

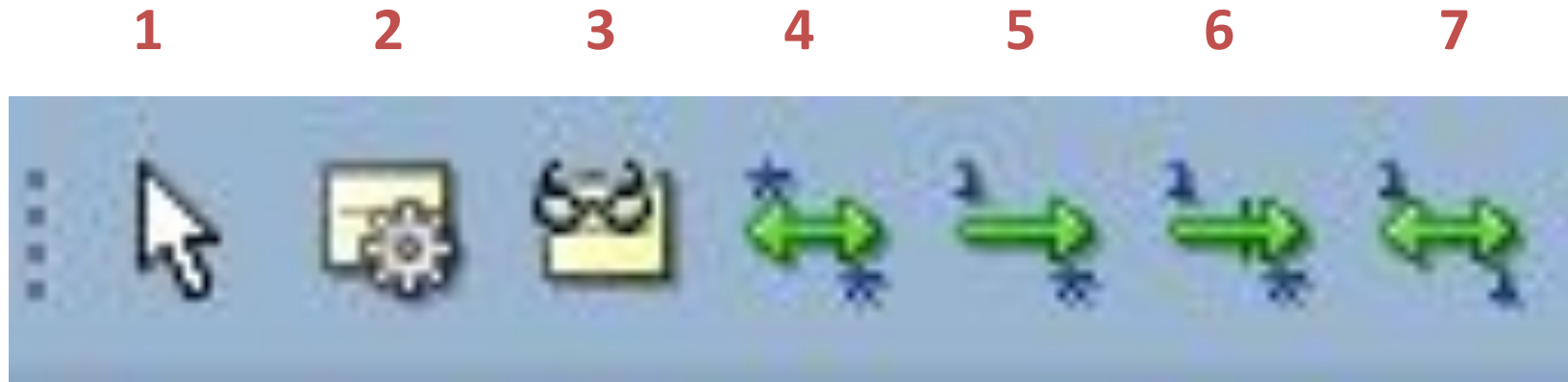
Baze podataka 2

Vežbe - Oracle SQL Developer Data Modeler

Sadržaj

- Koncepti EER modela podataka u alatu *Data Modeler*
- Primer EER modela
- Generisanje relacionog modela
- Generisanje DDL skriptova
- Dodatna podešavanja

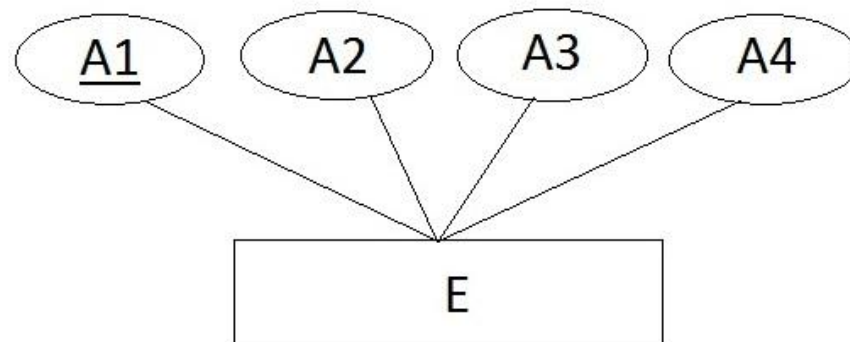
Alati za crtanje dijagrama



- 1 Pomeranje elemenata dijagrama
- 2 Kreiranje tipa entiteta
- 3 Kreiranje pogleda
- 4 Tip poveznika M:N
- 5 Tip poveznika 1:N
- 6 Identifikacioni tip poveznika 1:N
- 7 Tip poveznika 1:1

Koncepti EER modela podataka u alatu *Data Modeler*

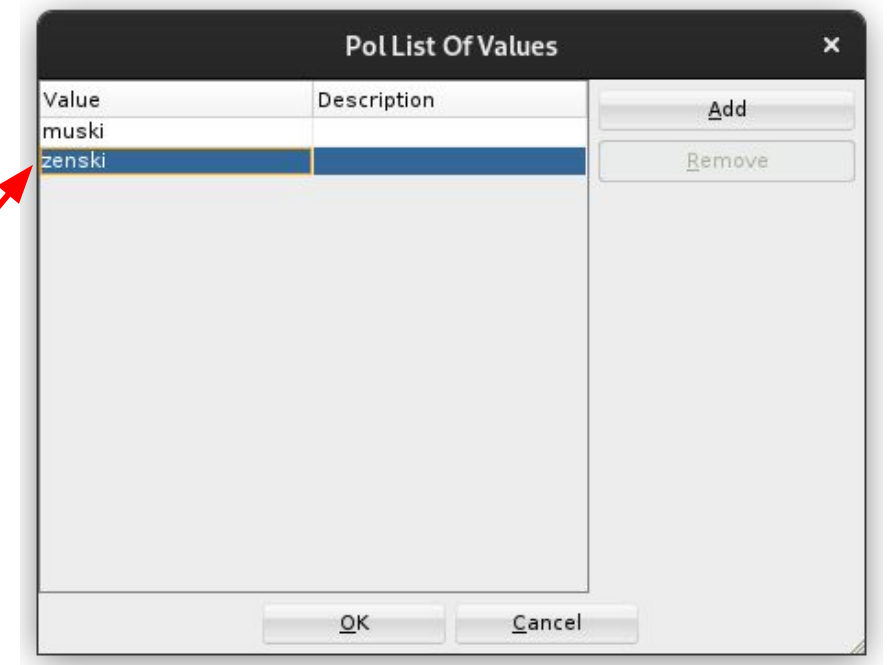
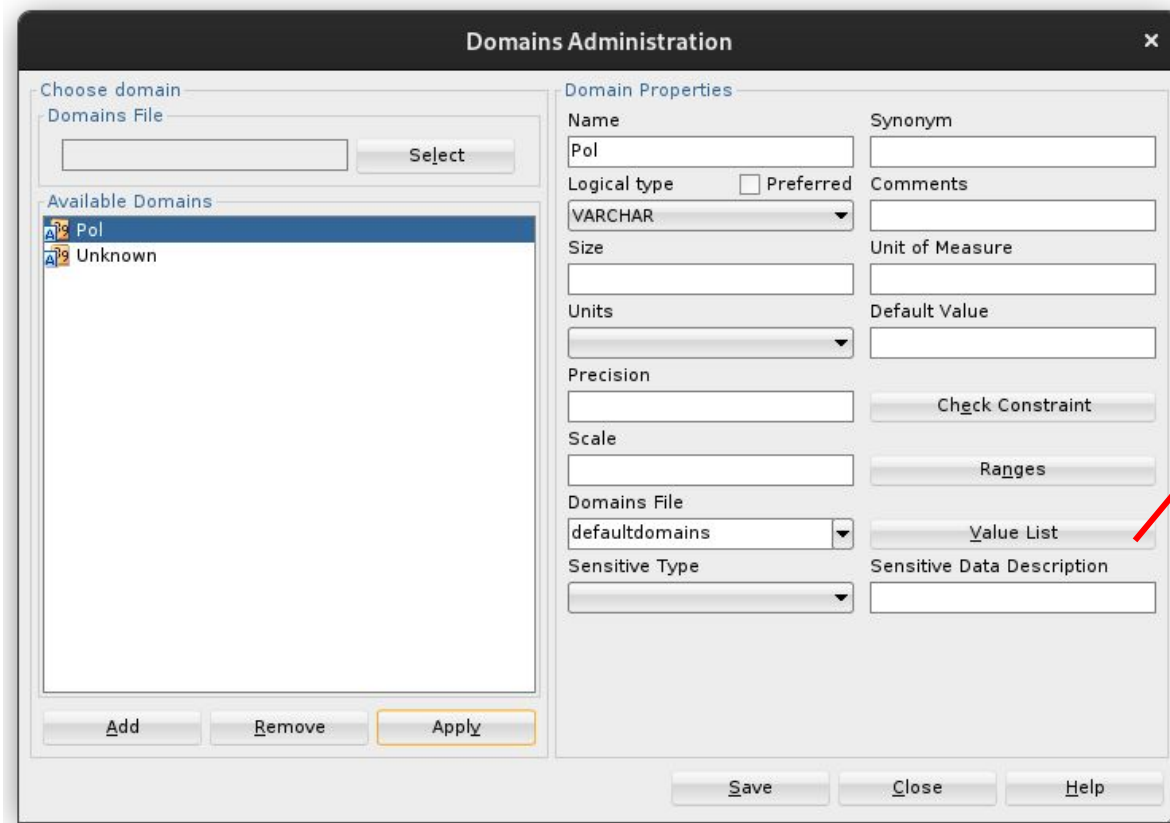
Tip entiteta



