| q_{carry} $(q_{acc}, I, \mathcal{L})$ $(q_{carry}, 0, \mathcal{L})$ $(q_{acc}, I, \mathcal{L})$ q_{right} $(q_{carry}, \bot, \mathcal{L})$ $(q_{right}, I, \mathcal{R})$ $(q_{right}, 0, \mathcal{R})$ | carry | _ | I | 0 |
|--|---------------------------|----------------------------------|-----------------------------------|-----------------------------------|
| () (- 0) (- 0) | q _{carry} | $(q_{acc}, I, \mathcal{L})$ | $(q_{carry}, \ 0, \ \mathcal{L})$ | $(q_{acc}, I, \mathcal{L})$ |
| $q_{right} \mid (q_{carry}, \Box, \mathcal{L}) \mid (q_{right}, 1, \mathcal{R}) \mid (q_{right}, 0, \mathcal{R})$ | \rightarrow q_{right} | $(q_{carry}, _, \mathcal{L})$ | $(q_{right}, I, \mathcal{R})$ | $(q_{right}, \ 0, \ \mathcal{R})$ |



| carry | | I | 0 |
|---------------------------|--|-------------------------------|-------------------------------|
| q _{carry} | $(q_{acc}, I, \mathcal{L})$ $(q_{carry}, L, \mathcal{L})$ | $(q_{carry}, 0, \mathcal{L})$ | $(q_{acc}, I, \mathcal{L})$ |
| $ ightarrow q_{right}$ | $(q_{carry}, _, \mathcal{L})$ | (q_{right}, I, R) | $(q_{right}, 0, \mathcal{R})$ |
| | | | |
| | | 1 - 1 - 1 - 1 | |

carry _ _ I

| | $(q_{carry},\;0,\;\mathcal{L}) \ (q_{right},\;\mathrm{I},\;\mathcal{R})$ | |
|--|--|--|
| | | |

| carry | | I | 0 |
|---------------------------|-----------------------------|--|-----------------------------|
| q _{carry} | $(q_{acc}, I, \mathcal{L})$ | $(q_{carry}, \ 0, \ \mathcal{L}) \ (q_{right}, \ \mathrm{I}, \ \mathcal{R})$ | $(q_{acc}, I, \mathcal{L})$ |
| \rightarrow q_{right} | (q_{carry}, L, L) | $(q_{right}, 1, R)$ | (q_{right}, U, K) |
| | | | |

| q_{carry} $(q_{acc}, I, \mathcal{L})$ $(q_{carry}, 0, \mathcal{L})$ $(q_{acc}, I, \mathcal{L})$ |
|--|
| |
| $q_{right} \mid (q_{carry}, \square, \mathcal{L}) (q_{right}, \mathbb{I}, \mathcal{R}) (q_{right}, \mathbb{O}, \mathcal{R})$ |

| carry I 0 |
|--|
| q_{carry} $(q_{acc}, I, \mathcal{L})$ $(q_{carry}, 0, \mathcal{L})$ $(q_{acc}, I, \mathcal{L})$ $\rightarrow q_{right}$ $(q_{carry}, \bot, \mathcal{L})$ $(q_{right}, I, \mathcal{R})$ $(q_{right}, 0, \mathcal{R})$ |

| carry | | I | 0 |
|---------------------|-------------------------------|-------------------------------|-------------------------------|
| q _{carry} | $(q_{acc}, I, \mathcal{L})$ | $(q_{carry}, 0, \mathcal{L})$ | $(q_{acc}, I, \mathcal{L})$ |
| →q _{right} | $(q_{carry}, L, \mathcal{L})$ | $(q_{right}, I, \mathcal{R})$ | $(q_{right}, O, \mathcal{R})$ |

| carry | | I | 0 |
|-----------------------------------|--|--|--|
| q carry →q right | $(q_{acc}, I, \mathcal{L})$ $(q_{carry}, L, \mathcal{L})$ | $(q_{carry}, 0, \mathcal{L})$ $(q_{right}, I, \mathcal{R})$ | $(q_{acc}, I, \mathcal{L})$ $(q_{right}, 0, \mathcal{R})$ |
| | | | |

| carry | | I | 0 |
|-------------------------------------|---|--|---|
| q_{carry} $\Rightarrow q_{right}$ | $(q_{acc}, I, \mathcal{L})$ (q_{carry}, L) | $(q_{carry}, \ 0, \ \mathcal{L})$ $(q_{right}, \ I, \ \mathcal{R})$ | $(q_{acc}, \ \mathrm{I}, \ \mathcal{L}) \ (q_{right}, \ \mathrm{O}, \ \mathcal{R})$ |
| | | | |

| carry | | I | 0 |
|---------------------------------------|---|--|---|
| q_{carry} $ ightarrow q_{right}$ | $(q_{acc}, I, \mathcal{L})$ $(q_{carry}, \Box, \mathcal{L})$ | $(q_{carry}, 0, \mathcal{L})$ $(q_{right}, I, \mathcal{R})$ | $(q_{acc}, \ 	ext{I}, \ \mathcal{L}) \ (q_{right}, \ 	ext{O}, \ \mathcal{R})$ |
| | | | |

| carry | _ | I | 0 |
|------------------------------------|---|--|--|
| q_{carry} $ ightarrow q_{right}$ | $(q_{acc}, I, \mathcal{L})$ (q_{carry}, L) | $(q_{carry}, 0, \mathcal{L})$ $(q_{right}, I, \mathcal{R})$ | $(q_{acc}, I, \mathcal{L})$ $(q_{right}, 0, \mathcal{R})$ |
| | | | |

Halted (accepted) (Accept: q_{acc} , Reject: q_{re})

| $q_{carry} \mid (q_{acc}, 1, L) \mid (q_{carry}, 0, L) \mid (q_{acc}, 1, L)$ |
|---|
| $egin{array}{c cccc} q_{carry} & (q_{acc}, \ \mathrm{I}, \ \mathcal{L}) & (q_{carry}, \ \mathrm{0}, \ \mathcal{L}) & (q_{acc}, \ \mathrm{I}, \ \mathcal{L}) \\ ightarrow q_{right} & (q_{carry}, \ _{-}, \ \mathcal{L}) & (q_{right}, \ \mathrm{I}, \ \mathcal{R}) & (q_{right}, \ \mathrm{0}, \ \mathcal{R}) \end{array}$ |

