Task 1:

- Lattice is defined to be P(Var) with $\sqsubseteq$ = $\subseteq$, $\sqcup$ = $\cup$ and $\perp$ = $\varnothing$, where Var is the set of all variables in the program.
- The forward flow, flow(S), is used.
- The monotone framework and transfer functions are as follows:

$\text{Initialized}_{\text{entry}}(l) = \cup \{\text{Initialized}_{\text{exit}}(l') \mid (l', l) \in \text{flow}(S) \}$

$\text{Initialized}_{\text{exit}}(l) = (\text{Initialized}_{\text{entry}}(l) \smallsetminus \text{kill}_{\text{Initialized}}(B^l)) \cup \text{gen}_{\text{Initialized}}(B^l)$ where $B^l \in \text{blocks}(S)$

$\text{gen}_{\text{Initialized}}([z: = a]^l) = \{z\}$
$\text{gen}_{\text{Initialized}}([\text{All Other Instructions}]^l) = \varnothing$

$\text{kill}_{\text{Initialized}}([z: = a]^l) = \varnothing$
$\text{kill}_{\text{Initialized}}([\text{All Other Instructions}]^l) = \varnothing$