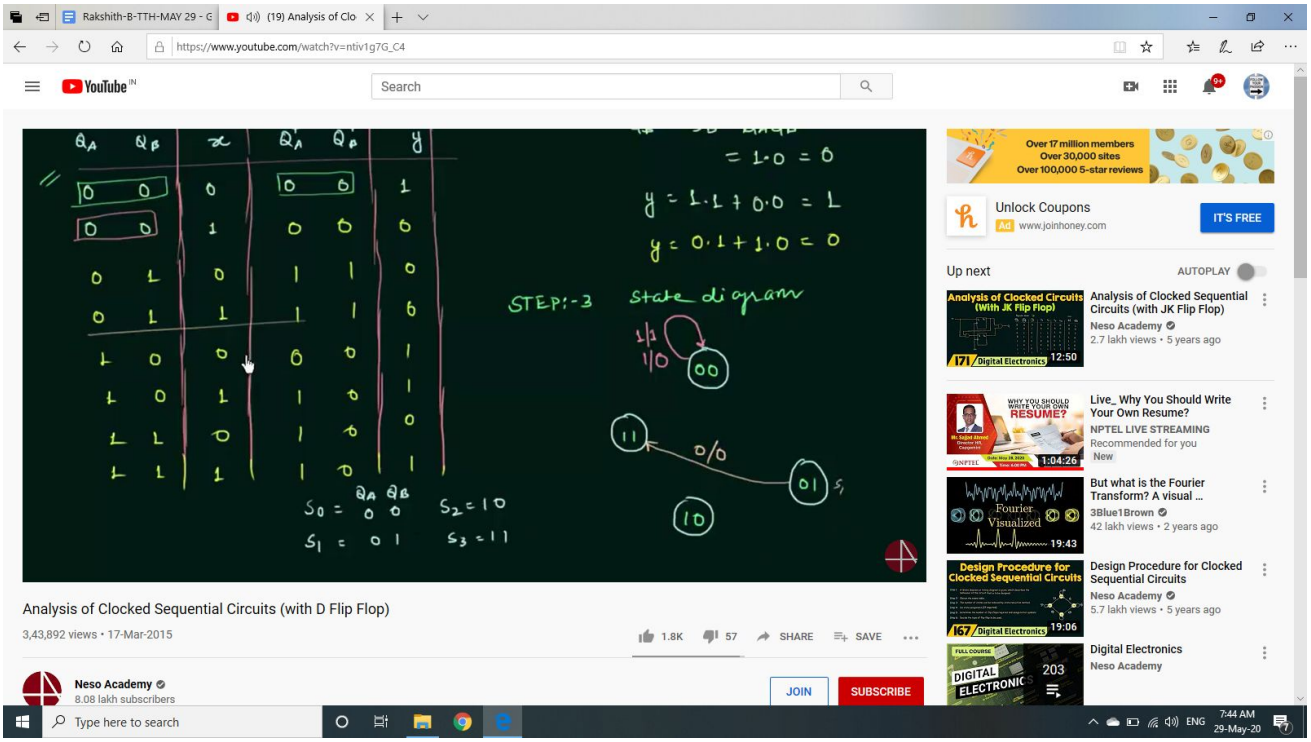
REPORT MAY 29

Date:	29 MAY 2020	Name:	Rakshith B
Course:	Logic Design	USN:	4AL16EC409
Topic:	Analysis of Clocked Sequential circuits,Digital Clock Design	Semester & Section:	6th SEM B
Github Repository:	Rakshith-B		

