J.B. INSTITUTE OF ENGINEERING & TECHNOLOGY

(UGC AUTONOMOUS)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Innovations in Teaching & Learning Process

Faculty Name: Dr. P. Srinivasa Rao
Designation: Professor & Head
Mind Map:

Flipped Classroom:

https://onlinecourses.nptel.ac.in/noc20_cs08/unit?unit=2&lesson=15

Tutorial Sheet Based on Video Lecture:

Which of the following is true?

a. Java uses only interpreter.
b. Java uses only compiler.
c. Java uses both interpreter and compiler.
d. None of the above.

- ☐ a.
- ☐ b.
- ☐ c.
- ☐ d.

A Java file with extension '.class' contains

a. Java source code
b. HTML tags
c. Java Byte code
d. A program file written in Java programming language

- ☐ a.
- ☐ b.
- ☐ c.
- ☐ d.

1 point

Which of the following features are **not** common in both Java and C++?

a. The class declaration.
b. The access modifiers.
c. The encapsulation of data and methods.
d. Multiple inheritancefrom class

- ☐ a.
- ☐ b.
- ☐ c.
- ☐ d.

What is the value returned by the method `f()` defined below ?

```
public static int f(intx, int y){return (x>y) ? y : x;}
```

a. The sum of x and y that is, x + y.
b. The difference of x and y that is, x - y.
c. The maximum of x and y that is, the larger value of x and y.
d. The minimum of x and y that is, the smaller value of x and y.

- ☐ a.
- ☐ b.
- ☐ c.
- ☐ d.

A platform is the hardware or software environment in which a program runs. Which of the following is/are Java platform component(s)?

a. HTML
b. Java Virtual Machine
c. Java Application Programming Interface (API)
d. HotJava

- ☐ a.
- ☐ b.
- ☐ c.
- ☐ d.

Consider the following program.

```
public class Question1{
      public static void main(String args[]){
            for(int a=1;a<3;a+=3){
                  System.out.print(--a);
            }
      }
}
```

What will be the output of the program if it is executed?

a. 0
b. 01
c. 012
d. 0123

- ☐ a.
- ☐ b.
- ☐ c.
- ☐ d.

Following is a piece of code where some parts of a statement is missing:

```
public class Question3{
      public static void main(String args[]){
            charnptel[]={'N','P','T','E','L'};
            System.out.print(_________);
      }
}
```

In the following, some options are given. You have to choose the correct option for the argument in *System.out.print()* function to print the first and the last characters in the array nptel.

a. nptel[nptel.length-1] + nptel[0]
b. nptel[0] + nptel[nptel.length-1]
c. "" + nptel[0] + nptel[nptel.length-1]
d. "" + nptel[nptel.length-1] + nptel[0]

- [ ] a.
- [ ] b.
- [ ] c.
- [ ] d.

Which of the following **cannot** be used for a variable name in Java?

a. identifier
b. final
c. malloc
d. calloc

- [ ] a.
- [ ] b.
- [ ] c.
- [ ] d.

```
publicclass Operator3 {
public static void main(String[] args) {
          String str1="NPTEL";
          String str2="java";
          System.out.println(str1+str2); //Statement 1
          int a=20;
          int b=10;
          System.out.println(a+b);          //Statement 2
}
}
```

Which of the following statement(s) is/are correct?

a. Except + (plus) operator all other operators are overloaded in java.
b. The output of the Statement 1 is
   NPTELjava
c. The output of the Statement 2 is
   1020
d. The output of the Statement 2 is
   30

- [ ] a.
- [ ] b.
- [ ] c.
- [ ] d.

Which of the following is an incorrect array declaration?

a. int[] a = new int[20];
b. int [ ] a;
c. `int[][] a = new int[20];`
d. `int[][] a = {{1, 2, 4}, {1, 2, 4}};`

- [ ] a.
- [ ] b.
- [ ] c.
- [ ] d.

Test the Coding skills

Complete the code segment **to find the perimeter and area of a circle given a value of radius**. You should use Math. PI constant in your program. If radius is zero or less than zero, then print " please enter nonzero positive number ".

Sample Test Cases

	Input	**Output**
Test Case 1	2.5	15.707963267948966 19.634954084936208
Test Case 2	-1	please enter nonzero positive number

Activity based Learning

Prepare a class diagram using inheritance concepts for the college administration (College, dept., office, UG ,PG students,)

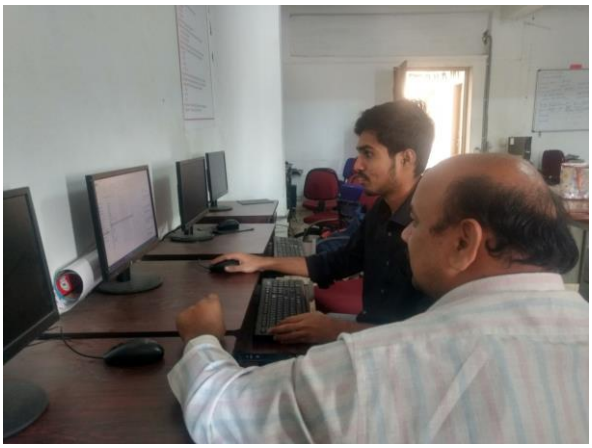
Some of the Inputs College has Depts

Depts have UG and PG students

Everyone has name, hall ticket no, gender, address etc.

Learning by Doing: CSE II-B

Java concept: Method Overriding



We are giving number of examples on each topic to practice by the students, and we are helping where they are unable to do new things by using the concepts explained

Reproducibility of the Dr P Srinivasa Rao Ph.D Work

The Following Projects are being offered for the students to reuse or to extend the work

1 Framework for a scalable distributed system

2 Decentralized Dynamic load balancing in Distributed systems

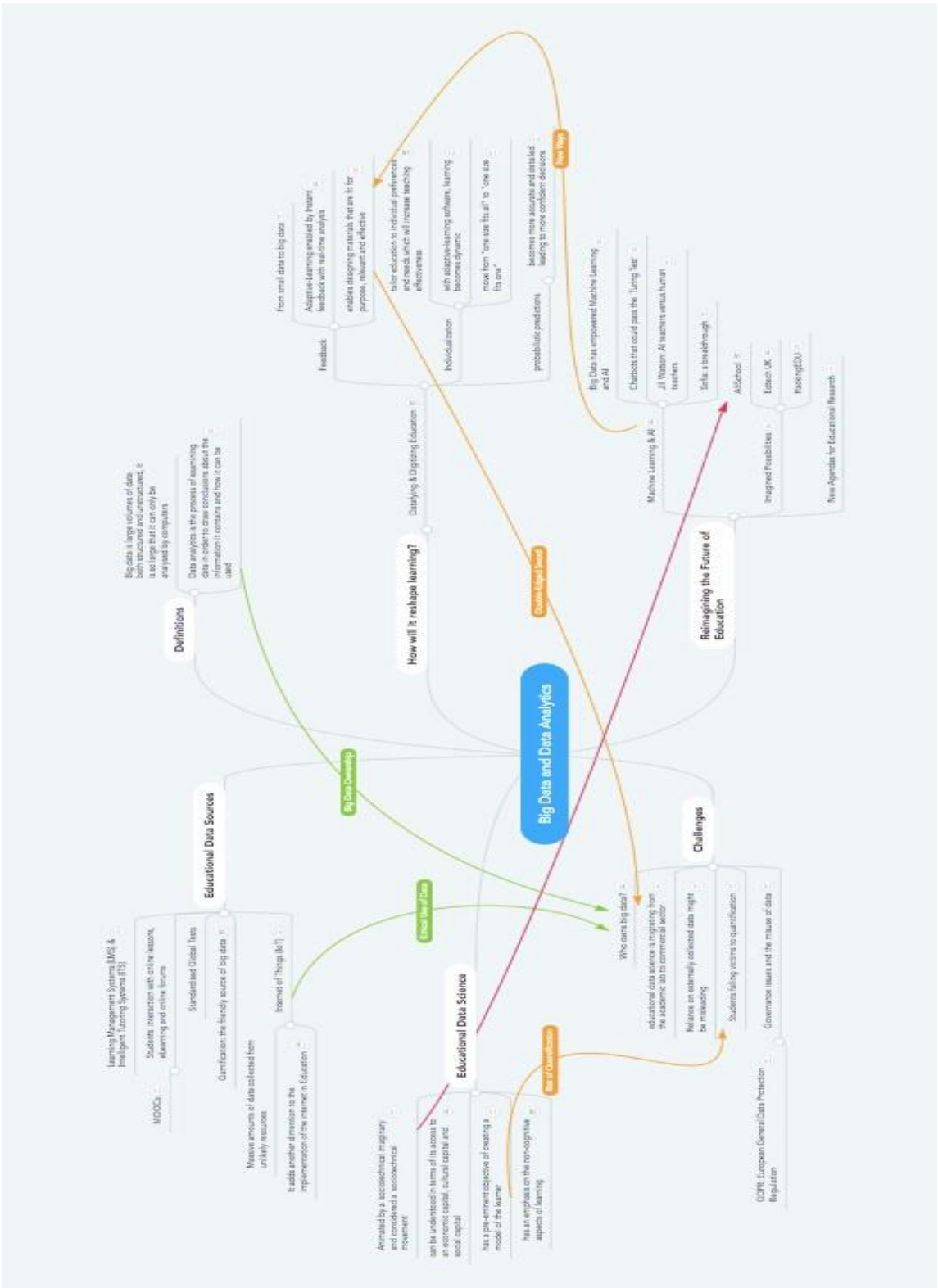
3 Overview of Distributed dynamic load balancing algorithms

4 Decentralized Dynamic Load balancing in cloud computing

Faculty Name: Dr. G. Arun Sampaul Thomas
Designation: Associate Professor

1. MIND MAP

Name of the Subject	:	Big Data Analytics
Faculty Name	:	Dr.G.Arun Sampaul Thomas
AY / Class / Sem	:	2019-20 / IV CSE 'B' / I



2. FLIPPED CLASS ROOMS

Name of the Subject : Big Data Analytics
Faculty Name : Dr.G.Arun Sampaul Thomas
AY / Class / Sem : 2019-20 / IV CSE 'B' / I

A) VIDEO TUTORIALS:

https://www.youtube.com/watch?v=SqvAaB3vK8U

https://www.youtube.com/watch?v=x-PCNX4prLA

B) TUTORIAL SHEETS:
(Question with Key based on the video tutorials)

1. YARN's dynamic allocation of cluster resources improves utilization over more static___rules used in early versions of Hadoop.
   a) Hive **b) MapReduce** c) Impala d) All of the mentioned

2. What is the name of the programming framework originally developed by Google that supports the development of applications for processing large data sets in a distributed computing environment?
   a) **MapReduce** **b)** Hive. C) Zookeeper

3. What are the main components of Big Data?

   a) MapReduce b) HDFS c) YARN d) **All of these**

4. Above the file systems comes the___engine, which consists of oneJob Tracker, to which client applications submit MapReduce jobs.
   a) **MapReduce** b) Google c) Functional programmingd) Facebook

5. A_____node acts as the Slave and is responsible for executing a Taskassigned to it by the Job Tracker.
   a) MapReduce b) Mapper **c) Task Tracker** d) Job Tracker

6. Point out the correct statement :
   a) **MapReduce tries to place the data and the compute as close as possible**
   b) Map Task in MapReduce is performed using the Mapper() function
   c) Reduce Task in MapReduce is performed using the Map() function
   d) All of the mentioned

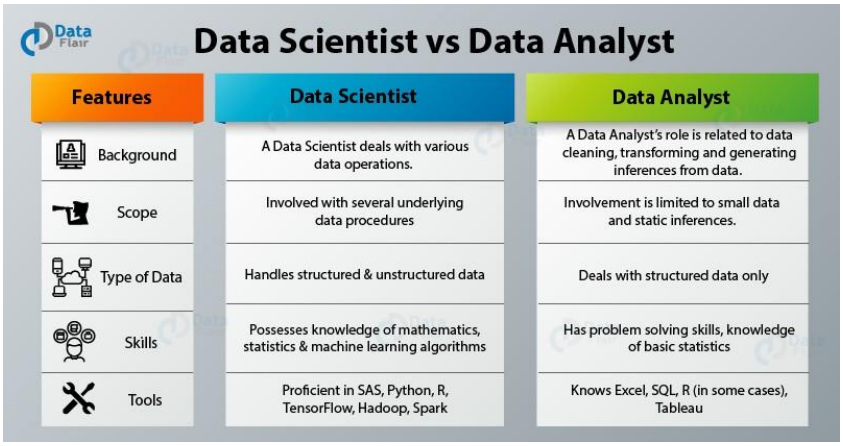
3. ACTIVITY BASED LEARNING

Name of the Subject : Big Data Analytics
Faculty Name : Dr.G.Arun Sampaul Thomas
AY / Class / Sem : 2019-20 / IV CSE 'B' / I

Topic for Team Debate among Students:

Who is more responsible for Big Data Processing – Data Scientist (or) Data Analyst?

1. Asked the students to split into two teams supporting data Scientist one and the Data Analyst second.
2. Asked them to prepare for ten minutes as a two different team by referring web resources.
3. Students were presented the following features for the discussion of Data Scientist / Data Analyst.
   - Background, scope, Type of Data, Skill sets, Tools used
4. Finally it was concluded with ***Dr.G.Arun Sampaul Thomas*** that the two Data operators have equal importance in the Big Data field.