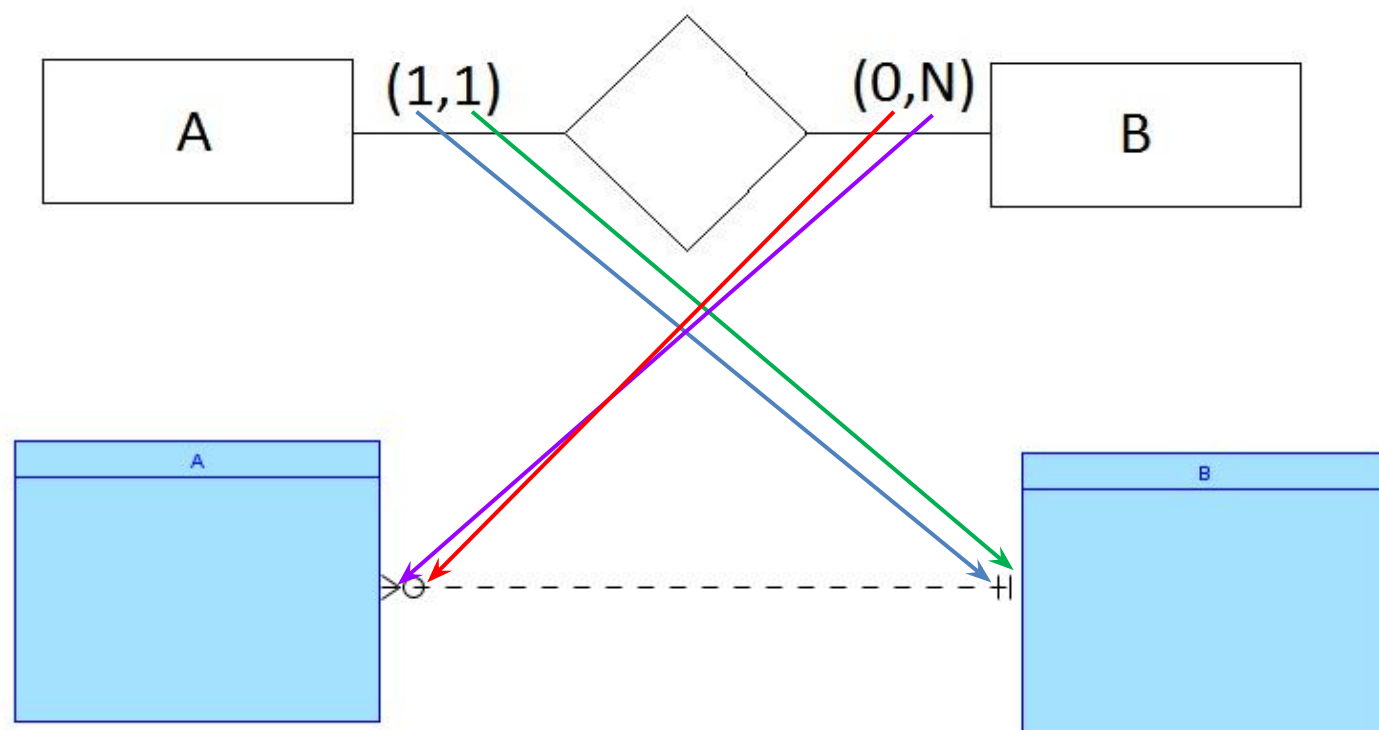
E	
P *	A1 NUMERIC
*	A2 VARCHAR
	A3 FLOAT
	A4 Date
🔑 {entity} PK (A1)	

Domeni

- Tools → Domains Administration



Tip poveznika 1:N



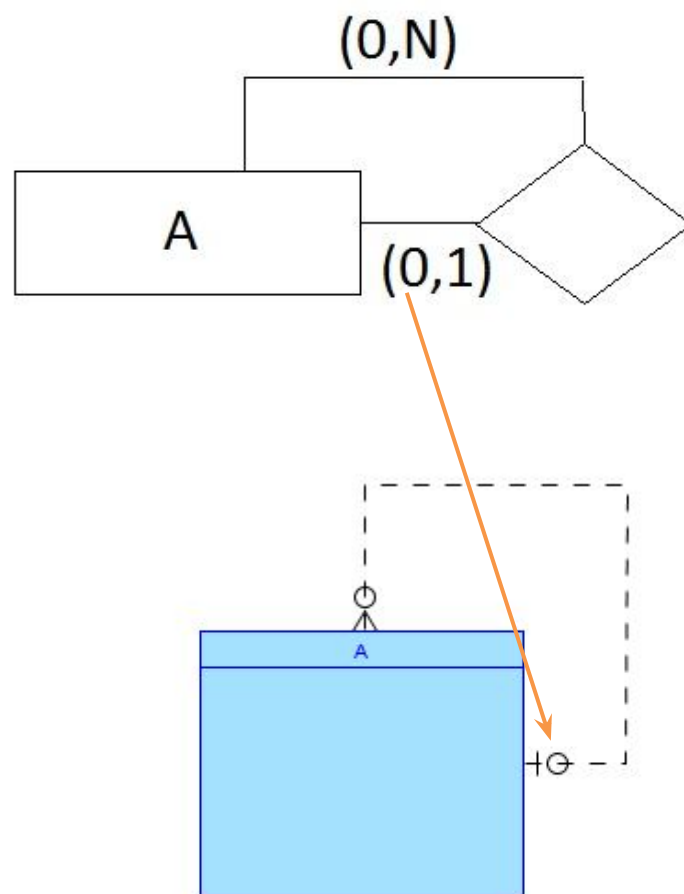
Relation Properties

The screenshot shows a dialog box titled "Relation Properties - AB" with a search icon in the top-left corner. The dialog is divided into a left-hand navigation pane and a main configuration area. The navigation pane lists several categories: General (selected), Attributes, Engineer To, Comments, Comments in RDBMS, Notes, FK Attributes, Impact Analysis, Measurements, Change Requests, Responsible Parties, Documents, Dynamic Properties, User Defined Properties, and Summary. The main configuration area is titled "General" and contains the following fields and controls:

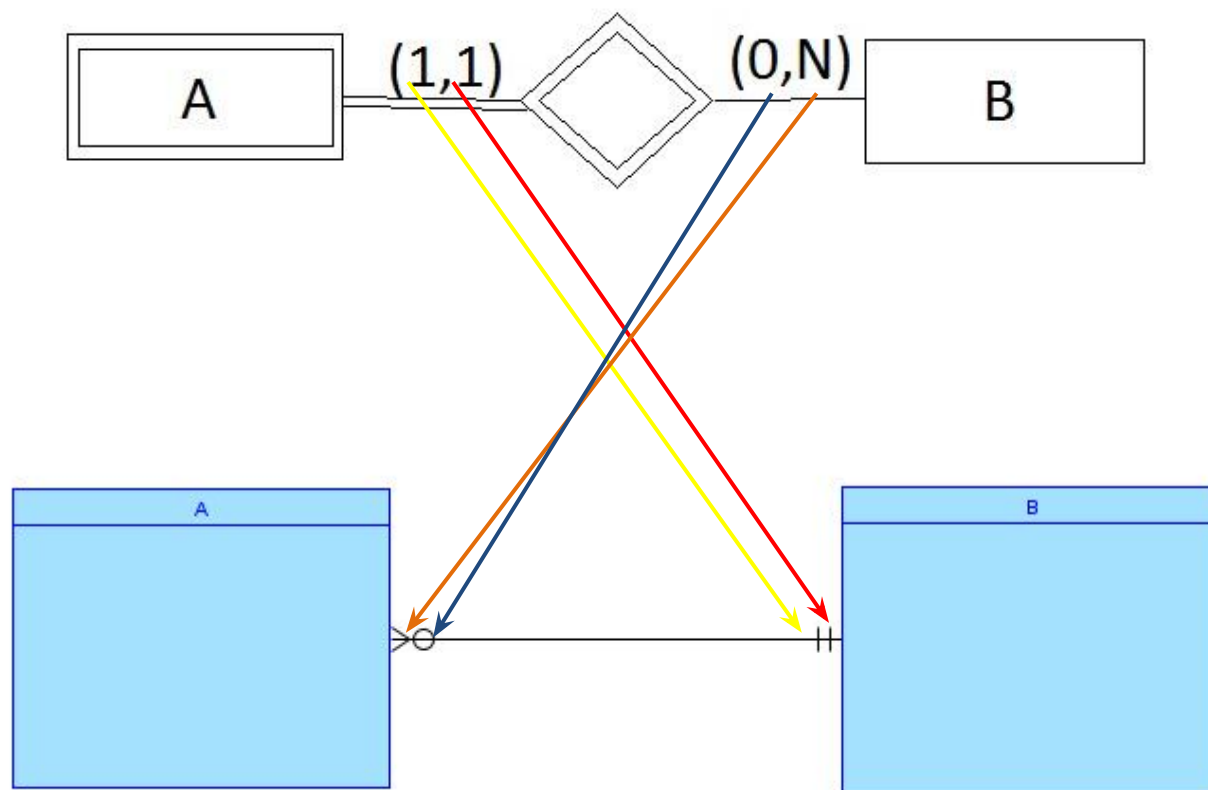
- Name:** Text field containing "AB".
- Use surrogate keys:** Unchecked checkbox.
- Source Cardinality:**
 - Source:** Dropdown menu set to "A".
 - Source key:** Empty dropdown menu.
 - Name on Source:** Empty text field.
 - Source Entity Synonym:** Dropdown menu set to "A".
 - Source to Target Cardinality:** Dropdown menu set to "1".
 - Source Optional:** Unchecked checkbox.
 - Transferable:** Checked checkbox.
- Target Cardinality:**
 - Target:** Dropdown menu set to "B".
 - Target key:** Empty dropdown menu.
 - Name on Target:** Empty text field.
 - Target Entity Synonym:** Dropdown menu set to "B".
 - Target to Source Cardinality:** Dropdown menu set to "> *".
 - Target Optional:** Checked checkbox.
 - Transferable:** Checked checkbox.
- Dominant Role:** Dropdown menu set to "None".
- Identifying:** Unchecked checkbox.
- In Arc:** Unchecked checkbox.
- Delete Rule:** Dropdown menu set to "NO ACTION".

