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

<table>
<thead>
<tr>
<th>Student ID</th>
<th>Team Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Result at Event</td>
<td>Student Gender</td>
</tr>
<tr>
<td>Student Points to Date</td>
<td>Team Description</td>
</tr>
<tr>
<td>Student Points at Event</td>
<td>Student Address</td>
</tr>
<tr>
<td>Student First Name</td>
<td>Coach Name</td>
</tr>
<tr>
<td>Letters Sport Code</td>
<td>Student Other Details</td>
</tr>
<tr>
<td>Student Middle Name</td>
<td>Team Other Details</td>
</tr>
<tr>
<td>Letters Awarded Date</td>
<td>Division Description</td>
</tr>
<tr>
<td>Student Last Name</td>
<td>Sport Description</td>
</tr>
<tr>
<td>Team Gender</td>
<td>Event Name</td>
</tr>
<tr>
<td>Student Date of Birth</td>
<td>Event Start Date</td>
</tr>
<tr>
<td>Event Location</td>
<td>Event End Date</td>
</tr>
<tr>
<td>Event Other Details</td>
<td></td>
</tr>
</tbody>
</table>
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
Before we do that,

- You will write a reflection paper
  - Close your laptops
  - Close your books
• **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
• 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)
4. Which students' last names begin with ‘Smith’?

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

• * is the wildcard that replaces any number of characters
```
5. How many students have last names beginning with ‘Sm’?

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

- Use LIKE and the wildcard (*)
5. How many students have last names beginning with ‘Sm’?

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

- Use LIKE and the wildcard (*)
6. Which students have last names with ‘nn’ somewhere in the middle?

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

- Use wildcard (*) at both ends
7. What are the average points won by student athletes?

```sql
SELECT AVG(student_points_awarded) FROM Student_Athletes
```
8. Show a listing of events sorted by starting date.

```sql
SELECT * 
FROM Events 
ORDER BY event_start_date
```
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:
10. How many times has Jo Smith competed?
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.
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.
13. Show a listing of the average number of points won by students in each sport.