Data Dev

Teaching Students about Data Management

teacher's quick-start tutorial

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Session Outline

- 30,000 ft view of Database Management (Computer Systems)

- HTML/CSS Overview

- Database Concepts

- PHP Basics

- Capstone Project / Mini Outline for Competition Projects

How Does the Internet Work?

- Looking at the forrest, not the trees. #ToTheWhiteboard

Resources for Today

- Teacher Resource Document:
  tinyurl.com/devcatalyst-2018

- Github Repository:
  github.com/mplyler (devcat-datadev-2018)

HTML/CSS Overview

- sample-html > finished-version

- Review together

- Make small customizations

Databases

What is a **Database**?

- a database consists of an organized collection of data for one or more uses, typically in digital form

- tables, records, rows, columns/fields

- a different kind of "spreadsheet" / more powerful

SQL

How do you say **SQL**?

/ˌɛs.kjuːˈɛl/
            OR
/ˈsiːkwəl/

Structured Query Language
  • programming and managing data in RDBMS
  • ubiquitous database language

SQL

SQL functions fit into broad categories:

Data definition language

create database objects: tables, indexes and views
define access rights to database objects

Data manipulation language

includes commands to INSERT, UPDATE, DELETE and retrieve
(SELECT) data within database tables

Basic Query Structure

SELECT *column1, column2, …*
FROM *table_name*;

column1, column2, …. are the field names
table_name … is the table name

Expanded Query Structure

SELECT *column1, column2, ...*
FROM *table_name*
WHERE *predicate/condition*
ORDER BY *columnX*;

column1, column2, ... are the field names
table_name ... is the table name
predicate/condition ... allows us to filter our results
order by ... ASC or DESC

SQL Keywords (a few of them)

AND/OR
ALTER
AS
BETWEEN
CREATE
DELETE
DROP
EXISTS
GROUP BY

HAVING
JOIN
LIKE
ORDER BY
SELECT
TRUNCATE
UNION
UPDATE
WHERE

UML

- The **Unified Modeling Language** is a general-purpose, developmental, modeling language in the field of software engineering, that is intended to provide a standard way to visualize the design of a system.

Hands-On Exercises

Using Gungoo
(cPanel and phpMyAdmin - set up environment):

- **IDE** exploration
- **Database** creation
- **Table** creation
- **Data** insertion
- **Query** execution

PHP Basics

PHP (recursive acronym for **PHP**: Hypertext Preprocessor) is a widely-used open source general-purpose scripting language that is especially suited for web development and can be embedded into HTML.

PHP Syntax

A **PHP** script starts with **<?php** and ends with **?>**:

```php
<?php
  // PHP code goes here
?>
```

PHP Syntax

```
<!DOCTYPE html>
<html>
<body>

<h1>Basic PHP Page</h1>

<?php
  echo "Hello World!";
?>


</body>
</html>
```

PHP Syntax Facts

- php scripts can be added anywhere in the document

- keywords, classes and functions <u>are not</u> case-sensitive

- variable names <u>are</u> case-sensitive

- variables start with $, followed by name (cannot start with a number)

Hands-On Exercises

Using VS Code, Cyberduck and Gungoo:

- **Hello World**
- **Connect to Database**
- **Simple Data Submission**
- **Submission Form** (*with "AJAX" functionality*)

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Mini Project / Collaboration

- Create a database and web front-end for a fictitious retail store.

- What are our steps? Let's outline the process.

- Dive-in and create a functioning, data-driven website.