At the bottom of the dialog, there are four buttons: "OK", "Apply", "Cancel", and "Help".

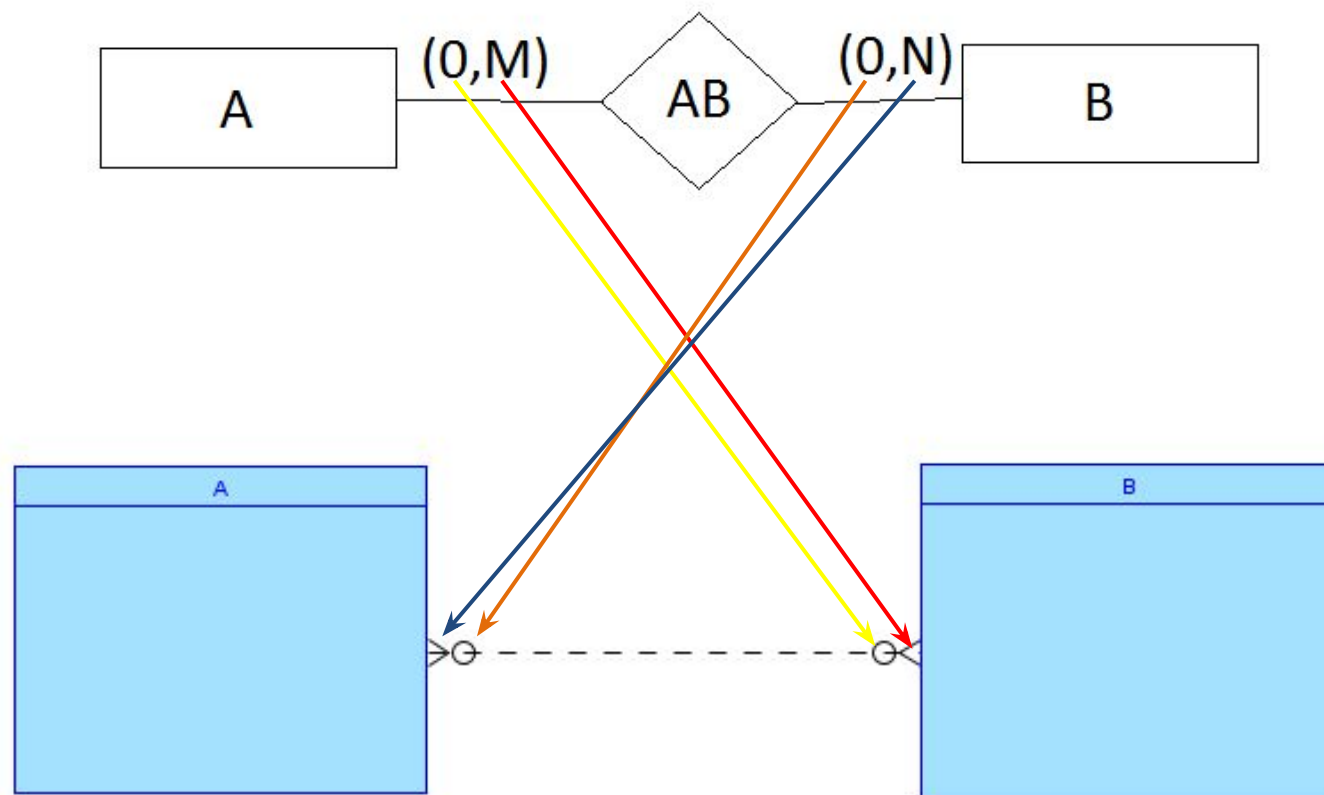
Rekurzivni tip poveznika N:1



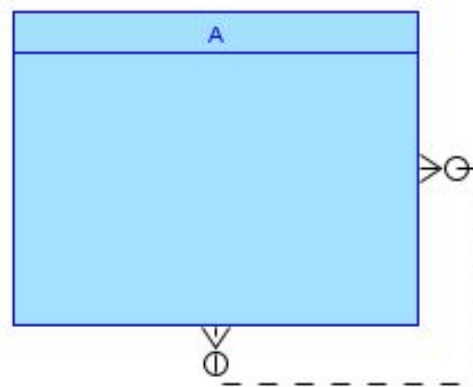
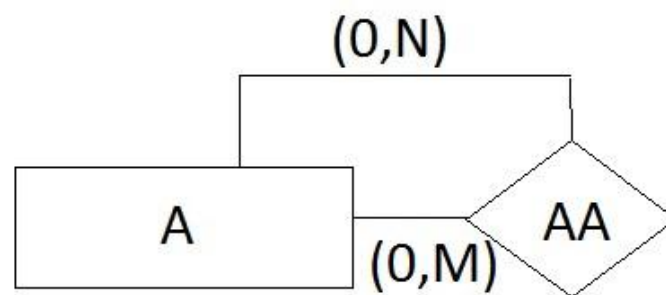
Identifikacioni tip poveznika