FORENOON SESSION DETAILS

Image of session



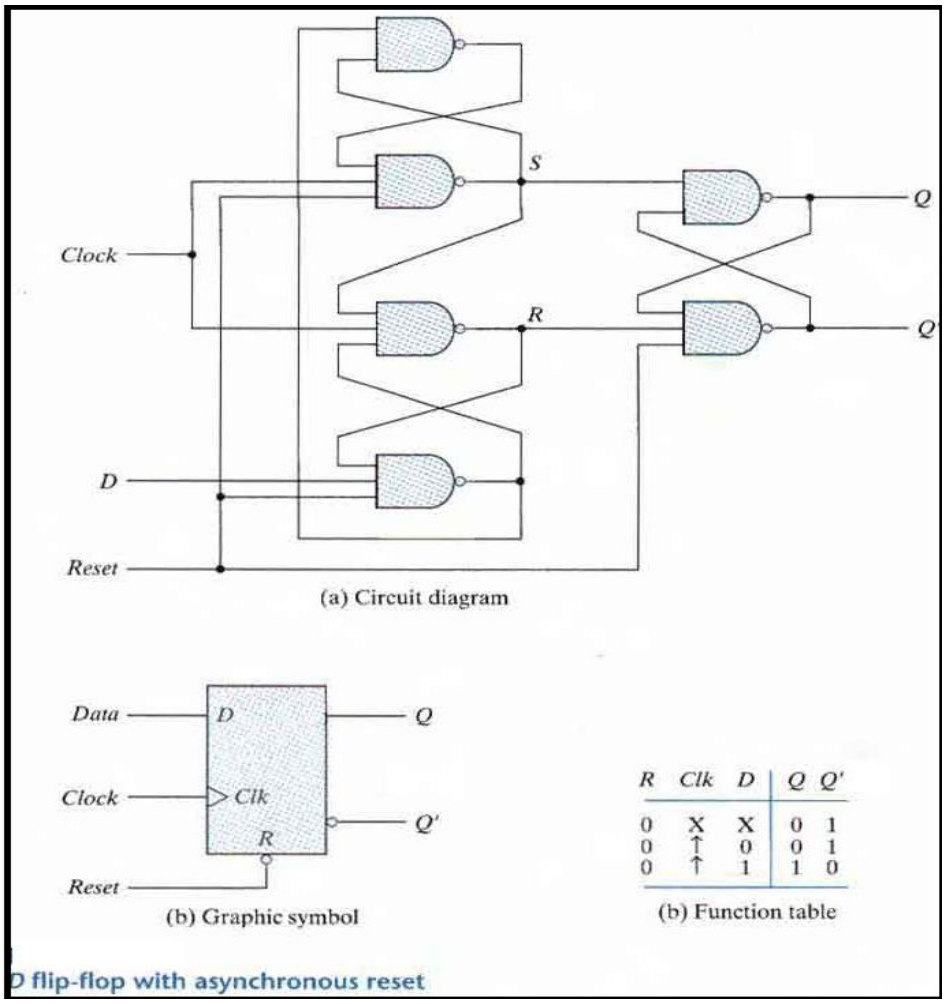
Report –

Analysis of Clocked Sequential Circuits

- Some flip-flops have asynchronous inputs that are used to force the flip-flop to a particular state independently of the clock
- The input that sets the flip-flop to 1 is called preset or direct set. The input that clears the flip-flop to 0 is called clear or direct reset
- The information available in a state table can be represented graphically in the form of a state diagram. In this type of diagram a state is represented by a circle and the (clock-triggered) transitions between states are indicated by directed lines connecting the circles.

- **The time sequence of inputs, outputs, and flip-flop states can be enumerated in a state table (transition table). The table has four parts present state, next state, inputs and outputs.**
- **In general a sequential circuit with 'm' flip-flops and 'n' inputs needs 2^{m+n} rows in the state table.**

