Databases for Many Majors: The Penultimate Year

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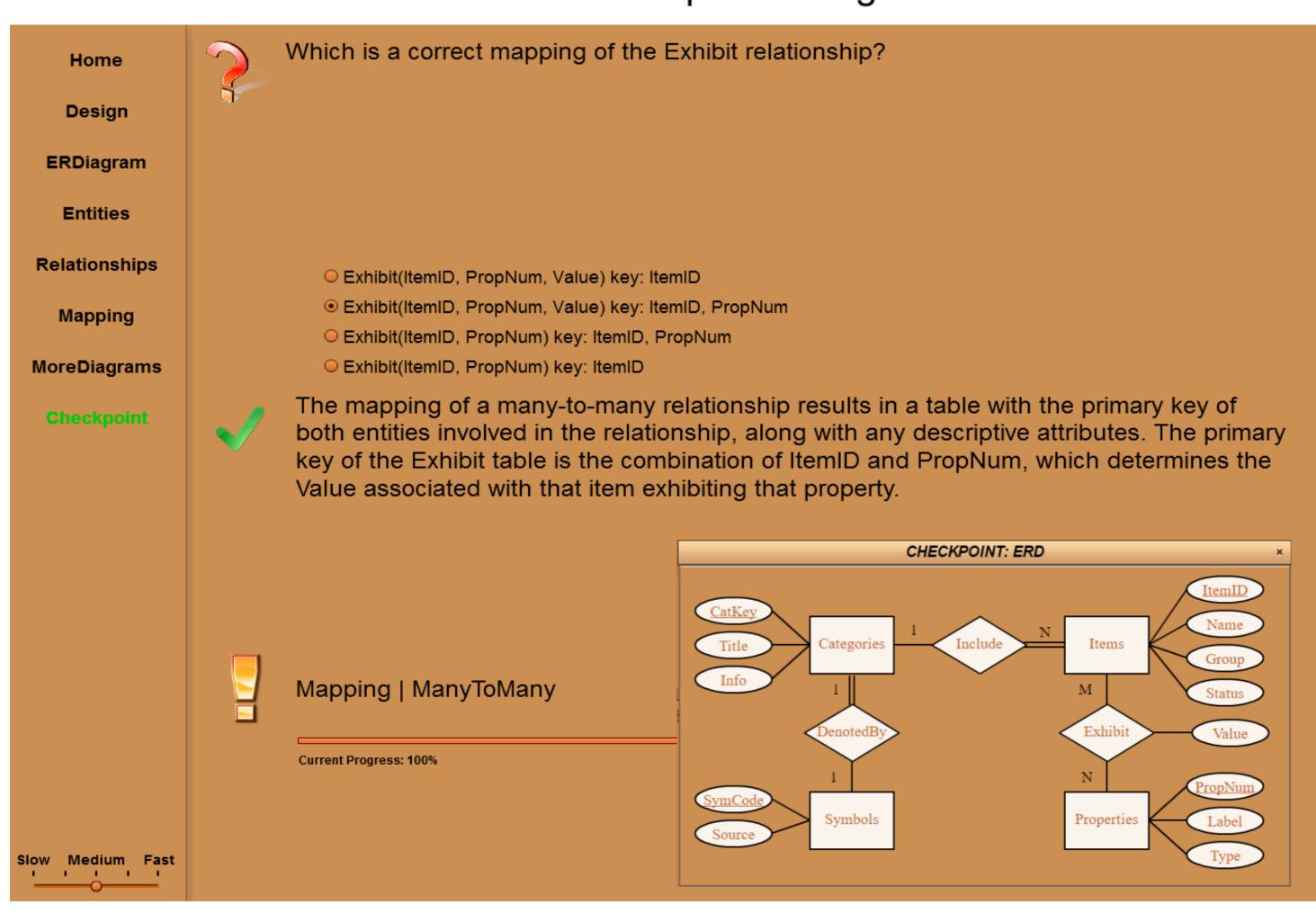
http://databasesmanymajors.faculty.asu.edu