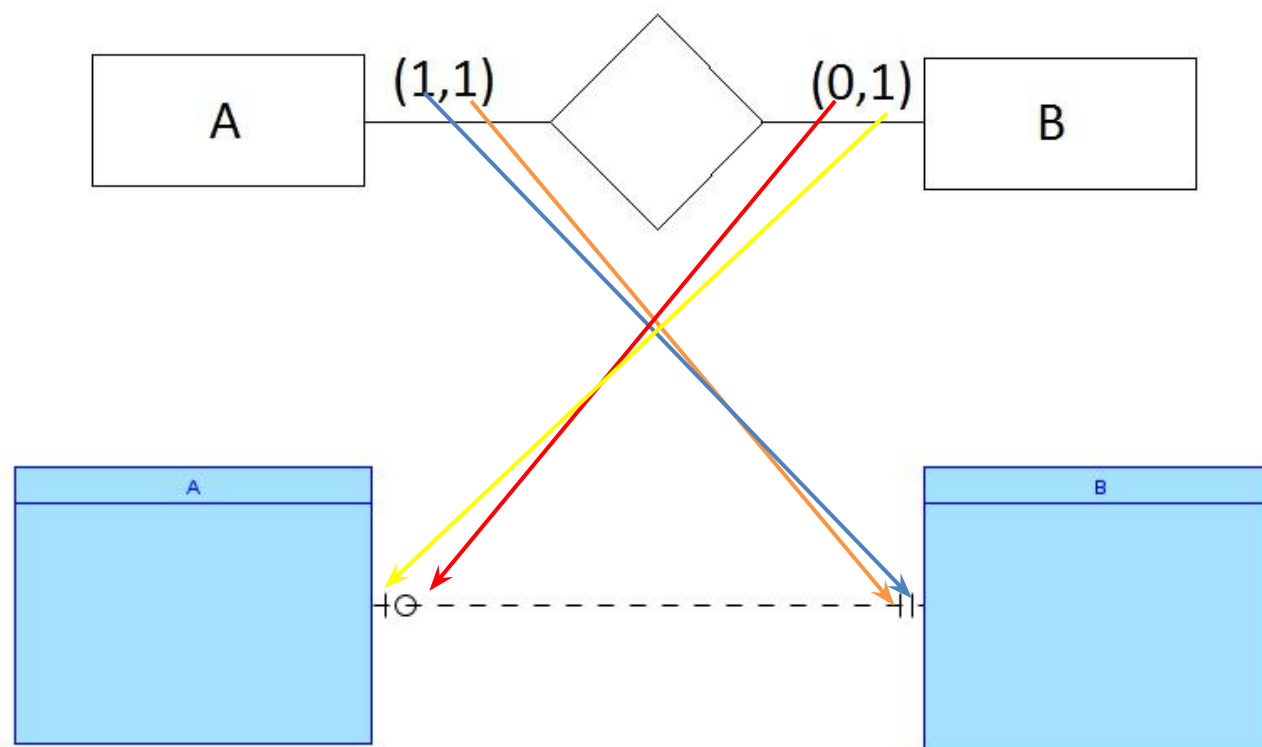
Tip poveznika M:N



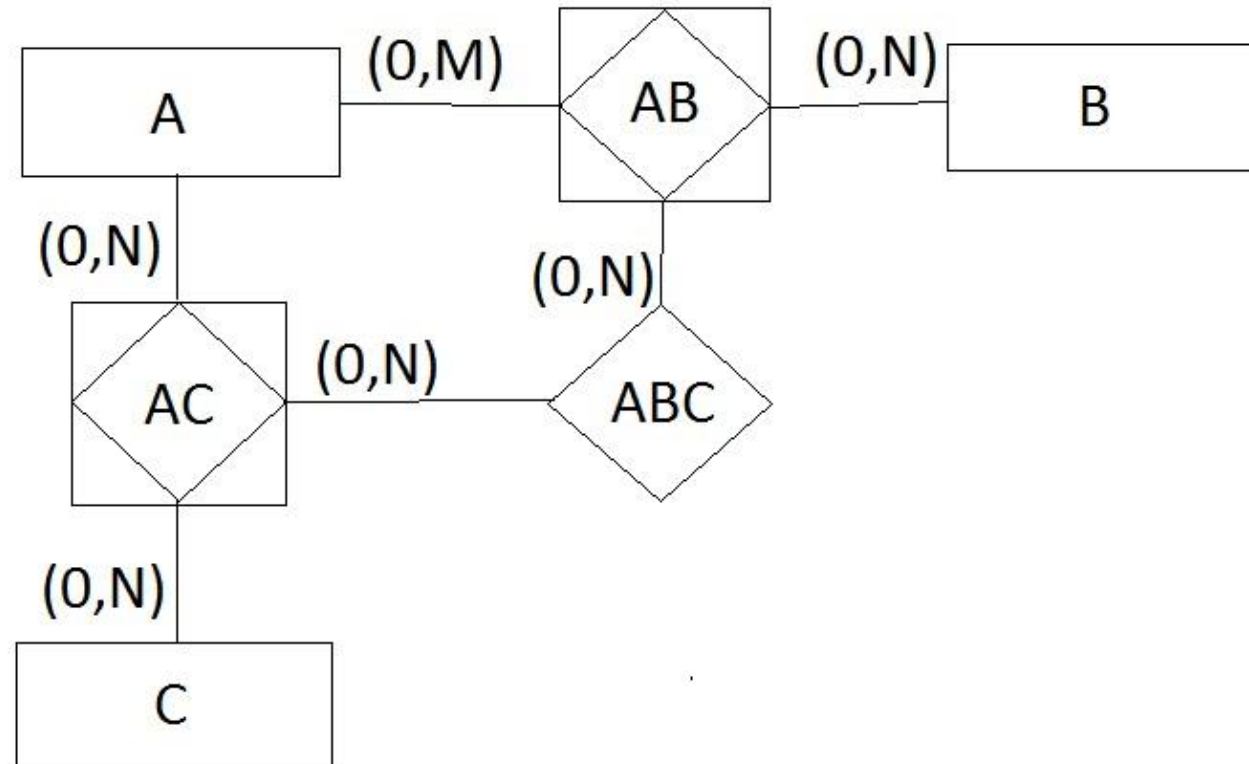
Rekurzivni tip poveznika M:N



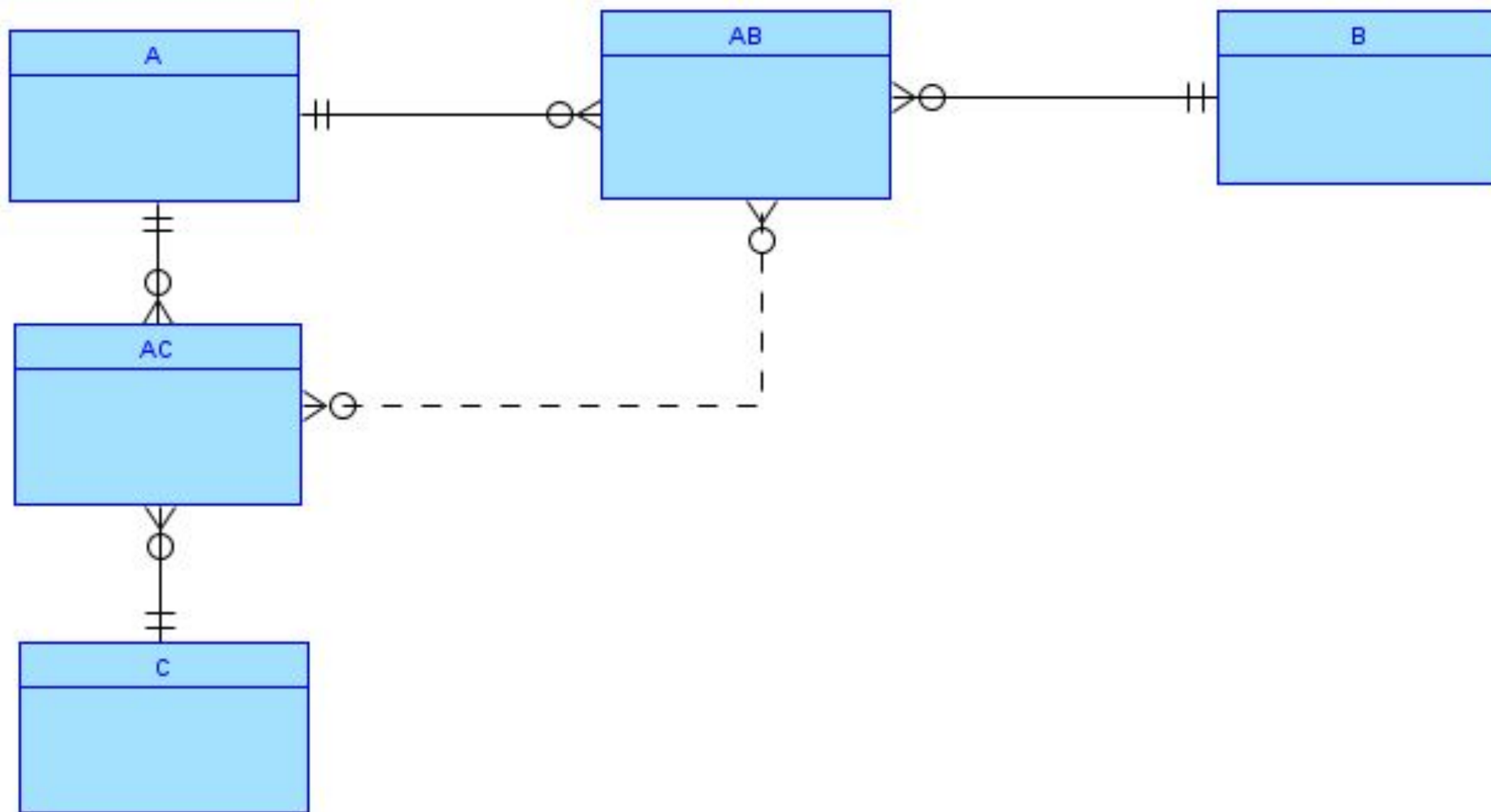
Tip poveznika 1:1



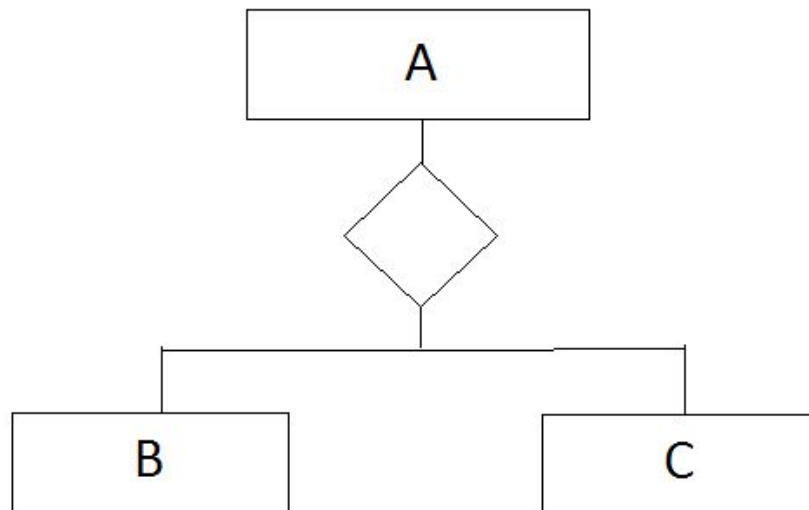
Gerund



Gerund



IS-A hijerarhija



IS-A hijerarhija - *Entity Properties* - potklasa

The screenshot shows a software interface for defining entity properties. The window title is "Entity Properties - B". On the left, a tree view lists various property categories, with "General" selected. The main area displays the "General" tab with several input fields and checkboxes. The "Super Type" field is highlighted with a red rectangle and contains the text "A Izbor superklase". A "Select" button is located to the right of this field. Other fields include "Name" (B), "Short Name", "Synonyms", "Preferred Abbreviation", "Long Name" (B), and "Based on Structured Type". Checkboxes for "Allow Type Substitution" (checked), "Create Surrogate Key", and "Deprecated" are also present. At the bottom, there are buttons for "OK", "Apply", "Naming Rules", "Cancel", and "Help".

Property	Value
Name	B
Short Name	
Synonyms	
Synonym to display	
Preferred Abbreviation	
Long Name	B
Based on Structured Type	
Super Type	A Izbor superklase
Source	
Allow Type Substitution	<input checked="" type="checkbox"/>
Create Surrogate Key	<input type="checkbox"/>
Deprecated	<input type="checkbox"/>

