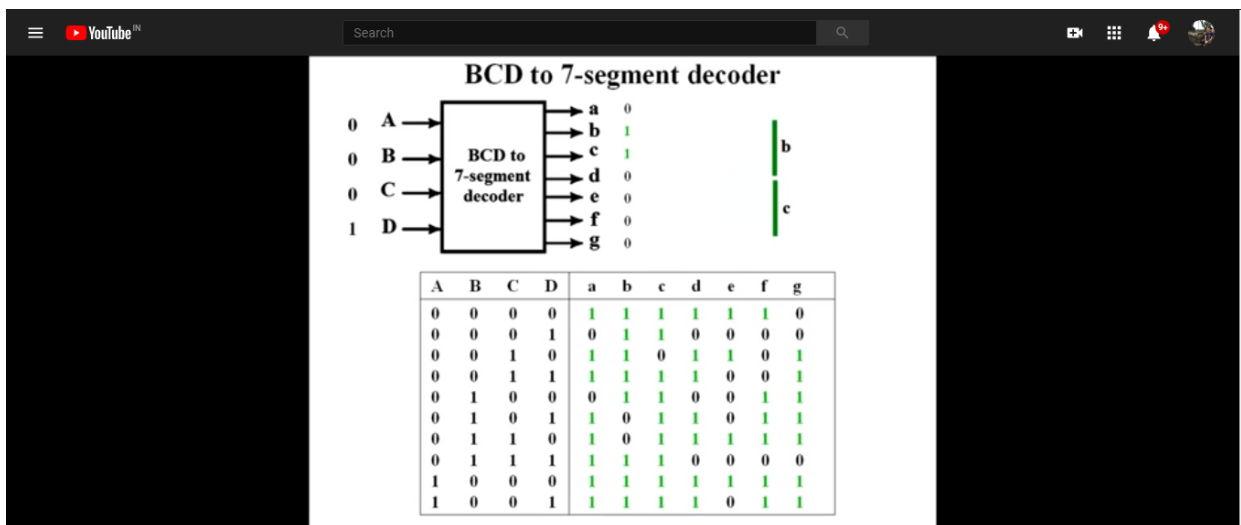
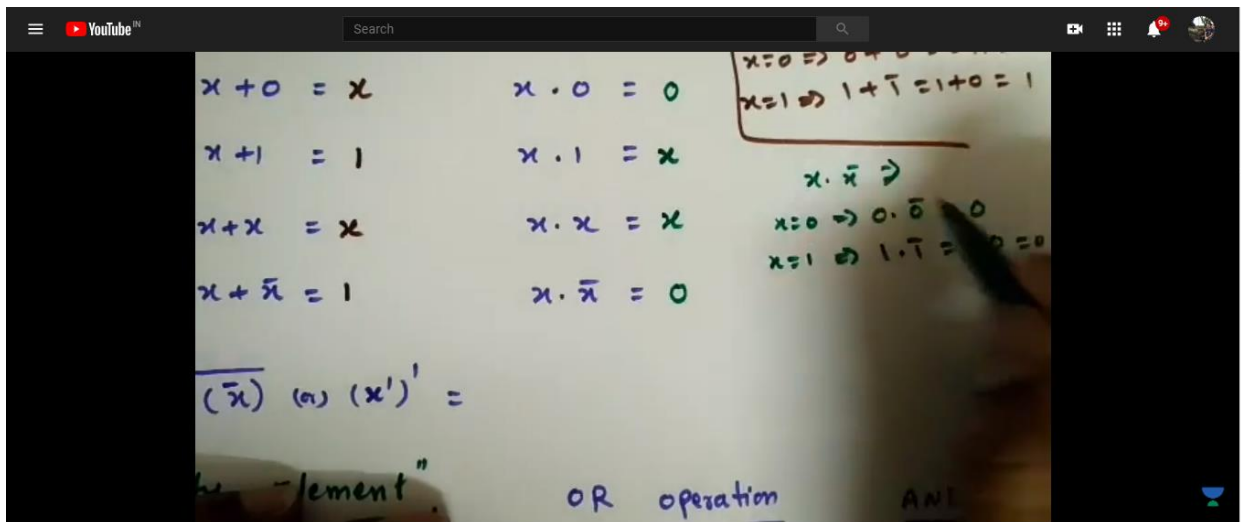


DAILY ASSESSMENT

Date:	28-May-2020	Name:	Swastik R Gowda
Course:	LOGIC DESIGN	USN:	4AL17EC091
Topic:	❖ Boolean equations for digital circuits. Combinational circuits: Conversion of MUX and Decoders to logic gates. ❖ Design of 7 segment decoder with common anode display	Semester & Section:	6 th Sem 'B' Sec
Github Repository:	swastik-gowda		

FORENOON SESSION DETAILS

Image of session



Report – Report can be typed or hand written for up to two pages.

COMBINATION CIRCUIT :

A combination circuit is one that has a "combination" of series and parallel paths for the Electricity to flow. Its properties are a combination of the two. In this example, the Parallel section of the circuit is like a sub-circuit and actually is part of an over-all series circuit.

BOOLEAN EQUATIONS FOR DIGITAL CIRCUITS

Boolean Algebra is an algebra, which deals with binary numbers & binary variables. The range of voltages corresponding to Logic 'High' is represented with '1' and the range of voltages with '0'.

POSTULATES AND BASIC LAWS OF BOOLEAN ALGEBRA

Boolean Postulates

Consider the binary numbers 0 and 1, Boolean variable x and its complement x' . Either the Boolean literal. The four possible logical OR operations among these literals and binary numbers are shown below.

