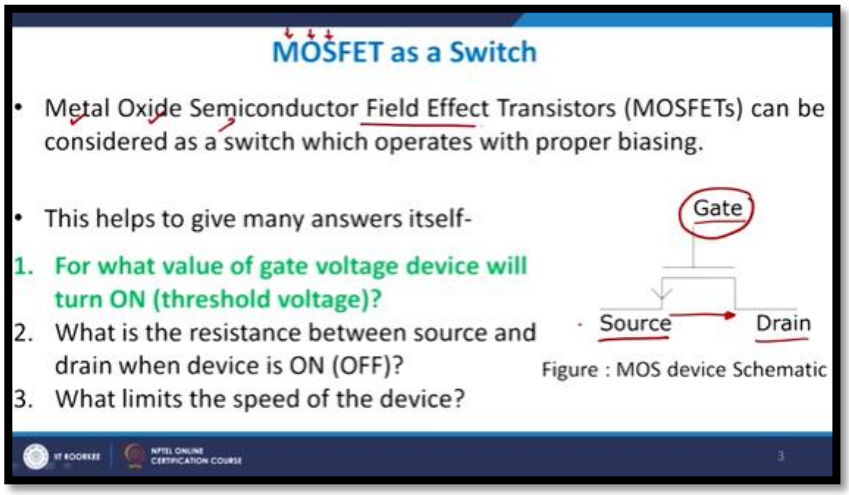
DAILY ASSESSMENT

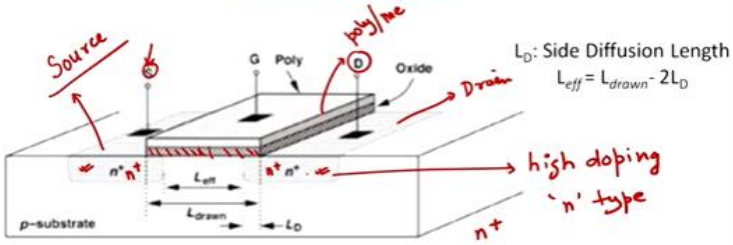
Date:	**10/06/2020**	**Name:**	**Davis S. Patel**
Course:	**VLSI**	**USN:**	**4AL16EC045**
Topic:	**MOS transistor basics-I**	**Semester & Section:**	**8th - A**
GitHub Repository:	**Davis**		

FORENOON SESSION DETAILS

Image of session



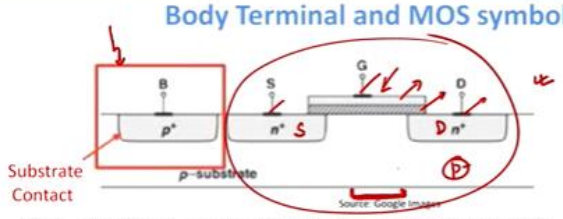
MOSFET Structure

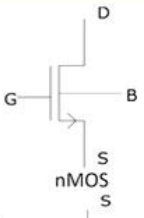


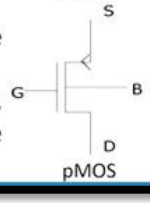
- If MOS structure is symmetric then why one n-region is called source and another is drain?

