

オートマトンと言語 Lesson. 12 演習問題

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問4. $G3$ を拡張して次の通り $G4 = (N4, \Sigma4, P4, S4)$ とする.

$N4 = \{E, S, I, C\}, \Sigma4 = \{a, b, u, v, +, *, (,), \{, \}, =, ;, \text{while}\}$

$P4 = \{E \rightarrow (E), E \rightarrow (E + E), E \rightarrow (E * E), E \rightarrow v, S \rightarrow I = E; , I \rightarrow u,$

$S \rightarrow S\text{while}(C)\{S\}; S, S \rightarrow \varepsilon, C \rightarrow E > E, E \rightarrow a, E \rightarrow b\}$

$S4 = S$

注意: $\Sigma4$ に含まれる"**while**"は1つの記号である.

補足: C は条件(condition)に相当する.

問4.1. $G4$ を用いて, 次のCプログラム(のような記号列)を導出せよ.

$u = (v + b); \text{while}(a > b)\{u = (v + a); \}$

$S \Rightarrow S\text{while}(C)\{S\}; S$

$\Rightarrow I = E; \text{while}(C)\{S\}; S$

$\Rightarrow u = E; \text{while}(C)\{S\}; S$

$\Rightarrow u = (E + E); \text{while}(C)\{S\}; S$

$\Rightarrow u = (v + E); \text{while}(C)\{S\}; S$

$\Rightarrow u = (v + b); \text{while}(C)\{S\}; S$

$\Rightarrow u = (v + b); \text{while}(E > E)\{S\}; S$

$\Rightarrow u = (v + b); \text{while}(a > E)\{S\}; S$

$\Rightarrow u = (v + b); \text{while}(a > b)\{S\}; S$

$\Rightarrow u = (v + b); \text{while}(a > b)\{I = E;\}; S$

$\Rightarrow u = (v + b); \text{while}(a > b)\{u = E;\}; S$

$\Rightarrow u = (v + b); \text{while}(a > b)\{u = (E + E);\}; S$

$\Rightarrow u = (v + b); \text{while}(a > b)\{u = (v + E);\}; S$

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