- ❖ $x + 0 = x$
- ❖ $x + 1 = 1$
- ❖ $x + x = x$
- ❖ $x + x' = 1$

Similarly, the four possible logical AND operations among those literals and binary numbers are shown $x.1 = x$

- ❖ $x.0 = 0$
- ❖ $x.x = x$
- ❖ $x.x' = 0$

Boolean law

Following are the three basic laws of Boolean Algebra.

Commutative law

Associative law

Distributive law

Commutative Law

If any logical operation of two Boolean variables give the same result irrespective of the order of those

is said to be Commutative. The logical OR & logical AND operations of two Boolean variables x & $x + y = y + x$

$x.y = y.x$

The symbol '+' indicates logical OR operation. Similarly, the symbol '.' indicates logical AND operation. Commutative law obeys for logical OR & logical AND operations.

Associative Law

If a logical operation of any two Boolean variables is performed first and then the same operation is performed, then that logical operation is said to be Associative. The logical OR & logical AND are shown below.

$$x + y + z = x + (y + z) = (x + y) + z$$

$$x.y.z = x.(y.z) = (x.y).z$$

Associative law obeys for logical OR & logical AND operations.

Distributive Law

If any logical operation can be distributed to all the terms present in the Boolean function, then that is called the distributive law. The distribution of logical OR & logical AND operations of three Boolean variables x, y & z are shown below.

$$x.y + z = x.(y + z) = x.y + x.z$$

$$x + y.z = x + y.x + y.z = x + z$$

Distributive law obeys for logical OR and logical AND operations.

Boolean Algebra

The following two theorems are used in Boolean algebra.

- ❖ Duality theorem
- ❖ DeMorgan's theorem

Duality Theorem

This theorem states that the dual of the Boolean function is obtained by interchanging the logical AND with OR and zeros with ones. For every Boolean function, there will be a corresponding Dual function.

DeMorgan's Theorem

This theorem is useful in finding the complement of a Boolean function. It states that the complement of the product of variables is equal to the logical OR of each complemented variable.

DeMorgan's theorem with 2 Boolean variables x and y can be represented as

$$(x.y)' = x' + y'$$

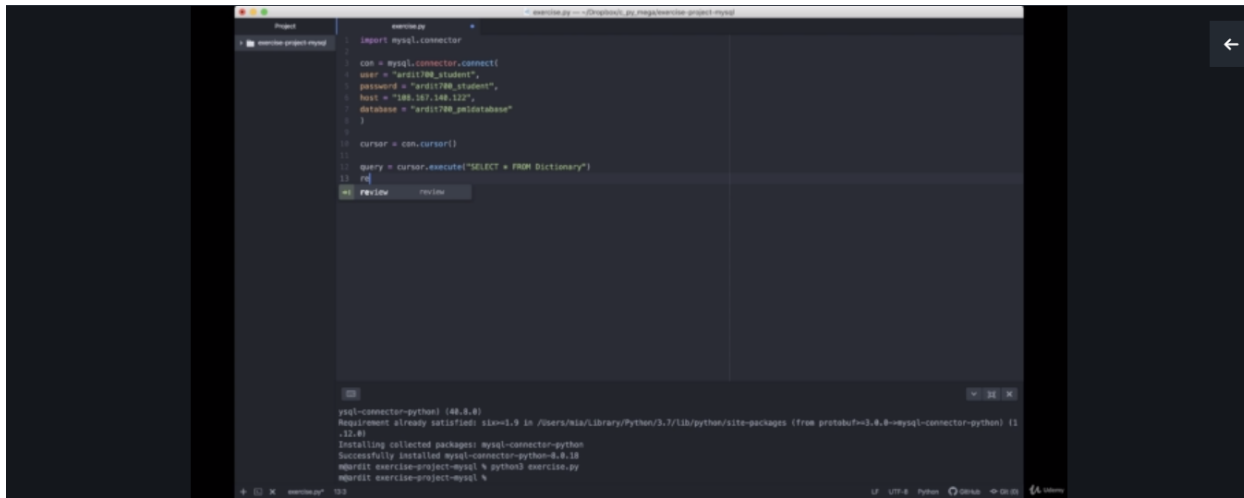
The dual of the above Boolean function is

$$x.y.x' = x' + y'$$

Date:	28-May-2020	Name:	Swastik R Gowda
Course:	PYTHON	USN:	4AL17EC091
Topic:	❖ Project Exercise with Python and mysql: Interactive English Dictionary ❖ Data Analysis with Pandas	Semester & Section:	6 th Sem 'B' Sec

AFTERNOON SESSION DETAILS

Image of session



Report – Report can be typed or hand written for up to two pages.

SQL statement in Python code:

```
query = cursor.execute("SELECT * FROM Dictionary WHERE Expression = 'rain'")
```

That statement retrieved all the rows of the Dictionary table where the value of the column Expression was rain. The string inside cursor.execute() is SQL code that Python sends to the database. That kind of language is understood by the database.

Here are some more examples of SQL queries that you can try out from within your Python script just like we did previously:

Get all rows where the value of the column Expression starts with r:

```
"SELECT * FROM Dictionary WHERE Expression LIKE 'r%'"
```

Get all rows where the value of the column Expression starts with rain:

```
"SELECT * FROM Dictionary WHERE Expression LIKE 'rain%'"
```

All rows where the length of the value of the column Expression is less than four characters:

```
"SELECT * FROM Dictionary WHERE length(Expression) < 4"
```

All rows where the length of the value of the column Expression is four characters:

```
"SELECT * FROM Dictionary WHERE length(Expression) = 4"
```

All rows where the length of the value of the column Expression is greater than 1 but less than 4 characters:

```
"SELECT * FROM Dictionary WHERE length(Expression) > 1 AND length(Expression) < 4"
```

All rows of column Definition where the value of the column Expression starts with r:

```
"SELECT Definition FROM Dictionary WHERE Expression LIKE 'r%'"
```