Source: Google Images

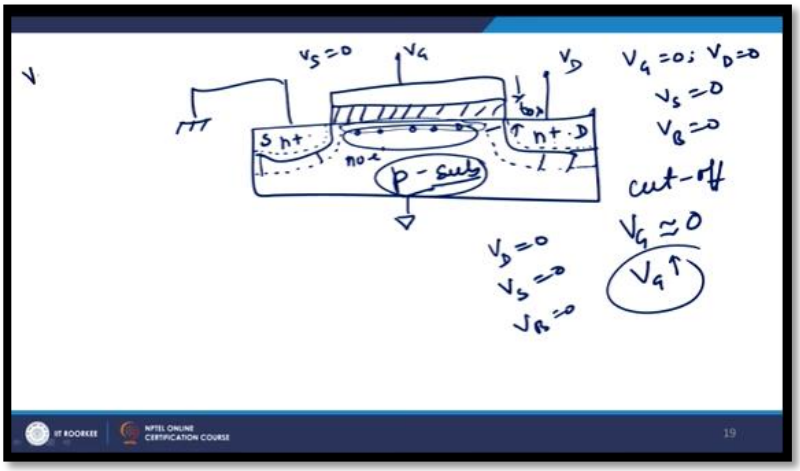
Body Terminal and MOS symbols





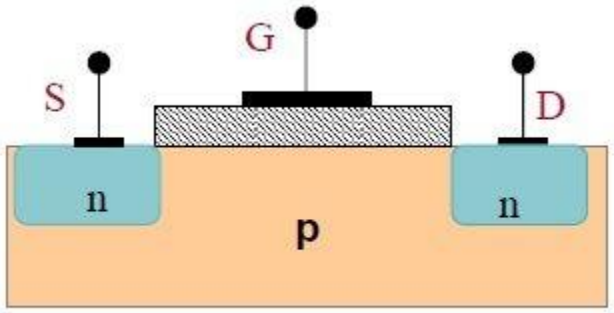


- The substrate bias should be connected with the negative most supply of the system.
- nMOS and pMOS are in general made in same wafer, in which one device can placed in local substrate called as well.



REPORT –

A metal–oxide–semiconductor field-effect transistor (MOSFET, MOS-FET, or MOS FET) is a field-effect transistor (FET with an insulated gate) where the voltage determines the conductivity of the device. It is used for switching or amplifying signals. The ability to change conductivity with the amount of applied voltage can be used for amplifying or switching electronic signals. MOSFETs are now even more common than BJTs (bipolar junction transistors) in digital and analog circuits.



MOSFET Structure

A MOSFET is by far the most common transistor in digital circuits, as hundreds of thousands or millions of them may be included in a memory chip or microprocessor. Since they can be made with either p-type or n-type semiconductors, complementary pairs of MOS transistors can be used to make switching circuits with very low power consumption, in the form of CMOS logic.

MOSFETs are particularly useful in amplifiers due to their input impedance being nearly infinite which allows the amplifier to capture almost all the incoming signal. The main advantage is that it requires almost no input current to control the load current, when compared with bipolar transistors.

MOSFETs are available in two basic forms:

- **Depletion Type:** The transistor requires the Gate-Source voltage (V_{GS}) to switch the device "OFF". The depletion-mode MOSFET is equivalent to a "Normally Closed" switch.

- **Enhancement Type:** The transistor requires a Gate-Source voltage (V_{GS}) to switch the device "ON". The enhancement-mode MOSFET is equivalent to a "Normally Open" switch.

MOSFET structure

It is a four-terminal device with source(S), gate (G), drain (D) and body (B) terminals. The body is frequently connected to the source terminal, reducing the terminals to three. It works by varying the width of a channel along which charge carriers flow (electrons or holes).

The charge carriers enter the channel at source and exit via the drain. The width of the channel is controlled by the voltage on an electrode is called gate which is located between source and drain. It is insulated from the channel near an extremely thin layer of metal oxide. A metal-insulator-semiconductor field-effect transistor or MISFET is a term almost synonymous with MOSFET. Another synonym is IGFET for the insulated-gate field-effect transistor.

MOSFET Operation

The working of a MOSFET depends upon the MOS capacitor. The MOS capacitor is the main part of MOSFET. The semiconductor surface at the below oxide layer which is located between source and drain terminals. It can be inverted from p-type to n-type by applying positive or negative gate voltages.

When we apply positive gate voltage the holes present under the oxide layer with a repulsive force and holes are pushed downward with the substrate. The depletion region populated by the bound negative charges which are associated with the acceptor atoms.

The electrons reach the channel is formed. The positive voltage also attracts electrons from the n+ source and drain regions into the channel.

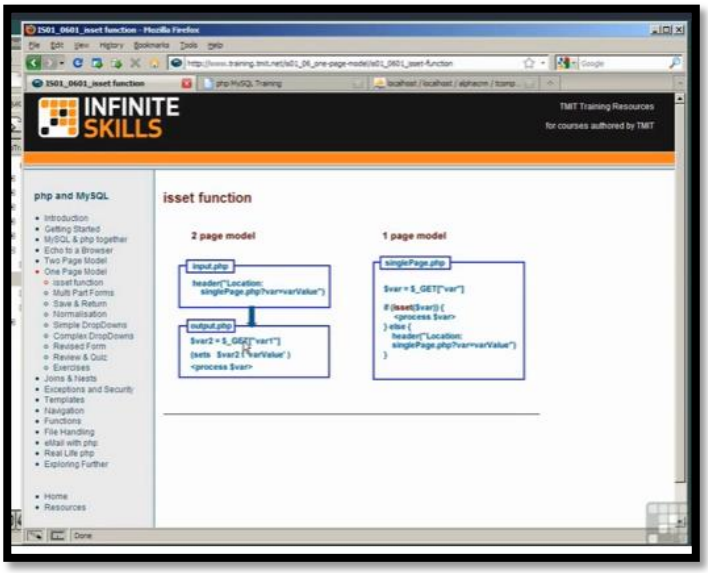
Now, if a voltage is applied between the drain and source, the current flows freely between the source and drain and the gate voltage controls the electrons in the channel. If we apply negative voltage, a hole channel will be formed under the oxide layer

