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On cooperating/distributed grammar systems. (English. German, Russian summary)

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The authors introduce the concept of a cooperating/distributed (CD) grammar system $G = (V, \Sigma, P_1, \cdots, P_r; Q_1, \cdots, Q_s, S)$, which consists of r context-free grammars $G_i = (V, \Sigma, P_i, S)$ and s EOL systems $H_j = (V, \Sigma, Q_j, S)$, $r, s \in \mathbf{N}$. Rewriting steps according to G are performed by the underlying context-free grammars and EOL systems.

Each CD grammar system gives rise to a number of languages when additional restrictions are placed on the derivations, e.g., when each G_i and H_j is only allowed to make exactly k consecutive steps, or at most k consecutive steps; the order of G_i's and H_j's is uncontrolled, or it is controlled by a directed graph. The paper mainly deals with the expressive power of the corresponding language families. This results in characterizations of well-known language families—such as the families of context-free, of EOL, and of ETOL languages, as well as the family of languages generated by programmed grammars—in terms of CD grammar systems.

{Although the subject has been motivated by some trends in computer networks ("computer supported co-working") and in artificial intelligence ("the blackboard model of problem-solving") no applications of the authors' results to these areas are given.}

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