Open Discussion

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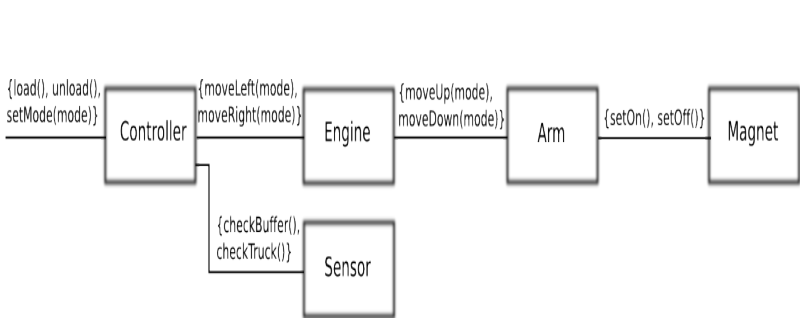
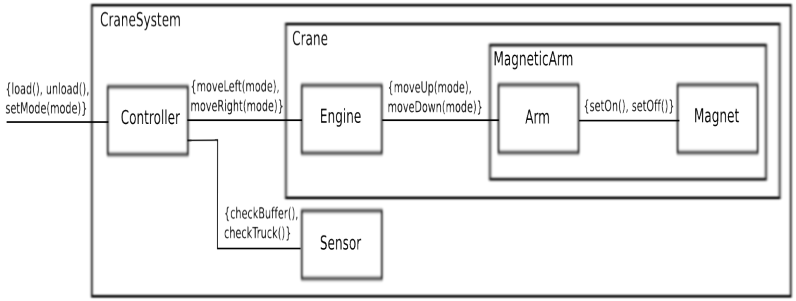
31th Meeting

