

# Exercises for AR@AI - Description Logics (II)

## Modeling TBoxes

An artist is someone who created an artwork. A sculpture is an artwork. A painting is an artwork that is not a sculpture. A painter is someone who created a painting. A sculptor is someone who created an artwork and created only sculptures. If an artwork is created by an artist, he has either painted or sculptured it. A multi-talent is both a painter and sculptor.

3. Model the information as a DL TBox.

3. Solution:

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## Modeling ABoxes

Rembrandt created the artwork: “nightwatch”, but never created a sculpture. “nightwatch” is a painting. Michelangelo created at least one sculpture.

5. Model the information as a DL ABox

5. Solution:

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## Modeling ontology in Protégé

Enter the following KB into Protégé:

$Artist \equiv \exists created.Artwork$   
 $Sculpture \sqsubseteq Artwork$   
 $Painting \equiv Artwork \sqcap \neg Sculpture$   
 $Painter \equiv \exists created.Painting$   
 $Sculptor \equiv \exists created.\top \sqcap \forall created.Sculpture$   
 $Multitalent \sqsubseteq Painter \sqcap Sculptor$

$(rembrandt, nightwatch) : created$

$rembrandt : \neg \exists created.Sculpture$

$nightwatch : Artwork$

$michelangelo : \exists created.Sculpture$