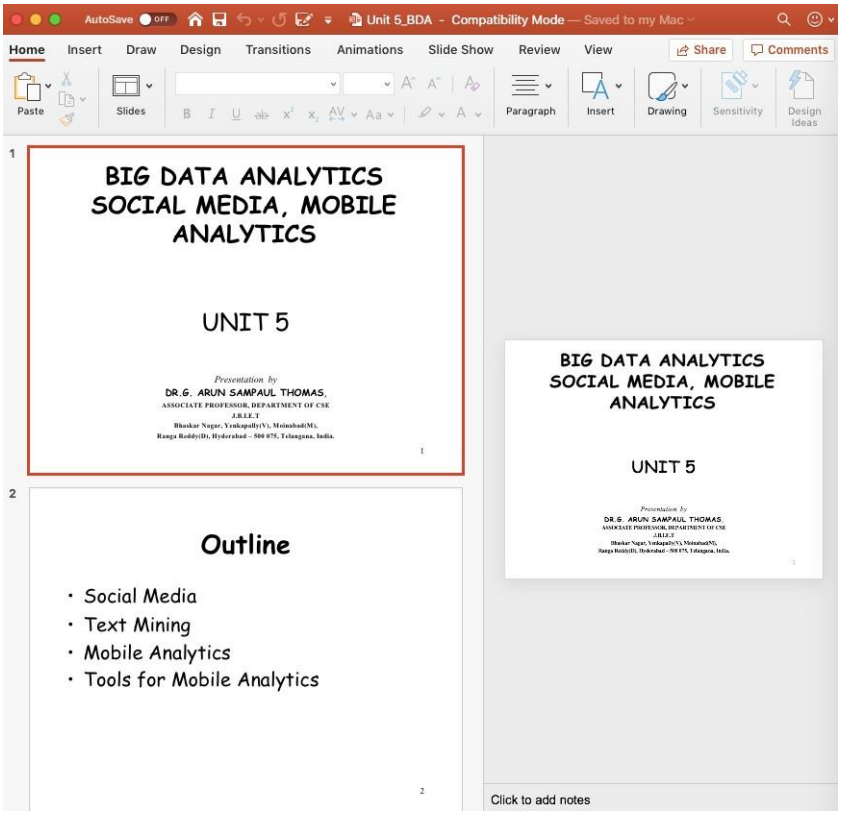


Ref: https://data-flair.training/blogs/data-scientist-vs-data-analyst/

Snapshots during Debate

4. PRESENTATION BY PPT's

Name of the Subject : Big Data Analytics
Faculty Name : Dr.G.Arun Sampaul Thomas
AY / Class / Sem : 2019-20 / IV CSE 'B' / I



Unit 3, 4, 5 – PPT's Enclosed

5. ASSIGNMENTS

BIG DATA ANALYTICS (IV CSE – B)

ASSIGNMENT – 1

Total Marks: 10

Date of Announcement: 23.08.19

Date of Submission: 30.08.19

Q. No	Question	CO	Blooms Taxonomy	Marks
1.	Take any one of the Shopping Applications either Android / IOS App. Define the Roles, activities of the following people. • Data Engineer • Data Analyst • Data Scientist **Key:** • **Example Individual App. Selection and its analysis (5)** • **Data engineer, Analyst & Scientist roles definition (5)**	CO1, CO2	Analyse, Create	10 M

Sample Assignment Answer:

G. Sai Sree
1667/A05B7
CSE-B.

Assignment-1

LifeStyle Shopping Application:-

Originating in India in the year 1999, Lifestyle is a retail fashion brand which comes under Dubai-based retail and hospitality conglomerate, the Landmark Group. Lifestyle International Pvt. Ltd has witnessed a compounded annual growth rate of 25% over the last three years, and has been ranked 10th on the list of Best Companies to Work.

The role activities of the following people

1) Data Engineer
2) Data Analyst
3) Data Scientist.

→ Data Engineer:- Data Engineering teams builds the technology platform that powers our customers shopping experience and enables smooth flow of products from.

Suppliers to our Customer door steps. Whose primary job responsibilities involve preparing data for analytical or operational uses. As a data Engineer, you will be responsible for leading the architecture, design and development of the data, metrics and reporting platform for services.

Data Analyst:- Analyst collect the data about the fabrics, different trends those available for delivery. Analyst acts a single point of Contact for all data repository. Analyst identify trends, patterns & concerns emerging from data and highlight the same to management, with recommendations in a clear, concise manner to enable smooth and quick decision making. Analyst submits the large sets of data to a scientist Here scientist crosschecks the whole data, evaluates it and then engineers will work and finally online shopping applications made our shopping easily.

The Application will be successful because the app provides us " Live tracking of delivery, offers and different trends options.

Collect large amounts of data amounts of data & work with it facts, figure and numbers crunching They go through the data analyze it and find conclusions. Has strong communications skills and he will translate the data into an understandable document. He will look at numbers, trends and data come to new conclusions based on the findings.

Data Scientist:- As a data Scientist, you will have the opportunity to leverage lifestyle's rich data to develop data products that are used by millions of users and propel the growth of our business. you will collaborate with a strong team of engineers, product managers and fellow data scientists in defining the frontier of data products.

Data Scientists will work on how to evaluate potential approaches, build features, Statistical / machine learning models and determine metrics. you will communicate insights / recommendations to a wide Spectrum of Stakeholders across the Company.

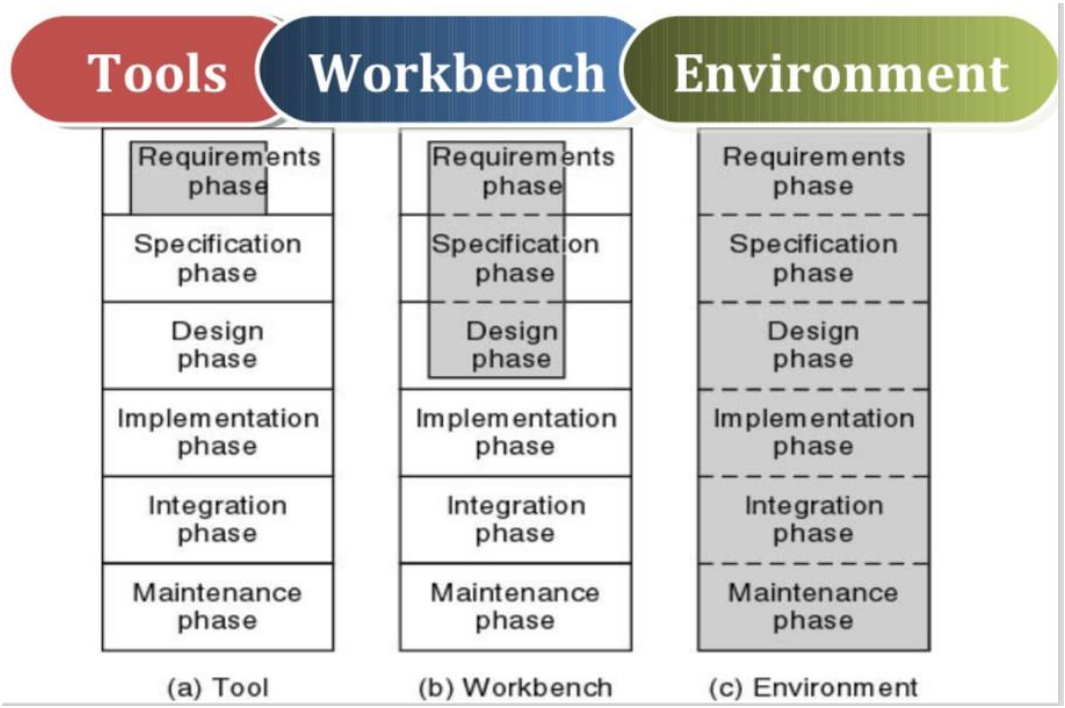
Data Sciences team at Myntra / Lifestyle uses data and algorithms to build large Scale Systems to enable better decision making for the business as well as. sends better customer experience. Some of the areas of our focus are personalisation, pricing, Demand Sensing, Recommendation Systems, Search etc.

The positive & negatives feedback helps us to shop different brands. This work has the support of "Machine Learning".

6. LAB – WORKING MODEL

Name of the Subject : Case Tools Lab
Faculty Name : Dr.G.Arun Sampaul Thomas
AY / Class / Sem : 2019-20 / IV CSE 'B' / I

Three Categories of CASE TOOLS in Real world Software Project Development:



Tools

- A product that assists in just one aspect of the production of software
- Support individual process tasks
- Examples: Checking the consistency of a design

Workbenches

- Collection of tools that together support
  - Process workflows (requirements, design, etc.)
  - One or two activities where an activity is a related collection oftasks
- Commercial examples: PowerBuilder

Environments

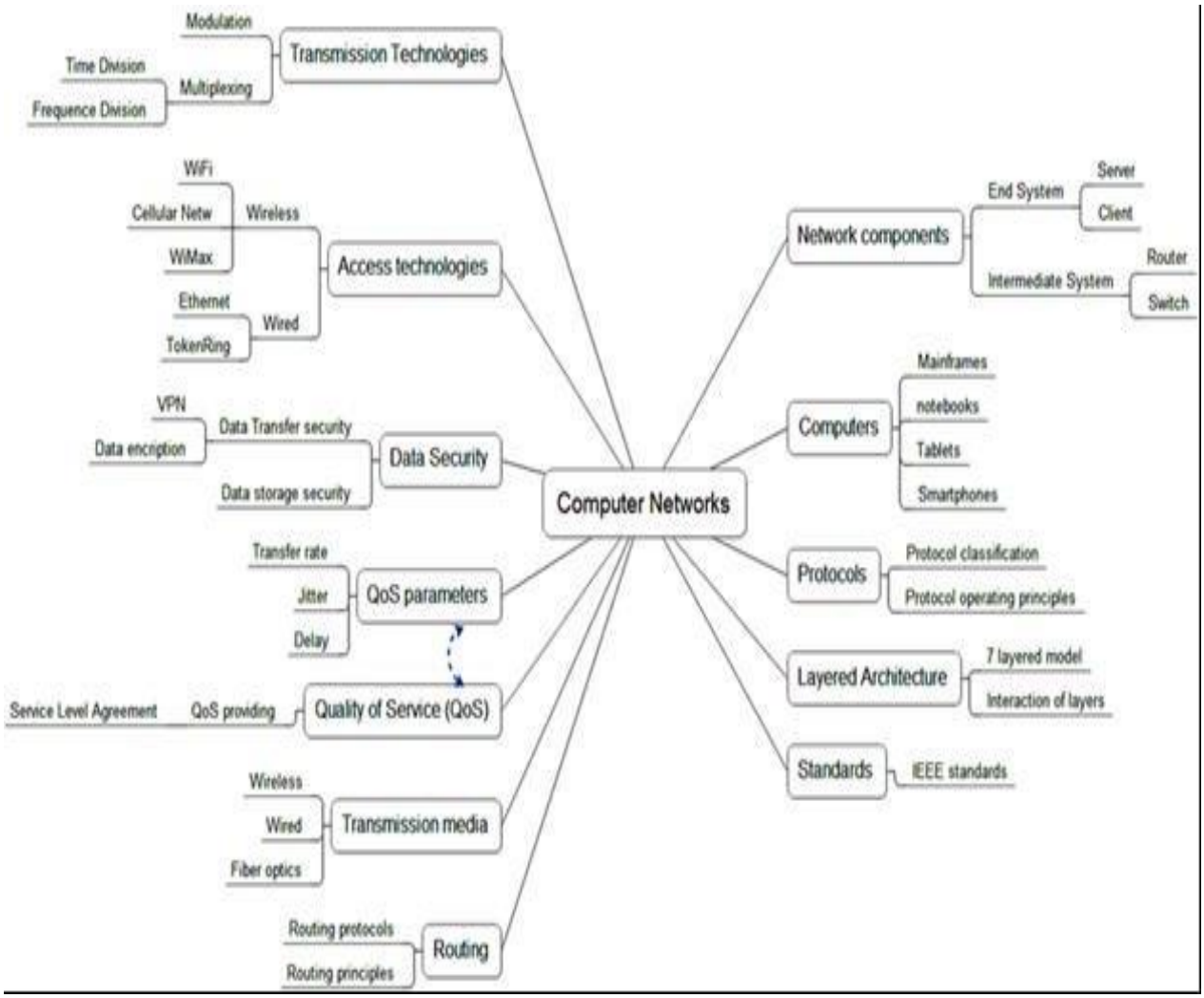
- Support the complete software process or, at least, a large portion ofthe software process.
- Normally include several different workbenches which are integrated in some way.

Faculty Name: Dr. R. Vijay Anand

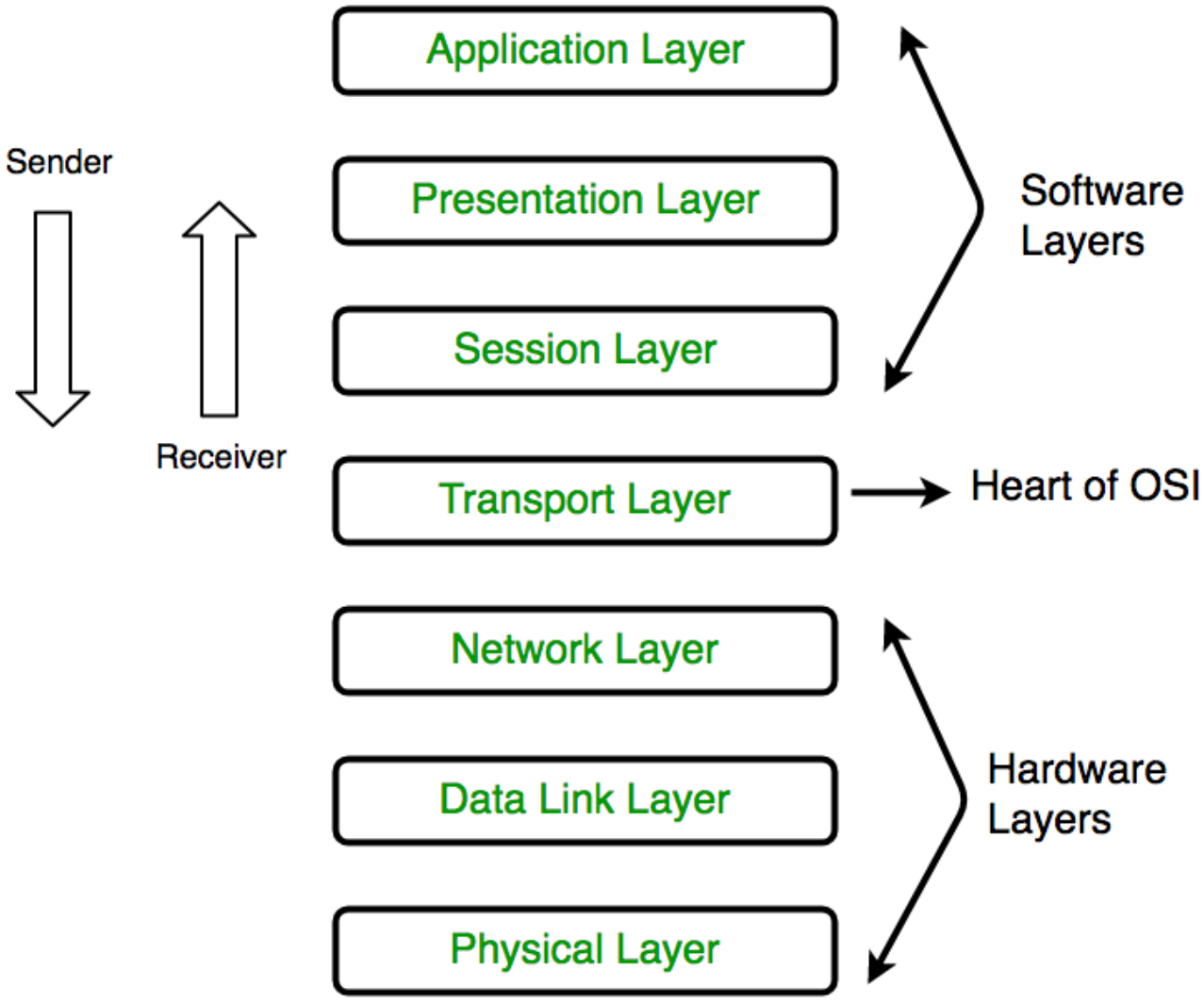
Designation: Associate Professor

MIND MAP:

Name of the Subject : Computer Networks
AY / Class / Sem : 2019-20 / IV CSE 'B' / I



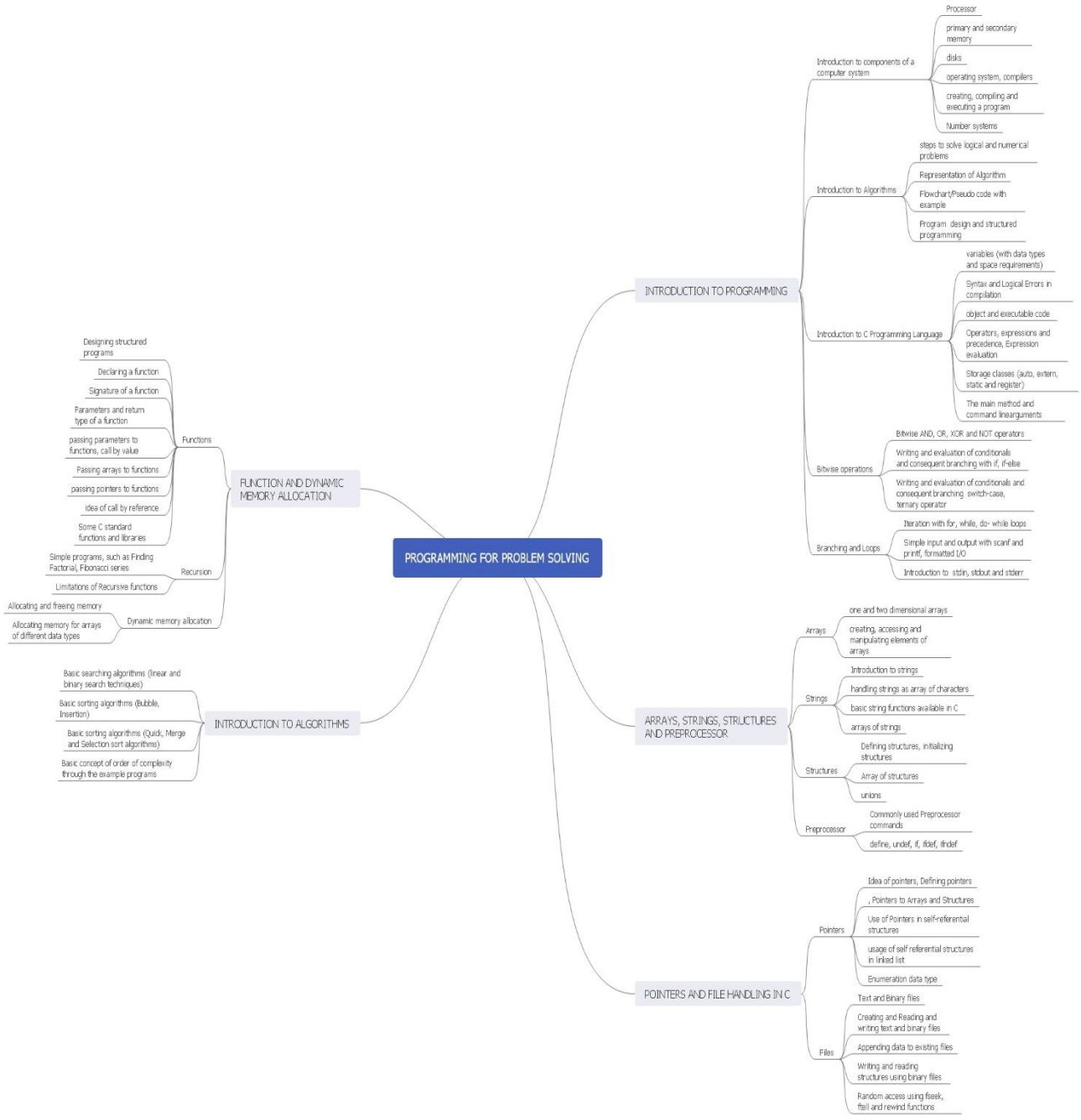
Working Model:

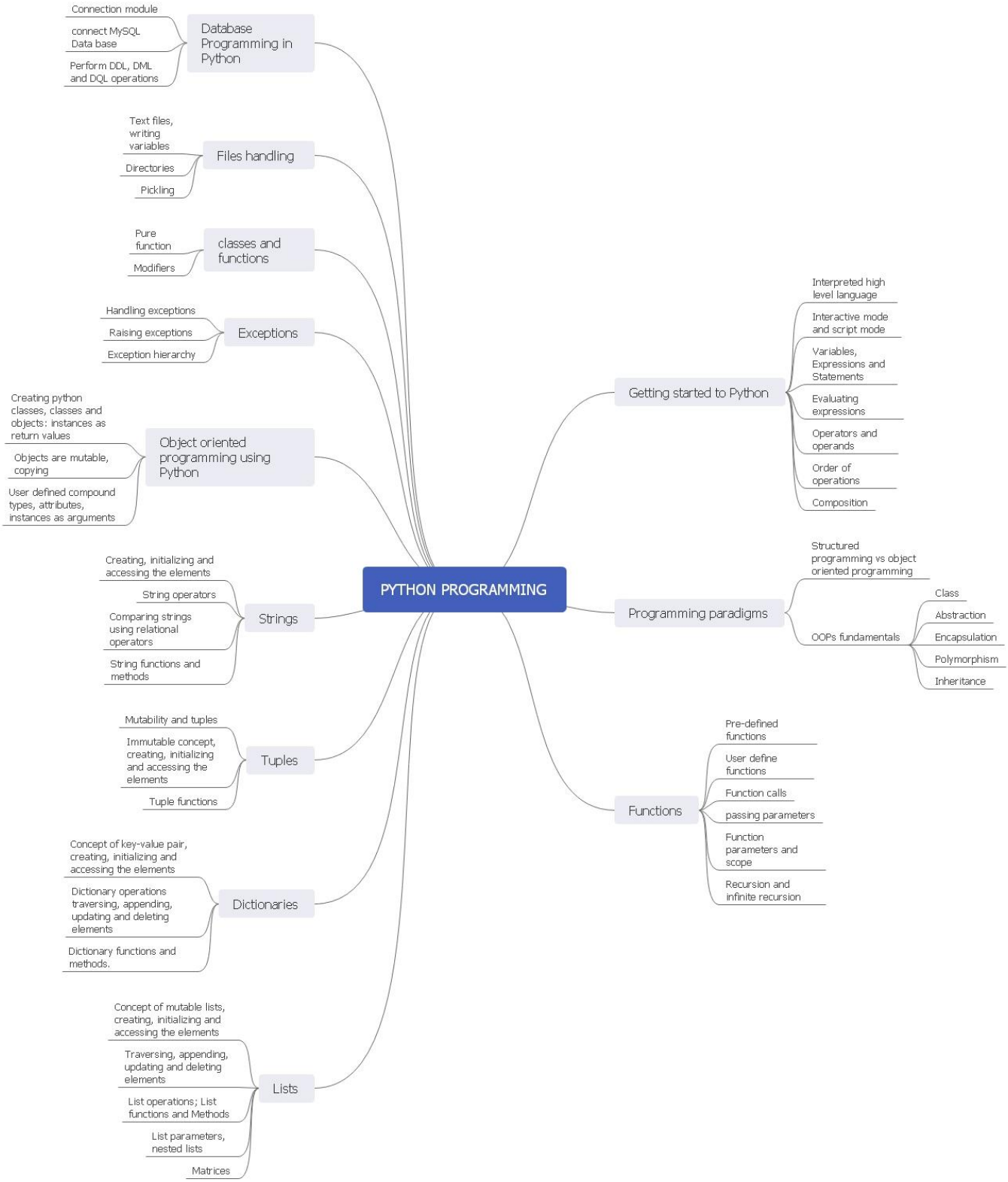


Faculty name: Abhay Kumar

Designation: Assistant Professor

Mind Map:




PYTHON PROGRAMMING
Getting started to Python
Interpreted high level language
Interactive mode and script mode
Variables, Expressions and Statements
Evaluating expressions
Operators and operands
Order of operations
Composition
Programming paradigms
Structured programming vs object oriented programming
OOPs fundamentals
Class
Abstraction
Encapsulation
Polymorphism
Inheritance
Functions
Pre-defined functions
User define functions
Function calls
passing parameters
Function parameters and scope
Recursion and infinite recursion
Database Programming in Python
Connection module
connect MySQL Data base
Perform DDL, DML and DQL operations
Files handling
Text files, writing variables
Directories
Pickling
classes and functions
Pure function
Modifiers
Exceptions
Handling exceptions
Raising exceptions
Exception hierarchy
Object oriented programming using Python
Creating python classes, classes and objects: instances as return values
Objects are mutable, copying
User defined compound types, attributes, instances as arguments
Strings
Creating, initializing and accessing the elements
String operators
Comparing strings using relational operators
String functions and methods
Tuples
Mutability and tuples
Immutable concept, creating, initializing and accessing the elements
Tuple functions
Dictionaries
Concept of key-value pair, creating, initializing and accessing the elements
Dictionary operations traversing, appending, updating and deleting elements
Dictionary functions and methods.
Lists
Concept of mutable lists, creating, initializing and accessing the elements
Traversing, appending, updating and deleting elements
List operations; List functions and Methods
List parameters, nested lists
Matrices

Flipped Class Room:

Snapshot of Video Lecture:

J B Institute of Engineering and Technology
(UGC Autonomous)
Bhaskar Nagar, Moinabad Mandal
R.R. District, Hyderabad, Telangana State , India-500075

Class: III B.Tech, I-Sem Sub Code: **E315A**

Branch: CSE Academic Year: **2019-20**

Python Programming

TUTORIAL SHEET BASED ON VIDEO LECTURE

Q-1. What will be the output of the following code snippet?

```
a=[1,2,3,4,5,6,7,8,9]
print(a[::2])
```

A. [1,2]
B. [8,9]
C. [1,3,5,7,9]
D. [1,2,3]

Q-2. What will be the output of the following code snippet?

```
a=[1,2,3,4,5,6,7,8,9]
a[::2]=10,20,30,40,50,60
print(a)
```

A. ValueError: attempt to assign sequence of size 6 to extended slice of size 5
B. [10, 2, 20, 4, 30, 6, 40, 8, 50, 60]
C. [1, 2, 10, 20, 30, 40, 50, 60]
D. [1, 10, 3, 20, 5, 30, 7, 40, 9, 50, 60]

Q-3. What will be the output of the following code snippet?

```
a=[1,2,3,4,5]
print(a[3:0:-1])
```

A. Syntax error
B. [4, 3, 2]
C. [4, 3]
D. [4, 3, 2, 1]

Q-4. What will be the output of the following code snippet?

```
def f(value, values):
    v = 1
    values[0] = 44
t = 3
```

```
v = [1, 2, 3]
f(t, v)
print(t, v[0])
```

A. 1 44
B. 3 1
C. 3 44
D. 1 1

Q-5. What is the correct command to shuffle the following list?

```
fruit=['apple', 'banana', 'papaya', 'cherry']
```

A. fruit.shuffle()
B. shuffle(fruit)
C. random.shuffle(fruit)
D. random.shuffleList(fruit)

Q-6. What will be the output of the following code snippet?

```
data = [[[1, 2], [3, 4]], [[5, 6], [7, 8]]]
def fun(m):
    v = m[0][0]

    for row in m:
        for element in row:
            if v < element: v = element

    return v
print(fun(data[0]))
```

A. 1
B. 2
C. 3
D. 4
E. 5
F. 6

Q-7. What will be the output of the following code snippet?

```
arr = [[1, 2, 3, 4],
       [4, 5, 6, 7],
       [8, 9, 10, 11],
       [12, 13, 14, 15]]
for i in range(0, 4):
    print(arr[i].pop())
```

A. 1 2 3 4
B. 1 4 8 12

C. 4 7 11 15
D. 12,13,14,15

Q-8. What will be the output of the following code snippet?

```
def f(i, values = []):
    values.append(i)
    print (values)
    return values
f(1)
f(2)
f(3)
```

A. [1] [2] [3]
B. [1, 2, 3]
C. [1] [1, 2] [1, 2, 3]
D. 1 2 3

Q-9. What will be the output of the following code snippet?

```
arr = [1, 2, 3, 4, 5, 6]
for i in range(1, 6):
    arr[i - 1] = arr[i]
for i in range(0, 6):
    print(arr[i], end = " ")
```