DesignDB Checkpoint

A generic conceptual design was developed for use in the 20 comprehensive checkpoint questions, making it easier to adopt the animations by reducing the customization effort.
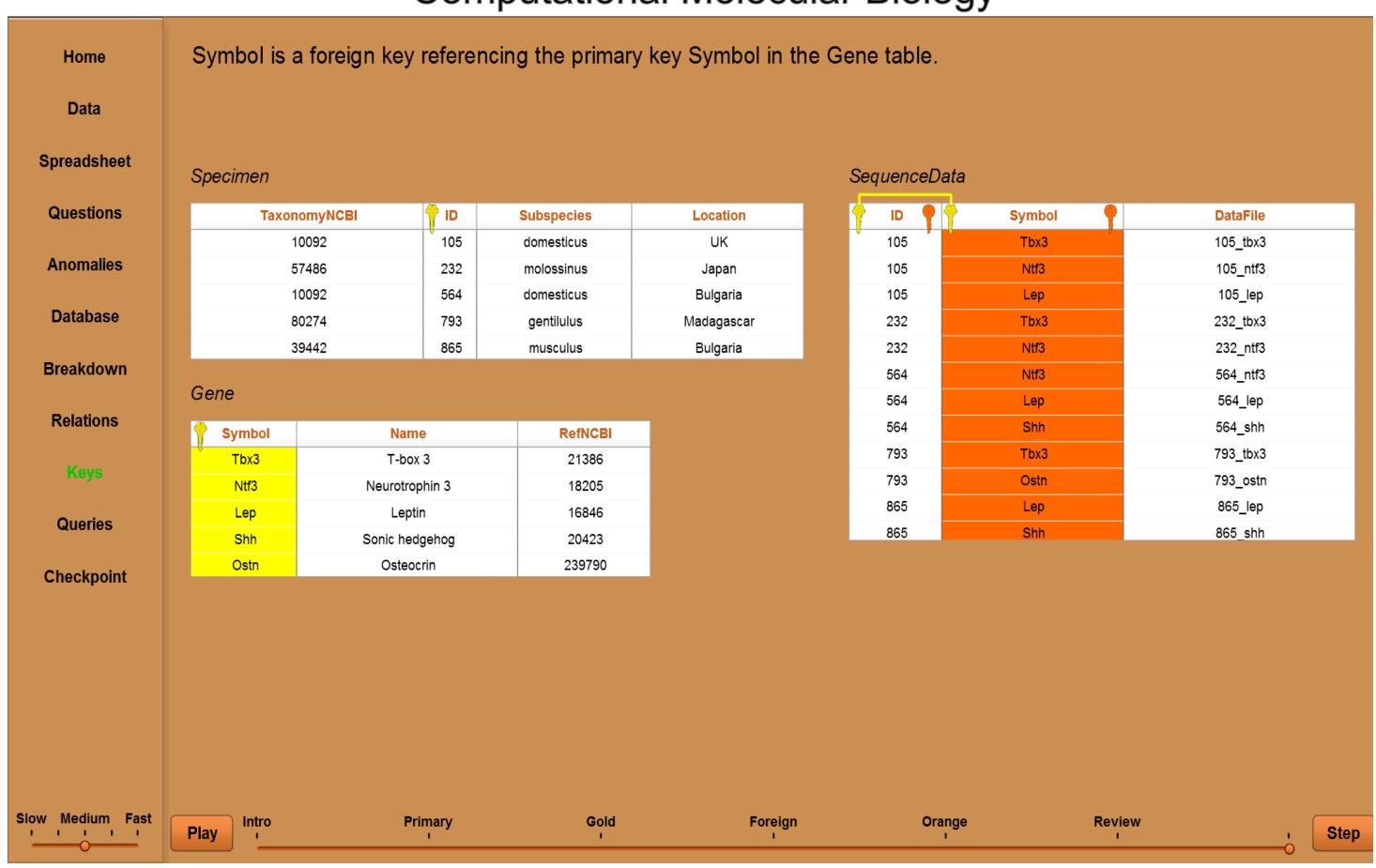
CreateDB: Visual Customization Tool

Assists customizer in designing the database instance for the animations; verifies primary & foreign keys and anomalies; generates XML files to assist with customizing: IntroDB, QueryDB, and DesignDB

DesignDB: Checkpoint & ERD
Generic Conceptual Design

Which is a correct mapping of the Exhibit relationship?

