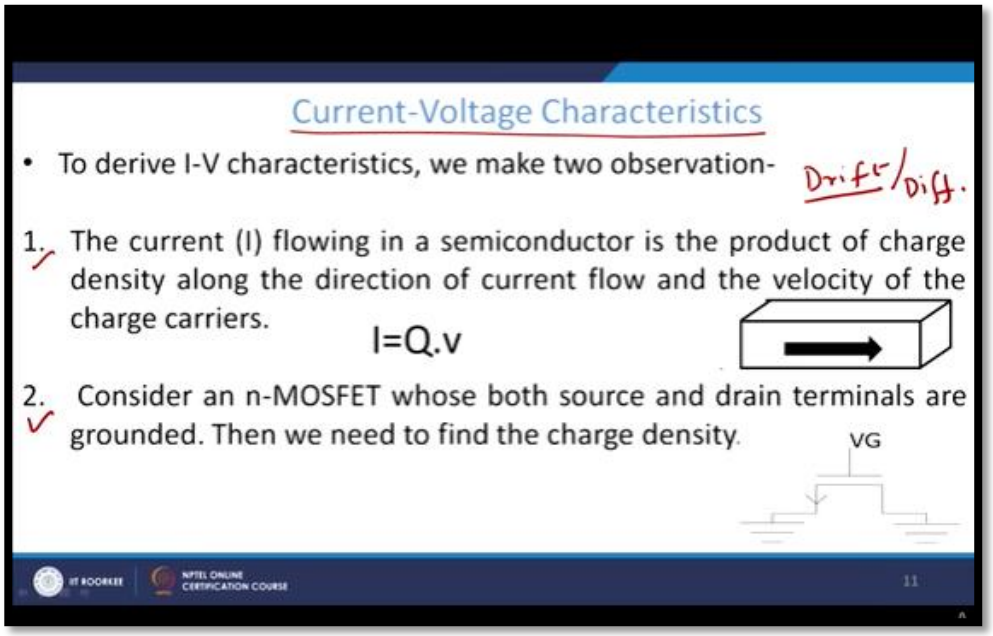
DAILY ASSESSMENT

Date:	**11/06/2020**	**Name:**	**Davis S. Patel**
Course:	**VLSI**	**USN:**	**4AL16EC045**
Topic:	**MOS transistor basics-II and III**	**Semester & Section:**	**8th - A**
GitHub Repository:	**Davis**		

FORENOON SESSION DETAILS

Image of session

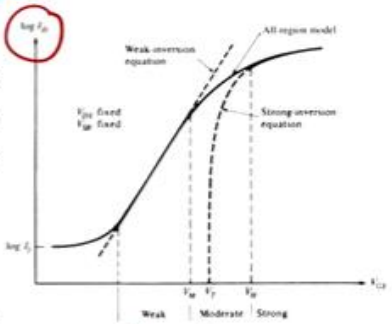


Sub-threshold Slope

- The slope of transfer characteristics determines how well a transistor can be turned off by reducing V_{GS}, for digital applications.

$$S = \frac{dV_{GS}}{d(\log I_D)}$$

- The conventional limit of S for MOSFET is 60mV/decade.



Source: Y. Tsividis and C. McAndrew, "The MOS Transistor," Oxford University Press, 2013.

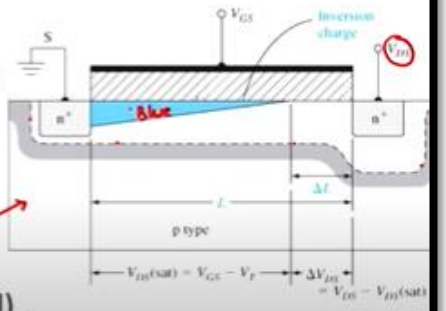
mod01lec03

Channel Length Modulation (CLM)

- Does really MOSFET acts as a constant current source in its saturation region?
  - The effective channel length gets modulated by V_{DS}.
  - Drain current is given by-

$$I_D = \mu_n C_{OX} \frac{W}{2L}(V_{GS} - V_{TH})^2(1+\lambda V_{DS})$$

where λ is CLM parameter (empirical).

