HASKELL-types

$$
\begin{array}{lcl}
\underline{\text{type}} & \rightarrow & (\underline{\text{tyconstr}}\ \underline{\text{type}}_1 \ldots \underline{\text{type}}_n), \quad n \geq 0 \\
& & \mid [\underline{\text{type}}] \\
& & \mid (\underline{\text{type}}_1 \rightarrow \underline{\text{type}}_2) \\
& & \mid (\underline{\text{type}}_1, \ldots, \underline{\text{type}}_n), \quad n \geq 0 \\
& & \mid \underline{\text{var}}
\end{array}
$$

$$
\underline{\text{tyconstr}} \rightarrow \text{string starting with upper case symbol}
$$

HASKELL-programs (1)

$$
\underline{\text{program}} \rightarrow \{\ \underline{\text{topdecl}}_1 ;\ \ldots\ ;\underline{\text{topdecl}}_n\ \}, \quad n \geq 0
$$

$$
\begin{array}{lcl}
\underline{\text{topdecl}} & \rightarrow & \underline{\text{decl}} \\
& & \mid \texttt{type}\ \underline{\text{tyconstr}}\ \underline{\text{var}}_1\ \ldots\ \underline{\text{var}}_n\ =\ \underline{\text{type}}, \quad n \geq 0 \\
& & \mid \texttt{data}\ [\underline{\text{context}} \Rightarrow]\ \underline{\text{tyconstr}}\ \underline{\text{var}}_1\ \ldots\ \underline{\text{var}}_n\ = \\
& & \quad \underline{\text{constr}}_1\ \underline{\text{type}}_{1,1} \ldots \underline{\text{type}}_{1,n_1} \mid \\
& & \quad \vdots \\
& & \quad \underline{\text{constr}}_k\ \underline{\text{type}}_{k,1} \ldots \underline{\text{type}}_{k,n_k}, \quad n \geq 0, k \geq 1, n_i \geq 0 \\
& & \mid \texttt{class}\ [\underline{\text{context}} \Rightarrow]\ \underline{\text{tyconstr}}\ \underline{\text{var}}\ [\texttt{where}\ \{\underline{\text{cdecl}}_1; \ldots; \underline{\text{cdecl}}_n\}] \\
& & \mid \texttt{instance}\ [\underline{\text{context}} \Rightarrow]\ \underline{\text{tyconstr}}\ \underline{\text{instype}} \\
& & \qquad [\texttt{where}\ \{\underline{\text{cdecl}}_1; \ldots; \underline{\text{cdecl}}_n\}]
\end{array}
$$

HASKELL-programs (2)

$$
\begin{array}{lcl}
\underline{\text{cdecl}} & \rightarrow & \underline{\text{typedecl}} \mid \underline{\text{fundecl}} \mid \underline{\text{infixdecl}} \mid \underline{\text{var}}\ \underline{\text{rhs}} \\
\underline{\text{instype}} & \rightarrow & (\underline{\text{tyconstr}}\ \underline{\text{var}}_1 \ldots \underline{\text{var}}_n), \quad n \geq 0 \\
& & \mid [\underline{\text{var}}] \\
& & \mid (\underline{\text{var}}_1 \rightarrow \underline{\text{var}}_2) \\
& & \mid (\underline{\text{var}}_1, \ldots, \underline{\text{var}}_n), \quad n \geq 2 \\
\underline{\text{idecl}} & \rightarrow & \underline{\text{fundecl}} \mid \underline{\text{var}}\ \underline{\text{rhs}} \\
\underline{\text{context}} & \rightarrow & (\underline{\text{tyconstr}}_1 \underline{\text{var}}_1, \ldots, \underline{\text{tyconstr}}_n \underline{\text{var}}_n), \quad n \geq 1 \\
\underline{\text{typedecl}} & \rightarrow & \underline{\text{var}}_1, \ldots, \underline{\text{var}}_n\ ::\ [\underline{\text{context}} \Rightarrow]\ \underline{\text{type}}, \quad n \geq 1
\end{array}
$$