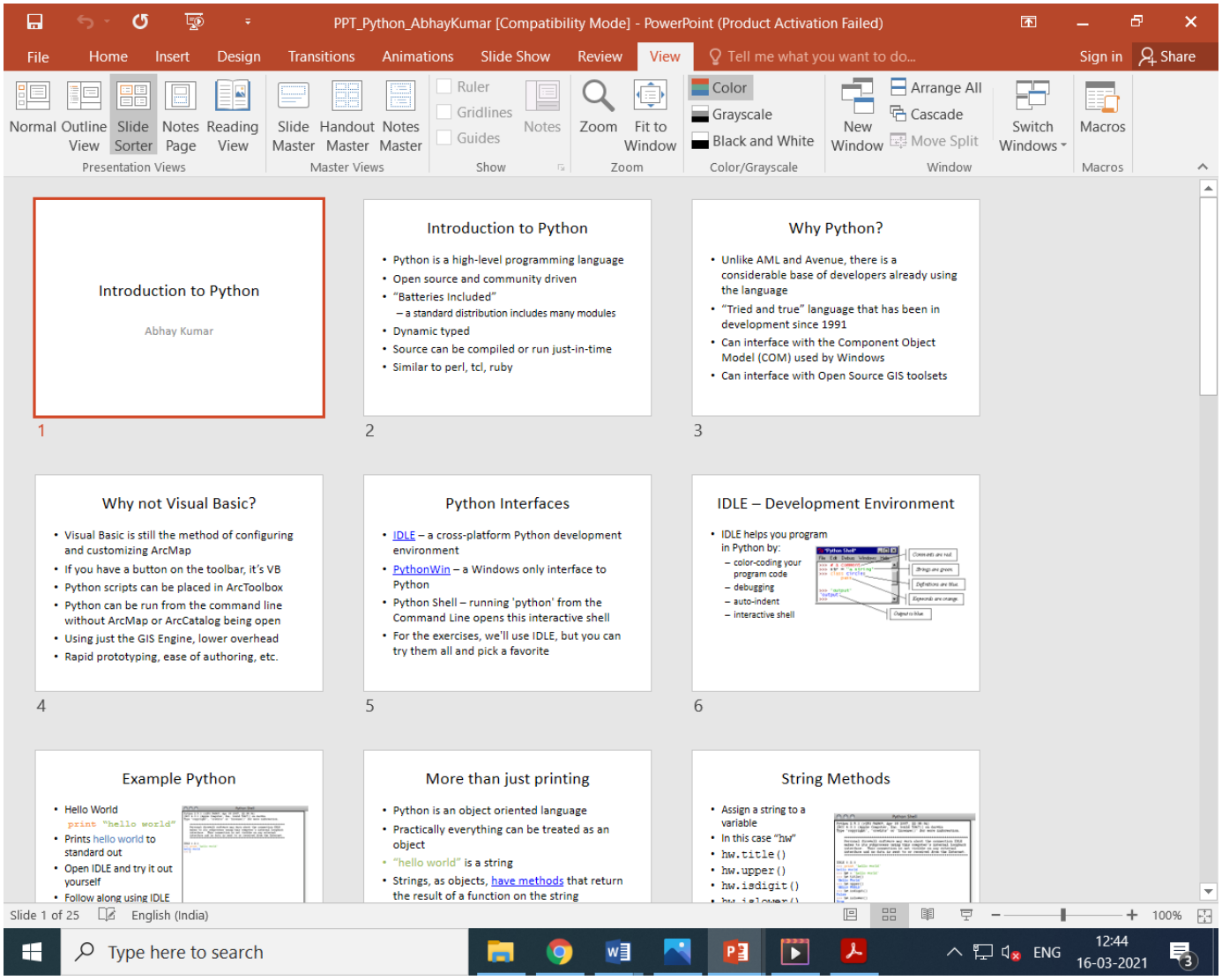
A. 1 2 3 4 5 6
B. 2 3 4 5 6 1
C. 1 1 2 3 4 5
D. 2 3 4 5 6 6

Q-10. What will be the output of the following code snippet?

```
fruit_list1 = ['Apple', 'Berry', 'Cherry', 'Papaya']
fruit_list2 = fruit_list1
fruit_list3 = fruit_list1[:]

fruit_list2[0] = 'Guava'
fruit_list3[1] = 'Kiwi'

sum = 0
for ls in (fruit_list1, fruit_list2, fruit_list3):
    if ls[0] == 'Guava':
        sum += 1
    if ls[1] == 'Kiwi':
        sum += 20

print (sum)
```

A. 22 **B.** 21 **C.** 0 **D.** 43

Powerpoint Presentation:



SAMPLE ASSIGNMENT

J.B. INSTITUTE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

Academic Year 2019-20 B.Tech CSE III-I Sem (Sec-A)

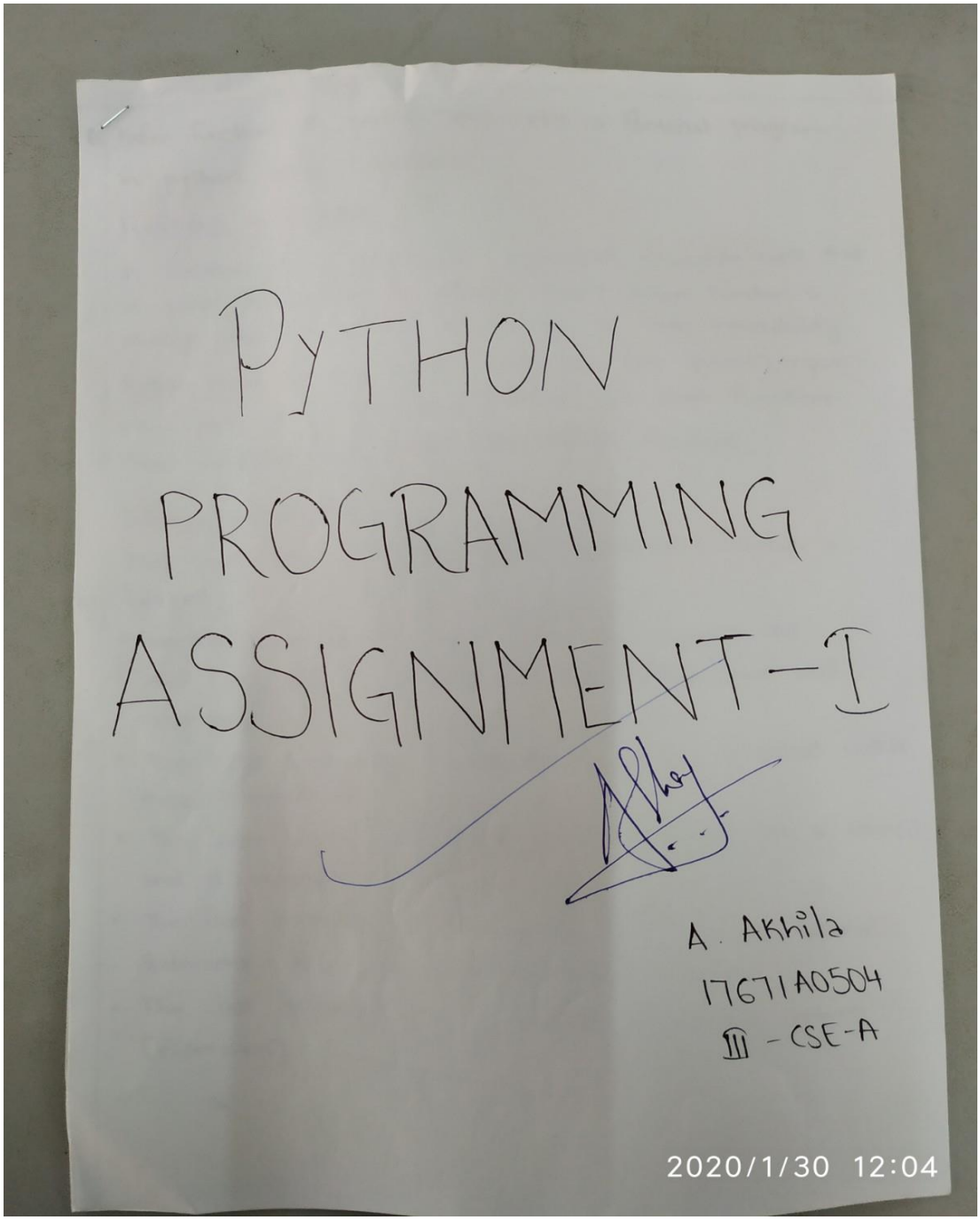
PYTHON PROGRAMMING
(III CSE – A)

Assignment 1 **Total Marks: 5**

Note: Answer any two questions

Q. No	Question	CO	Blooms Taxonomy
1	Define Function in Python and Write a factorial Program in Python using Functions.	CO1	Remembering
2	Explain List and Tuple data structure. Write an example and define mutability concept in Python in terms of list and tuple.	CO2	Understand
3	Summarize steps on getting started to Python with both interactive mode and script mode	CO1	Understand

Sample Assignment Answer



Define functions in python and write a factorial program in python using Functions

Functions in Python

A function is a block of organized, reusable code that is used to perform a single, related action. Function is always used to take advantage of code reusability. Python gives many built-in functions like print(), input(), etc. but we can also create our own functions. These functions are called user-defined functions.

Defining a Function

There are certain simple rules to define a function in Python:

- Function block must begin with the keyword 'def'.
- 'def' keyword is followed by the function name and parentheses (()).
- Any input parameters or arguments should be placed within these parentheses.
- The code block within every function starts with a colon(:) and is indented.
- The first statement of a function can be an optional statement - the documentation string
- The last statement in a function should be return [expression]

2020/1/30 12:04

Explain mutabili

Syntax of a Function

```
def func_name (parameters):
    "func. docstring"
    function statements
    return [expression]
```

```
# Factorial program using function
def factorial(n):
    if n==0 or n==1:
        return 1
    elif n<0:
        print ("Factorial doesn't exist")
    else:
        return n * factorial (n-1)

print ( factorial ( int( input( " Enter a number:"))))
```

Output:

```
Enter a number: 5
120

Enter a number: -1
Factorial doesn't exist

Enter a number: 0
1
```

2020/1/30 12:04

Explain list and tuple data structure. Write an example and define mutability concept in python in terms of list and tuple.

Lists:

The list in python is the most important data structure. It is based on the concept of sequence i.e. all the items of list are stored at one place in memory and the address of first item is at index '0', second item is at index '1' and so on, and the address of the last item is at n-1

Creation of List:

List1 = ['Phy', 'Chem', 1997, 2000]
List2 = [1,2,3,4]

To access the contents of list, we use square brackets or slicing concept.

>>> print "List1[0]:", List1[0]
o/p: List1[0]: Phy

Lists are mutable, i.e., they can be modified at run time. Since lists are mutable, we can update, modify and add new items.

Eg: L1 = ["Phy", "Chem", 1997, 2000]
print "Value at index 2:", L1[2]
L1[2] = 2001
print "New value at index 2:", L1[2]

o/p: Value at index 2: 1997
New value at index 2: 2001

In the same way, we can delete and update lists.
Hence, Lists are mutable.

Tuples:

A tuple is a collection which is ordered and unchangeable. It is a collection of Python objects separated by commas. A tuple is a sequence of immutable python objects. Tuples

2020/1/30 12:05

are sequences like lists but tuples can't be changed or modified like lists.

Creating a Tuple:

It is very simple. We use small brackets and items are stored in sequence separated by commas

tup1 = ('Phy', 'Chem', 1997, 2000)
tup2 = (1,2,3,4,5)

To create any empty tuple we can use tup = ()

A tuple with one element must be written like this:

tup = (50,)

Accessing a tuple

To access values in a tuple, we need to use a square bracket and index and slicing.

E.g. tup1 = ('Phy', 'Chem', 1997, 200)
print "tup1[0]:", tup1[0]

o/p: tup1[0]: Phy

Since tuples are immutable, we cannot update or change tuple elements.

Deleting individual tuple elements is also not possible since we are modifying tuple. However, we can delete the entire tuple.

Working Models by Abhay Kumar:

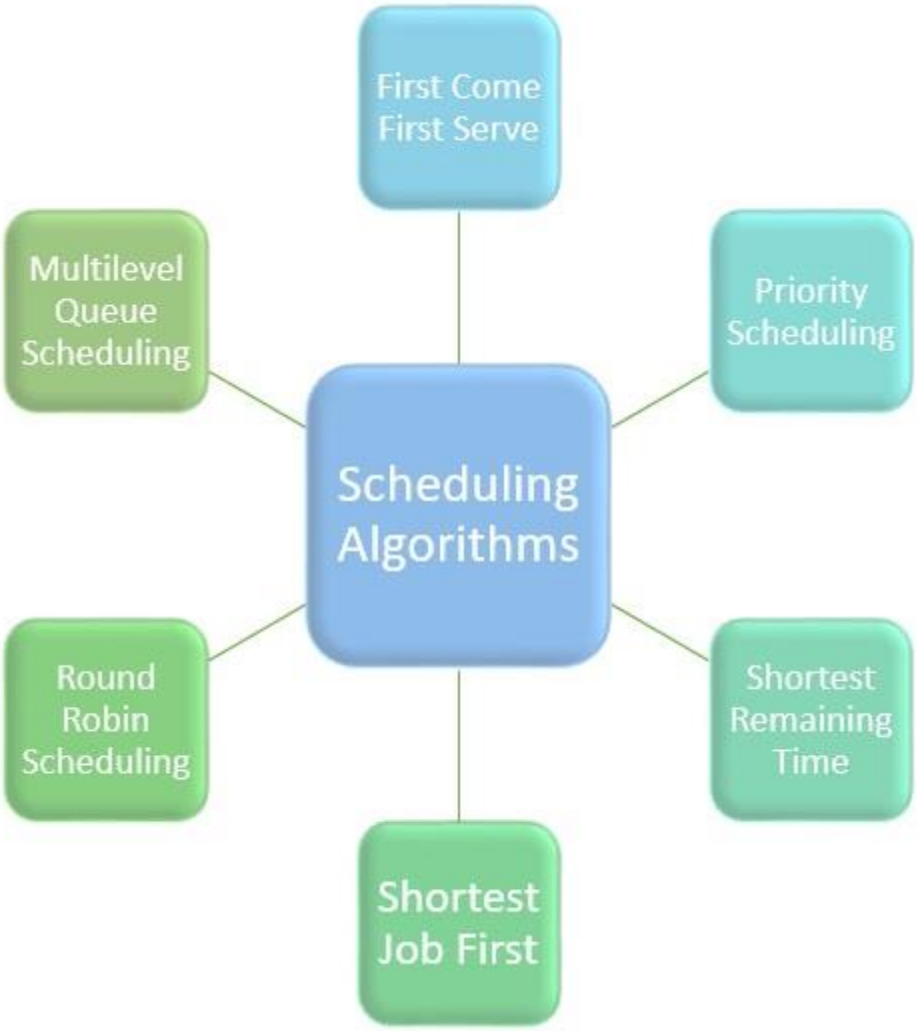


Fig: CPU Scheduling Algorithm

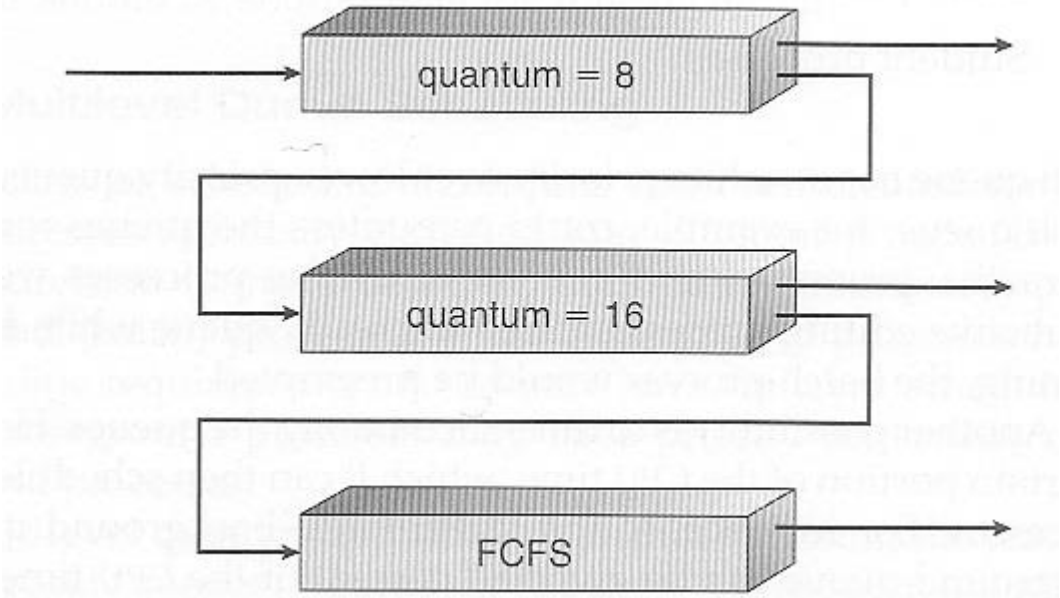


Fig: Multilevel Feedback Queues

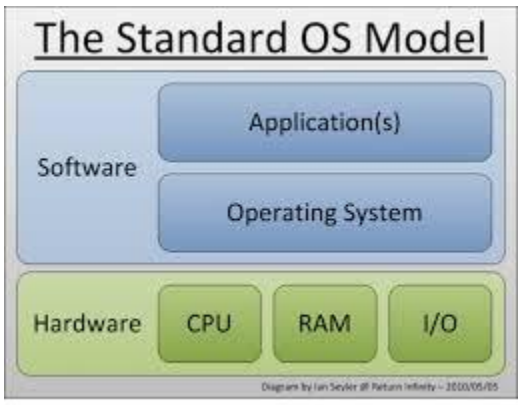


Fig: Standard OS Model

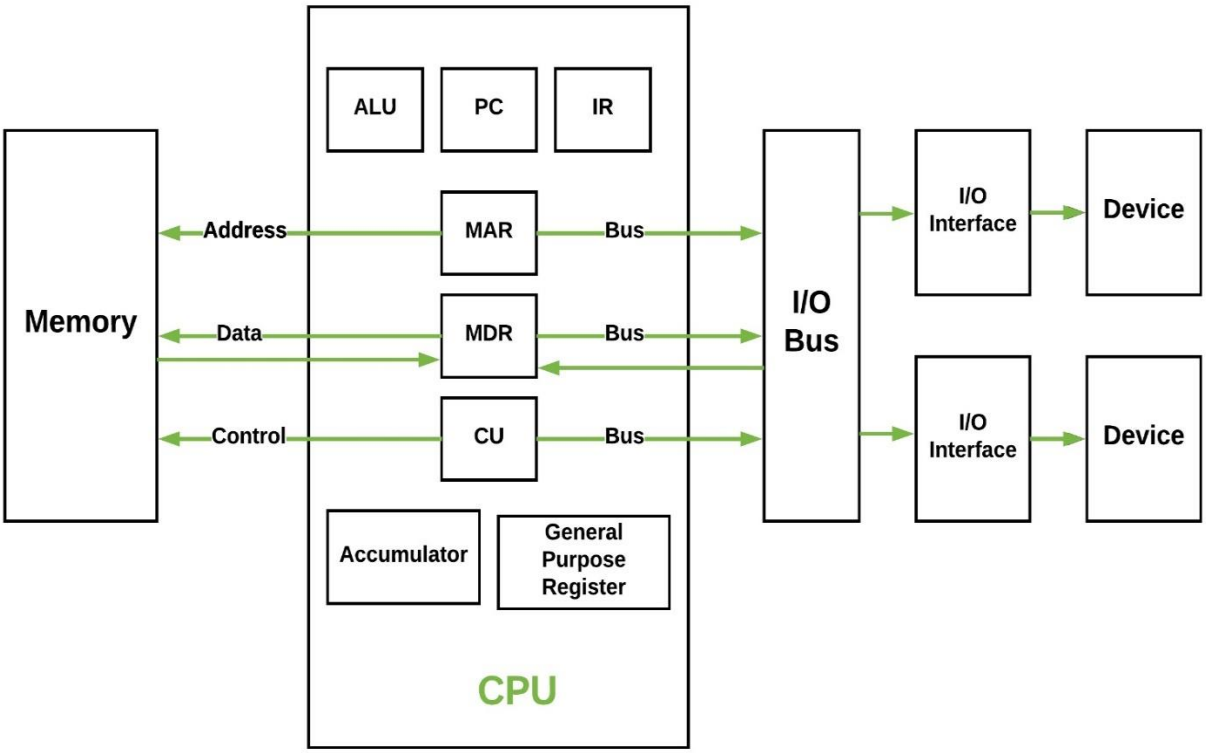


Fig: Von Neumann Architecture

Faculty Name: Mr. Nageswara Rao

Designation: Associate Professor

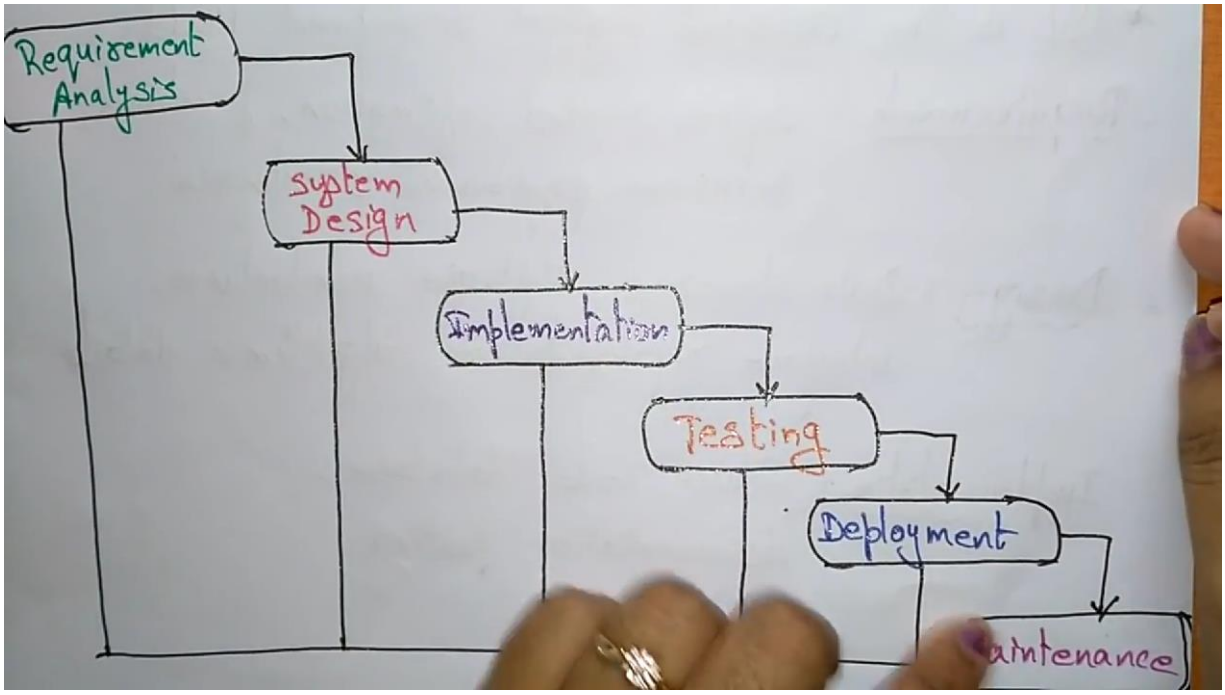
Mind Map:

Flipped Classroom:

Topic: Waterfall Method

Subject: Software Project Management

Class: IV-B.Tech 1-Semester 2019-2020



Tutorial Sheet Based on Video Lecture

1. What are the basic steps to building a program?
2. Explain waterfall model?

Faculty Name: Gandu Soujanya

Designation: Assistant Professor

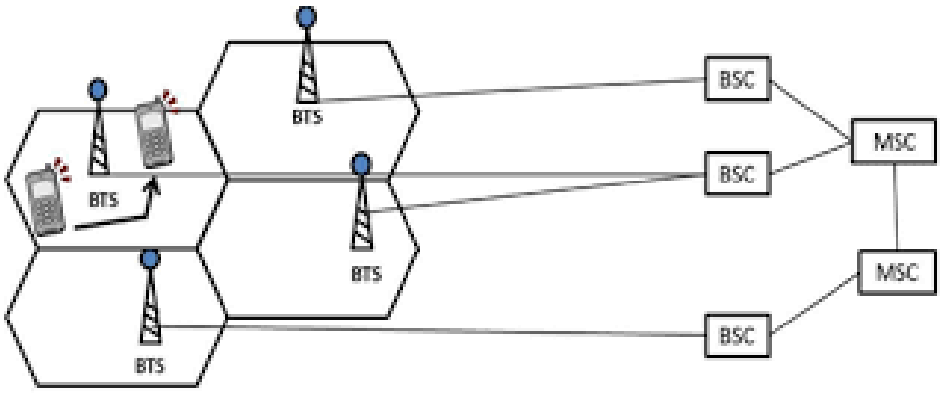
Mind Map:

Activity Based Learning: Role Play

Subject: Mobile Computing

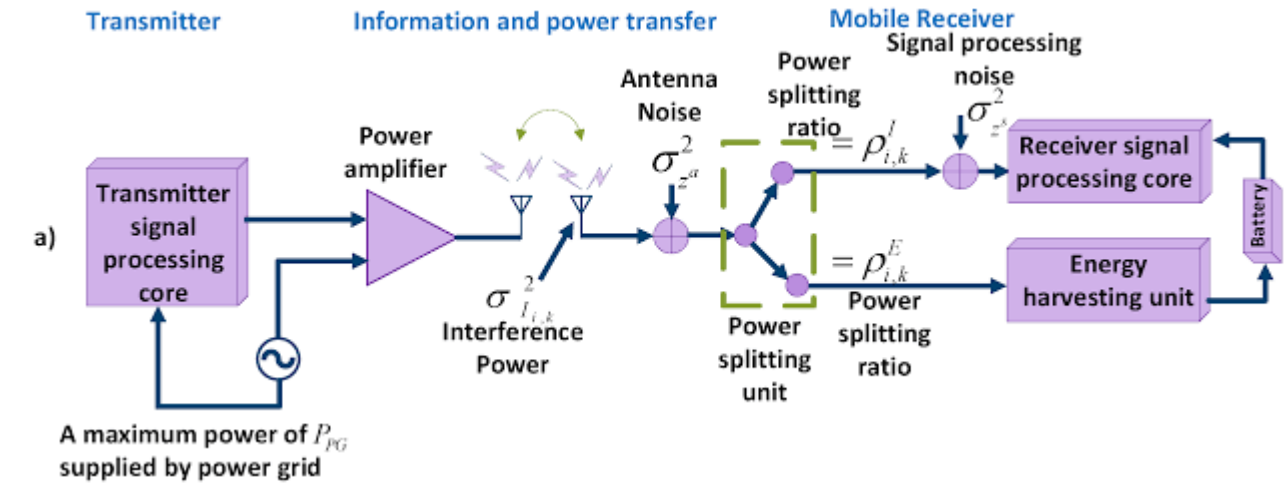
Topic: Handover

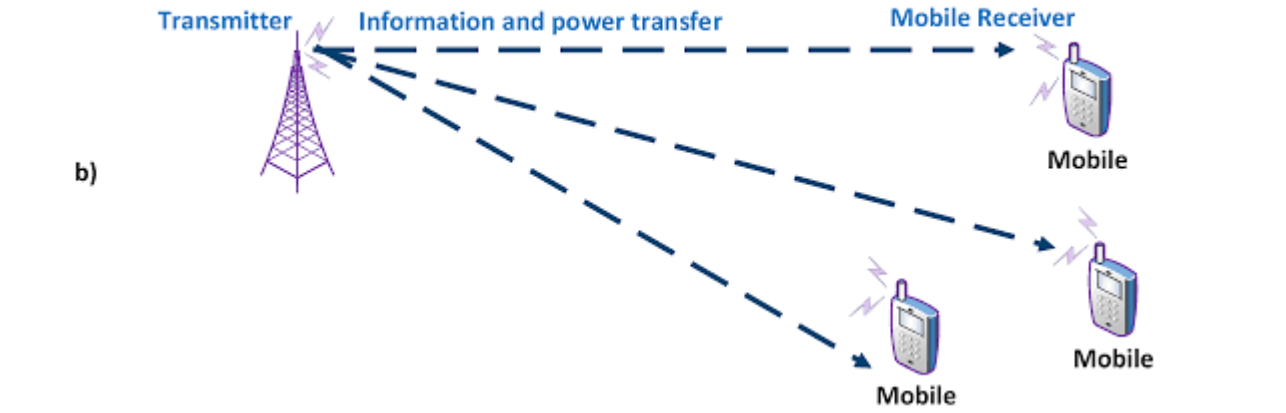
Method: 6 Students have been picked from the Class and Assigned each Person A Role Like Ms,Bts_{old},Bsc_{old} ,Msc Bsc_{new} ,Bts_{new} , and Students performed Handover Operation .