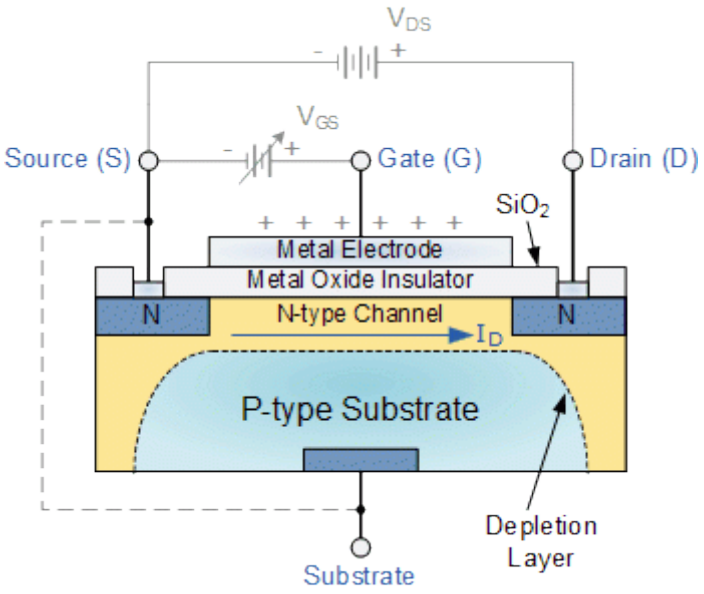


Source: Google Images

REPORT –

The MOSFET

MOSFET's operate the same as JFET's but have a gate terminal that is electrically isolated from the conductive channel.



As well as the Junction Field Effect Transistor (JFET), there is another type of Field Effect Transistor available whose Gate input is electrically insulated from the main current carrying channel and is therefore called an Insulated Gate Field Effect Transistor.

The most common type of insulated gate FET which is used in many different types of electronic circuits is called the Metal Oxide Semiconductor Field Effect Transistor or MOSFET for short.

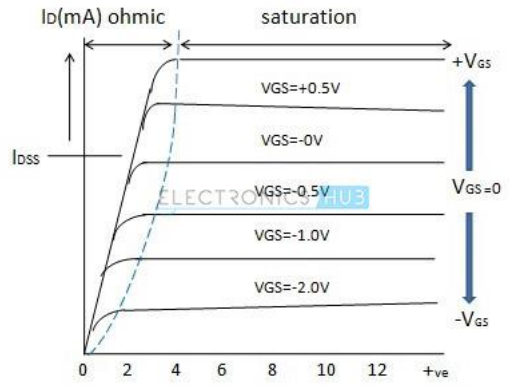
The IGFET or MOSFET is a voltage controlled field effect transistor that differs from a JFET in that it has a "Metal Oxide" Gate electrode which is electrically insulated from the main semiconductor n-channel or p-channel by a very thin layer of insulating material usually silicon dioxide, commonly known as glass.

This ultra-thin insulated metal gate electrode can be thought of as one plate of a capacitor. The isolation of the controlling Gate makes the input resistance of the MOSFET extremely high way up in the Mega-ohms (MΩ) region thereby making it almost infinite.

As the Gate terminal is electrically isolated from the main current carrying channel between the drain and source, "NO current flows into the gate" and just like the JFET, the MOSFET also acts like a voltage controlled resistor where the current flowing through the main channel between the Drain and Source is proportional to the input voltage. Also like the JFET, the MOSFETs very high input resistance can easily accumulate large amounts of static charge resulting in the MOSFET becoming easily damaged unless carefully handled or protected.

MOSFETs are three terminal devices with a Gate, Drain and Source and both P-channel (PMOS) and N-channel (NMOS) MOSFETs are available. The main difference this time is that 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.



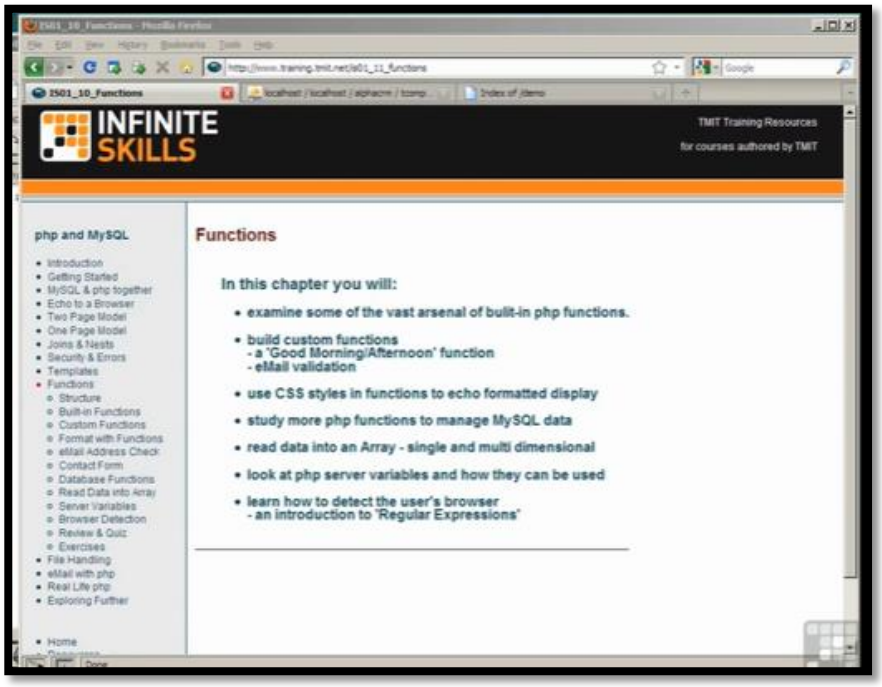
Characteristic Curve of Depletion Mode MOSFET