IS-A hijerarhija - *Entity Properties* - superklasa

Entity Properties - A

Subtypes

Entity and subtypes generation preset functionality

Subtree generation Do not preset

Apply to model Relational_1

Subtypes implementation

References Identifying

Attributes inheritance Primary attributes only

Discriminator column

Generate discriminator

Use attribute

Column name

Discriminating value

Complete Subtypes

OK Apply Naming Rules Cancel Help

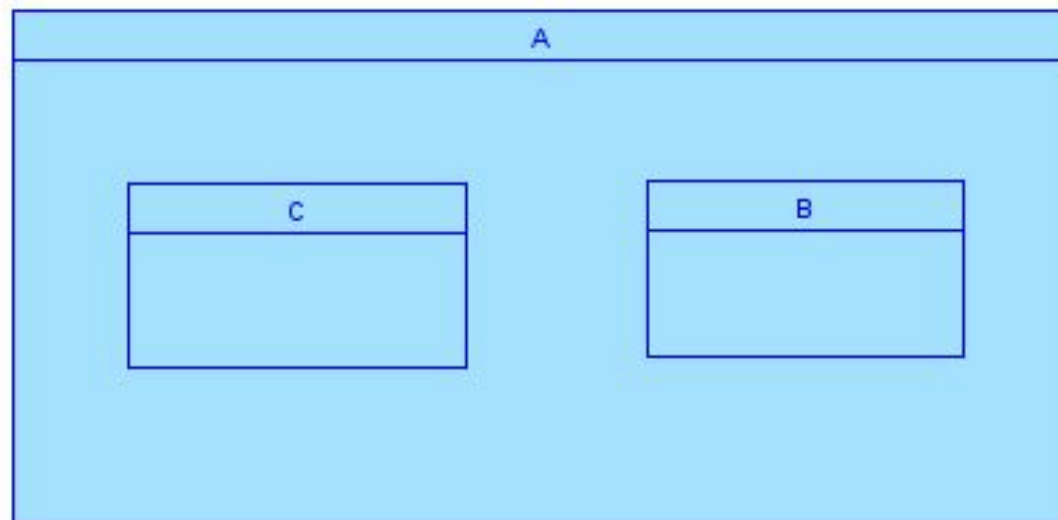
Način formiranja tabela hijerarhije

Automatsko generisanje klasifikacionog obeležja

Totalna IS-A hijerarhija

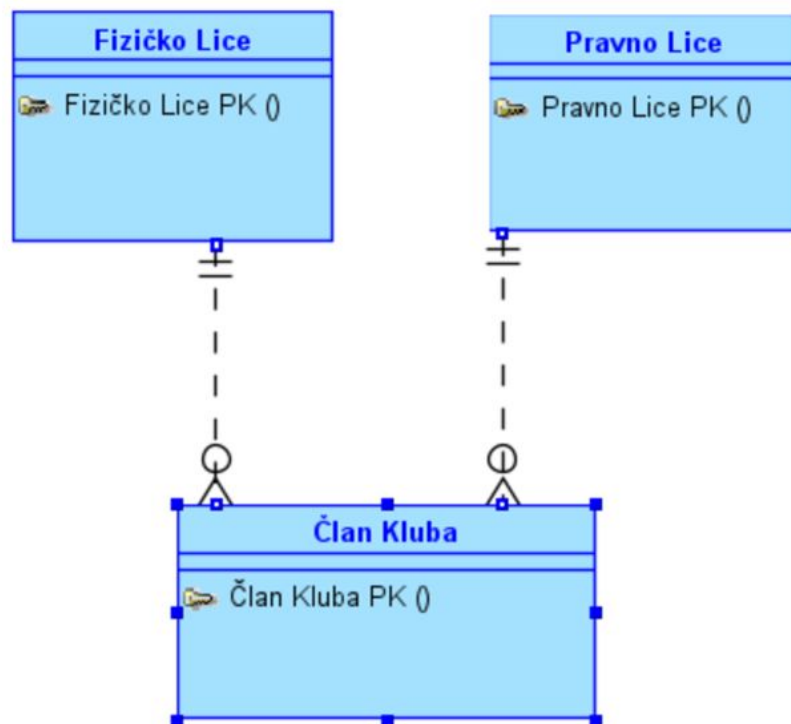
Korišćenje postojećeg
obeležja kao klasifikaciono
obeležje

IS-A hierarhija

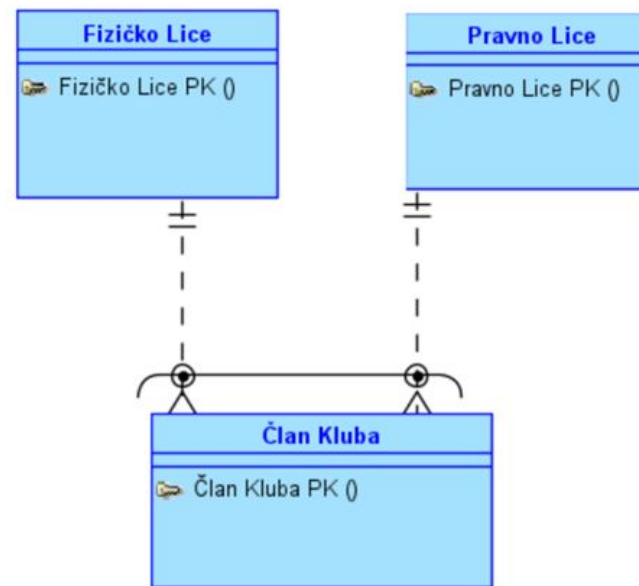


Kategorizacija

Selektovati veze i tip entiteta koji je povezan sa kategorijama



Pojaviće se opcija: *New Arc*



Primer EER modela

Pozorište (samostalni rad)

Nacrtati ER konceptualnu šemu baze podataka POZORISTE, koja će obezbediti menadžmentu pozorišta da upravlja izvođenjima predstava i zaposlenima. Na osnovu tekstualnog opisa realnih entiteta i njihovih odnosa i identifikovanog skupa obeležja. Tekstualni opis:

- U pozorištu se priprema i igra jedna ili više predstava. Svaka predstava ima svoj identifikator, naziv, dužinu trajanja i godinu prve premijere.
- Svaka predstava ima nijedno ili više prikazivanja. Svako prikazivanje predstave se identifikuje na osnovu identifikatora predstave i rednog broja prikazivanja. Takođe, prikazivanje ima datum i vreme izvođenja predstave kao i broj gledalaca koji su posetili predstavu.
- Predstava se prikazuje na određenoj sceni pozorišta. Prikazivanje može biti na sceni matičnog pozorišta ili predstava može da gostuje u nekom pozorištu.
- Svako pozorište ima svoj identifikator, naziv, adresu, mesto i državu u kojoj se nalazi, kao i adresu sajta.

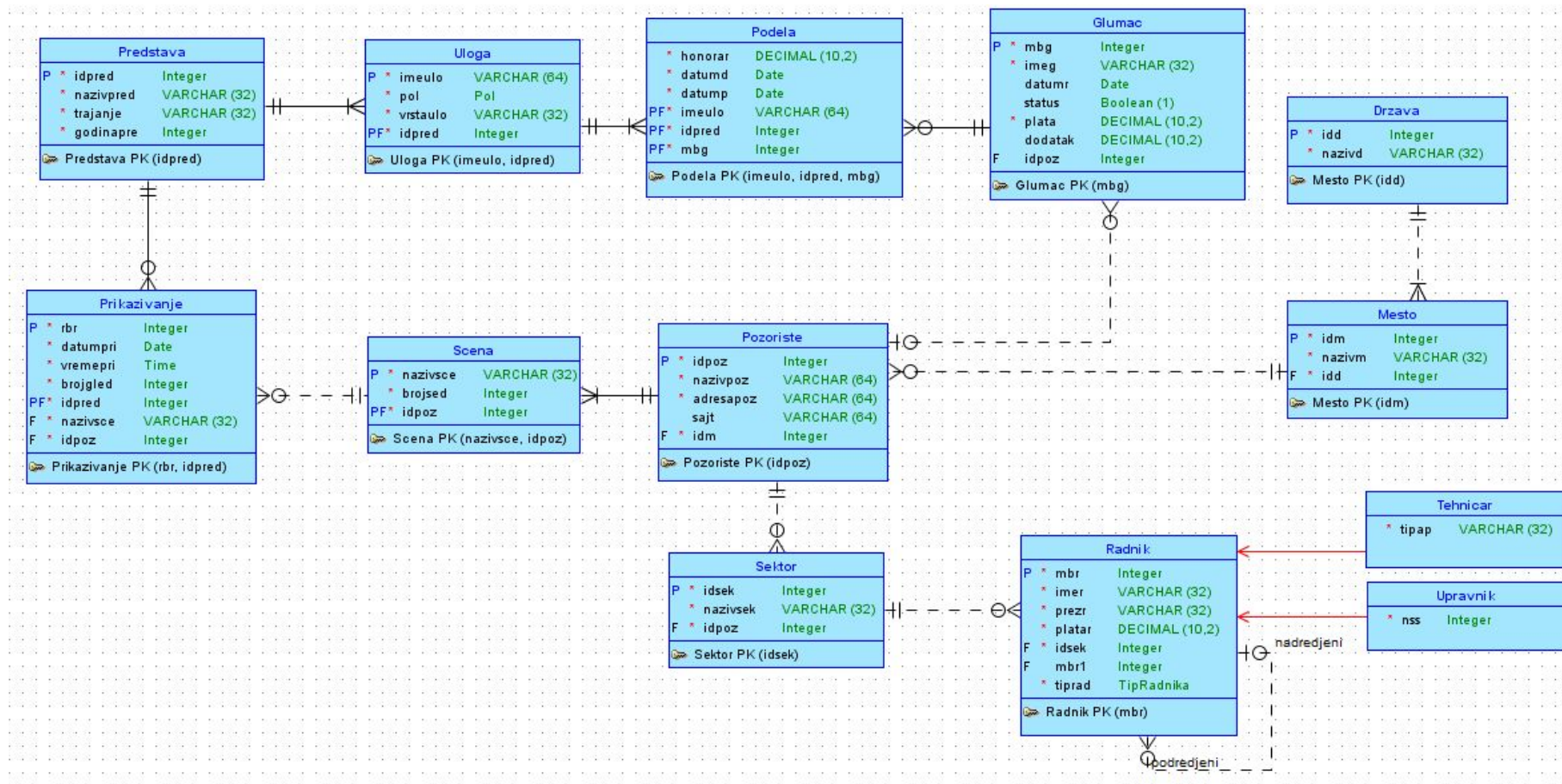
Pozorište (samostalni rad)

- Scena ima svoj naziv koji je identifikuje u okviru pozorišta u kojem se nalazi kao i ukupni broj sedišta. Na jednoj sceni može da se izvodi više predstava. Scena pripada tačno jednom pozorištu, dok pozorište može da ima jednu ili više scena.
- U pozorištu rade i radnici koji nisu glumačko osoblje. Oni su zaposleni u različitim sektorima pozorišta koji imaju svoj naziv (uprava, administracija, tehnički sektor ...) i identifikacioni broj pomoću kojeg su jedinstveno identifikovani. Svaki radnik ima jednog direktno nadređenog rukovodioca.
- Za upravnike se vodi evidencija o nivou stručne spreme a za tehničko osoblje tip aparature kojom upravljaju.