Intra-cell handover

Working Model:

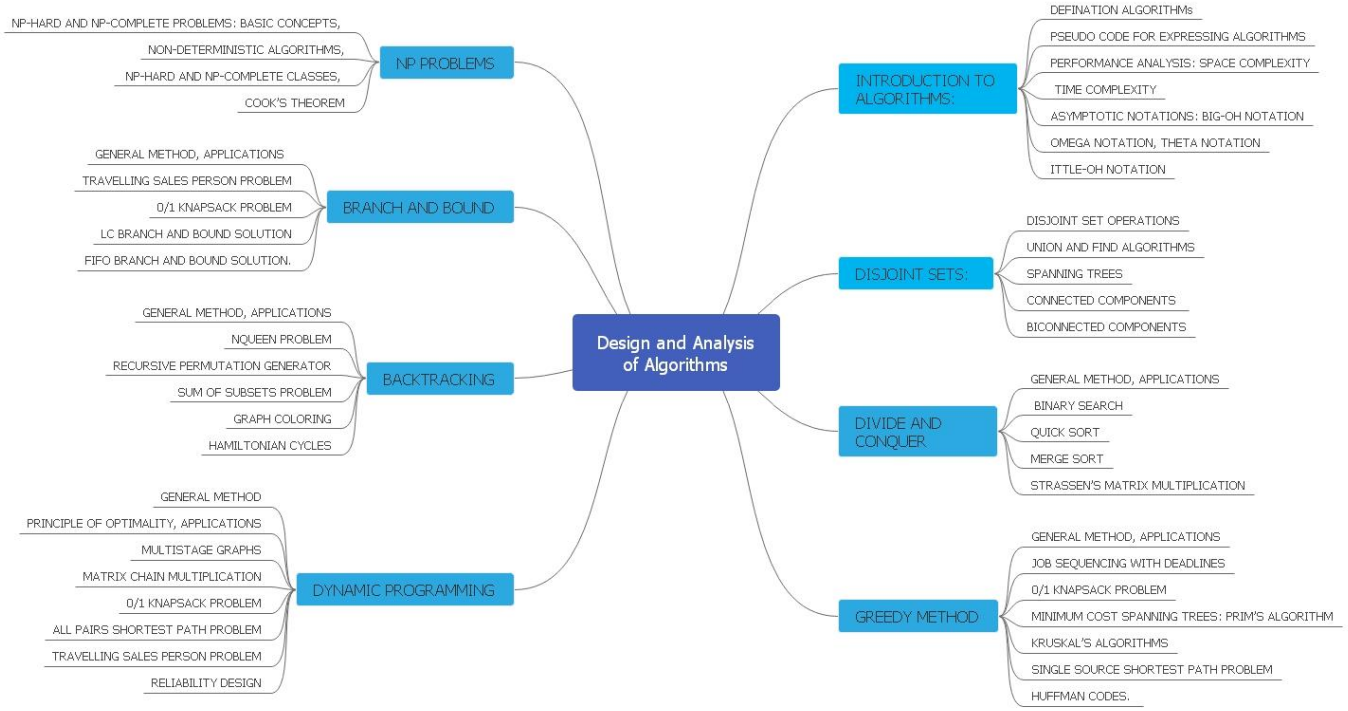




Faculty Name: M Naveen Babu

Designation: Assistant Professor

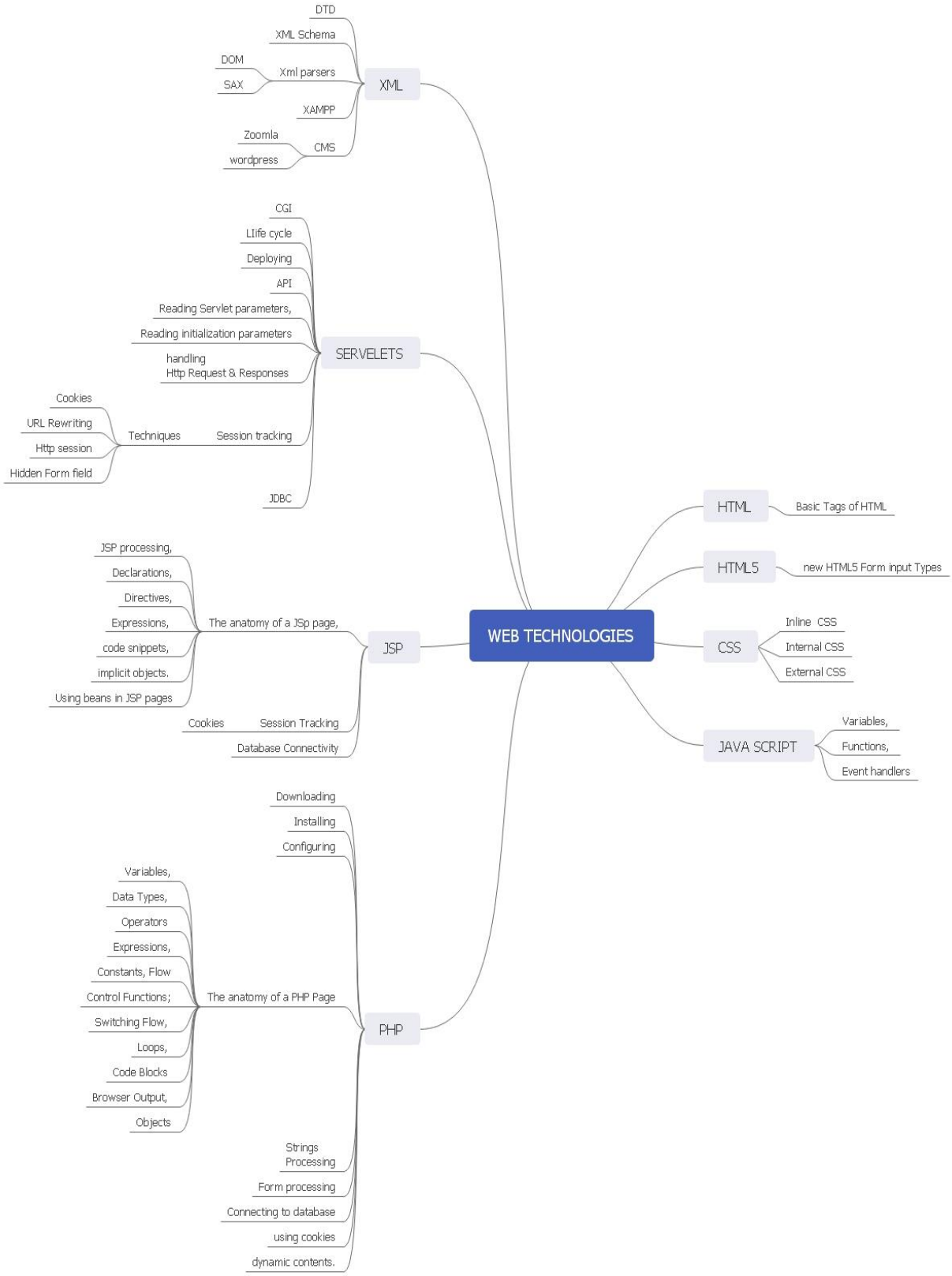
Mind Map:



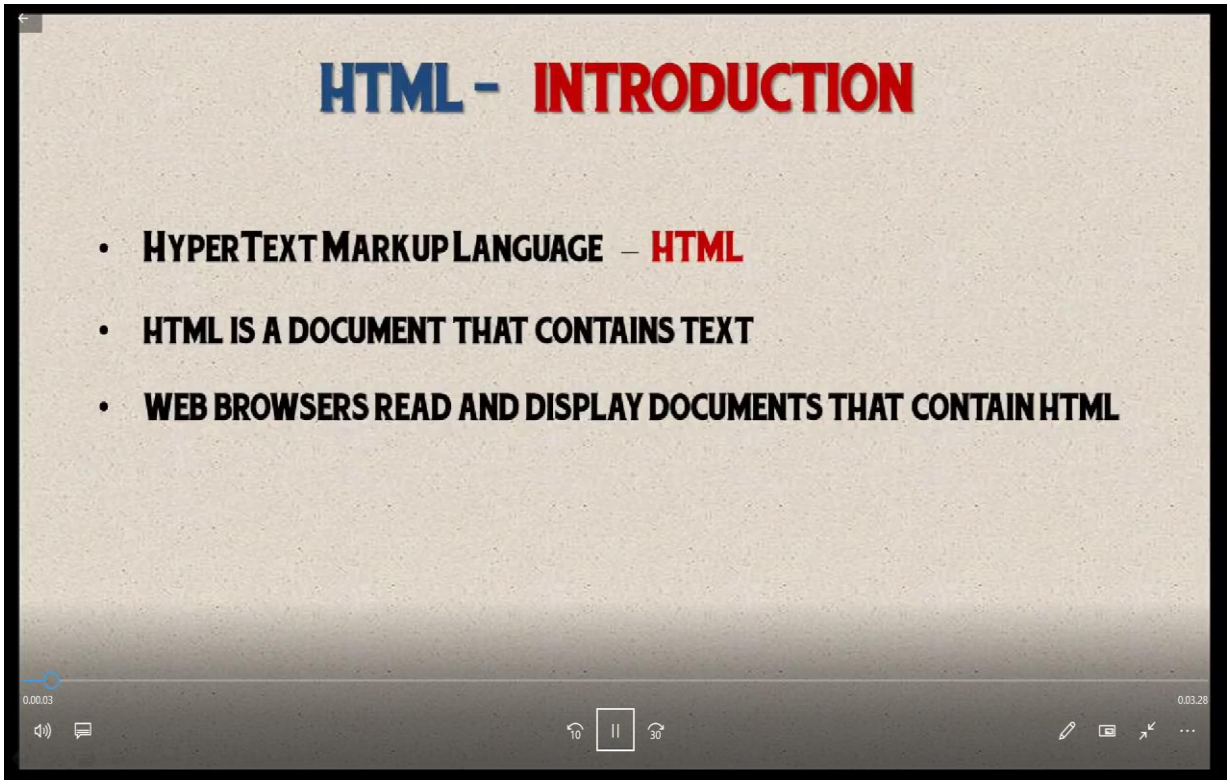
Faculty Name: R. Srikanth

Designation: Assistant Professor

Mind Map:



Flipped Classroom: Web Technologies



TUTORIAL SHEET BASED ON VIDEO LECTURE

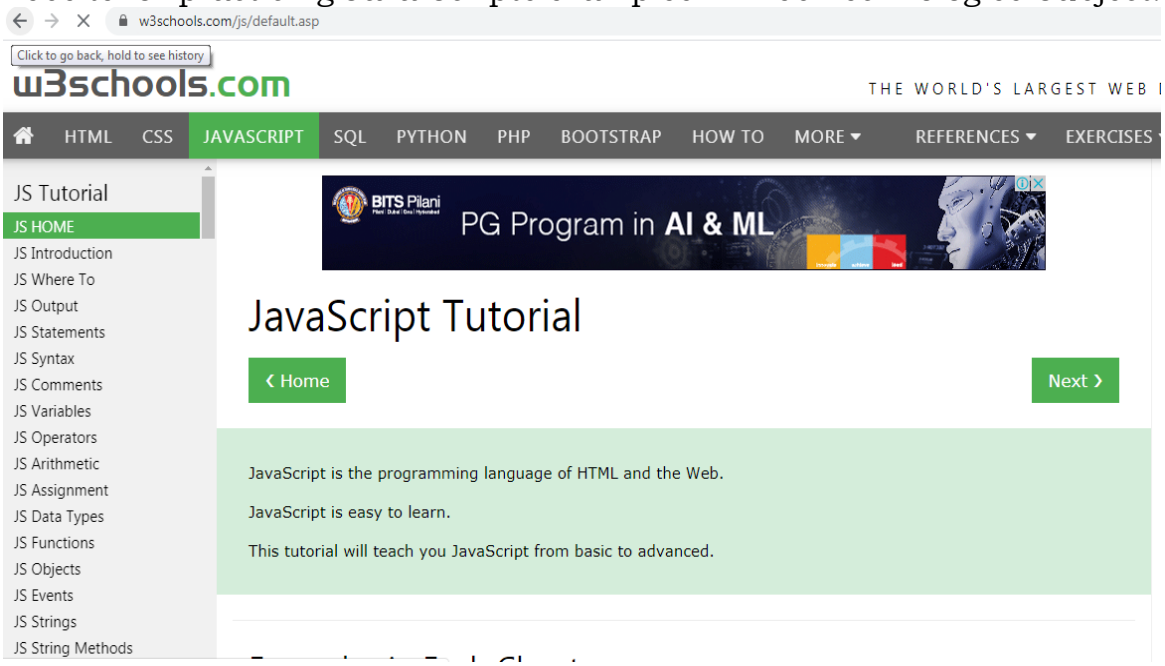
1. What is HTML?
2. What are tags?
3. Do all HTML tags come in a pair?
4. Introduction to html

ACTIVITY BASED LEARNING

Activity Name: Think Pair Share
Class: B.Tech CSE III Year
Subject: Web Technologies
Topic: Java Script Objects

Learning Method: Think-pair-share (TPS) is a collaborative learning strategy where students work together to solve a **problem** or answer a question about an assigned reading. This strategy requires students to think individually about a topic or answer to a question; and share ideas with classmates.

Learning by Doing: Students are encouraged to do self-learning by going through the websites which offer interactive tutorials with Cloud based IT infrastructure. W3schools.com is one such website where students can learn almost all recent technologies in computer science domain. My Students are motivated to refer this website for practicing Java Scripts examples in Web Technologies Subject.