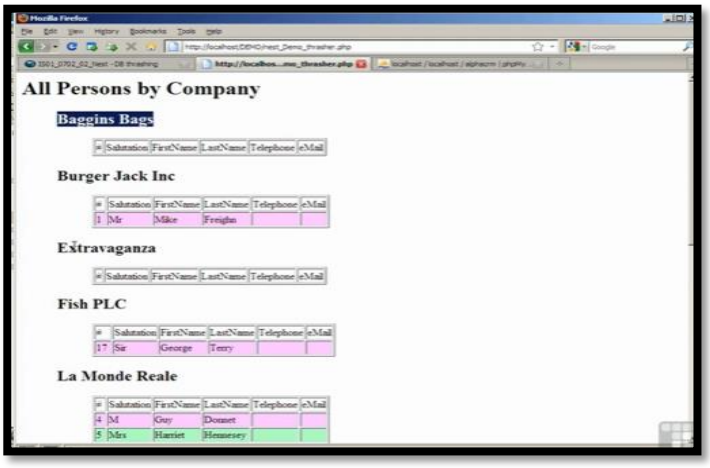
DAILY ASSESSMENT

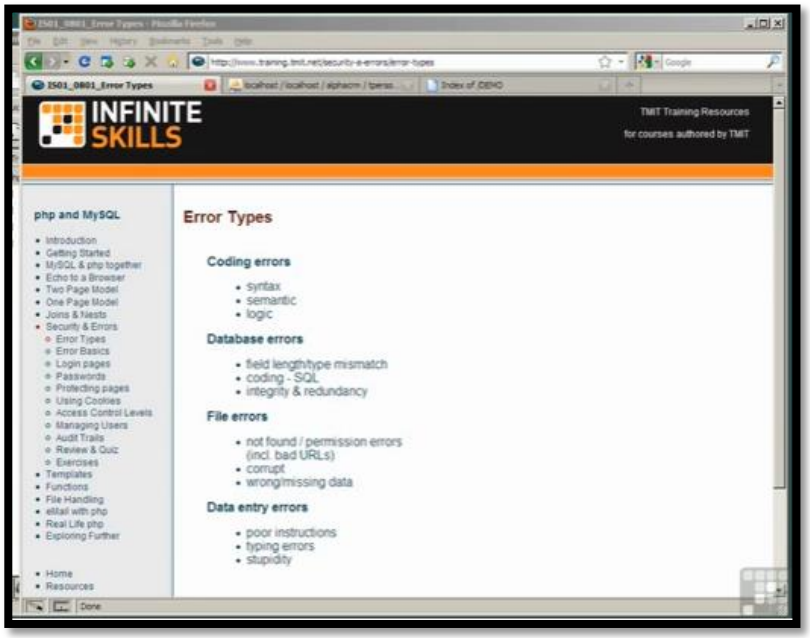
Date:	**10/06/2020**	**Name:**	**Davis S. Patel**
Course:	**MySQL**	**USN:**	**4AL16EC045**
Topic:	**Inserting And Using Database Data** **MySQL Joins** **PHP Errors And Security** **Building A Template Page**	**Semester & Section:**	**8th - A**
GitHub Repository:	**Davis**		