- Exhibit(ItemID, PropNum, Value) key: ItemID
- Exhibit(ItemID, PropNum, Value) key: ItemID, PropNum
- Exhibit(ItemID, PropNum) key: ItemID, PropNum
- Exhibit(ItemID, PropNum) key: ItemID

The mapping of a many-to-many relationship results in a table with the primary key of both entities involved in the relationship, along with any descriptive attributes. The primary key of the Exhibit table is the combination of ItemID and PropNum, which determines the Value associated with that item exhibiting that property.

Mapping | ManyToMany

Current Progress: 100%

Slow Medium Fast

Databases for Many Majors: Customizable Visualizations to Improve STEM Learning

DUE-0941584/DUE-0941401

- 2 Animations: IntroDB & QueryDB
- Customizations: CMB & GIS
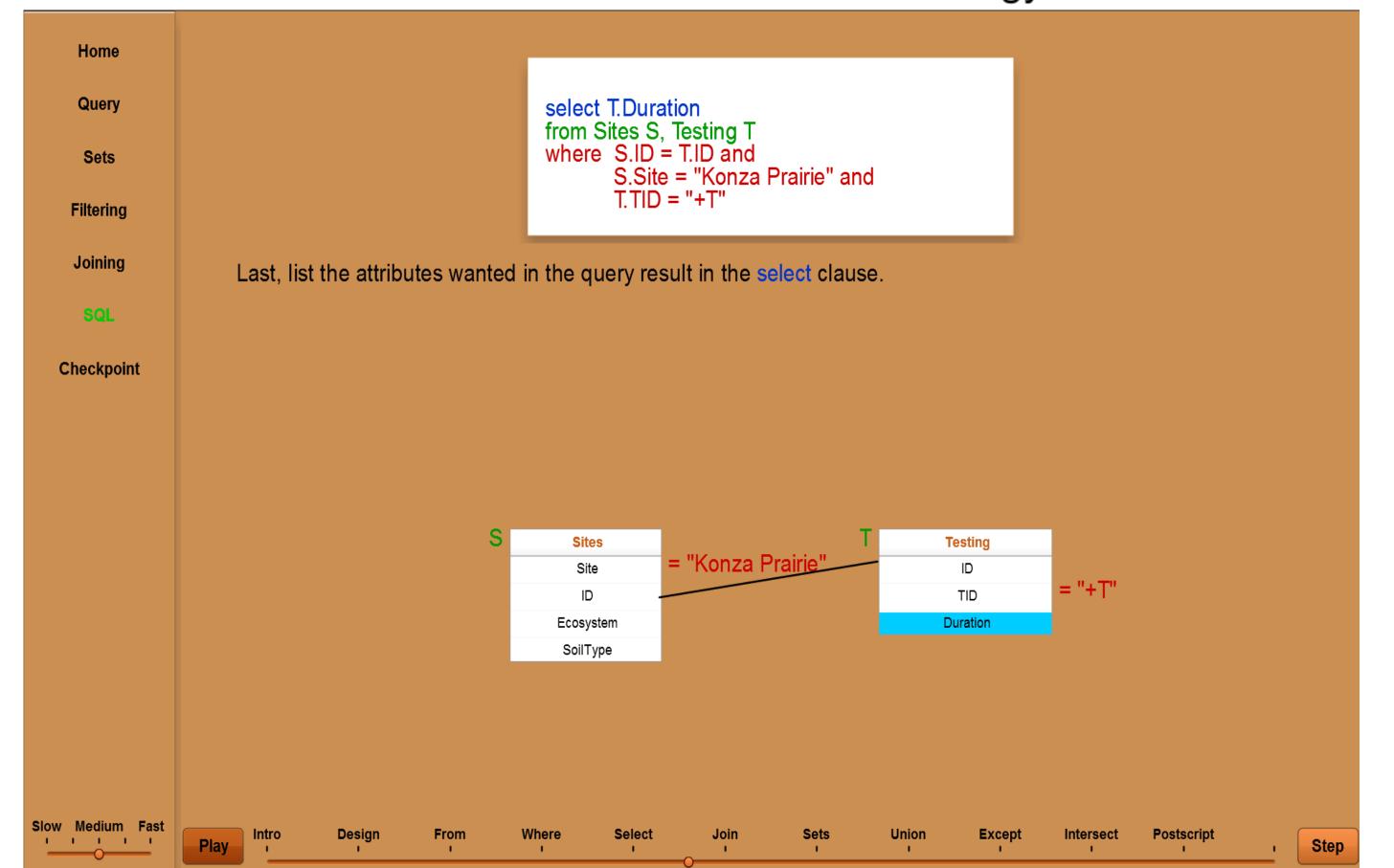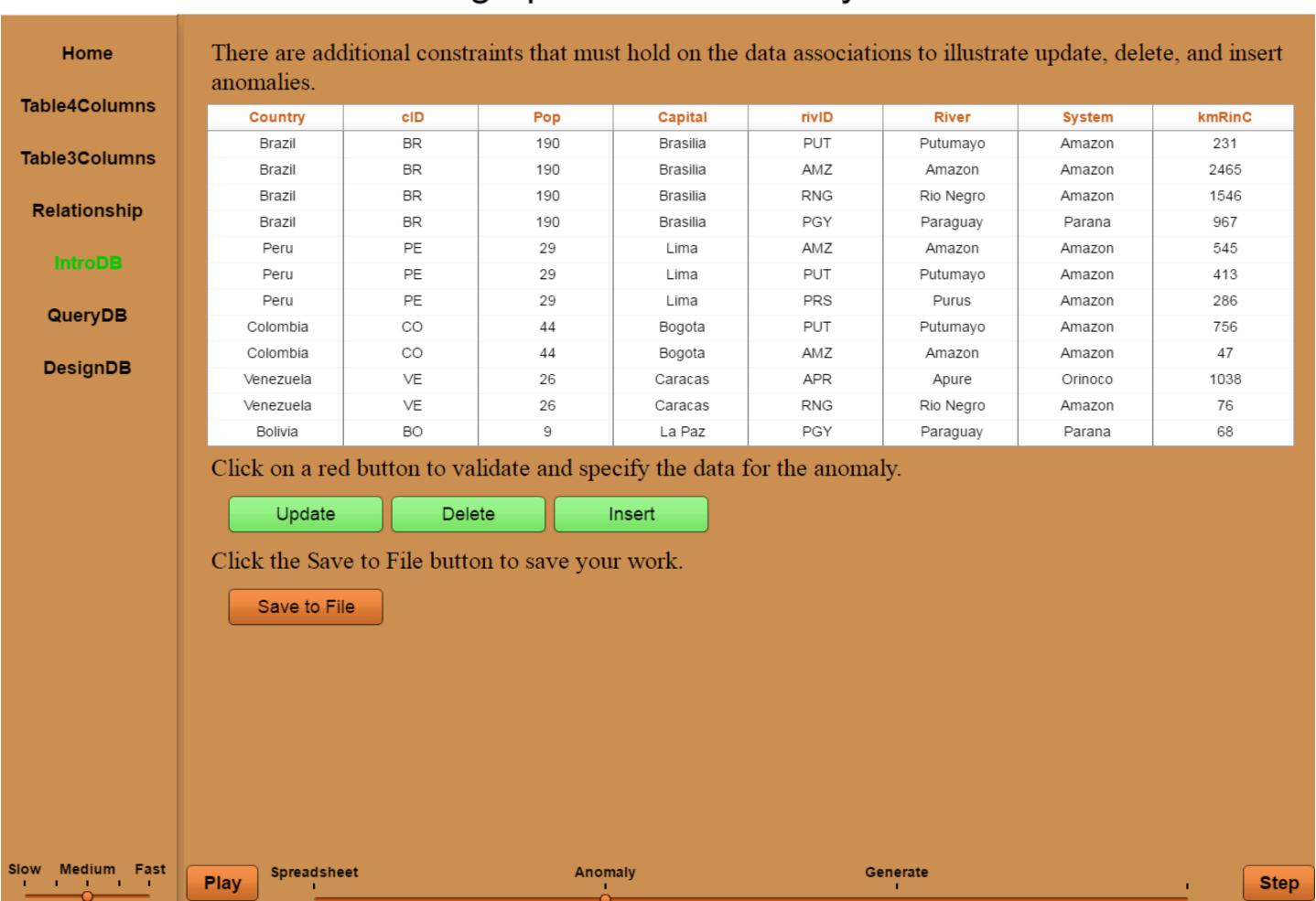- IEEE Trans on Education paper

