proposed move to System F

At the Manticore meeting on 11/7/07, we discussed moving BOM in the direction of System F.

The following summarize the proposed changes to the \texttt{BOM}\texttt{-module}:

New syntactic forms:

- \texttt{let x : \text{tau} = y [tauVec]}
- \texttt{apply f [tauVec] (...) / ...)}
- \texttt{let x : \text{tau} = CONS [tauVec] ( ... )}
- \texttt{let x : \text{tau} = CONST [tauVec]}
- \texttt{throw k [tau] ( ... )}

New types:

- \texttt{alpha (* type variables *)}
- \texttt{forall alphaVec . \text{tau}}
- \texttt{T [tauVec]}
- \texttt{tau + tau}

Here are the changes to the datatypes in the \texttt{BOM}\texttt{-module}:

datatype term
\begin{verbatim}
= ...
\end{verbatim}

\begin{itemize}
\item \texttt{E\_Apply of (var * ty list * var list * var list)}
\item \texttt{E\_Throw of (var * ty list * var list)}
\item \texttt{E\_HLOp of (hlop * ty list * var list * var list)}
\end{itemize}

and rhs
\begin{verbatim}
= ...
\end{verbatim}

\begin{itemize}
\item \texttt{E\_TyApply of (var * ty list)}
\item \texttt{E\_DCon of (data_con * ty list * ty list)}
\end{itemize}

and lambda = FB of
\begin{verbatim}
Unknown macro: { f }
\end{verbatim}

and pat
\begin{verbatim}
= P\_DCon of (data_con * ty list * var list)}
\end{verbatim}

and the changes to the BOMTy module:

datatype ty
\begin{verbatim}
= T\_Var of ty_var
\end{verbatim}

\begin{itemize}
\item \texttt{T\_Forall of (ty_var list * ty)}
\item \texttt{T\_TyCon of (tyc * ty list)}
\end{itemize}

We'll also need to add the \texttt{ty_var} type and make changes to the representation of \texttt{tyc}s.