AFTERNOON SESSION DETAILS

Image of Session



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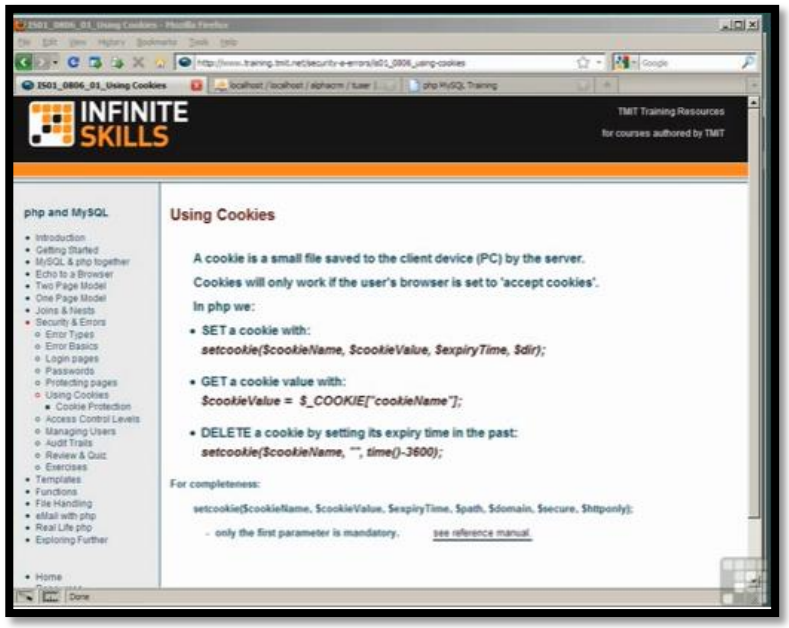
eMail with php
Real Life php
Exploring Further
Home
Resources
Error Types
Coding errors
syntax
semantic
logic
Database errors
field length/type mismatch
coding - SQL
integrity & redundancy
File errors
not found / permission errors (incl. bad URLs)
corrupt
wrong/missing data
Data entry errors
poor instructions
typing errors
stupidity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Login pages
Passwords
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Using Cookies
Cookie Protection
Access Control Levels
Managing Users
Audit Trails
Review & Quiz
Exercises
Templates
Functions
File Handling
eMail with php
Real Life php
Exploring Further
Home
Using Cookies
A cookie is a small file saved to the client device (PC) by the server.
Cookies will only work if the user's browser is set to 'accept cookies'.
In php we:
SET a cookie with:
setcookie($cookieName, $cookieValue, $expiryTime, $dir);
GET a cookie value with:
$cookieValue = $_COOKIE["cookieName"];
DELETE a cookie by setting its expiry time in the past:
setcookie($cookieName, "", time()-3600);
For completeness:
setcookie($cookieName, $cookieValue, $expiryTime, $path, $domain, $secure, $httponly);
- only the first parameter is mandatory.
see reference manual

REPORT –

PHP MySQL Insert Data

After a database and a table have been created, we can start adding data in them.

Here are some syntax rules to follow:

- The SQL query must be quoted in PHP
- String values inside the SQL query must be quoted
- Numeric values must not be quoted
- The word NULL must not be quoted

The INSERT INTO statement is used to add new records to a MySQL table:

INSERT INTO table_name (column1, column2, column3...)

VALUES (value1, value2, value3...)

Normalization in MySQL

Normalization is the procedure of professionally organizing data in a database. Normalization database schema design technique, by which an existing schema is modified to minimize redundancy and dependency of data, eliminating redundancy data means this goal will storing the same data in more than one table and the second one is ensuring data dependencies make sense means only storing related data in a table. In organizing data Normalization split a large table into smaller tables and it defines relationships among them to increases the simplicity.

MySQL JOINS

MySQL JOINS are used with SELECT statement. It is used to retrieve data from multiple tables. It is performed whenever you need to fetch records from two or more tables.

There are three types of MySQL joins:

- MySQL INNER JOIN (or sometimes called simple join)
- MySQL LEFT OUTER JOIN (or sometimes called LEFT JOIN)
- MySQL RIGHT OUTER JOIN (or sometimes called RIGHT JOIN)

Nested loops is one way of processing joins:

```
for each row of table A
  if this row matches where clauses
    for each row of joined table B
      if this row matches where clauses and join clauses
        accept row
      end
    end
  end
end
```

That can be optimized with indexes quite a bit, by doing "for each row found at key K in some index" instead of "each row of table A", and the same with table B.The presentation is saying this is the only way MySQL processes joins.

PHP Errors and Security

With PHP security, there are two sides to error reporting. One is beneficial to increasing security, the other is detrimental.

A standard attack tactic involves profiling a system by feeding it improper data, and checking for the kinds, and contexts, of the errors which are returned. This allows the system cracker to probe for information about the server, to determine possible weaknesses. For example, if an attacker had gleaned information about a page based on a prior form submission, they may attempt to override variables, or modify them:

The PHP errors which are normally returned can be quite helpful to a developer who is trying to debug a script, indicating such things as the function or file that failed, the PHP file it failed in, and the line number which the failure occurred in. This is all information that can be exploited. It is not uncommon for a php developer to use show_source(), highlight_string(),

or highlight_file() as a debugging measure, but in a live site, this can expose hidden variables, unchecked syntax, and other dangerous information. Especially dangerous is running code from known sources with built-in debugging handlers, or using common debugging techniques. If the attacker can determine what general technique you are using, they may try to brute-force a page, by sending various common debugging strings.

PHP Cookies

A cookie is often used to identify a user. A cookie is a small file that the server embeds on the user's computer. Each time the same computer requests a page with a browser, it will send the cookie too. With PHP, you can both create and retrieve cookie values.