DUE-1431848/DUE-1431661

- STEM Customizations:
  Ecology, Statistics, Forensics, Astronomy
- Checkpoints: Formative Self-assessment
- New Animation: DesignDB - Conceptual Design
- CreateDB: Customization Tool
- Ultimate Year: Dissemination and Open Source

CreateDB: Visual Customization Tool
Geographic Information Systems

There are additional constraints that must hold on the data associations to illustrate update, delete, and insert anomalies.

Country	cID	Pop	Capital	rivID	River	System	kmRinC
Brazil	BR	190	Brasilia	PUT	Putumayo	Amazon	231
Brazil	BR	190	Brasilia	AMZ	Amazon	Amazon	2465
Brazil	BR	190	Brasilia	RNG	Rio Negro	Amazon	1546
Brazil	BR	190	Brasilia	PGY	Paraguay	Parana	967
Peru	PE	29	Lima	AMZ	Amazon	Amazon	545
Peru	PE	29	Lima	PUT	Putumayo	Amazon	413
Peru	PE	29	Lima	PRS	Purus	Amazon	286
Colombia	CO	44	Bogota	PUT	Putumayo	Amazon	756
Colombia	CO	44	Bogota	AMZ	Amazon	Amazon	47
Venezuela	VE	26	Caracas	APR	Apure	Orinoco	1038
Venezuela	VE	26	Caracas	RNG	Rio Negro	Amazon	76
Bolivia	BO	9	La Paz	PGY	Paraguay	Parana	68

Click on a red button to validate and specify the data for the anomaly.

Update   Delete   Insert

Click the Save to File button to save your work.

Save to File

Slow Medium Fast   Play   Spreadsheet   Anomaly   Generate   Step

IntroDB: Introduction to Databases
Computational Molecular Biology

Symbol is a foreign key referencing the primary key Symbol in the Gene table.

Specimen

TaxonomyNCBI	ID	Subspecies	Location
10092	105	domesticus	UK
57486	232	molossinus	Japan
10092	564	domesticus	Bulgaria
80274	793	gentilulus	Madagascar
39442	865	musculus	Bulgaria

Gene

Symbol	Name	RefNCBI
Tbx3	T-box 3	21386
Ntf3	Neurotrophin 3	18205
Lep	Leptin	16846
Shh	Sonic hedgehog	20423
Ostn	Osteocrin	239790

SequenceData

ID	Symbol	DataFile
105	Tbx3	105_tbx3
105	Ntf3	105_ntf3
105	Lep	105_lep
232	Tbx3	232_tbx3
232	Ntf3	232_ntf3
564	Ntf3	564_ntf3
564	Lep	564_lep
564	Shh	564_shh
793	Tbx3	793_tbx3
793	Ostn	793_ostn
865	Lep	865_lep
865	Shh	865_shh

Slow Medium Fast   Play Intro Primary Gold Foreign Orange Review Step

QueryDB: Introduction to Querying
Environmental Science/Ecology

```
select T.Duration
from Sites S, Testing T
where S.ID = T.TID and
      S.Site = "Konza Prairie" and
      T.TID = "+T"
```

Last, list the attributes wanted in the query result in the select clause.

S *Sites*
Site
ID
Ecosystem
SoilType

= "Konza Prairie"

T *Testing*
ID
TID
Duration

= "+T"

Slow Medium Fast   Play Intro Design From Where Select Join Sets Union Except Intersect Postscript Step

DesignDB: Conceptual Design
Astronomy

Select an ER component to see how it is mapped in the relational schema below.

Summary Syntax

Particles
iOrd
mass
temp
rho
TID

Observed
iOrd
stepID
grpID

Timesteps
stepID
gigayears
redshift

Conversion
CID
description

Types
TID
name
metallicity

Slow Medium Fast   Play Intro Entities Relationships ManyToMany OneToMany OneToOne MoreHtoN More1to1 Review Step