Pozorište (samostalni rad)

- Predstava ima jednu ili više uloga. Svaka uloga se identifikuje na osnovu imena uloge u okviru odgovarajuće predstave. Pored imena uloga ima i vrstu uloge (glavna, sporedna, statista) i pol (muška ili ženska uloga).
- Za svaku ulogu u predstavi vrši se podela gde jednoj ulozi može biti dodeljen jedan ili više glumaca. Glumcu može biti dodeljeno više uloga.
- Glumac ima svoj identifikator, ime, prezime, datum rođenja, mesečnu platu i dodatak na platu. Glumac ne mora da ima matično pozorište, ali ako ga ima onda pripada tačno jednom pozorištu.
- Glumac koji dobije ulogu u nekoj predstavi može biti stalno zaposlen ili gostujući u pozorištu u kojem se igra predstava što je označeno njegovim statusom. Takođe, glumac za odgovarajuću ulogu u predstavi ima određeni honorar kao i datum dodele uloge i datum prestanka angažovanja glumca na toj ulozi. Gostujući glumci nemaju platu već samo honorar za odgovarajuću ulogu u predstavi u kojoj učestvuju. Honorar je na mesečnom nivou dok traje angažovanje glumca u datoj predstavi.

Pozorište (samostalni rad)



Generisanje relacionog modela

Generisanje relacionog modela

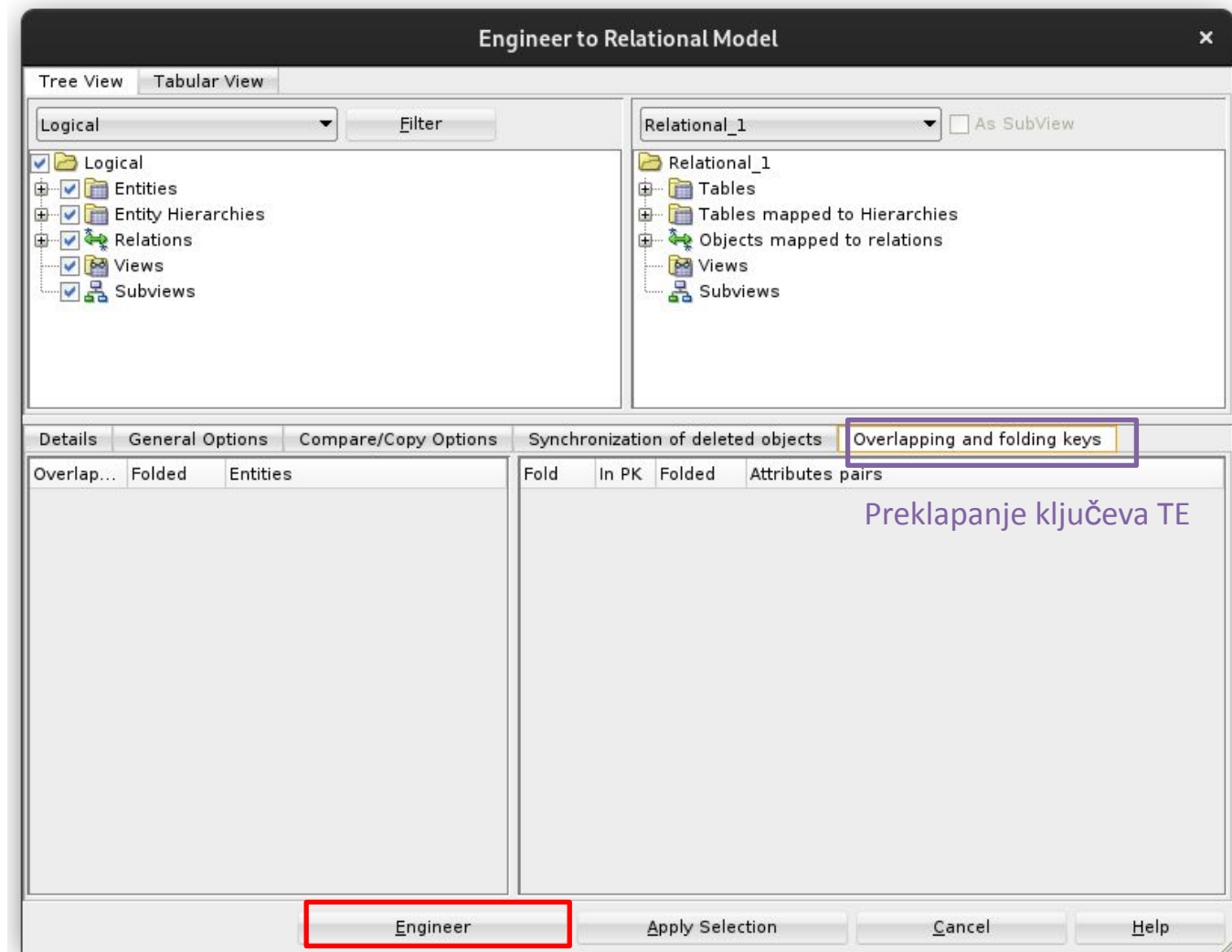
The screenshot displays the Oracle SQL Developer Data Modeler interface. The main workspace shows a logical model being converted to a relational model. The logical model consists of entities: **Part**, **Assignment**, **Scene**, **Theatre**, and **Department**. The relational model shows the same entities with their attributes and primary keys. The **Part** entity has attributes `id_pt` (PK), `name_pt`, `gender_pt`, and `type_pt`. The **Assignment** entity has attributes `id_as` (PK), `honorar_as`, `startdate_as`, and `enddate_as`. The **Scene** entity has attributes `id_sc` (PK), `name_sc`, and `numofseats_sc`. The **Theatre** entity has attributes `id_th` (PK), `name_th`, `address_th`, and `webiste_th`. The **Department** entity has attributes `id_dpt` (PK) and `name_dp`. Relationships are shown with crow's foot notation: **Part** to **Assignment** (1:M), **Part** to **Scene** (1:M), **Scene** to **Theatre** (1:M), and **Theatre** to **Department** (1:M).

A context menu is open over the **Part** entity, with the option **Engineer to Relational Model** selected. The menu options include: Show, Hide, Create SubView, Create Display, Set Classification Types, Set Additional Classification Types, Apply Naming Standards, Create Glossary from Logical model, Apply Custom Transformation Scripts, Delete, Search, Update model with previously exported XLS (XLSX) file, **Engineer to Relational Model**, Properties, and Versioning.

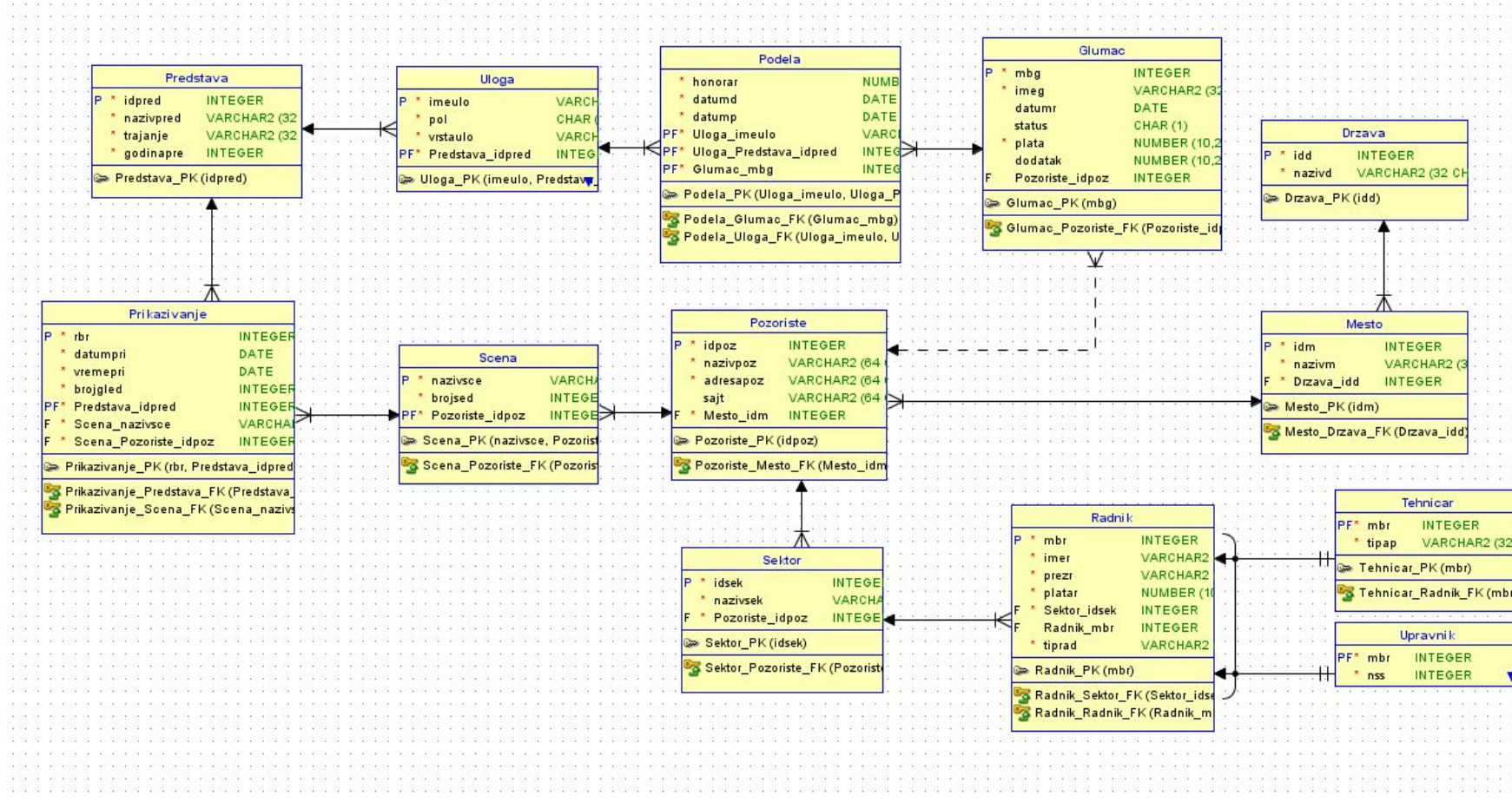
The **Navigator** on the right shows a tree view of the model. The **Messages - Log** window at the bottom shows the following log entries:

```
2021-12-27 22:37:31 - Open Design: 'theatremodel'  
2021-12-27 22:37:35 - Open Design: 'OK'  
2021-12-27 22:38:14 - Close Design: Untitled_1
```