Working Models:

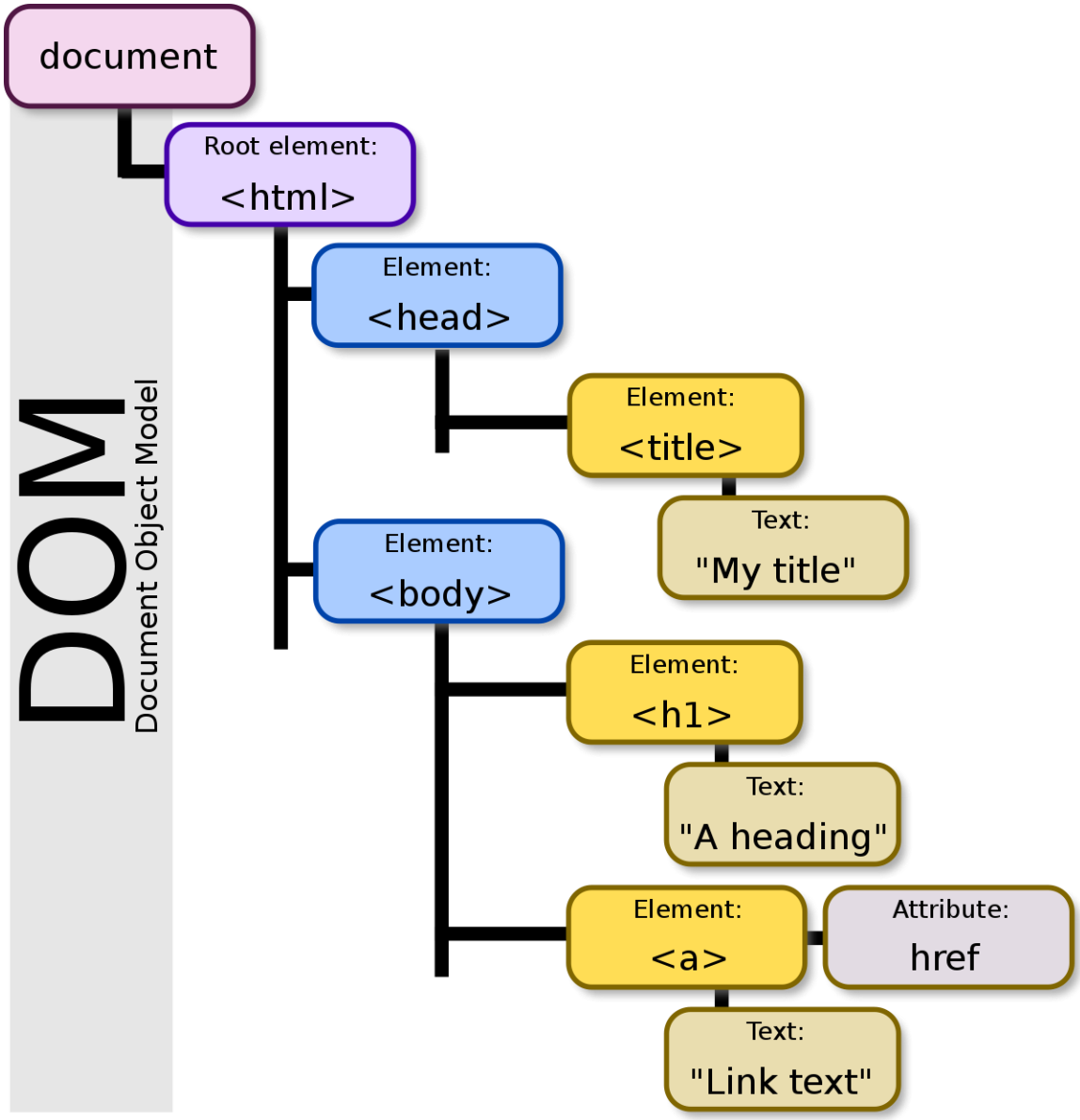
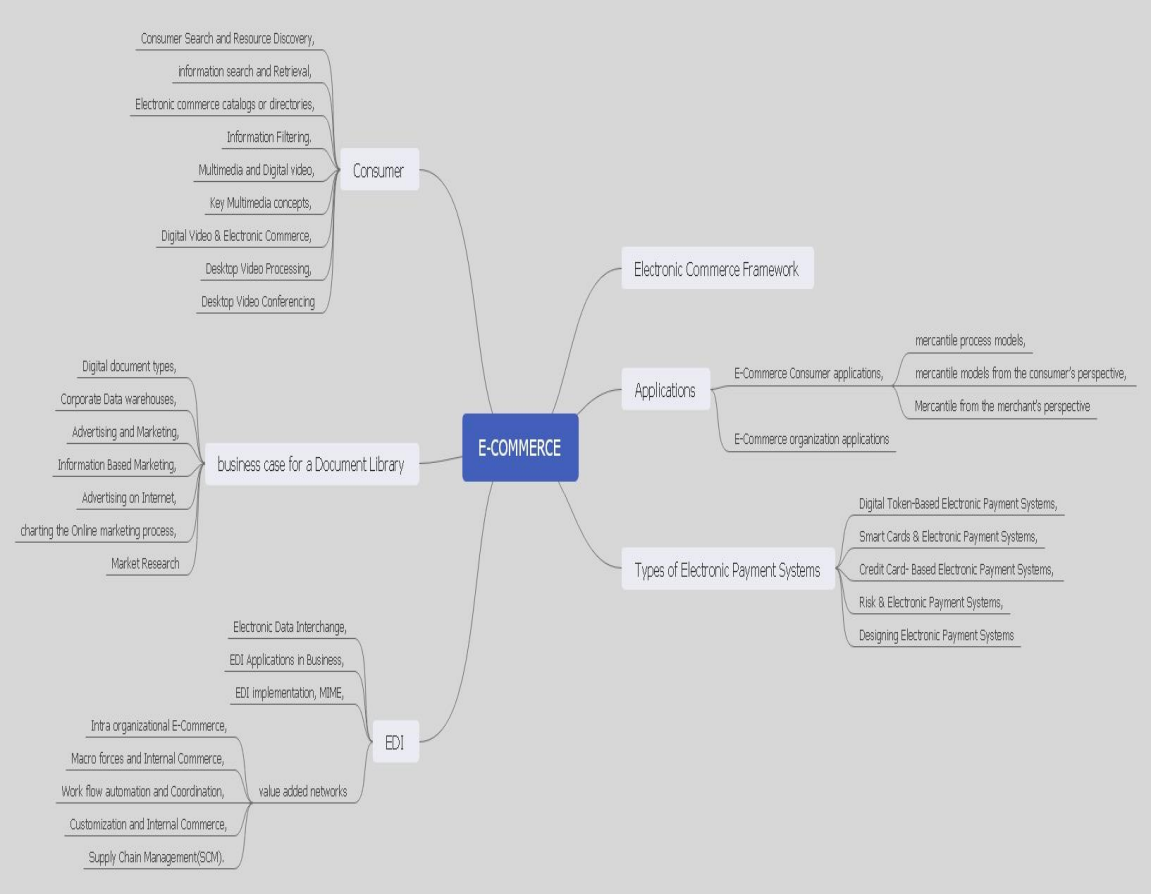


Fig. Document Object Model

Faculty Name: M. Renuka

Designation: Assistant Professor

Mind Map:



Flipped classroom: Lecture Video snapshot

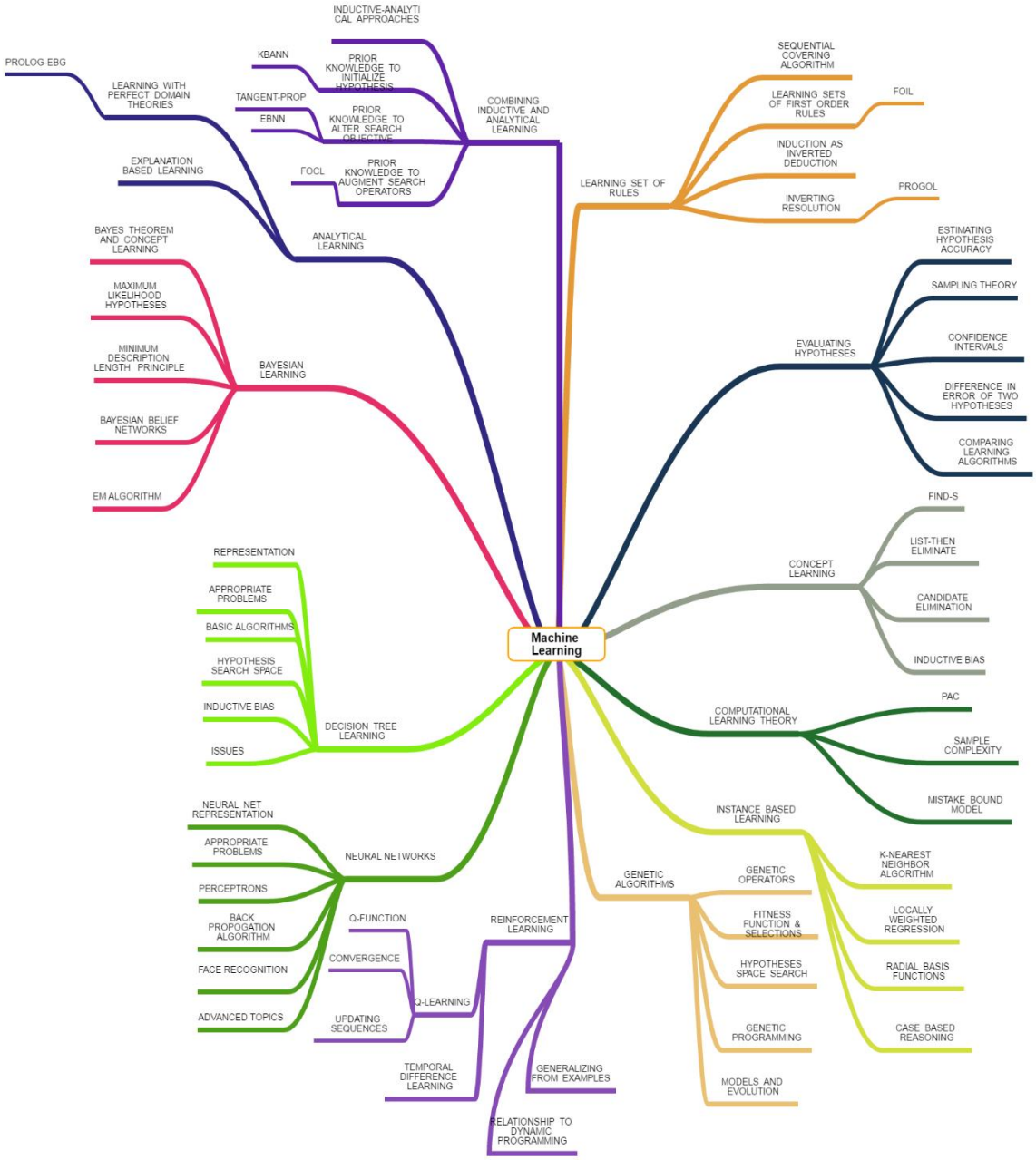
Tutorial Sheet:

Introduction
Part I: What is E-commerce?
Part II: Birth and Arrival of E-commerce
Part III: What are the key drivers of E-commerce?
Part IV: Why should E-commerce not be ignored?
Part V: Is E-commerce a risk or opportunity?
Part VI: Why are people buying online?
Part VII: Who is Selling Online?
Part VIII: E-commerce Myths and Facts
Part IX: Limitation of Offline Model

Faculty Name: S. Sathish Kumar

Designation: Assistant Professor

Mind Map:

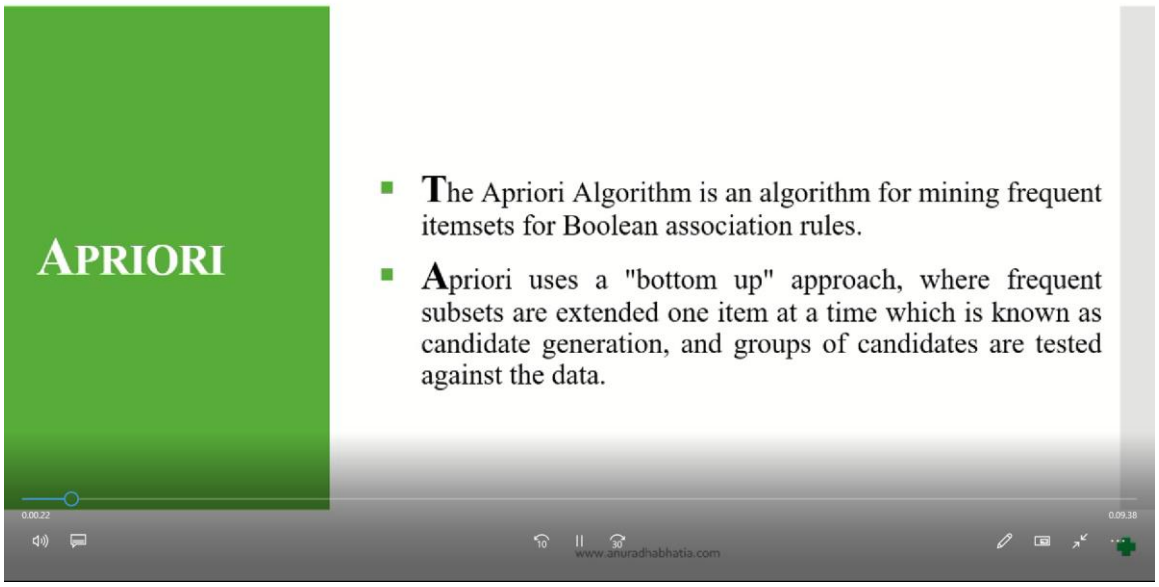


Flipped Classroom:

Topic: Apriori Algorithm

Subject: Data Warehousing & Data Mining

Lecture Video Snapshot:



TUTORIAL SHEET BASED ON VIDEO LECTURE

1. a) Identify the frequent pattern from the following no. of transactions using apriori algorithm?
   b) Generate the association rules from the frequent patterns found