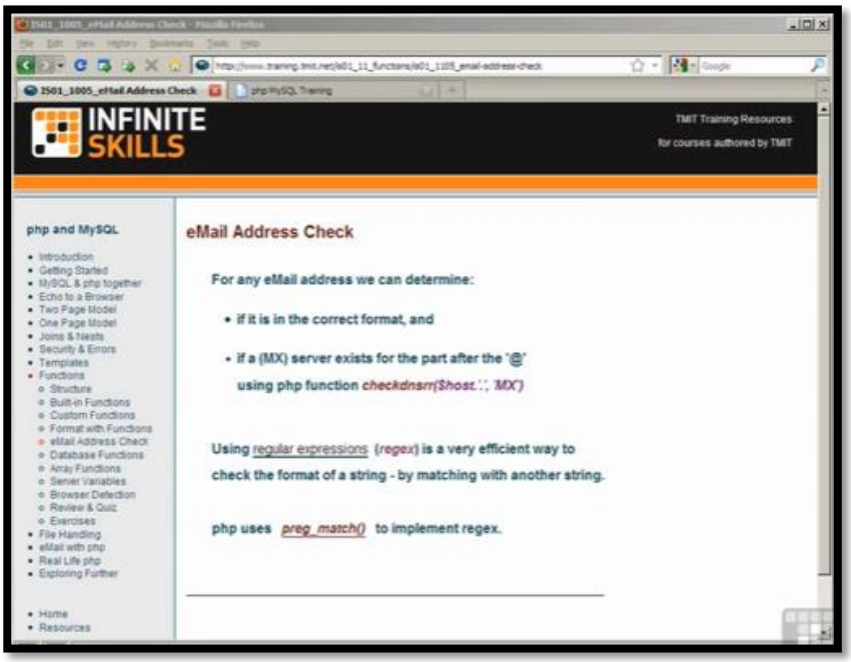
The V-I characteristics of the depletion mode MOSFET transistor are given above. This characteristic mainly gives the relationship between drain- source voltage (VDS) and drain current (ID). The small voltage at the gate controls the current flow through the channel.

The channel between drain and source acts as a good conductor with zero bias voltage at gate terminal. The channel width and drain current increases if the gate voltage is positive and these two (channel width and drain current) decreases if the gate voltage is negative.

DAILY ASSESSMENT

Date:	**11/06/2020**	**Name:**	**Davis S. Patel**
Course:	**MySQL**	**USN:**	**4AL16EC045**
Topic:	**PHP Functions Using External Files, And Images**	**Semester & Section:**	**8th - A**
GitHub Repository:	**Davis**		

AFTERNOON SESSION DETAILS
Image of session 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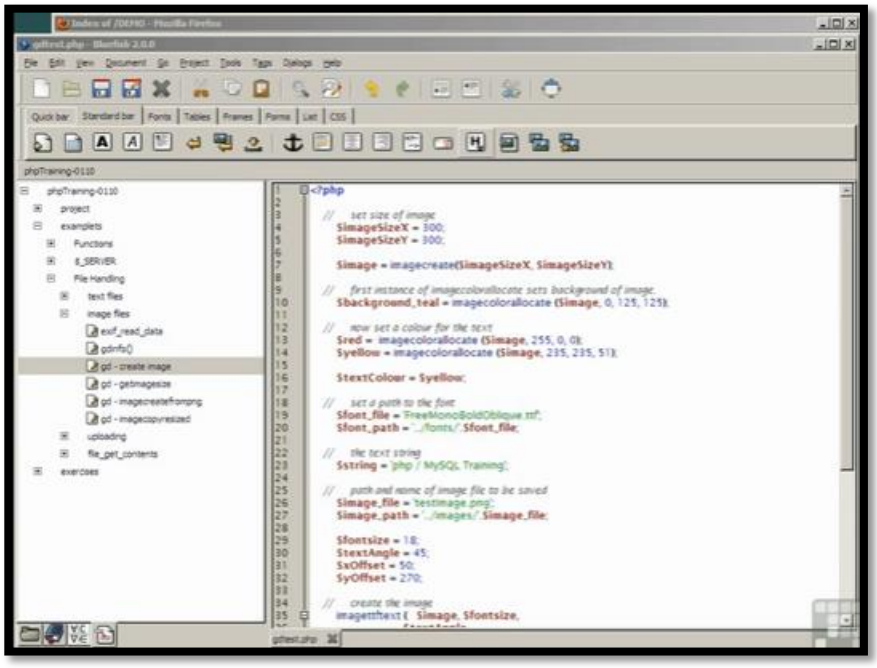
Database Functions
Array Functions
Server Variables
Browser Detection
Review & Quiz
Exercises
File Handling
eMail with php
Real Life php
Exploring Further
Home
Resources
eMail Address Check
For any eMail address we can determine:
if it is in the correct format, and
if a (MX) server exists for the part after the '@'
using php function checkdnsrr($host.'', 'MX')
Using regular expressions (regex) is a very efficient way to check the format of a string - by matching with another string.
php uses preg_match() to implement regex.


