What are Joins? How do they work?

Joining Categories

Categories

- What is a category?
  - Set of Column Names
    - No limit on how many columns there can be in a category
  - Rows of Data
    - The only limit is the amount of data in your SI Database
  - Think of it like an Excel spreadsheet
  - Also known as Views in our StudentInformation package

Mammals		
GUID	Name	Description
A1-32-100	Otters	Brown, Furry, Wet
B2-64-182	Dolphins	Gray, Wet, Smart
C3-75-987	Rabbits	White, Furry, Fluffy

Category Name

Column Names

Data Rows

Jumps		
GUID	Name	Description
B2-64-182	Dolphins	Gray, Wet, Smart
C3-75-987	Rabbits	White, Furry, Fluffy
D4-12-645	Frogs	Slimy, Ribbits

Swims		
GUID	Name	Description
A1-32-100	Otters	Brown, Furry, Wet
D4-12-645	Frogs	Slimy, Ribbits
E5-32-920	Fish	Scaley, Blup blup blup
B2-64-182	Dolphins	Gray, Wet, Smart

Why Join Categories?

- **Most** Student categories are designed to return all students whether they have related data or not; however, there are always caveats.
  - Student Categories -> data contains specific student related data pieces
- Categories are designed to include the most essential pieces of data so only one category is needed by any report.
  - This makes reports run faster
  - There are standard fields – to learn about what fields are standard within categories refer to the 'Ad Hoc View Information and Report List' Doc
- So why join Categories?
  - 1 or more columns from another category may be essential in making reports useful so it may be truly necessary to bring in a category.

How do we join?

- Find unique items that are found in all categories
- In our case we use GUIDs also known as Unique IDs

Mammals		
GUID	Name	Description
A1-32-100	Otters	Brown, Furry, Wet
B2-64-182	Dolphins	Gray, Wet, Smart
C3-75-987	Rabbits	White, Furry, Fluffy

Jumps		
GUID	Name	Description
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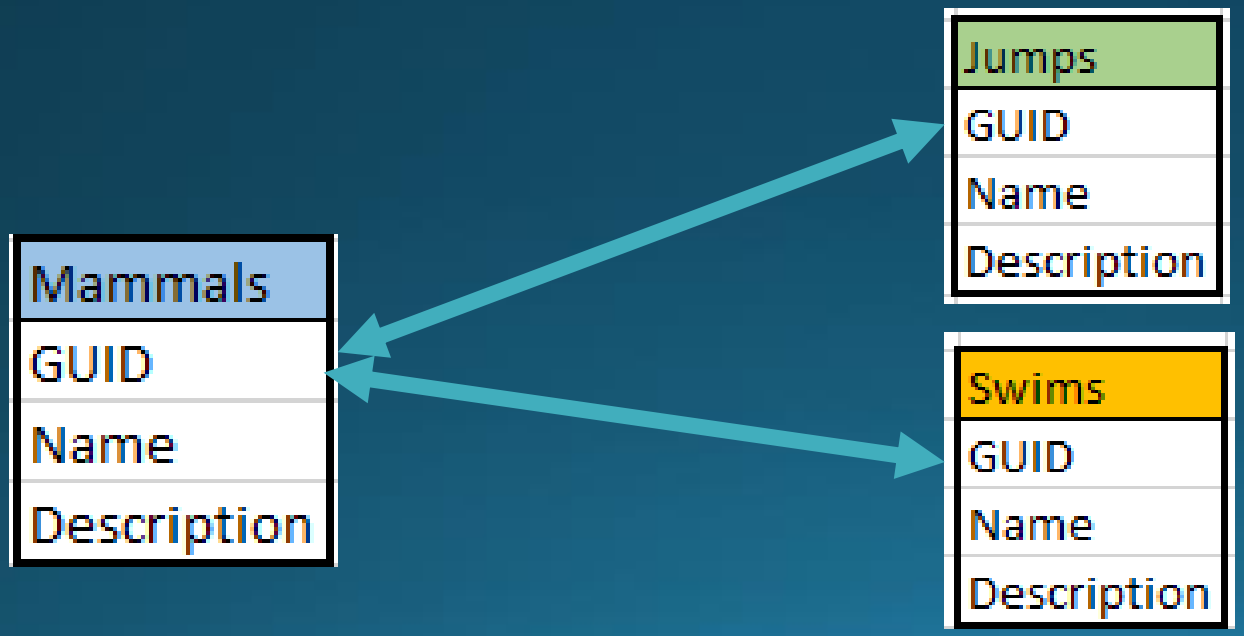
D4-12-645	Frogs	Slimy, Ribbits
E5-32-920	Fish	Scaley, Blup blup blup
B2-64-182	Dolphins	Gray, Wet, Smart

It's about the Columns

- We're matching on uniqueness between categories
- The Column Namess contain the unique data
- We Match Column Names!

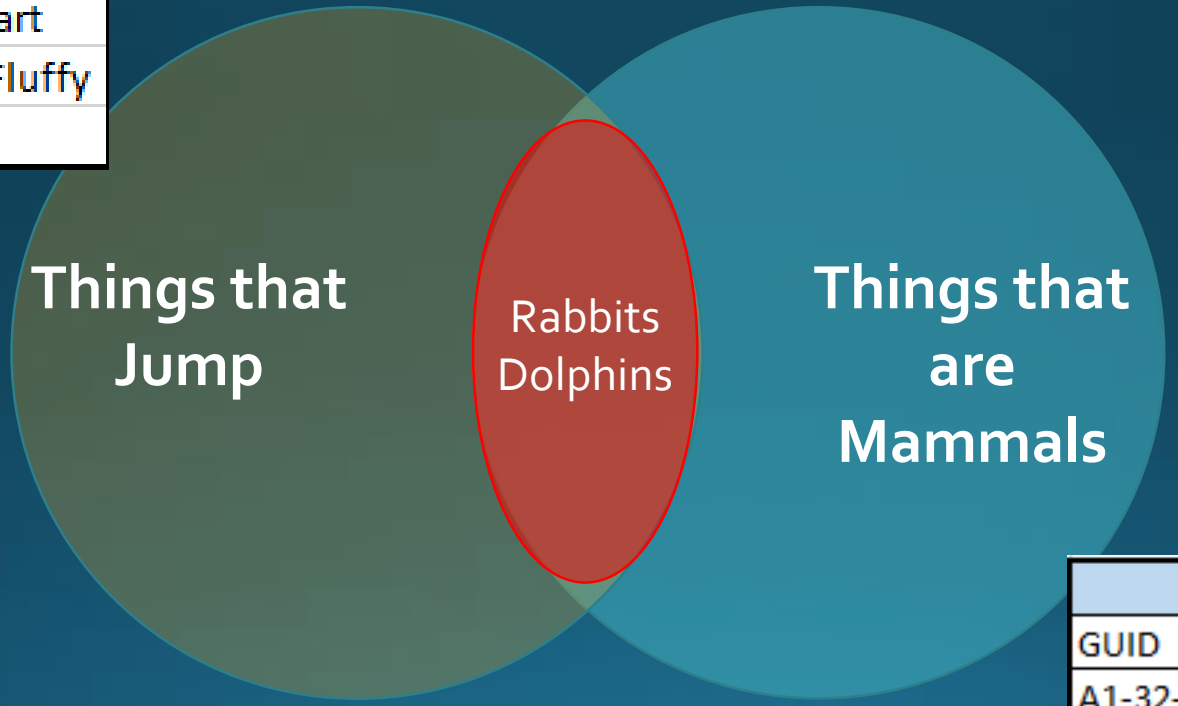


Types of Joins

- INNER JOIN – Only produces results that show up in both categories
- OUTER JOIN – produces all results from one category + whatever shows in both
- Report Designer Default - when joining two or more categories together is an INNER JOIN.
- Report Designer allows a change from INNER JOIN to an OUTER JOIN between categories with Check Box options

Inner Join

Jumps		
GUID	Name	Description
B2-64-182	Dolphins	Gray, Wet, Smart
C3-75-987	Rabbits	White, Furry, Fluffy
D4-12-645	Frogs	Slimy, Ribbits



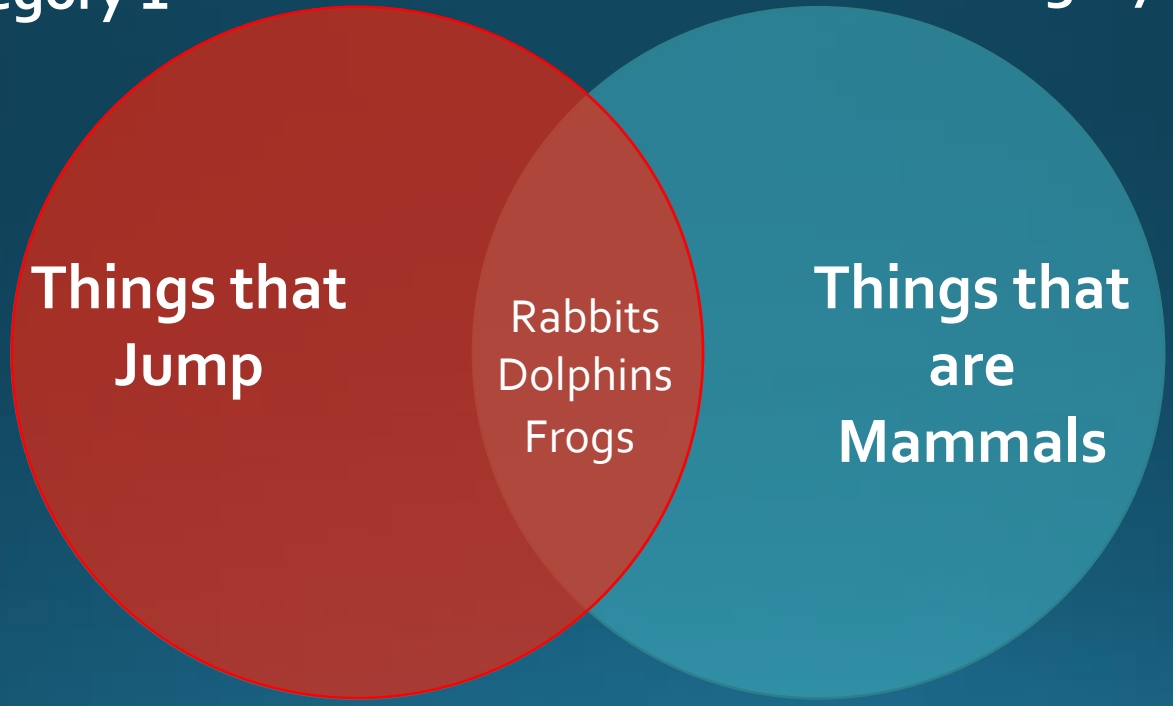
Mammals		
GUID	Name	Description
A1-32-100	Otters	Brown, Furry, Wet
B2-64-182	Dolphins	Gray, Wet, Smart
C3-75-987	Rabbits	White, Furry, Fluffy

Outer Join 1

Outer Join on Category 1

Outer Join on Category 2

Jump Category
Rabbits
Frogs
Dolphins



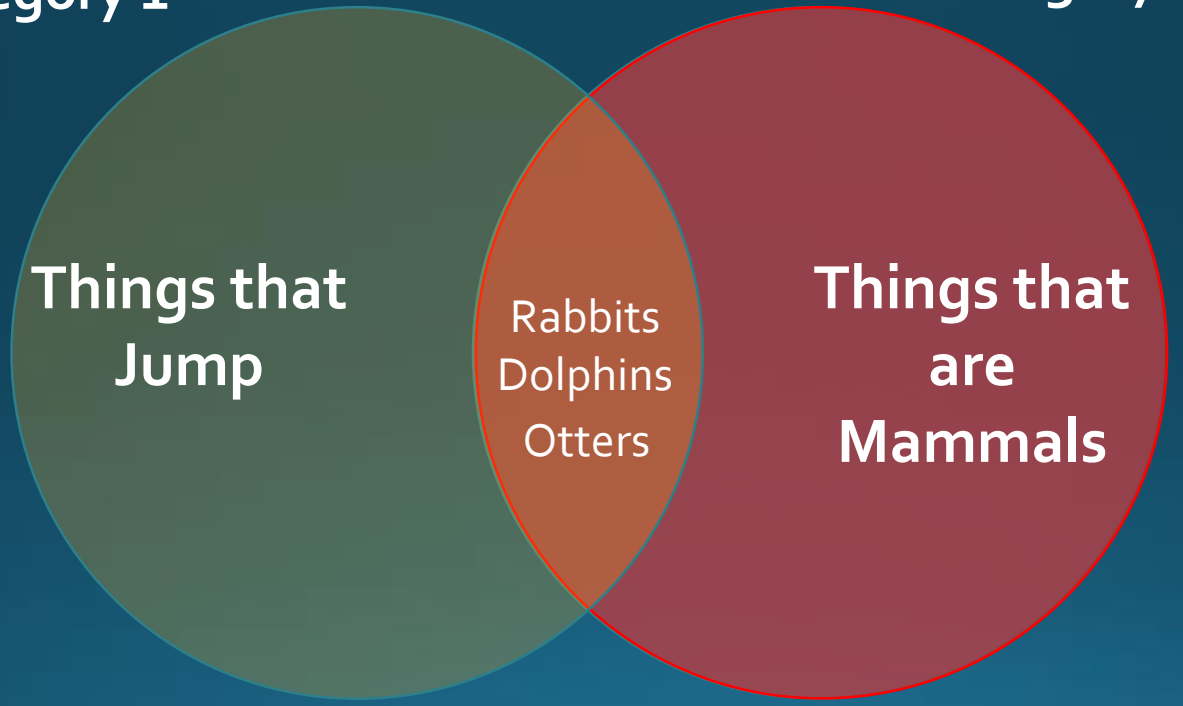
Mammals Category
Rabbits
Otters
Dolphins

Outer Join 2

Outer Join on Category 1

Outer Join on Category 2

Jump Category
Rabbits
Frogs
Dolphins



Mammals Category
Rabbits
Otters
Dolphins

Let's add another

Mammals		
GUID	Name	Description
A1-32-1[illegible]0	Otters	Brown, Furry, Wet
B2-64-1[illegible]2	Dolphins	Gray, [illegible]Wet, Smart
C3-75-9[illegible]7	Rabbits	White, Furry, [illegible]Fluffy

Jumps		
GUID	Name	Description
B2-64-182	Dolphins	Gray, Wet, Smart
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B2-64-182	Dolphins	Gray, Wet, Smart

Mammals INNER JOIN Jumps

Mammals		
GUID	Name	Description
A1-32-100	Otters	Brown, Furry, Wet
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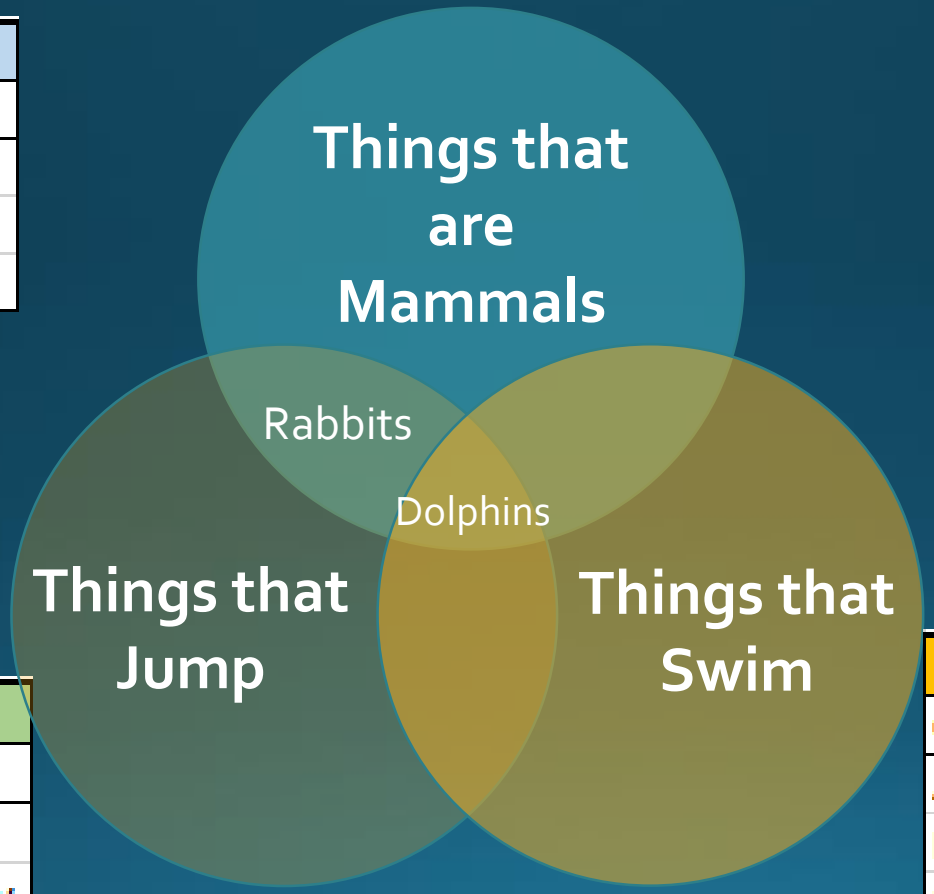

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GUID	Name	Description
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Mammals INNER JOIN Swims

Mammals		
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Jumps INNER JOIN Swims

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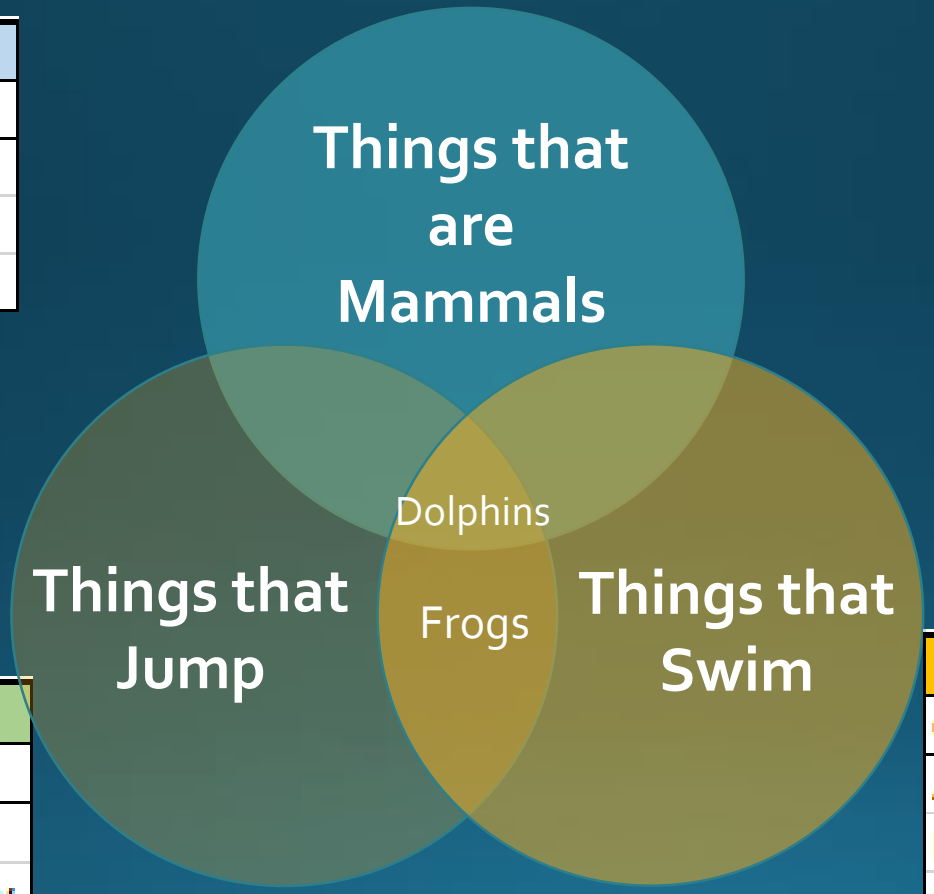

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D4-12-645	Frogs	Slimy, Ribbits
E5-32-920	Fish	Scaley, Blup blup blup
B2-64-182	Dolphins	Gray, Wet, Smart

INNER JOIN All Categories

Mammals		
GUID	Name	Description
A1-32-100	Otters	Brown, Furry, Wet
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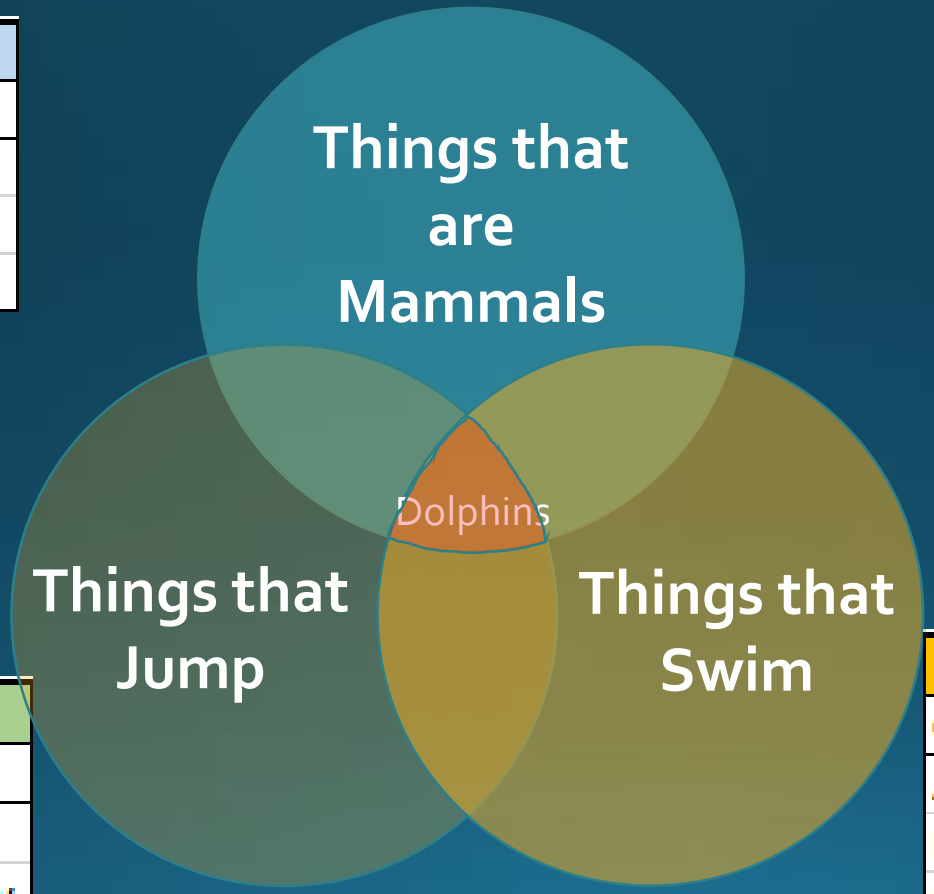
C3-75-987	Rabbits	White, Furry, Fluffy



Jumps		
GUID	Name	Description
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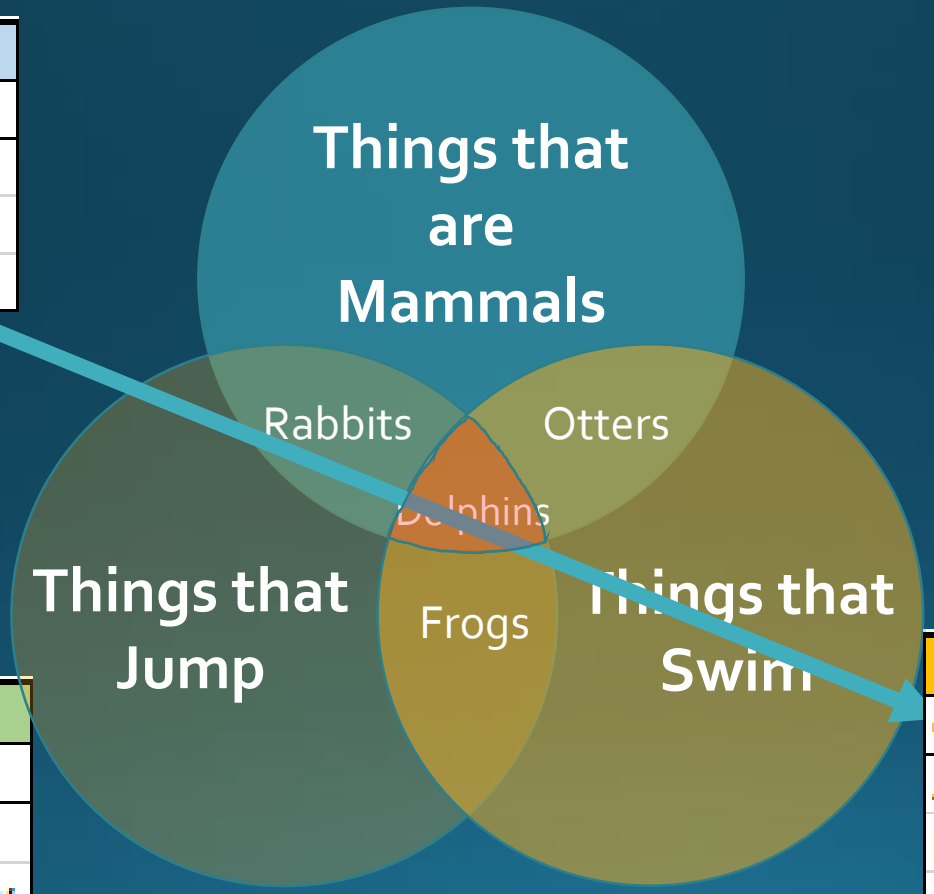

Jumps		
GUID	Name	Description
B2-64-182	Dolphins	Gray, Wet, Smart
C3-75-987	Rabbits	White, Furry, Fluffy
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D4-12-645	Frogs	Slimy, Ribbits
E5-32-920	Fish	Scaley, Blup blup blup
B2-64-182	Dolphins	Gray, Wet, Smart

How do we apply this to StudentInformation Categories?

- Future Examples will show SI Categories
- Previews Example Translates to Following SI Categories
  - Mammals = StudentDemographicCore
  - Jumps = StudentCourseInfo
  - Swims = StudentEMISFD

What is a GUID?

- GUIDs are Unique IDs
- Contained within Column Names of the Category
- Refer to Ad Hoc View/Report documentation
- Use the GUID columns to join between the SI Ad-Hoc Categories
- Look like meaningless randomly generate number/letter data
- They have meaning…But we won't get into that!

SI GUID
3A0F623F-5DD8-48A9-B699-94A700D95C1B

- Next set of examples refer to SI GUIDs but we will not show actual id because they are so long and it's messy

The Nature of the Beast

- Let's recall how our school districts work and describe our example
- We know the following:
  - Students are registered into a specific building and into a specific school year
  - Students can have multiple FS & FD records for each building and each school year
  - Each student will have several courses specific to each building and each school year
- It's a lot of data and we're only talking about Students!

2 SI Categories

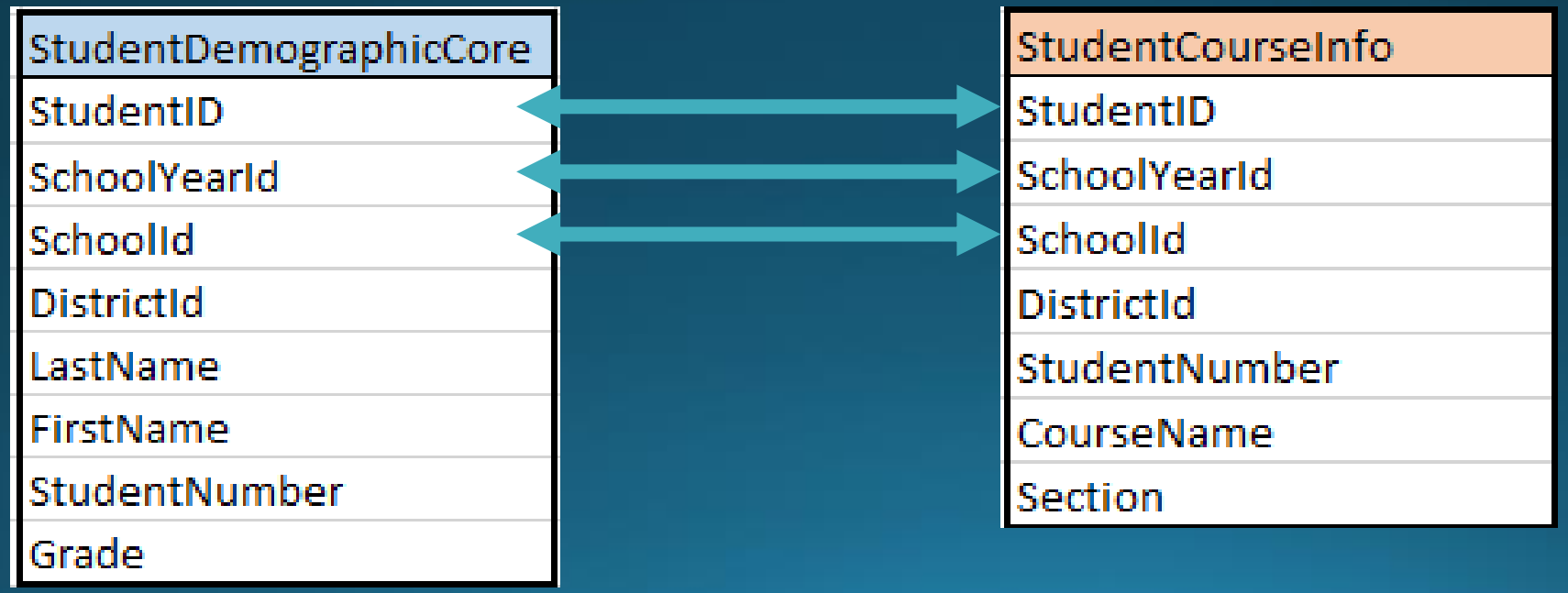
- We have students
  - Notice one student is registered @ 2 different buildings
- We have courses
  - Notice one student is taking classes at both buildings
- We need to ensure everything matches Students -> Buildings & School Years

StudentDemographicCore							
StudentID	SchoolYearId	SchoolId	DistrictId	LastName	FirstName	StudentNumber	Grade
GUID1A	GUID2E	GUID1B	GUID1D	Bauer	Melissa	000023	8
GUID1A	GUID2E	BUID1C	GUID1D	Bauer	Melissa	000023	8
GUID2A	GUID2E	GUID1B	GUID1D	Launder	Devin	001045	12
GUID3A	GUID2E	BUID1C	GUID1D	Recker	Amy	012300	7

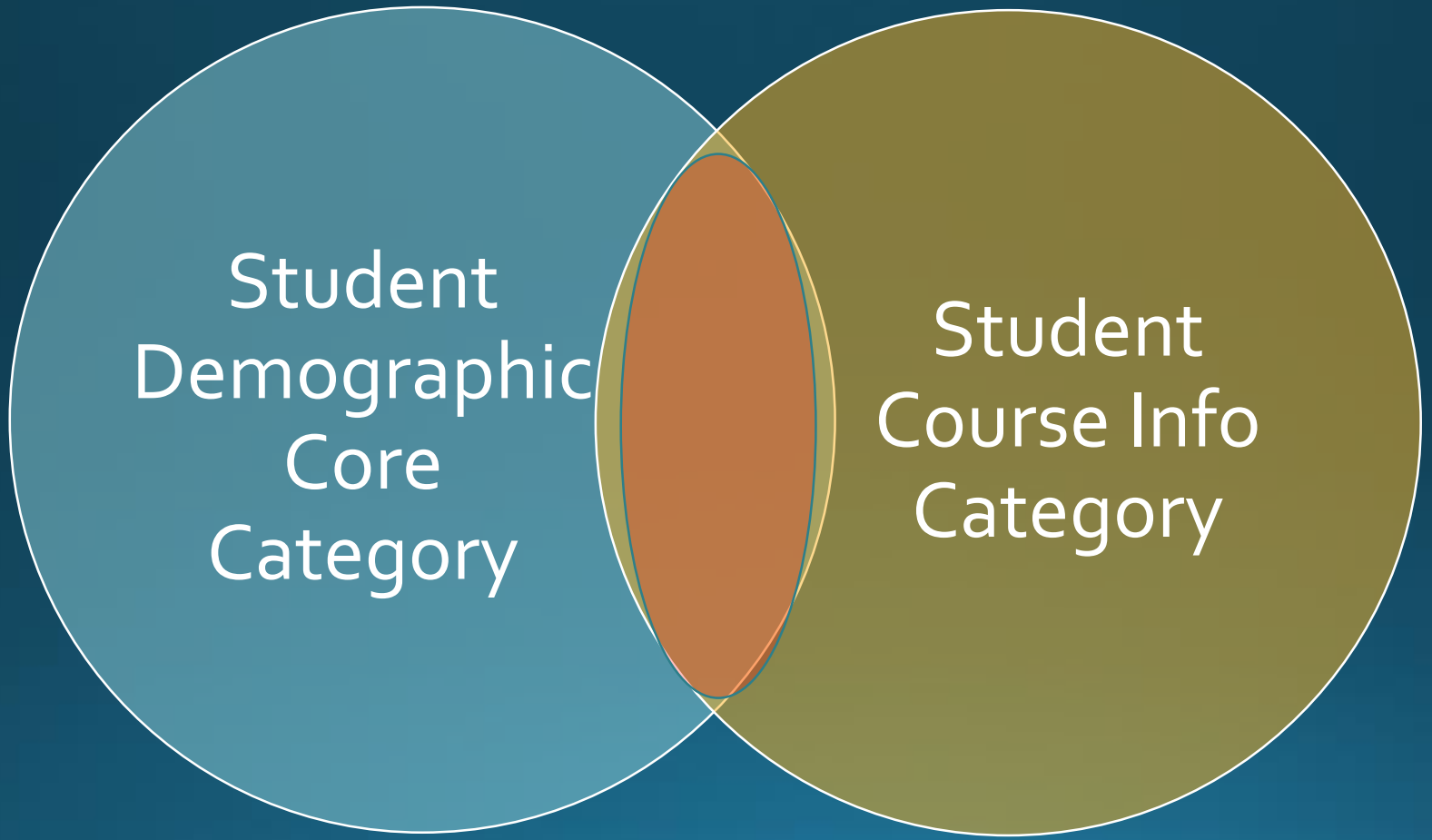
StudentCourseInfo						
StudentID	SchoolYearId	SchoolId	DistrictId	StudentNumber	CourseName	Section
GUID1A	GUID2E	GUID1B	GUID1D	000023	Speech	1
GUID1A	GUID2E	GUID1B	GUID1D	000023	Geometry	5
GUID1A	GUID2E	BUID1C	GUID1D	000023	Scoial Studies	8
GUID2A	GUID2E	GUID1B	GUID1D	001045	Algebra I	23
GUID2A	GUID2E	GUID1B	GUID1D	001045	Geometry	5
GUID2A	GUID2E	GUID1B	GUID1D	001045	US History	8
GUID3A	GUID2E	BUID1C	GUID1D	012300	Math	8
GUID3A	GUID2E	BUID1C	GUID1D	012300	Science	8
GUID3A	GUID2E	BUID1C	GUID1D	012300	Social Studies	8

Let's Practice Joins

- How do we ensure that we pull unique data for Students?
- What do we Join? Hint: Consult the View/Report Document
- Let's Discuss



SI Example – 2 Categories - INNER

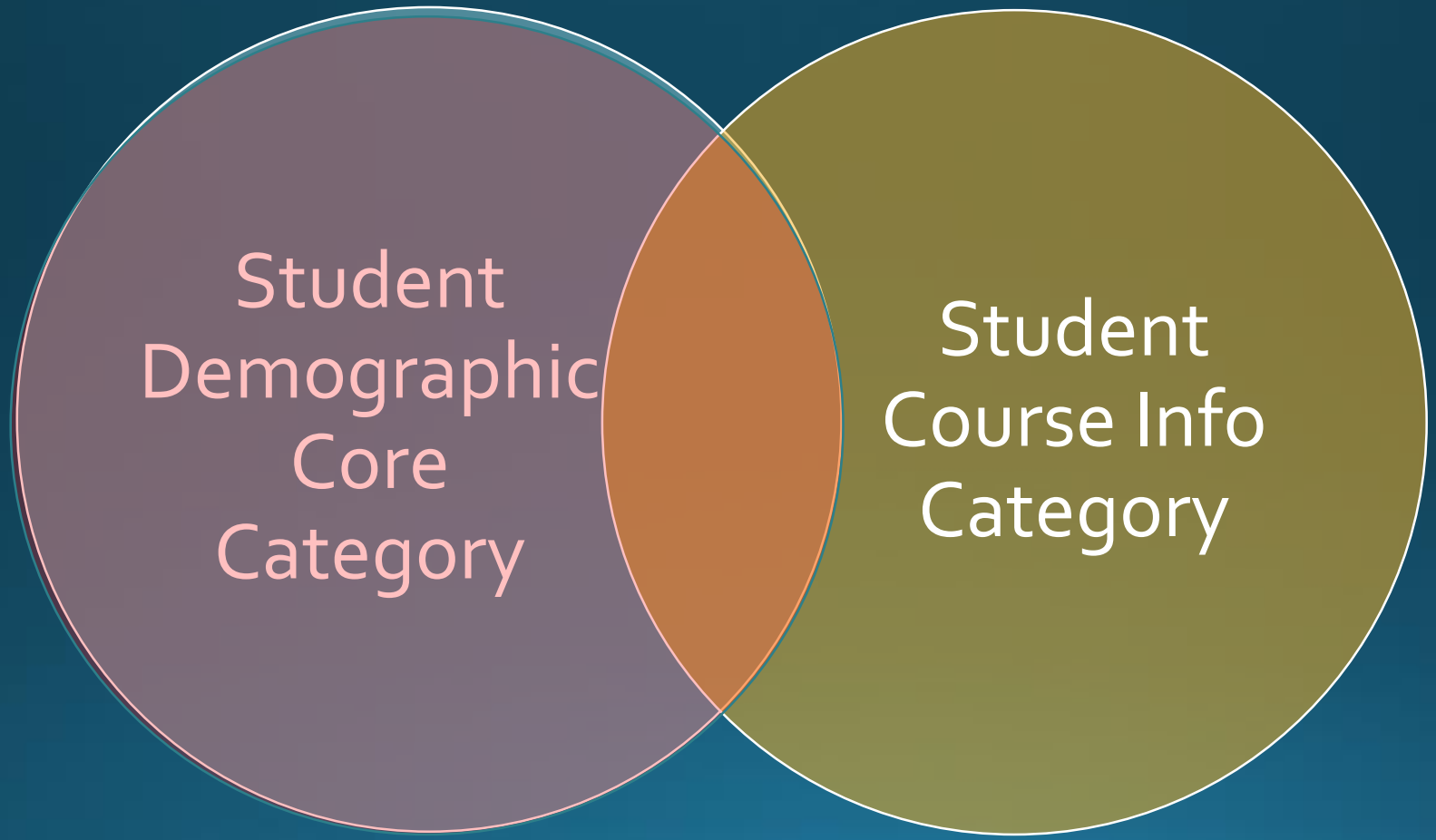


INNER JOIN – Our results are Students who have data in both the Student Demographic Core AND Student Course Info Categories

* - REMEMBER: **Most** Student categories are designed to return all students whether they have related data or not – Therefore in most cases, outer joins are unnecessary

SI Example – 2 Categories – Outer SD

Outer Join – either category will give you all students in StudentDemographicCore – OR- all students in StudentCourse Info Category*



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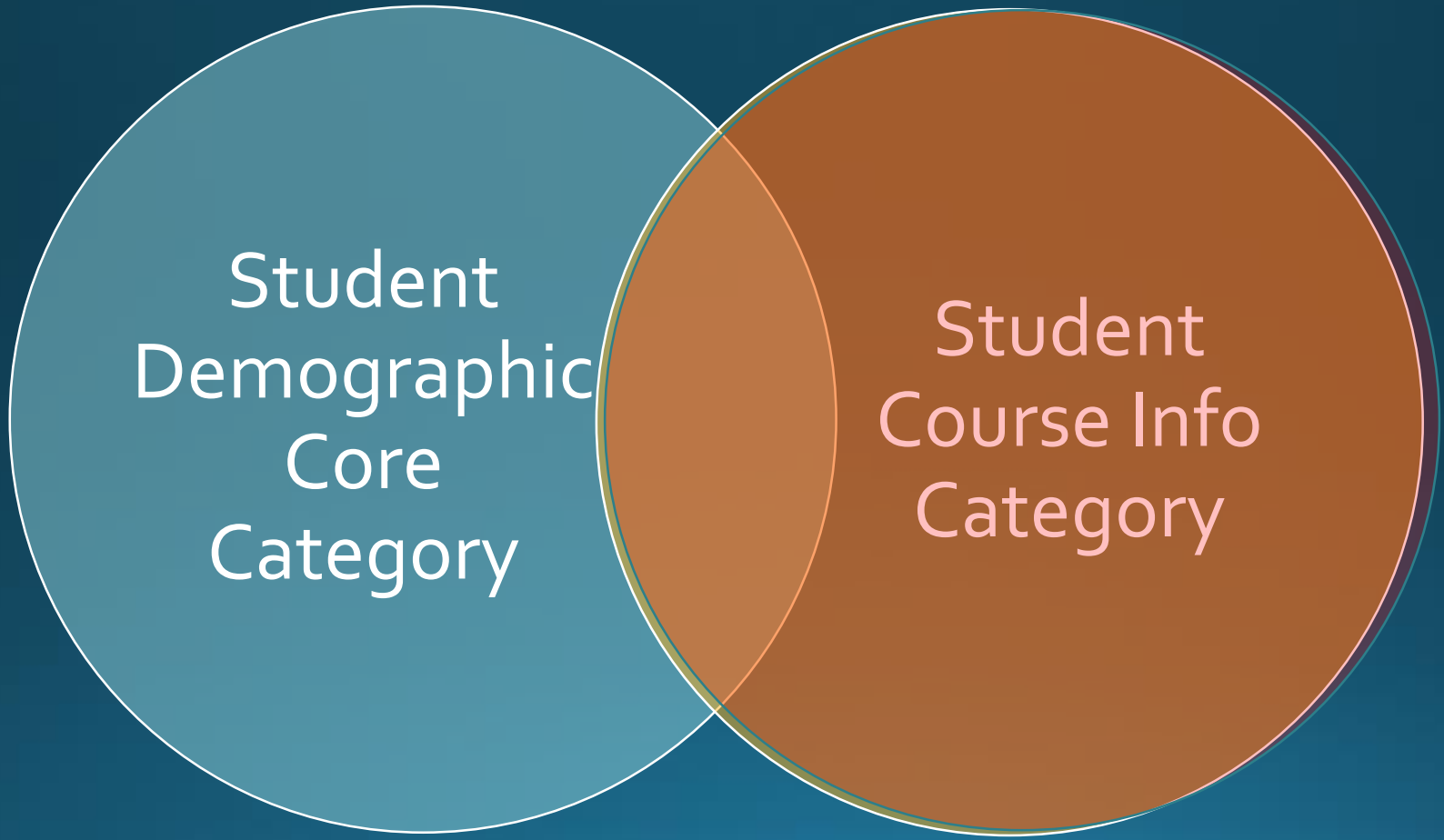
SI Example – 2 Categories – Outer SC

Outer Join – either category will give you all students in StudentDemographicCore – OR- all students in StudentCourse Info Category*



* - REMEMBER: **Most** Student categories are designed to return all students whether they have related data or not – Therefore in most cases, outer joins are unnecessary

What's the INNER JOIN result?

Student Course Report					
StudentNumber	LastName	FirstName	Grade	CourseName	Section
000023	Bauer	Melissa	8	Speech	1
000023	Bauer	Melissa	8	Geometry	5
000023	Bauer	Melissa	8	Social Studies	8
001045	Launder	Devin	12	Algebra I	23
001045	Launder	Devin	12	Geometry	5
001045	Launder	Devin	12	US History	8
012300	Recker	Amy	7	Math	8
012300	Recker	Amy	7	Science	8
012300	Recker	Amy	7	Social Studies	8

What if I don’t make joins?

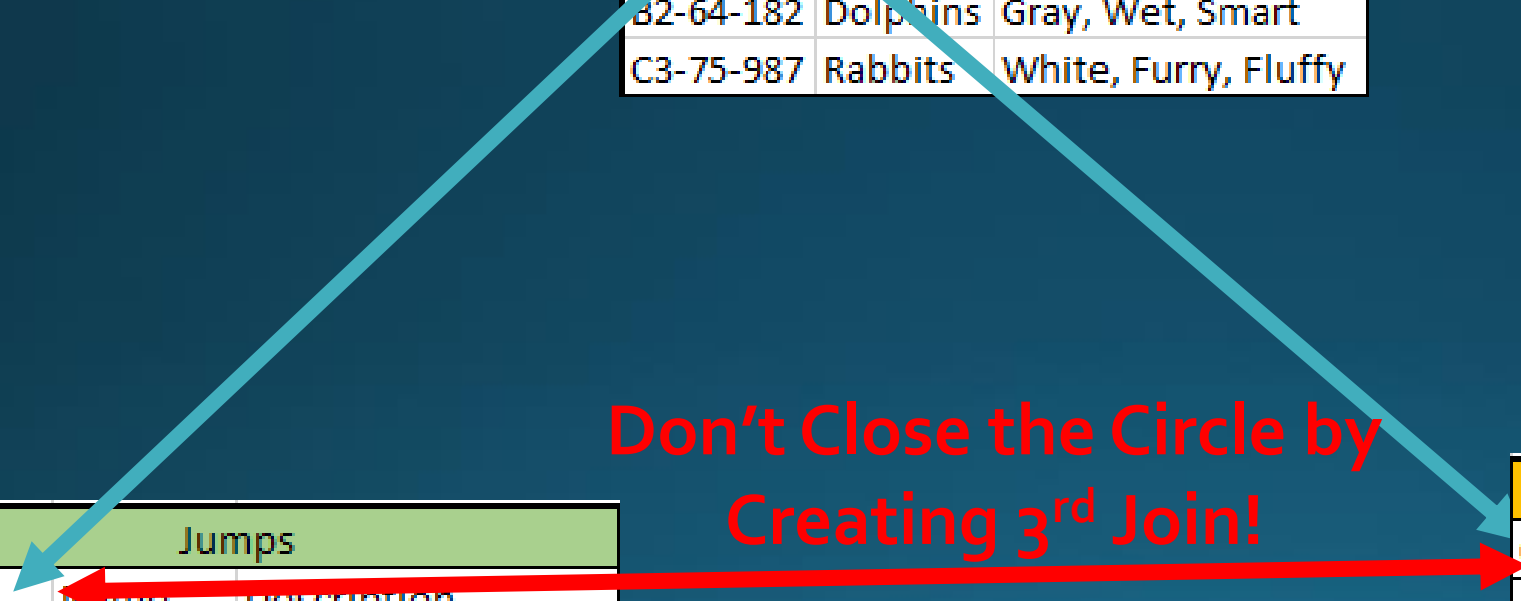
- Depending on report and who is reading it
  - Mismatched data!! -> UTTER CHAOS, Catastrophe
  - What seems like data row duplication
  - Missing data fields
  - more data returned which could be incorrect
- RULE: If you are using more than one category -> MUST USE JOINS
- RULE: Working with Student Categories -> ALWAYS Match StudentId, SchoolId, SchoolYearId
- Missing GUID aka Unique IDs to match between Categories -> Submit a ticket and let us know

Example: Not Matching SchoolId

Student Course Report					
StudentNumber	LastName	FirstName	Grade	CourseName	Section
000023	Bauer	Melissa	8	Geometry	5
000023	Bauer	Melissa	8	Geometry	5
000023	Bauer	Melissa	8	Social Studies	8
000023	Bauer	Melissa	8	Social Studies	8
000023	Bauer	Melissa	8	Speech	1
000023	Bauer	Melissa	8	Speech	1
001045	Launder	Devin	12	Algebra I	23
001045	Launder	Devin	12	Geometry	5
001045	Launder	Devin	12	US History	8
012300	Recker	Amy	7	Math	8
012300	Recker	Amy	7	Science	8
012300	Recker	Amy	7	Social Studies	8

Tip: Create Non-Circular Joins

Mammals		
GUID	Name	Description
A1-32-100	Otters	Brown, Furry, Wet
B2-64-182	Dolphins	Gray, Wet, Smart
C3-75-987	Rabbits	White, Furry, Fluffy



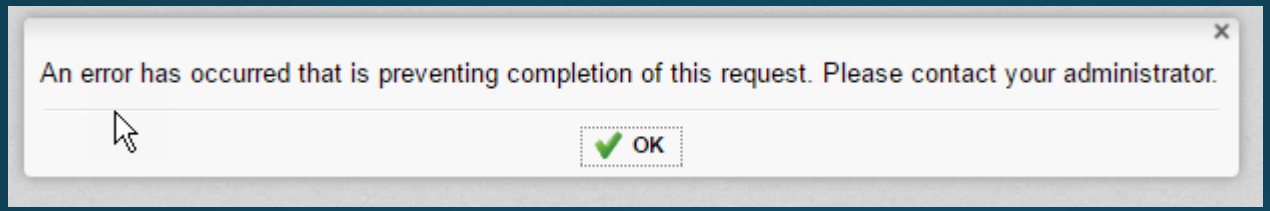
Don't Close the Circle by Creating 3rd Join!

Jumps		
GUID	Name	Description
B2-64-182	Dolphins	Gray, Wet, Smart
C3-75-987	Rabbits	White, Furry, Fluffy
D4-12-645	Frogs	Slimy, Ribbits

Swims		
GUID	Name	Description
A1-32-100	Otters	Brown, Furry, Wet
D4-12-645	Frogs	Slimy, Ribbits
E5-32-920	Fish	Scaley, Blup blup blup
B2-64-182	Dolphins	Gray, Wet, Smart

What Happens?

- Circular Join will create a Generic Report Error



- Generic Report error means there is an issue with the report. Error logs are on the web server
  - Need to go to the Web Server: C:\windows\Temp\Exago\WebReportsLog.txt
  - File generally keeps errors around for about 24 hours and then resets

3 SI Categories

StudentDemographicCore							
StudentID	SchoolYearId	SchoolId	DistrictId	LastName	FirstName	StudentNumber	Grade
GUID1A	GUID2E	GUID1B	GUID1D	Bauer	Melissa	000023	8
GUID1A	GUID2E	BUID1C	GUID1D	Bauer	Melissa	000023	8
GUID2A	GUID2E	GUID1B	GUID1D	Launder	Devin	001045	12
GUID3A	GUID2E	BUID1C	GUID1D	Recker	Amy	012300	7