Generisanje relacionog modela



Pozorište - relacioni model



Generisanje DDL skriptova

Generisanje DDL skriptova

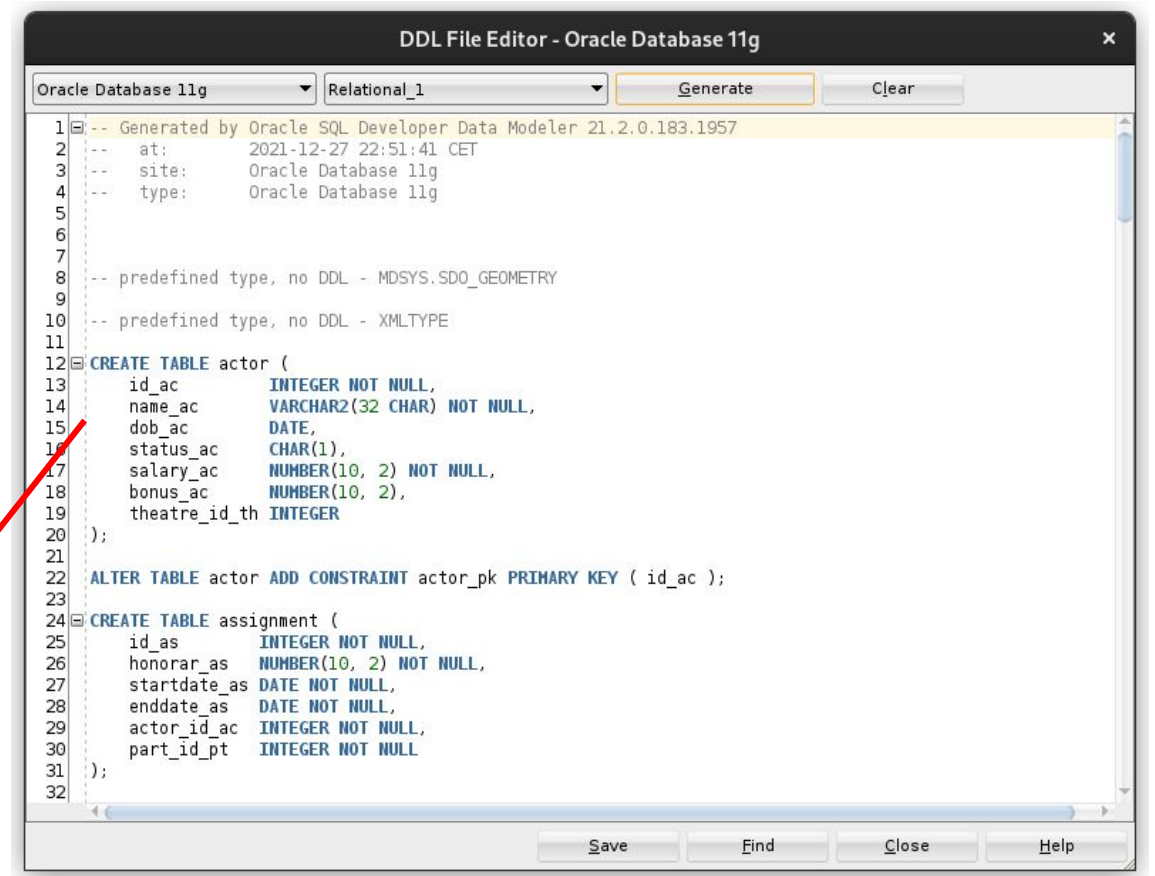
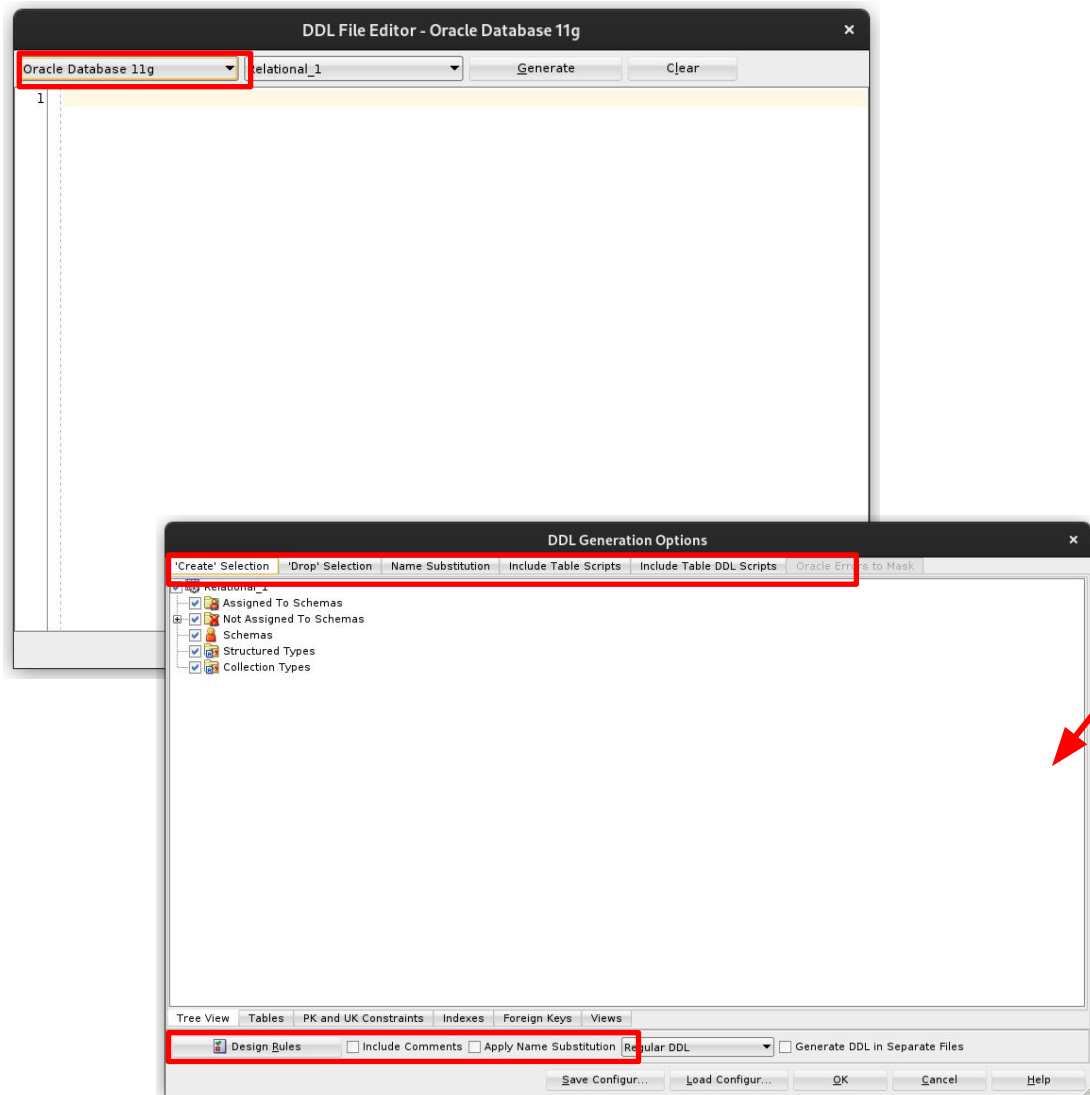
The screenshot displays the Oracle SQL Developer Data Modeler interface for a relational database model named 'theatremodel'. The main workspace shows a logical model with several tables and their relationships:

- Play**: Attributes include `id_pt` (INTEGER), `name_pt` (VARCHAR2), `gender_pt` (CHAR), and `type_pt` (VARCHAR2). It has a primary key `Play_PK (id_pt)` and a foreign key `Play_Play_FK (Play_id_pl)`.
- Part**: Attributes include `id_pt` (INTEGER), `name_pt` (VARCHAR2), `gender_pt` (CHAR), and `type_pt` (VARCHAR2). It has a primary key `Part_PK (id_pt)` and a foreign key `Part_Play_FK (Play_id_pl)`.
- Assignment**: Attributes include `id_as` (INTEGER), `honorar_as` (NUMBER), `startdate_as` (DATE), and `enddate_as` (DATE). It has a primary key `Assignment_PK (id_as)` and a foreign key `Assignment Actor FK (Actor_id_ac)`.
- Showing**: Attributes include `ordnum_sh` (INTEGER), `date_sh` (DATE), `time_sh` (DATE), `numofspec_sh` (INTEGER), `Play_id_pl` (INTEGER), and `Scene_id_sc` (INTEGER). It has a primary key `Showing_PK (ordnum_sh)` and foreign keys `Showing_Play_FK (Play_id_pl)` and `Showing Scene FK (Scene_id_sc)`.
- Scene**: Attributes include `id_sc` (INTEGER), `name_sc` (VARCHAR2), `numofseats_sc` (INTEGER), and `Theatre_id_th` (INTEGER). It has a primary key `Scene_PK (id_sc)` and a foreign key `Scene Theatre FK (Theatre_id_th)`.
- Theatre**: Attributes include `id_th` (INTEGER), `name_th` (VARCHAR2), `address_th` (VARCHAR2), and `webiste_th` (VARCHAR2). It has a primary key `Theatre_PK (id_th)` and a foreign key `Theatre Place FK (Place_id_pl)`.
- Department**: Attributes include `id_dpt` (INTEGER) and `name_dp` (VARCHAR2).

The 'Export' menu is open, and the 'DDL File' option (Ctrl+Shift+E) is selected. The 'Messages - Log' window at the bottom shows the following log entries:

```
2021-12-27 22:37:31 - Open Design: 'theatremodel'  
2021-12-27 22:37:35 - Open Design: 'OK'  
2021-12-27 22:38:14 - Close Design: Untitled_1
```

Generisanje DDL skriptova

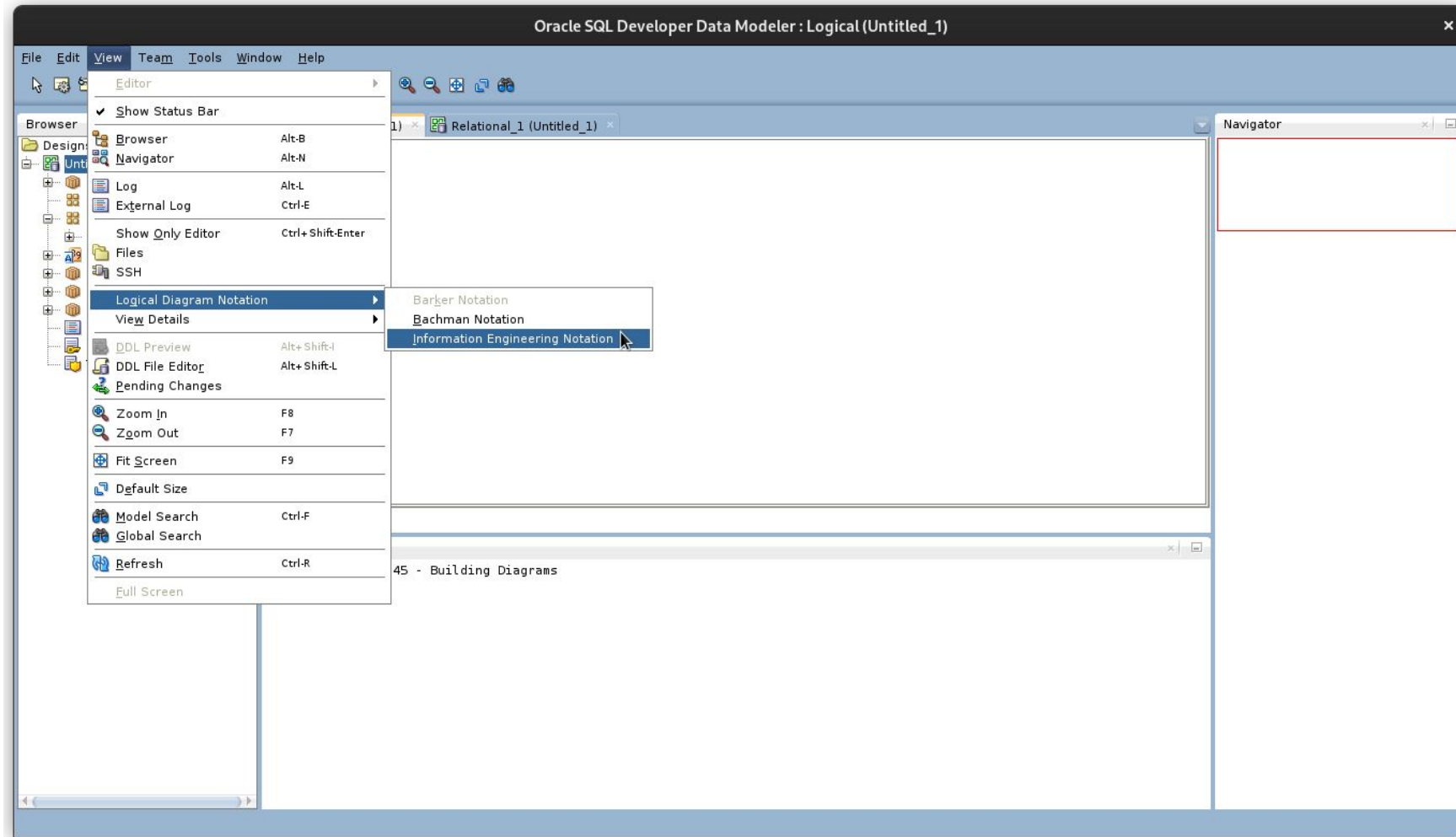


Generisanje DDL skriptova

```
DDL File Editor - Oracle Database 11g
Oracle Database 11g Relational_1 Generate Clear
168 ALTER TABLE showing
169     ADD CONSTRAINT showing_scene_fk FOREIGN KEY ( scene_id_sc )
170     REFERENCES scene ( id_sc );
171
172 ALTER TABLE technician
173     ADD CONSTRAINT technician_employee_fk FOREIGN KEY ( id_em )
174     REFERENCES employee ( id_em );
175
176 ALTER TABLE theatre
177     ADD CONSTRAINT theatre_place_fk FOREIGN KEY ( place_id_pl )
178     REFERENCES place ( id_pl );
179
180 ALTER TABLE theatremanager
181     ADD CONSTRAINT theatremanager_employee_fk FOREIGN KEY ( id_em )
182     REFERENCES employee ( id_em );
183
184 -- ERROR: No Discriminator Column found in Arc FKArc_2 - constraint trigger for Arc cannot be generate
185
186 -- ERROR: No Discriminator Column found in Arc FKArc_2 - constraint trigger for Arc cannot be generate
187
188
189
190 -- Oracle SQL Developer Data Modeler Summary Report:
191 --
192 -- CREATE TABLE                13
193 -- CREATE INDEX                  0
194 -- ALTER TABLE                  26
195 -- CREATE VIEW                   0
196 -- ALTER VIEW                    0
197 -- CREATE PACKAGE                 0
198 -- CREATE PACKAGE BODY            0
199 -- CREATE PROCEDURE               0
Save Find Close Help
```

Dodatna podešavanja

Prebacivanje u određenu dijagramsku notaciju



Podešavanje formata automatski generisanih imena obeležja/ograničenja

Oracle SQL Developer Data Modeler

File Edit View Team Tools Window Help

Browser

Designs [1]
Untitled_1
Logical
Multidim
Relation
Rela
Domain
Data Ty
Process
Business Information
Change Requests []
Sensitive Types []
TSDP Policies []

Logical (Untitled_1) x Relational_1 (Untitled_1) x

Navigator

Design Properties - Untitled_1

General

Settings

Compare Mappings

Diagram

DDL

Naming Standard

Attribute

Column

Domain

Entity

Table

Templates

Dynamic Properties

User Defined Properties

Comments

Notes

Summary

Messages - 2021-12-27 22:00

Logical

Table Constraints

Primary Key	{table}_PK	Add Variable
Foreign Key	{child}_{parent}_FK	Add Variable
Check Constraint	{table}_CK	Add Variable
Unique Constraint	{table}_{column}_UN	Add Variable
Index	{table}_{column}_IDX	Add Variable
Automatic Index	{table}_{column}_IDX	Add Variable
Column Check Constraint	CK_{table}_{column}	Add Variable
Not Null Constraint	NNC_{table abbr}_{column}	Add Variable
Column Foreign Key	{ref table}_{ref column}	Add Variable
Surrogate Key	{table abbr}_PK	Add Variable
Surrogate Key Column	{table abbr}_ID	Add Variable
Discriminator Column	{table abbr}_TYPE	Add Variable

Entity identifier

Primary Identifier	{entity} PK	Add Variable
Attribute Relation	{ref entity}_{ref attribute}	Add Variable

Example

Example Primary Key

OK Apply Cancel Help

Kraj!

Hvala na pažnji!