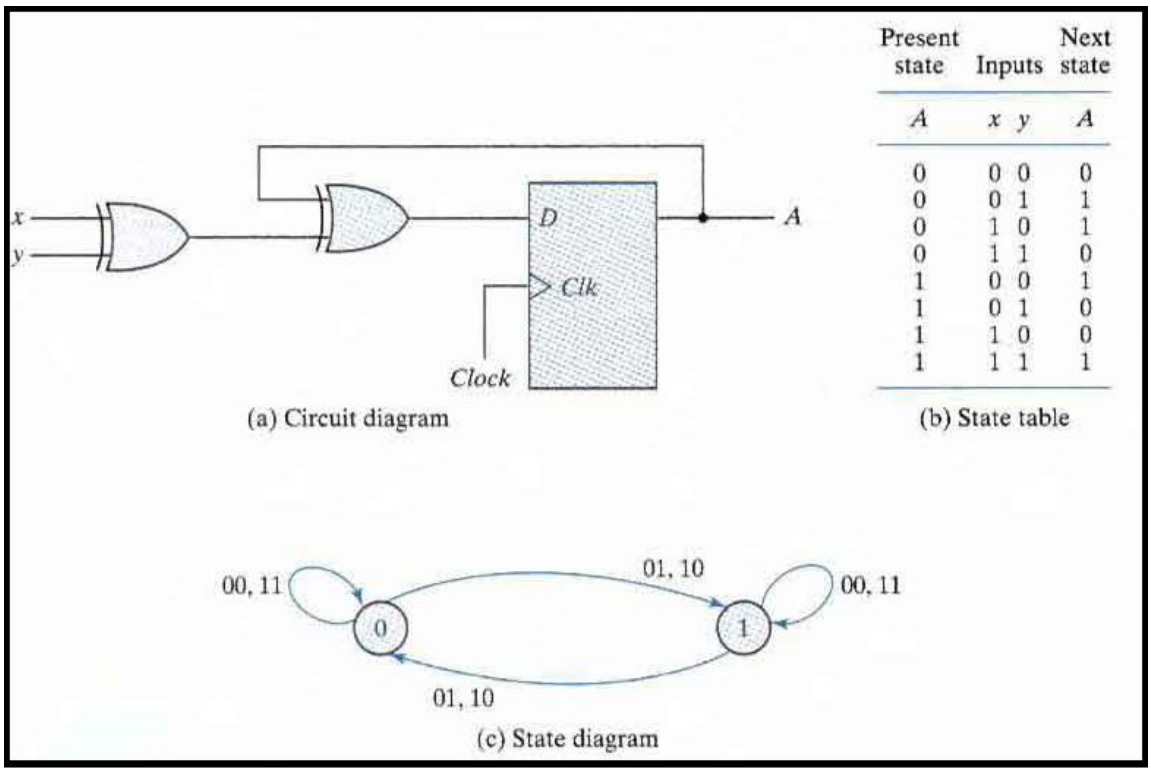
Positive Edge Triggered D Flip-flop



- **When the reset input is 0 it forces output Q' to Stay at 1 which clears output Q to 0 thus resetting the flip-flop.**
- **Two other connections from the reset input ensure that the S input of the third SR latch stays at logic 1 while the reset input is at 0 regardless of the values of D and Clk.**
- **Function table suggests that:**
  - **When R = 0, the output is set to 0 (independent of D and Clk).**
  - **The clock at Clk is shown with an upward arrow to indicate that the flip-flop triggers on the positive edge of the clock.**
  - **The value in D is transferred to Q with every positive-edge clock signal provided that R = 1.**

Analysis with D Flip-Flops

- The input equation of a D Flip-flop is given by $D_A = A \oplus x \oplus y$. D_A means a D Flip-flop with output A.
- The x and y variables are the inputs to the circuit. No output equations are given, which implies that the output comes from the output of the flip-flop.
- The state table has one column for the present state of flip-flop 'A' two columns for the two inputs, and one column for the next state of A.
- The next-state values are obtained from the state equation $A(t + 1) = A \oplus x \oplus y$.
- The expression specifies an odd function and is equal to 1 when only one variable is 1 or when all three variables are 1.



(a) Circuit diagram

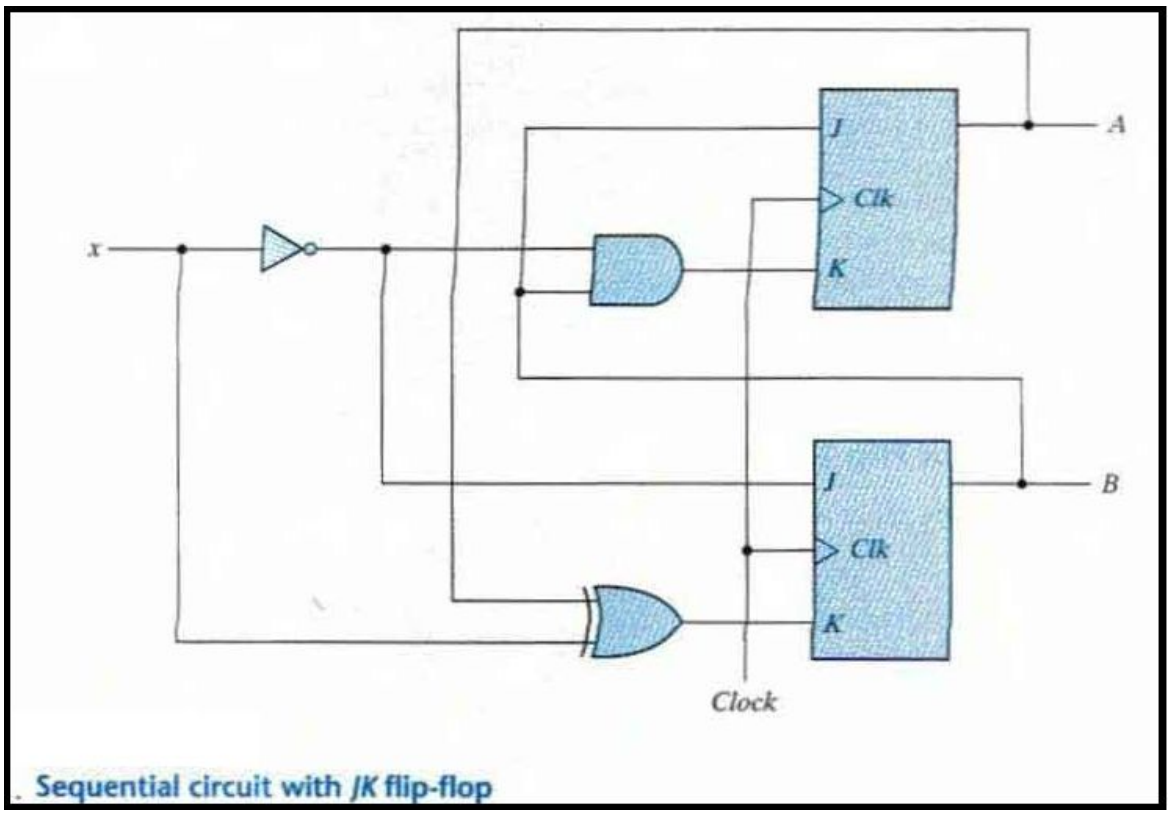
Present state	Inputs		Next state
A	x	y	A
0	0	0	0
0	0	1	1
0	1	0	1
0	1	1	0
1	0	0	1
1	0	1	0
1	1	0	0
1	1	1	1

