := JK$; ...	
t_{89}	6,16	I_0	$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\beta Z_1R_0 := Z_2\downarrow$	...; $XY\uparrow := JK$; ...	
t_{90}	6,17		$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\beta Z_1R_0 := I_0\downarrow$	...; $XY := \downarrow JK$; ...	
t_{91}	6,17		$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\beta Z_1R_0 := I_0\downarrow$	...; $XY := J\downarrow K$; ...	
t_{92}	6,17		$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\beta Z_1R_0 := I_0\downarrow$	...; $XY := JK\downarrow$; ...	
t_{93}	6		$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\beta Z_1R_0 := I_0\downarrow$	...; $XY := JK\downarrow$; ...	
t_{94}	7,19		$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\beta Z_1R_0 := I_0\downarrow$	...; $XY := JK\downarrow$; ...	
t_{95}	7,20	I_0	$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\beta Z_1R_0 := 1$	...; $XY := JK\downarrow$; ...	LOAD I_0
t_{96}	7,21	I_0	$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\beta Z_1R_0\downarrow$	...; $XY := JK\downarrow$; ...	
t_{97}	7,22		$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\beta Z_1R_0\downarrow$	...; $XY := JK\downarrow$; ...	CALL
t_{98}	7,23		$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\beta Z_1\downarrow$	...; $XY := JK\downarrow$; ...	STO R_0
t_{99}	7		$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\beta Z_1\downarrow$	...; $XY := JK\downarrow$; ...	
t_{100}			$Z_0R_0\#XY\beta I_0\#JK\beta B_0\#IK\beta Z_1\downarrow$	...; $XY := JK\downarrow$; ...	