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: