





Announcements

- Project 3

- * 3A

- Build the tables
 - Enter the data
 - Due tonight before 11pm

- * 3B

- Build the queries
 - Answer the questions
 - Due Monday, March 17, before 11pm



Project 3A

- If your average age is rounding up, see the *Note in the sidebar* in the project description
- If you can't enter the BID, SID, RID with the numbers given, we changed the numbers so they'll work with an autonumber field. Look in the project description for the new numbers.



Designing and Querying the Database

Hands on in Access



Agenda

- Reflection paper #3
- Finish up with database design
- SQL Queries for Project 3B





Athletes and Teams

- THINGS of Interest, include :
 - * Athletes
 - * Events
 - * Points earned for success
 - * Teams
- These THINGS are **related** as follows:
 - A Student Athlete can participate in zero, one or many TEAMS.



Athletes and Teams

student_id

student_result_at_event

student_points_to_date

student_points_at_event

student_first_name

letters_sport_code

student_middle_name

letters_awarded_date

student_last_name

team_gender

student_date_of_birth

event_location

team_name

student_gender

team_description

student_address

coach_name

student_other_details

team_other_details

division_description

sport_description

event_name

event_start_date

event_end_date

event_other_details



Building the Database

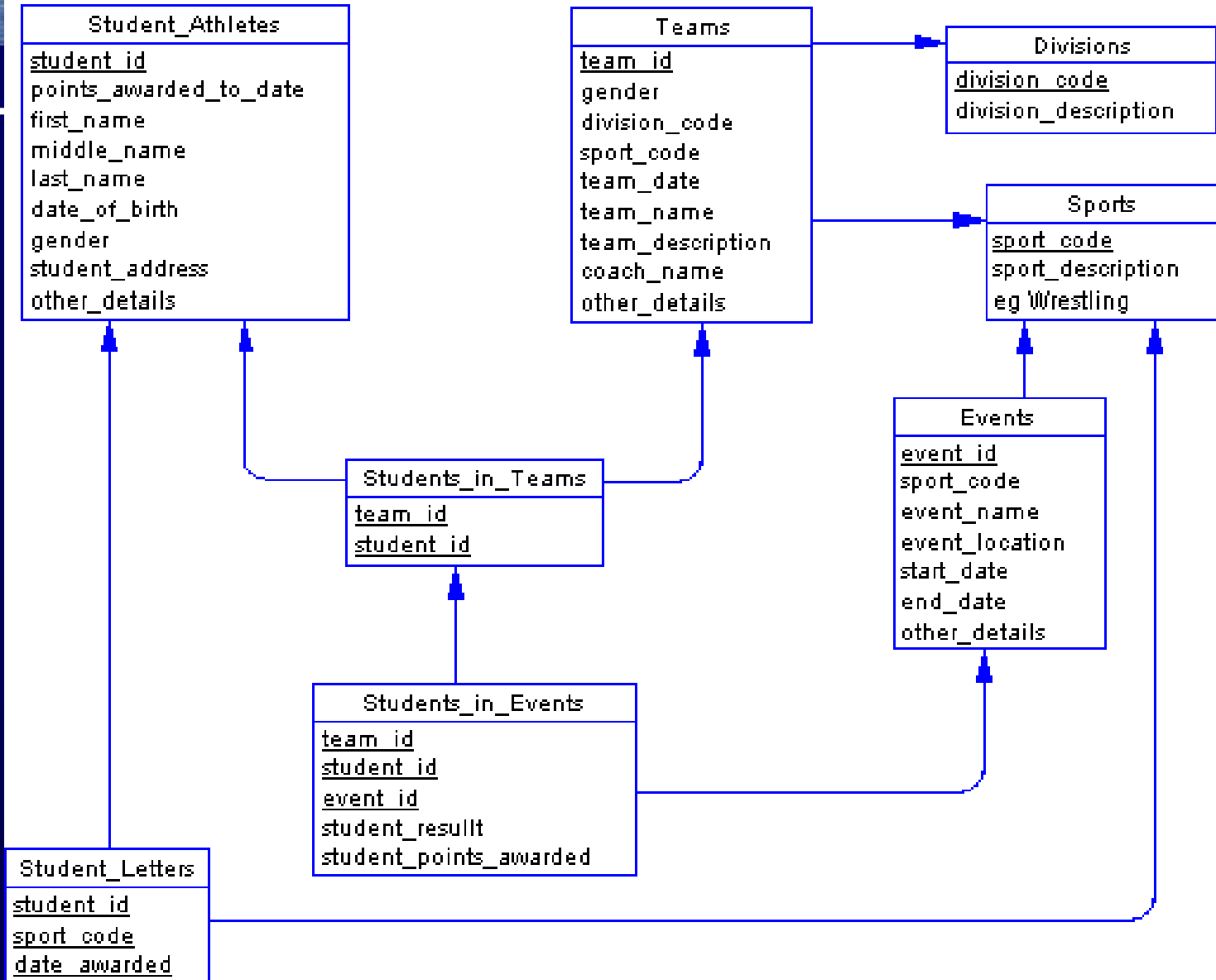
- Last time
 - * You built a database on paper and we started building the tables.
- After class
 - * I continued building the database
- Today we'll
 1. Look at tricky parts of the design
 2. Demo queries in Access



Reflection Paper

- Before we do that,
 - * You will write a reflection paper
 - Close your laptops
 - Close your books

Data Model for Student Athletes and Teams
 Barry Williams - 13th. September 2004
 Database Answers





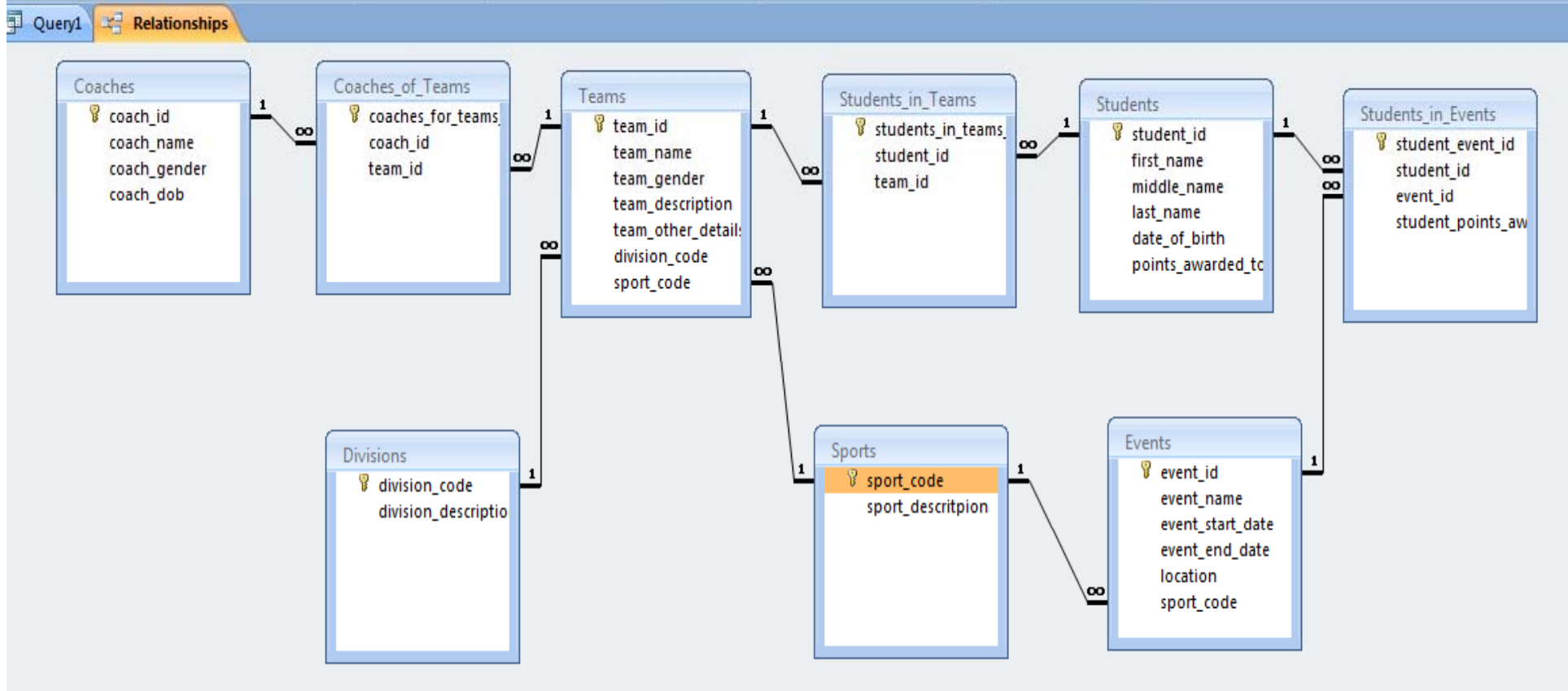
Demo

- Relationships in Access
 - * Database Tools > Relationships
 - * Right-Click > Show Tables
 - Add tables needed for Query
 - * Double-click on fields needed for query
 - * Checkbox is checked for columns that will show



Access

- Entity Relationship Diagram (ERD)





DB Design Questions

- Bridge tables
 - * Transform many: many into one:many
 - Students_in_Teams
 - Students_in_Events
 - Coaches_of_Teams
- Lookup Tables
 - * Helps data entry
 - Division
 - Sport
 - State abbreviations



From simple to complicated

QUERY EXAMPLES



Queries

- List all student athletes
 1. **SELECT * FROM Student_Athletes**
 - Wild card * selects ALL fields
 2. **SELECT * FROM Student_Athletes
ORDER BY student_name ASC**
 - Sorts on specified field in ascending order (A-Z, 0-9)
 3. **SELECT * FROM Student_Athletes
ORDER BY student_name DESC**
 - Sorts on specified field in descending order (Z-A, 9-0)



Queries

4. Which students' last names begin with 'Smith'?

```
SELECT last_name, first_name  
FROM Student_Athletes  
WHERE last_name LIKE "Smith*"
```

- * is the wildcard that replaces any number of characters



Queries

5. How many students have last names beginning with 'Sm'?

```
SELECT COUNT(student_id)
FROM Student_Athletes
WHERE last_name LIKE "Sm*"
ORDER BY last_name
```

- Use LIKE and the wildcard (*)



Queries

5. How many students have last names beginning with 'Sm'?

```
SELECT COUNT(student_id)
FROM Student_Athletes
WHERE last_name LIKE "Sm*"
ORDER BY last_name
```

- Use LIKE and the wildcard (*)

The screenshot shows a Microsoft Access window with a table design view for 'Student_Athletes'. The fields are: student_id (primary key), first_name, middle_name, last_name, gender, and date_of_birth. Below the design view is a criteria table for a query.

Field:	student_id	last_name
Table:	Student_Athletes	Student_Athletes
Total:	Count	First
Sort:		
Show:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Criteria:		Like "Sm*"
or:		



Queries

6. Which students have last names with 'nn' somewhere in the middle?

```
SELECT COUNT(last_name)  
FROM Student_Athletes  
WHERE last_name LIKE "*nn*"
```

- Use wildcard (*) at both ends



Queries

7. What are the average points won by student athletes?

```
SELECT AVG(student_points_awarded) FROM  
Student_Athletes
```



Queries

8. Show a listing of events sorted by starting date.

```
SELECT *  
FROM Events  
ORDER BY event_start_date
```



Queries

9. How many students were born between 7/21/91 and 7/20/95 and have earned over 8 points?

```
SELECT last_name, first_name, points_earned
FROM Student_Athletes
WHERE
    date_of_birth > #7/21/1991# AND
    date_of_birth < #7/20/1995# AND
    points_earned > 8
```



Queries

9. Design View:

The screenshot shows the Design View of a query named "Student_Athletes". The query is based on the "Student_Athletes" table. The design grid below shows the fields and criteria for the query.

Field:	last_name	first_name	date_of_birth	points_awarded_to_d
Table:	Student_Athletes	Student_Athletes	Student_Athletes	Student_Athletes
Sort:				
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:			>#7/21/1991# And <#7/20/1995#	>8
or:				



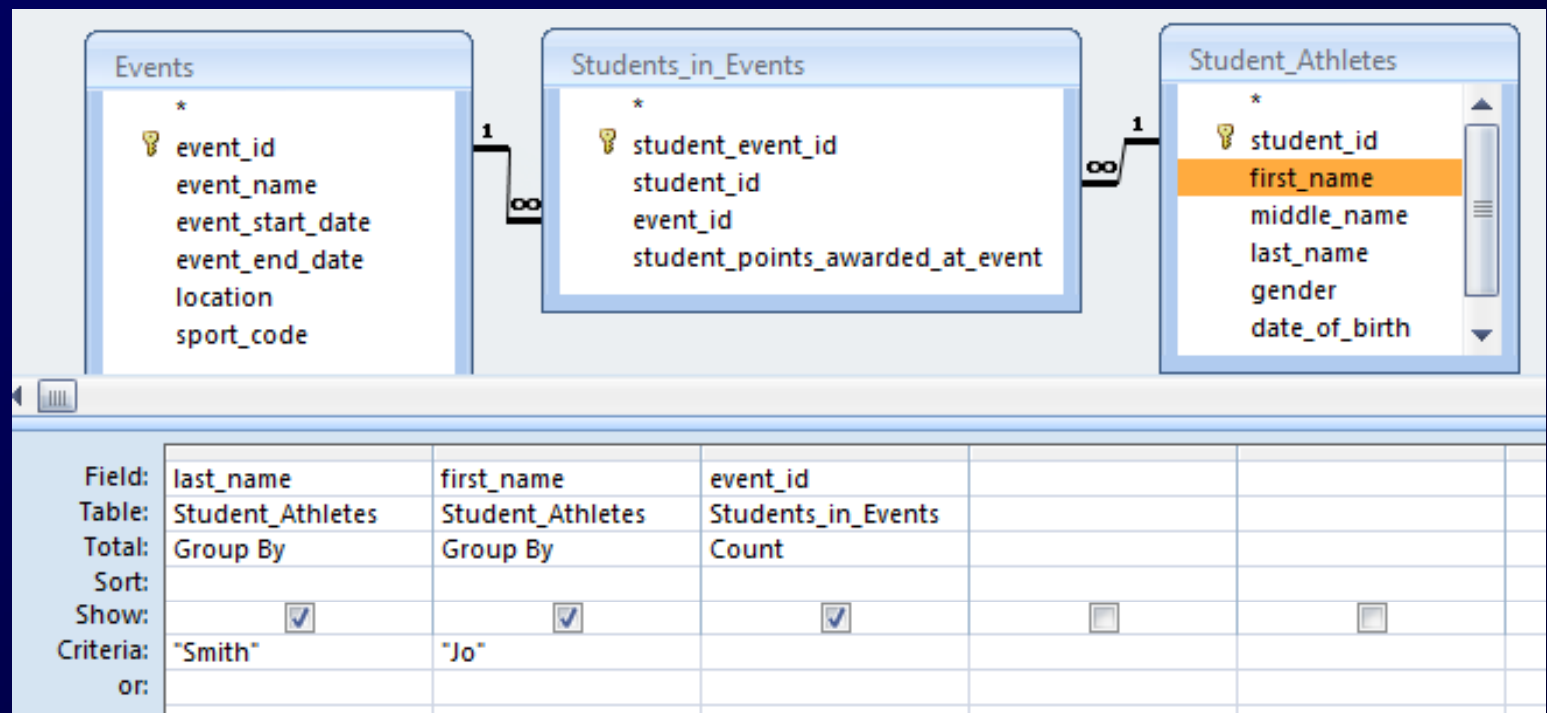
Queries

10. How many times has Jo Smith competed?



Queries

10. How many times has Jo Smith competed?





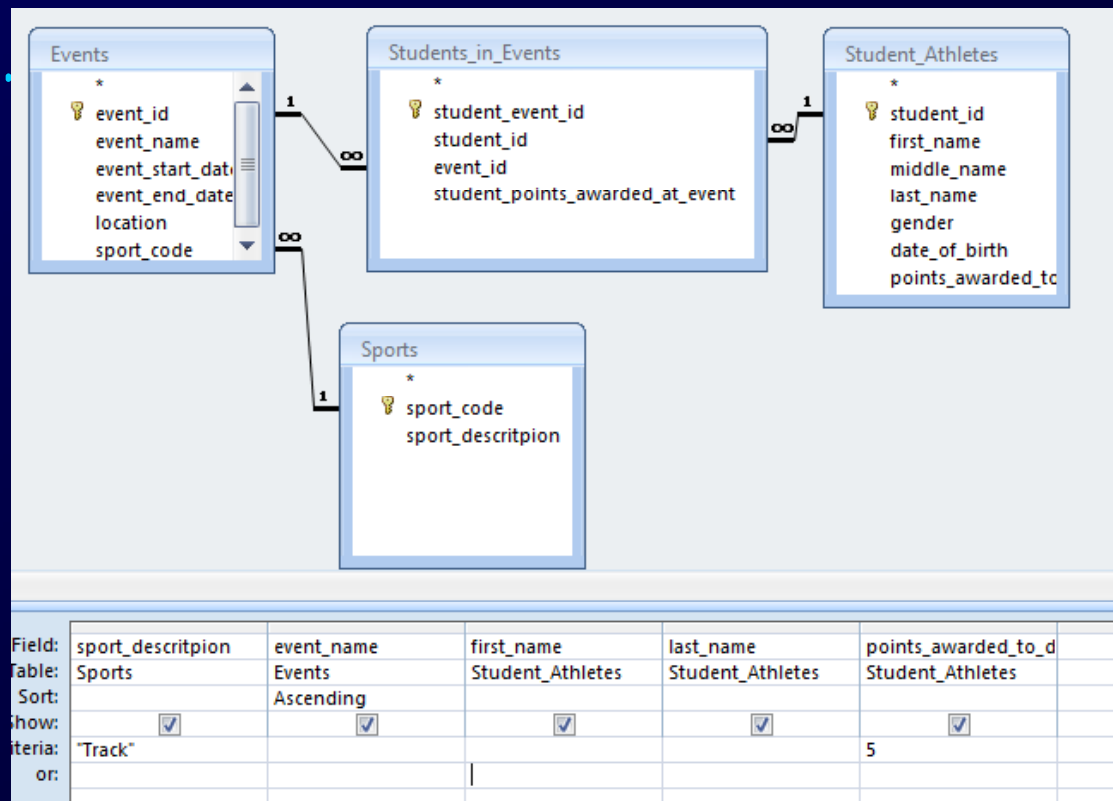
Queries

11. List all the events involving track and students who have earned at least 5 points.



Queries

11. List all the events involving track and students who have earned at least 5 points.





Queries

12. List all students who have earned between 5 and 8 points sorted with highest points first.



Queries

12. List all students who have earned between 5 and 8 points with highest points listed first.

Student_Athletes

- *
 - student_id
 - first_name
 - middle_name
 - last_name
 - gender
 - date_of_birth
 - points_awarded_to_date

Field:	last_name	first_name	points_awarded_to_d
Table:	Student_Athletes	Student_Athletes	Student_Athletes
Sort:			Descending
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:			>2 And <9
or:			



Queries

13. Show a listing of the average number of points won by students in each sport.