(b) State table

(c) State diagram

Analysis with JK Flip-Flops

- The circuit can be specified by the flip-flop input equations:
  - $J_A = B; K_A = Bx'$
  - $J_B = x'; K_B = A'x + Ax' = A \oplus x$
- The next state of each flip-flop is evaluated from the corresponding J and K inputs and the characteristic table of the JK flip-flop listed as:
  - When J = 1 and K = 0 the next state is 1
  - When J = 0 and K = 1 the next state is 0
  - When J = 0 and K = 0 there is no change of state and the next-state value is the same as that of the present state.
  - When J = K = 1, the next-state bit is the complement of the present-state bit.

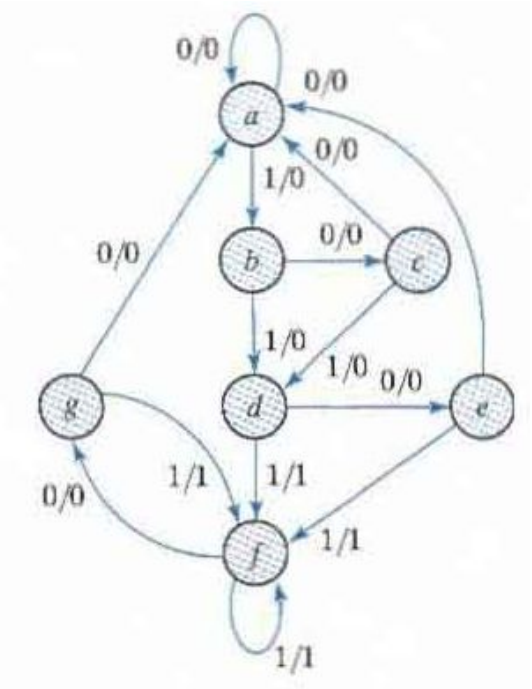


Sequential circuit with *JK* flip-flop

State Reduction and Assignment

- **Two sequential circuits may exhibit the same input-output behavior but have a different number of internal states in their state diagram.**
- **Certain properties of sequential circuits may simplify a design by reducing the number of gates and flip-flops it uses. Reducing the number of flip-flops reduces the cost of a circuit.**
- **The reduction in the number of flip-flops in a sequential circuit is referred to as the state reduction problem. State-reduction algorithms are concerned with procedures for reducing the number of states in a state table while keeping the external input-output requirements unchanged**

Example of State Reduction:



State Table

	Next State		Output	
Present State	$x = 0$	$x = 1$	$x = 0$	$x = 1$
a	a	b	0	0
b	c	d	0	0
c	a	d	0	0
d	e	f	0	1
e	a	f	0	1
f	g	f	0	1
g	a	f	0	1