Create Cookies With PHP

A cookie is created with the `setcookie()` function.

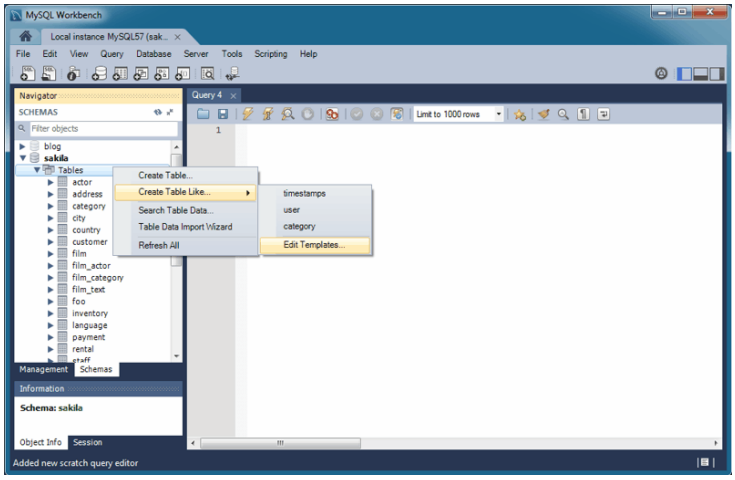
Syntax

```
setcookie(name, value, expire, path, domain, secure, httponly);
```

Building a Template Page

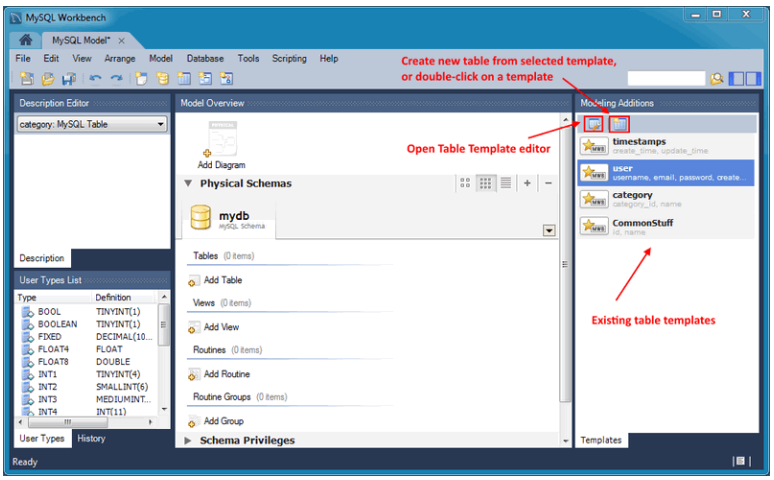
Define table templates with commonly used columns and settings to create new tables from either a live connection or while creating an EER model.

From the SQL editor, select Create Table Like from the Tables context menu, as shown in the next figure.



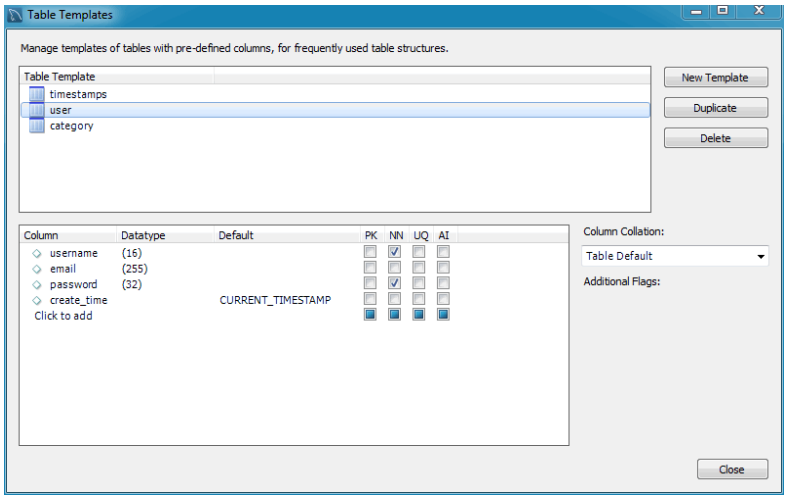
Or while modeling, click the "Open the table template editor" icon under Modeling Additions, as the following figure shows.

New Table Template: Modeling



After opening the Table Templates manager, make the adjustments and then click Apply to commit the changes. The following figure shows an example of column, data type, and default values that you can adjust for the user template.

Table Templates Manager



To open an existing template from the SQL editor, hover over the Create Table Like context menu and select the desired table template. For modeling, double-click on a template in the right modeling sidebar.