

$(arg = 5; x = 1; \text{while } (arg > 0) \text{ do } \{x = x * arg; arg = arg - 1\}, \emptyset)$
 $\Rightarrow (\text{skip}; x = 1; \text{while } (arg > 0) \text{ do } \{x = x * arg; arg = arg - 1\}, \{arg \mapsto 5\})$

$\Rightarrow (x = 1; \text{while } (arg > 0) \text{ do } \{x = x * arg; arg = arg - 1\}, \{arg \mapsto 5\})$

$\Rightarrow (\text{skip}; \text{while } (arg > 0) \text{ do } \{x = x * arg; arg = arg - 1\}, \{arg \mapsto 5, x \mapsto 1\})$

$\Rightarrow (\text{while } (arg > 0) \text{ do } \{x = x * arg; arg = arg - 1\}, \{arg \mapsto 5, x \mapsto 1\})$

$\Rightarrow (\text{if } (arg > 0) \text{ then } \{x = x * arg; arg = arg - 1; \text{while } (arg > 0) \text{ do } \{x = x * arg; arg = arg - 1\}\} \text{ else skip}, \{arg \mapsto 5, x \mapsto 1\})$

$\Rightarrow (x = x * arg; arg = arg - 1; \text{while } (arg > 0) \text{ do } \{x = x * arg; arg = arg - 1\}, \{arg \mapsto 5, x \mapsto 1\})$

$\Rightarrow (\text{skip}; \text{while } (arg > 0) \text{ do } \{x = x * arg; arg = arg - 1\}, \{arg \mapsto 5, x \mapsto 1\})$

$\Rightarrow (arg = arg - 1; \text{while } (arg > 0) \text{ do } \{x = x * arg; arg = arg - 1\}, \{arg \mapsto 5, x \mapsto 1\})$

$\Rightarrow (\text{skip}; \text{while } (arg > 0) \text{ do } \{x = x * arg; arg = arg - 1\}, \{arg \mapsto 4, x \mapsto 1\})$

$\Rightarrow (\text{while } (arg > 0) \text{ do } \{x = x * arg; arg = arg - 1\}, \{arg \mapsto 4, x \mapsto 1\})$