phpTraining-0110
project
examples
Functions
$_SERVER
File Handling
text files
image files
exif_read_data
gdinfo()
gd - create image
gd - getimagesize
gd - imagecreatefromjpeg
gd - imagecopyresized
uploading
file_get_contents
exercises
<?php
// set size of image
$imageSizeX = 300;
$imageSizeY = 300;
$image = imagecreate($imageSizeX, $imageSizeY);
// first instance of imagecolorallocate sets background of image
$background_teal = imagecolorallocate ($image, 0, 125, 125);
// now set a colour for the text
$red = imagecolorallocate ($image, 255, 0, 0);
$yellow = imagecolorallocate ($image, 235, 235, 51);
$textColour = $yellow;
// set a path to the font
$font_file = 'FreeMonoBoldOblique.ttf';
$font_path = '../fonts/'.$font_file;
// the text string
$string = 'php / MySQL Training';
// path and name of image file to be saved
$image_file = 'testimage.png';
$image_path = '../images/'.$image_file;
$fontsize = 18;
$textAngle = 45;
$xOffset = 50;
$yOffset = 270;
// create the image
imagettftext ($image, $fontsize,

REPORT –

A function is a reusable piece or block of code that performs a specific action.

Functions can either return values when called or can simply perform an operation without returning any value.

PHP has over 700 functions built in that perform different tasks.

Why use Functions?

- Better code organization – functions allow us to group blocks of related code that perform a specific task together.
- Reusability – once defined, a function can be called by a number of scripts in our PHP files. This saves us time of reinventing the wheel when we want to perform some routine tasks such as connecting to the database
- Easy maintenance- updates to the system only need to be made in one place.

Built in Functions

Built in functions are functions that exist in PHP installation package.

These built in functions are what make PHP a very efficient and productive scripting language.

The built in functions can be classified into many categories. Below is the list of the categories.

String Functions

These are functions that manipulate string data.

Date Function

The date function is used to format Unix date and time to human readable format.

array_slice

(PHP 4, PHP 5, PHP 7)

array_slice — Extract a slice of the array

Description

array_slice (array $array , int $offset [, int $length = **NULL** [, bool $preserve_keys = **FALSE**]]) : array

array_slice() returns the sequence of elements from the array array as specified by the offset and length parameters.

Upload and store an image in the Database with PHP

You can save your uploading images in the database table for later use e.g. display user profile or product image, create the image gallery, etc.

Creating Images Using PHP GD

The first step towards manipulation of images using PHP is loading them into memory as an image resource. This can be achieved by using different functions for different formats. All these functions have very similar names so they are easy to remember.

Create a New Image

The `imagecreatetruecolor()` function will prove helpful if you don't have an original image source that you want to manipulate. It accepts two integer parameters: a width and height. It will return an image resource if everything went as planned. The returned image resource is basically a black image with specified width and height.

Load an Image File

If you are planning on manipulating images that are already stored somewhere, you will benefit from using functions like `imagecreatefromjpeg()`, `imagecreatefrompng()`, and `imagecreatefromgif()`. These will create an image resource with all the data from the loaded image file. These functions accept a single parameter which specifies the location of the image you are loading either as a URL or as a file path.

Create an Image From a String

The GD library also allows you to create images from a string using the `imagecreatefromstring()` function in PHP. Remember that you will have to use `base64_decode()` on the given string before `imagecreatefromstring()`. The function can automatically detect if the image type is JPG, PNG, GIF, or another supported format.