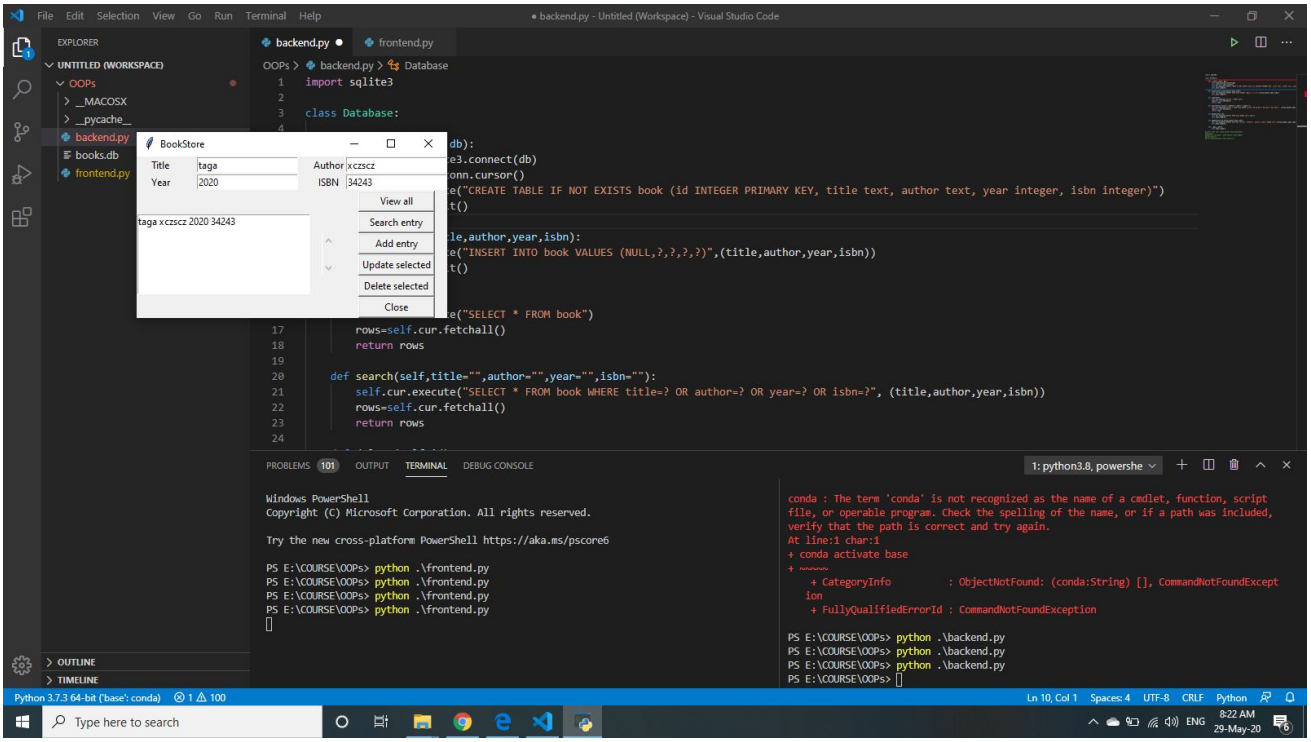
Date: 29 MAY 2020 **Name:RAKSHITH B**

Course: Python On Udemy **USN:4AL16EC409**

Topic: Object Oriented Programming **Semester & Section:6 B**

AFTERNOON SESSION DETAILS

Image of session:Output



Report –

GUI in OOP Design:

Frontend.py

```
from tkinter import *
from backend import Database

database=Database("books.db")

def get_selected_row(event):
    global selected_tuple
    index=list1.curselection()[0]
    selected_tuple=list1.get(index)
    e1.delete(0,END)
    e1.insert(END,selected_tuple[1])
    e2.delete(0,END)
    e2.insert(END,selected_tuple[2])
    e3.delete(0,END)
    e3.insert(END,selected_tuple[3])
    e4.delete(0,END)
    e4.insert(END,selected_tuple[4])

def view_command():
    list1.delete(0,END)
    for row in database.view():
        list1.insert(END,row)

def search_command():
    list1.delete(0,END)
    for row in
database.search(title_text.get(),author_text.get(),year_text.get(),isbn_text.
get()):
        list1.insert(END,row)

def add_command():

database.insert(title_text.get(),author_text.get(),year_text.get(),isbn_text.
get())
    list1.delete(0,END)
```

```
list1.insert(END,(title_text.get(),author_text.get(),year_text.get(),isbn_tex
t.get()))

def delete_command():
    database.delete(selected_tuple[0])

def update_command():

database.update(selected_tuple[0],title_text.get(),author_text.get(),year_tex
t.get(),isbn_text.get())

window=Tk()

window.wm_title("BookStore")

l1=Label(window,text="Title")
l1.grid(row=0,column=0)

l2=Label(window,text="Author")
l2.grid(row=0,column=2)

l3=Label(window,text="Year")
l3.grid(row=1,column=0)

l4=Label(window,text="ISBN")
l4.grid(row=1,column=2)

title_text=StringVar()
e1=Entry(window,textvariable=title_text)
e1.grid(row=0,column=1)

author_text=StringVar()
e2=Entry(window,textvariable=author_text)
e2.grid(row=0,column=3)

year_text=StringVar()
e3=Entry(window,textvariable=year_text)
e3.grid(row=1,column=1)
```

```
isbn_text=StringVar()
e4=Entry(window,textvariable=isbn_text)
e4.grid(row=1,column=3)

list1=Listbox(window, height=6,width=35)
list1.grid(row=2,column=0,rowspan=6,columnspan=2)

sb1=Scrollbar(window)
sb1.grid(row=2,column=2,rowspan=6)

list1.configure(yscrollcommand=sb1.set)
sb1.configure(command=list1.yview)

list1.bind('<<ListboxSelect>>',get_selected_row)

b1=Button(window,text="View all", width=12,command=view_command)
b1.grid(row=2,column=3)

b2=Button(window,text="Search entry", width=12,command=search_command)
b2.grid(row=3,column=3)

b3=Button(window,text="Add entry", width=12,command=add_command)
b3.grid(row=4,column=3)

b4=Button(window,text="Update selected", width=12,command=update_command)
b4.grid(row=5,column=3)

b5=Button(window,text="Delete selected", width=12,command=delete_command)
b5.grid(row=6,column=3)

b6=Button(window,text="Close", width=12,command=window.destroy)
b6.grid(row=7,column=3)
window.mainloop()
```

Backend.py

```
import sqlite3

class Database:

    def __init__(self, db):
        self.conn=sqlite3.connect(db)
        self.cur=self.conn.cursor()
        self.cur.execute("CREATE TABLE IF NOT EXISTS book (id INTEGER PRIMARY
KEY, title text, author text, year integer, isbn integer)")
        self.conn.commit()

    def insert(self,title,author,year,isbn):
        self.cur.execute("INSERT INTO book VALUES
(NULL,?,?,?,?)",(title,author,year,isbn))
        self.conn.commit()

    def view(self):
        self.cur.execute("SELECT * FROM book")
        rows=self.cur.fetchall()
        return rows

    def search(self,title="",author="",year="",isbn=""):
        self.cur.execute("SELECT * FROM book WHERE title=? OR author=? OR
year=? OR isbn=?", (title,author,year,isbn))
        rows=self.cur.fetchall()
        return rows

    def delete(self,id):
        self.cur.execute("DELETE FROM book WHERE id=?",(id,))
        self.conn.commit()

    def update(self,id,title,author,year,isbn):
        self.cur.execute("UPDATE book SET title=?, author=?, year=?, isbn=?
WHERE id=?",(title,author,year,isbn,id))
        self.conn.commit()

    def __del__(self):
        self.conn.close()
```

```
#insert("The Sun","John Smith",1918,913123132)
#delete(3)
#update(4,"The moon","John Smooth",1917,99999)
#print(view())
#print(search(author="John Smooth"))
```

Report of Webinar on Preparing for Next Normal:by Mr.Mohan Kumar

- **Case Study**
- **Crisis**
  - ❑ **Danger**
  - ❑ **Opportunity**
- **61% of Enterprise Line of Business**

Challenges During Times of Disruption

- **Organisational Barriers**
- **Shifting Customers Emotions**

Business Impact:

- **Spotting Disruptive Business and People Early**
- **The Urgency of Innovations**
- **Continuous Evaluation of Your Social Media Strategy**
- **Continuous Education Critical**
- **Technicians**
- **Customer Experience as a new Battlefield**
- **Challenging your Economic Model**

Next Normal
React ,Reimage and Realign

How Organisations React to the Covid 19?
Trust->Compassion->Stability->Hope
"We cannot solve problems in same Thinking "-Einstein

- **Resilient Dynamism**
- **Digital Transmission**
- **Economic Crisis**

Digital Transmission in Education

- **Institution**
- **Forcefully**

Exhibit->Design->Thinking->Innovation.

Skills:

- **Niche**
- **Markable**

- **Commodify**