StudentCourseInfo						
StudentID	SchoolYearId	SchoolId	DistrictId	StudentNumber	CourseName	Section
GUID1A	GUID2E	GUID1B	GUID1D	000023	Speech	1
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GUID2A	GUID2E	GUID1B	GUID1D	001045	Geometry	5
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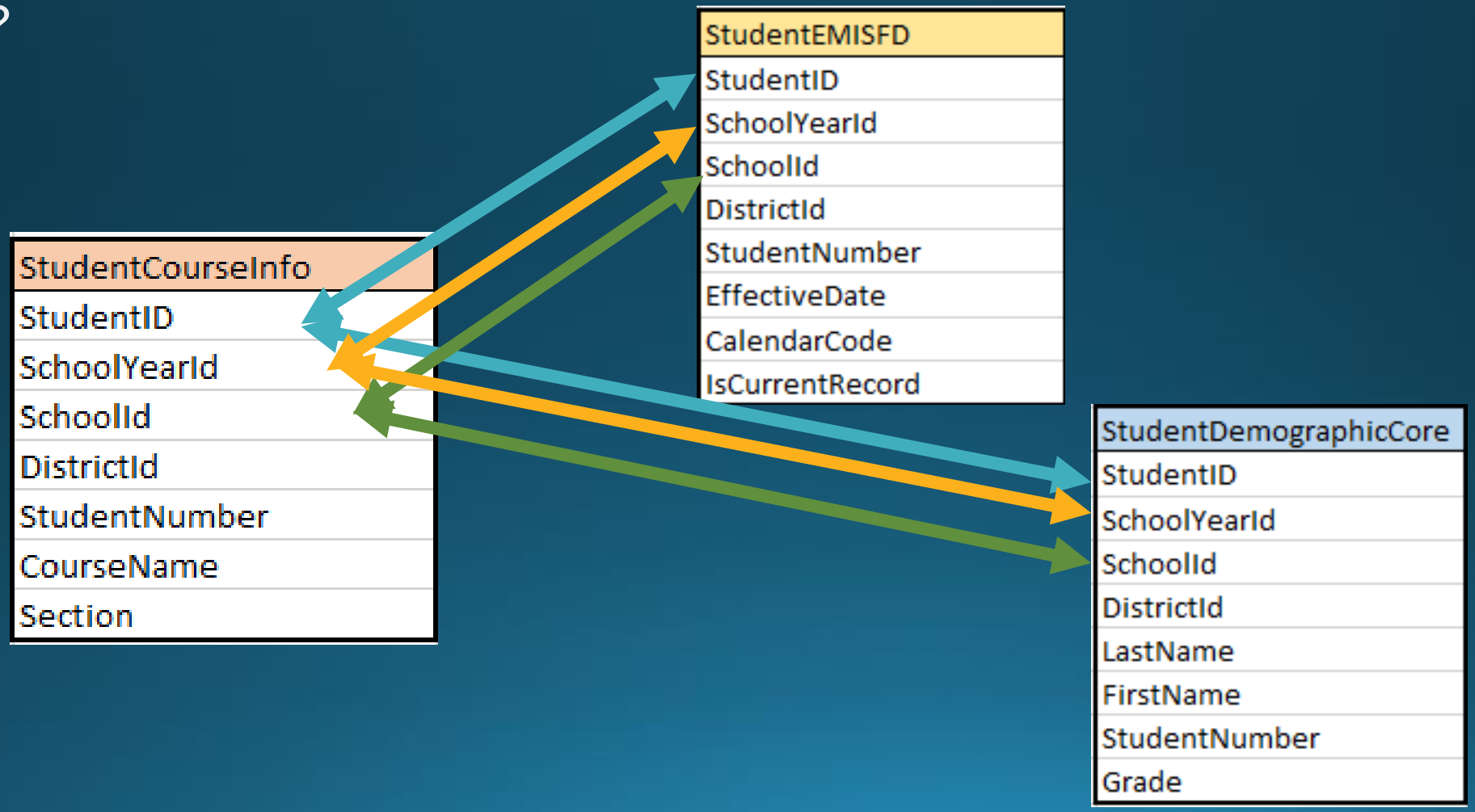
GUID3A	GUID2E	BUID1C	GUID1D	012300	Science	8
GUID3A	GUID2E	BUID1C	GUID1D	012300	Social Studies	8

StudentEMISFD							
StudentID	SchoolYearId	SchoolId	DistrictId	StudentNumber	EffectiveDate	CalendarCode	IsCurrentRecord
GUID1A	GUID2E	GUID1B	GUID1D	000023	7/1/2016	DFLT	Y
GUID1A	GUID2E	BUID1C	GUID1D	000023	7/1/2016	8	Y
GUID2A	GUID2E	GUID1B	GUID1D	001045	7/1/2016	11	Y
GUID3A	GUID2E	BUID1C	GUID1D	012300	7/1/2016	Sen	Y

3 Category Joins

- What is your main category and why are you bringing the others in?

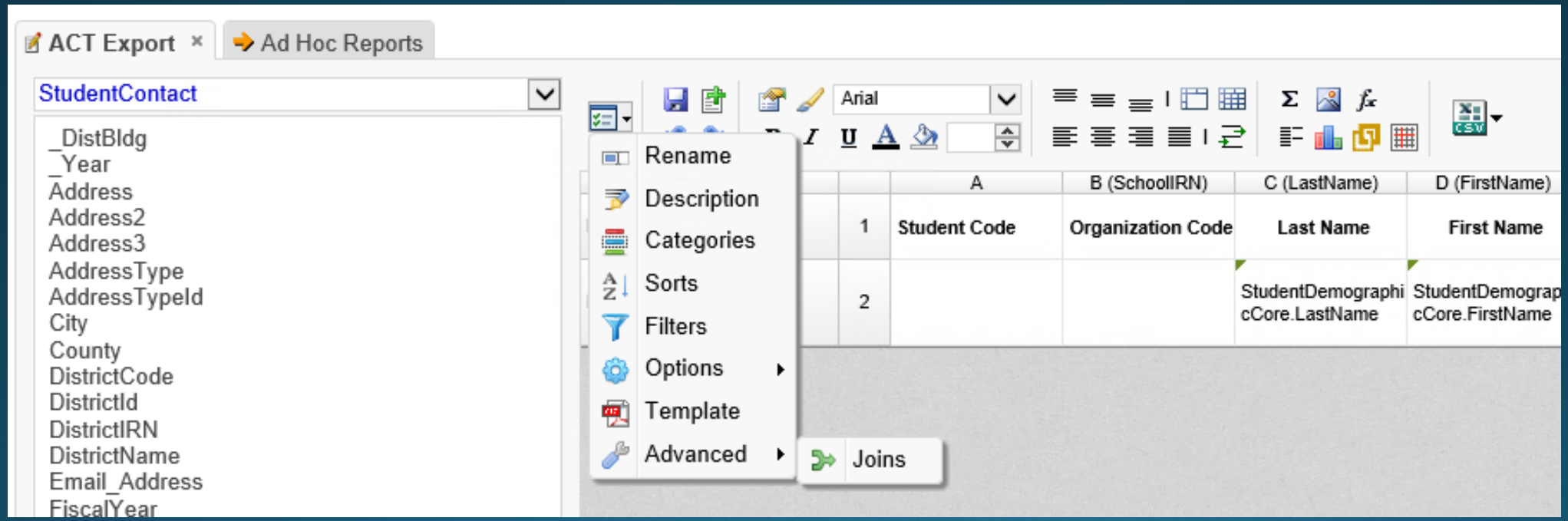


Final Recommendations

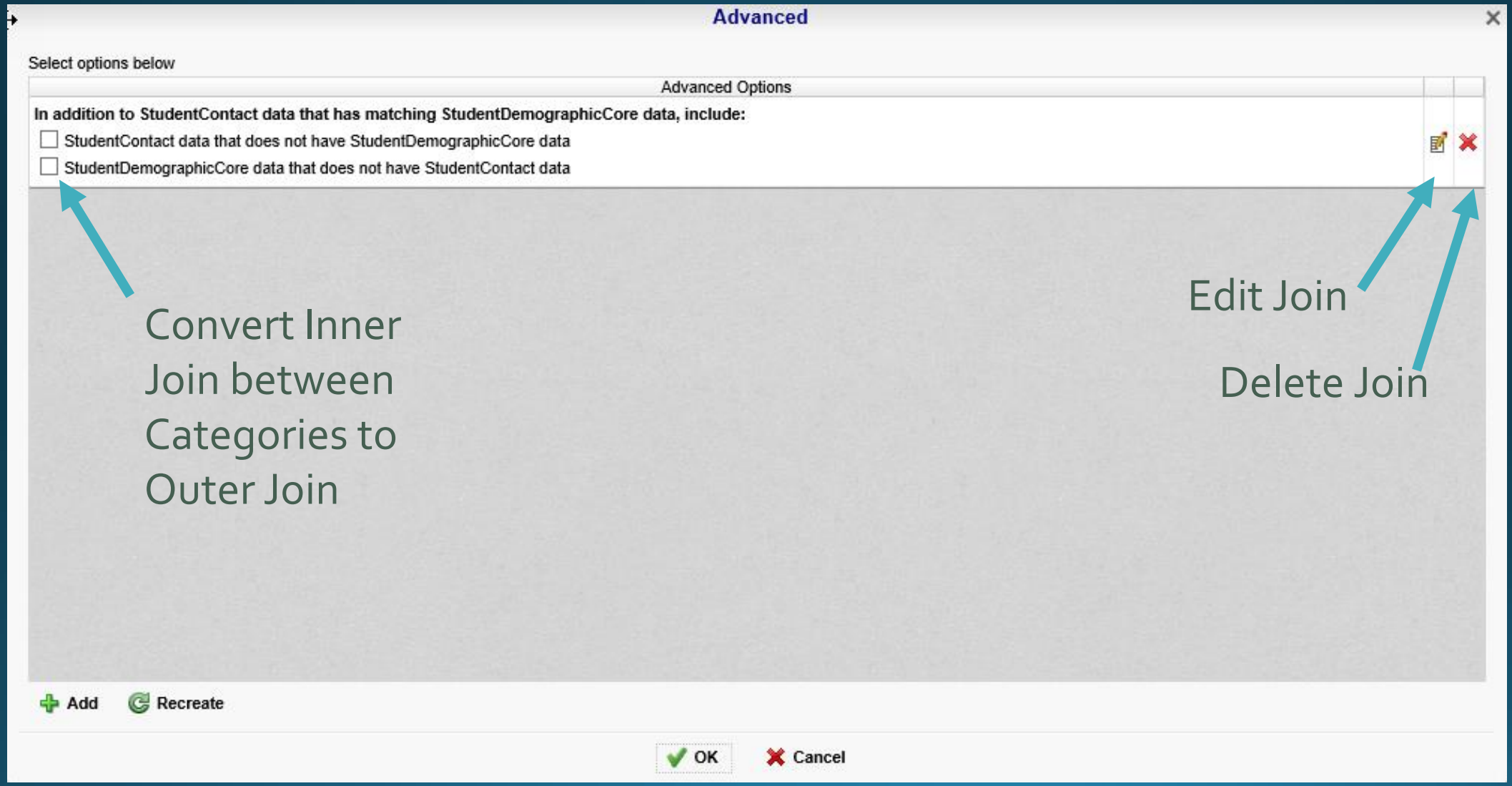
- Until you're comfortable with the categories -> Map it Out!
- Test, Test, Test
  - Compare what you see on the screens to what you see in the report.
  - Ask yourself –
    - Is this useful to my users?
    - How will they use it?
    - How often are they using it?
    - Why is there a need?
- Let your users test it out! Listen to them! Let them make recommendations!

Where do I create JOINS?

- Report Options -> Advanced -> Joins



JOIN Management

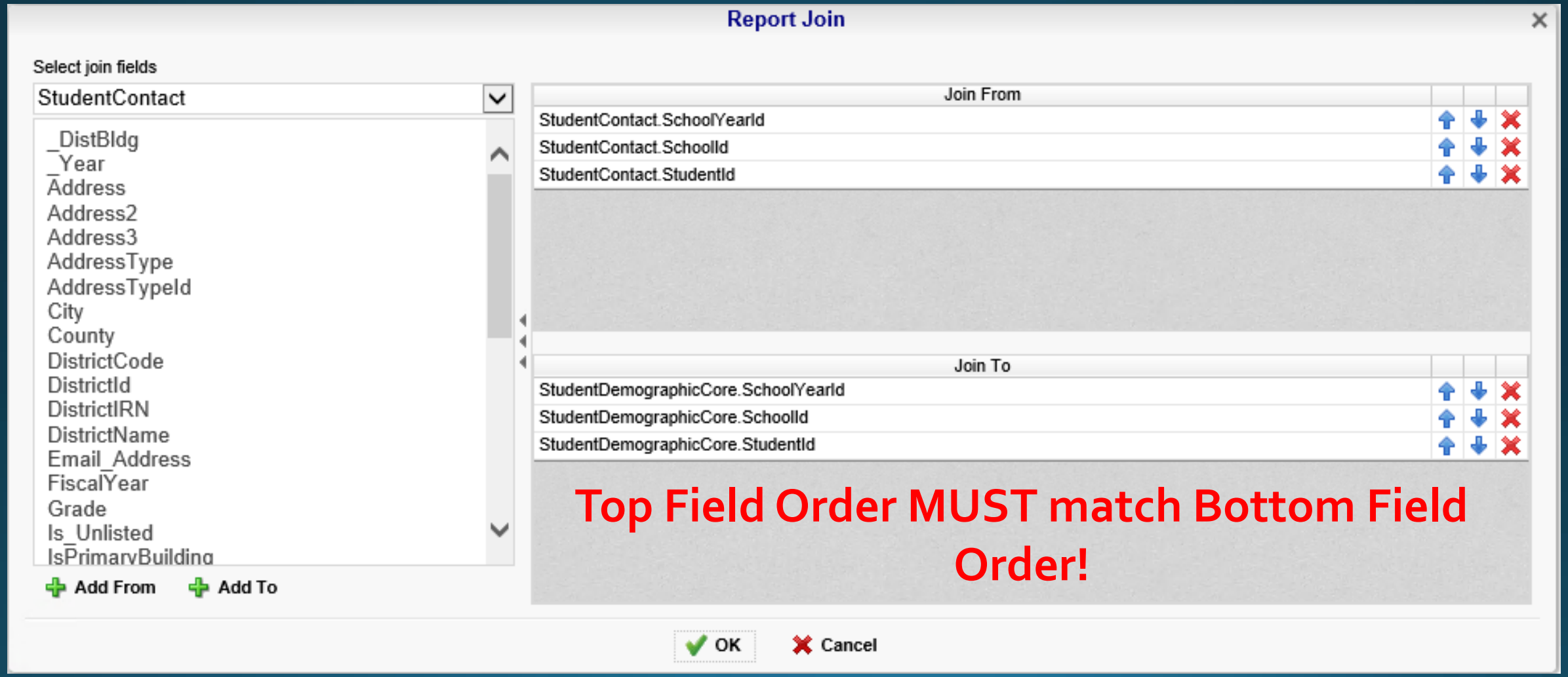


Convert Inner Join between Categories to Outer Join

Edit Join

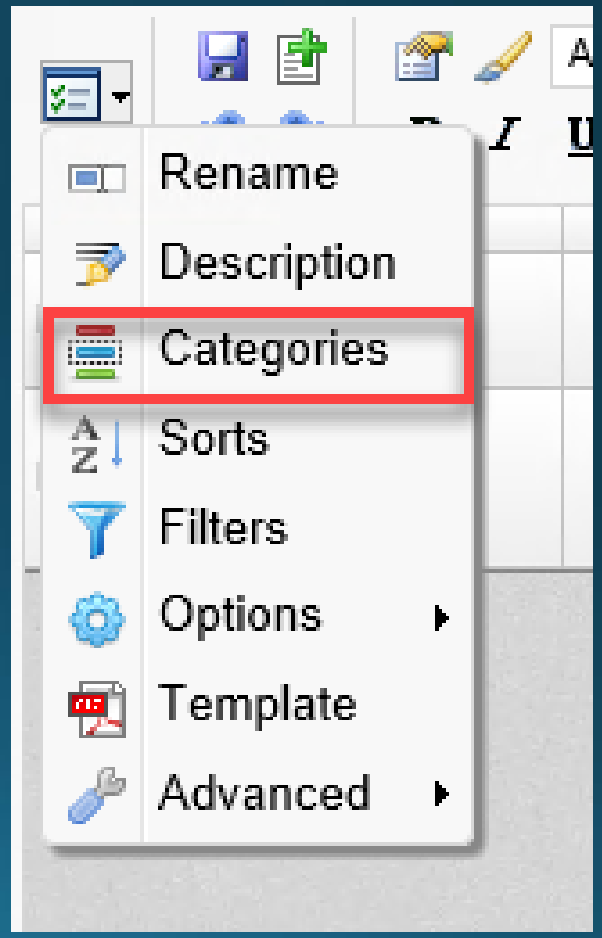
Delete Join

Edit Joins


Report Join
Select join fields
StudentContact
_DistBldg
_Year
Address
Address2
Address3
AddressType
AddressTypeId
City
County
DistrictCode
DistrictId
DistrictIRN
DistrictName
Email_Address
FiscalYear
Grade
Is_Unlisted
IsPrimaryBuilding
Add From
Add To
Join From
StudentContact.SchoolYearId
StudentContact.SchoolId
StudentContact.StudentId
Join To
StudentDemographicCore.SchoolYearId
StudentDemographicCore.SchoolId
StudentDemographicCore.StudentId
Top Field Order MUST match Bottom Field Order!
OK
Cancel

Final Tip/Trick

- If you make a change or look at Categories in Ad Hoc – JOINS will disappear.
- If you are editing a Report, be prepared to recreate JOINS if you go into Categories.



Questions?