Solution to Problem 7

Task. Show, step by step, how the following grammar describing valid names for variables in an alphabet consisting of 0, 1, and a will generate the word $a01$. In this grammar, N stands for names, L for letters, and D for digits. The rules are: $N \rightarrow L$, $N \rightarrow NL$, $N \rightarrow ND$, $L \rightarrow a$, $D \rightarrow 0$, and $D \rightarrow 1$.

Solution. The derivation of this string takes the following form: