Example DRC Queries

- Find the names of sailors who have reserved all boats

$\{ \langle N \rangle \mid \exists I, T, A \ (\langle I, N, T, A \rangle \in Sailors \ \wedge$

$\forall (B, BN, C) \in Boats \ (\exists \langle I, B, D \rangle \in Reserves)) \}$

It should be

$\{ \langle N \rangle \mid \exists I, T, A \ (\langle I, N, T, A \rangle \in Sailors \ \wedge$

$\forall B, BN, C \ (\langle B, BN, C \rangle \in Boats \Rightarrow$

$\exists D \ \langle I, B, D \rangle \in Reserves)) \}$ OR

$\{ \langle N \rangle \mid \exists I, T, A \ (Sailors (I, N, T, A) \ \wedge$

$\forall B, BN, C \ (Boats (B, BN, C) \Rightarrow \exists D \ Reserves(I, B, D))) \}$

Apply quantifiers on variables B, BN, C, D instead of tuples <B,BN,C> and <I,B,D>

Example DRC Queries

- Find sailors who have reserved all red boats

$\{ \langle N \rangle \mid \exists I, T, A \ (\langle I, N, T, A \rangle \in Sailors \ \wedge$

$\forall B, BN, C \ (\langle B, BN, C \rangle \in Boats$

$(C = \text{'red'} \Rightarrow \exists D \ \langle I, B, D \rangle \in Reserves)) \}$

- Find all sailors such that, for every red boat, there is a tuple in Reserves that shows the sailor has reserved it.