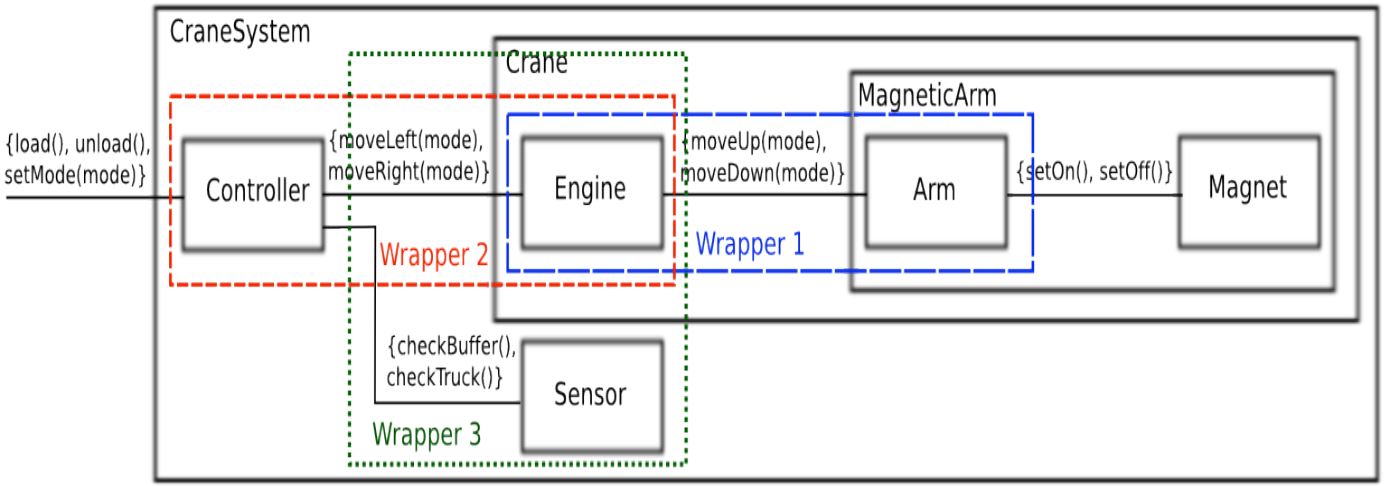
Crane System Views



(a) Flat Architecture of the Crane System



(b) Hierarchical Architecture of the Crane System



(c) Additional views to the Hierarchical Architecture of the Crane System

FACL Language Syntax

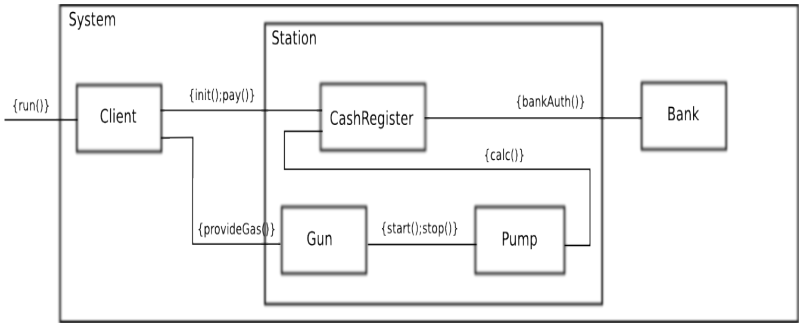
- **Semantic Domains :**

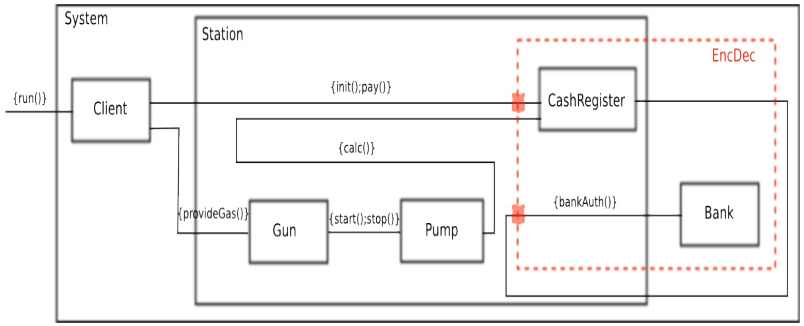
s	$\in$	*Sig*	$::=$	*ID*
cn	$\in$	*CName*	$::=$	*ID*
itf	$\in$	*Itf*	$::=$	Sig^*
m	$\in$	*Membrane*	$::=$	$Itf^* \times Itf^*$
ct	$\in$	*Content*	$::=$	$Component^* + CName$
b	$\in$	*Binding*	$::=$	$Itf \times Itf$
cp	$\in$	*Component*	$::=$	$ID \times Membrane \times Content \times Binding^*$

- **Syntax :**

$c \in CS$	$::=$	**new** $cp \mid c \downarrow id \mid c_1 \leftarrow c_2 \mid c_1 \rightarrow c_2$
$v \in View$	$::=$	**view** $c \mid$ **client** $v \mid$ **server** $v \mid v$ **except** $s^* \mid v_1 \sqcup v_2 \mid v_1 \sqcap v_2 \mid v_1 - v_2 \mid v_1 \rhd v_2$

Example : Gas Station





Primitive Components :

$$
\begin{array}{lcl}
\mathit{client} & \stackrel{\text{def}}{=} & \textbf{new}\ (\mathit{client}, (\{\{\mathit{run}()\}, \{\mathit{init}(), \mathit{pay}()\}\}, \{\{\mathit{provideGas}()\}\}), \mathit{client}, \phi) \\
\mathit{gun} & \stackrel{\text{def}}{=} & \textbf{new}\ (\mathit{gun}, (\{\{\mathit{provideGas}()\}\}, \{\{\mathit{start}(), \mathit{stop}()\}\}), \mathit{gun}, \phi) \\
\mathit{bank} & \stackrel{\text{def}}{=} & \textbf{new}\ (\mathit{bank}, (\{\{\mathit{bankAuth}()\}\}, \phi), \mathit{bank}, \phi) \\
\mathit{pump} & \stackrel{\text{def}}{=} & \textbf{new}\ (\mathit{pump}, (\{\{\mathit{start}(), \mathit{stop}()\}\}, \{\{\mathit{calc}()\}\}), \mathit{pump}, \phi) \\
\mathit{cashRegister} & \stackrel{\text{def}}{=} & \textbf{new}\ (\mathit{cashRegister}, (\{\{\mathit{init}(), \mathit{pay}()\}\}, \{\{\mathit{calc}()\}\}), \mathit{cashRegister}, \phi)
\end{array}
$$

Composite Components :

$$
\begin{array}{lcl}
\mathit{station} & \stackrel{\text{def}}{=} & \textbf{new}\ (\mathit{station}, (\{\{\mathit{init}(), \mathit{pay}()\}\}, \{\{\mathit{bankAuth}()\}\}), \{\mathit{cashRegister}, \mathit{gun}, \mathit{pump}\}, b_1) \\
\mathit{system} & \stackrel{\text{def}}{=} & \textbf{new}\ (\mathit{system}, (\{\{\mathit{run}()\}\}, \phi), \{\mathit{client}, \mathit{station}, \mathit{bank}\}, b_2)
\end{array}
$$

Additional Views :

$$
\begin{array}{lcl}
\mathit{EncDec} & \stackrel{\text{def}}{=} & \textbf{client}\ (\textbf{view}\ (\mathit{system} \downarrow \mathit{bank})) \\
 & & \sqcup \\
 & & \textbf{client}\ (\textbf{view}\ ((\mathit{system} \downarrow \mathit{station}) \downarrow \mathit{cashRegister}))\ \textbf{except}\ \{\{\mathit{calc}()\}\}
\end{array}
$$