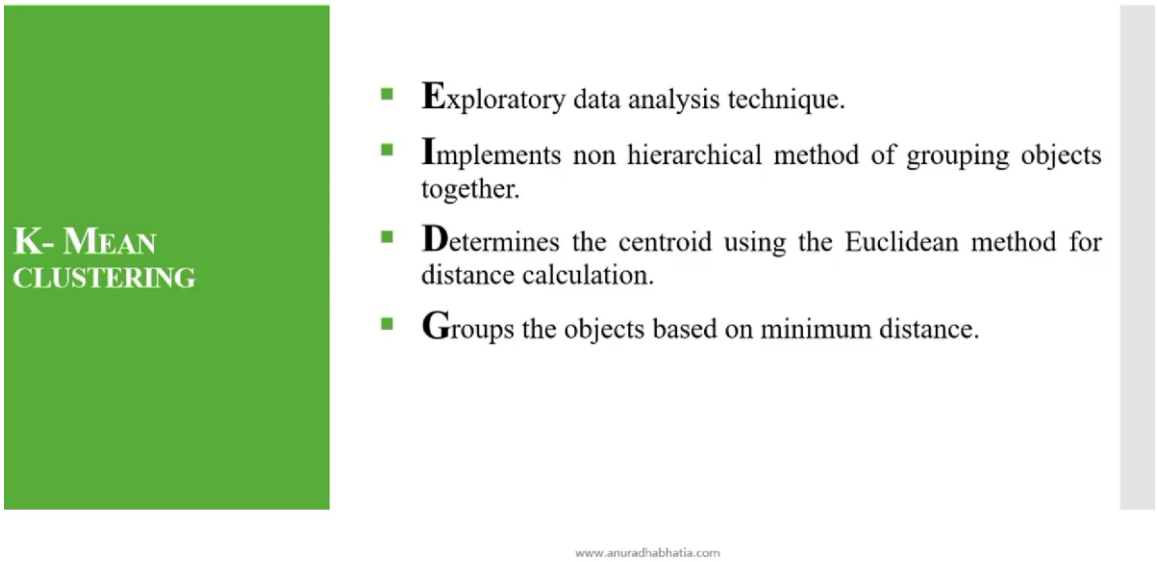
   Assume the Minimum support count = 2

Transaction id	Items
t1	{1, 3, 4}
t2	{2, 3, 5}
t3	{1, 2, 3, 5}
t4	{2, 5}
t5	{1, 2, 3, 5}

Topic: K-means Algorithm

Subject: Data Warehousing & Data Mining

Lecture Video Snapshot:



TUTORIAL SHEET BASED ON VIDEO LECTURE

1. Perform k-means clustering on the following data

Subject	A	B
1	1.0	1.0
2	1.5	2.0
3	3.0	4.0
4	5.0	7.0
5	3.5	5.0
6	4.5	5.0
7	3.5	4.5

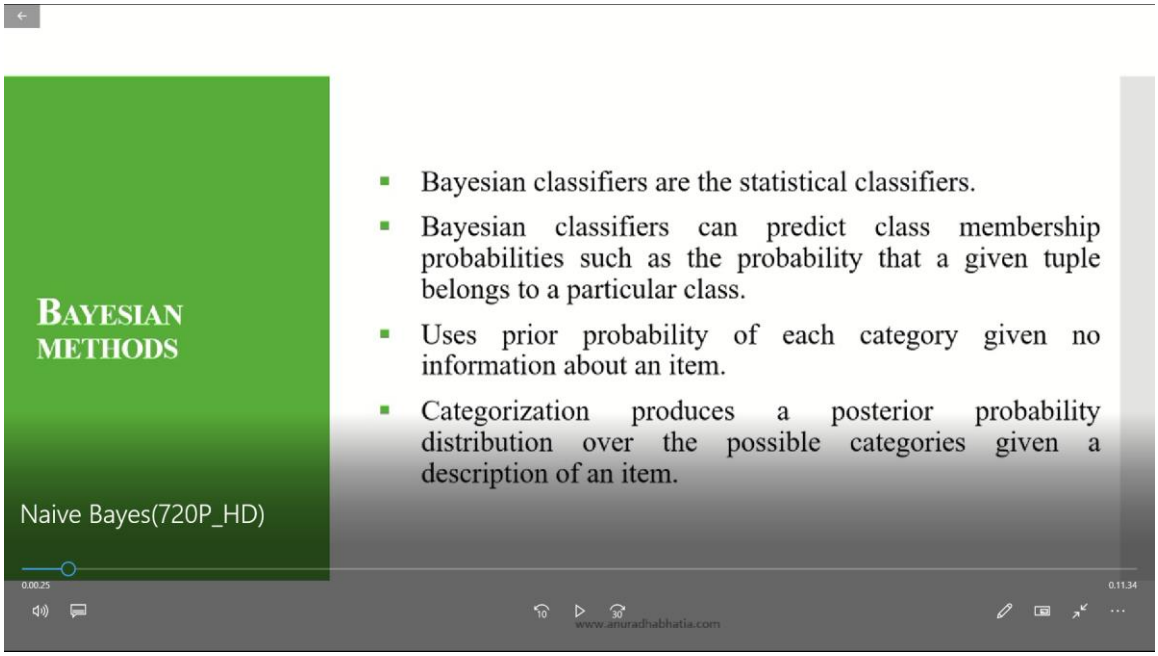
2. Perform k-means clustering on the following data with k=2

Height	Weight
185	72
170	56
168	60
179	68
182	72
188	77
180	71
180	70
183	84
180	88
180	67
177	76

Topic: Naïve Bayes Algorithm

Subject: Data Warehousing & Data Mining

Lecture Video Snapshot:



TUTORIAL SHEET BASED ON VIDEO LECTURE

1. Apply the naïve bayes algorithm for the following data to predict the class label of the test sample **color=red, type=sports, origin=domestic**

Example No.	Color	Type	Origin	Stolen?
1	Red	Sports	Domestic	Yes
2	Red	Sports	Domestic	No
3	Red	Sports	Domestic	Yes
4	Yellow	Sports	Domestic	No
5	Yellow	Sports	Imported	Yes
6	Yellow	SUV	Imported	No
7	Yellow	SUV	Imported	Yes
8	Yellow	SUV	Domestic	No
9	Red	SUV	Imported	No
10	Red	Sports	Imported	Yes

ACTIVITY BASED LEARNING

Topic: Bubble Sort & Insertion Sort through Role-play
Subject: Programming for Problem Solving
Method:

1. Students are asked to stand in sequence
2. Random number cards are given to them
3. Faculty will explain the algorithm for Bubble sort and Insertion sort by involving students and interacting with them.

Sample Photos:

Topic: Quick Sort through Blended Learning
Subject: Programming for Problem Solving
Method:
Students are encouraged to use any ICT tool to access online material to learn a concept under the supervision of faculty. Meanwhile students will also have control over time, pace of learning, place.
ICT used: Mobile with Institute Wi-Fi Access

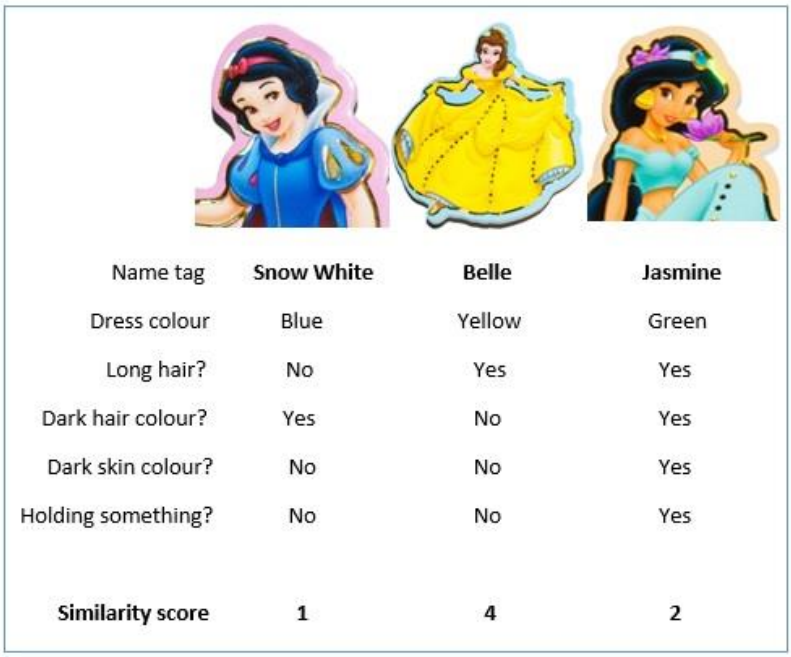
Topic: 'Unplugged' facial recognition task
Subject: Machine Learning

The facial recognition task was an unplugged activity in which students act out the algorithm physically in a game, without the use of a computer or robot. The task is as follows: given a person's photo, name the person inside the photo. This is the type of facial recognition technology behind automatic photo tagging in Facebook. To make this activity more engaging for our Year 6 girls, we called this activity 'Who is this princess?' – a game to identify the name of a Disney princess inside a picture.

Preparation: In our game, the teacher prepared seven colour-printed papers, each with one side printed with the image of one of six different Disney princesses – five images of five different princesses and two different images of one princess (for example, see Belle in Figure 1).

On the other side of the page, print a list of questions regarding some physical characteristics of the princess, such as dress colour, hair colour, skin colour, hair length and so on. Disney princesses were selected because they are generally well-known to our students, and the characters tend to have distinct visual features. You can choose any other collection of characters to suit your class or create your own.

Classroom discussion: Before the activity, the teacher can explain to the class that facial recognition is not as easy as it seems. A computer can match two photos pixel-by-pixel to check if there is an exact match. However, in real life the same person may look differently in each photo due to different posture, clothing, and facial expression. Humans can readily recognise faces. We can do so because our brain extracts and matches key features of the person inside the photos. For example, Snow White has short dark hair and always wears a dress, while Ariel has long red hair and has a fishtail. The goal of this activity is to illustrate the key AI concept of *feature extraction* – conversion of data in the original format (for example, an image) into a series of quantitative or qualitative features that can be used to distinguish different objects in the original data. A computer cannot 'see' a photo like a human, but it is good at comparing a list of features. By converting the original image into a series of features, a computer can behave like humans in terms of recognising the person inside each photo.



Name tag	Snow White	Belle	Jasmine	?
Dress colour	Blue	Yellow	Green	Yellow
Long hair?	No	Yes	Yes	Yes
Dark hair colour?	Yes	No	Yes	No
Dark skin colour?	No	No	Yes	No
Holding something?	No	No	Yes	Yes
Similarity score	**1**	**4**	**2**	

[Figure 1: The task of facial recognition can be achieved by converting the image of an unnamed person (right) into a series of physical characteristics, and identifying which image best matches the list of physical characteristics within a database of named photos (left). Images © dean bertoncelj/ Shutterstock]

Activity: This activity consists of two parts – feature extraction and database search. In the feature extraction step, we selected six students and gave each person a randomly chosen princess and instructed them not to show it to anyone else. Please make sure each person has a different character. The students were then asked to answer the questions about the princess in their hand (see Figure 1 for an example). The teacher then selected one other student from the rest of the class to give them a new 'unnamed' image of one of the princesses that was selected by the initial six students. Similarly, this student had to fill in the questions about their princess, but she could show the image to the class. At this point, the physical image of the princesses can be described by a series of textual descriptors of the characteristics of their appearance. This completes the feature extraction step.

The next step is the database search step. The teacher asked the six students to stand in front of the class but try not to show the image of their princess. The student holding the unnamed princess walked in front of each of the six classmates and counted how many of the physical characteristics matched between her unnamed princess and their classmate's princess, based on the list of physical characteristics alone, without looking at their images directly. The number of matched characteristics is called a similarity score. After all six princesses have been compared, the student needs to identify the princess with the highest similarity score. At this point, the teacher can ask all six students to show their princesses to the class. If all goes to plan, the unnamed princess should match the princess with the highest similarity score.

Key concept: This game seeks to demonstrate the key concept of feature extraction – conversion of one type of data (image) into another format that facilitates comparison. The two selected images may not have a perfect match in every single characteristic, but it should be the most similar among a big database of photos. Accuracy of this type of facial recognition depends on the quality and size of the background photo database. This is why 'big data' is such an important component of modern AI.

Topic: The number guessing game
Subject: Machine Learning

In the first week, we asked the students to build a computer program so that their robot could play a number guessing game. The game is as follows: the (human) player comes up with a whole number between 1 and 100 in their mind. The robot will repeatedly make a guess, say 26; after every guess, the human player provides feedback to the robot saying whether its guess was correct (=26), too small (>26) or too large (<26). The robot aims to guess the correct number in the smallest number of guesses.

Before the activity: I asked the class to brainstorm some strategies to make the robot guess the correct number as fast as possible. After a few minutes of discussion with the class, I asked them to compare three game strategies.

1. Randomly pick a number between 1 and 100 every time,regardless of the previous attempts and human feedback;
2. Systematically guess 1, 2, 3, ... until the correct answer is reached;
3. At the end of the iteration, use the feedback from the human to restrict the range of values to pick from. For example, if the first guess is 80 and the human feedback indicate this guess was too large, the robot will only select a number between 1 and 79 in the next round.

Key concept: Most students in my class could see that the third strategy was the best. It was the best strategy because every new guess uses the feedback from the previous rounds to narrow down the solution search space. The first two strategies do not use human feedback in any meaningful way, so are very inefficient. The third strategy is said to be able to learn from previous mistakes and progressively adjust its guesses. This is the essence of learning by trial-and-error.

A prerequisite of this activity is that students need to have basic computer coding skills, including the knowledge of variables, loops, if-else statements, reading input from a sensor or keyboard, and printing text on screen. I have converted my code into computer pseudocode so it can be easily used for teachers who teach computer coding in different languages (Figure 1).

```
min := 1
max := 100
finished := FALSE;
WHILE (!finished)
        myGuess := a random number between min and max
        PRINT 'Is it myGuess?'
        response := text from user input
        IF (response = 'correct')
                finished = TRUE

        ELSE IF (response = 'too large')
                max := myGuess – 1

        ELSE IF (response = 'too small')
                min := myGuess + 1

PRINT 'Yay!'
```

[Figure 1 : Computer pseudocode for the number guessing game. Variable names are highlighted in red.]

At the end of the activity, I explained to the students that this number guessing program was actually learning as the game progressed. This was a process of learning by trial-and-error. They had just built a simple machine learning program!

Learning by Doing:

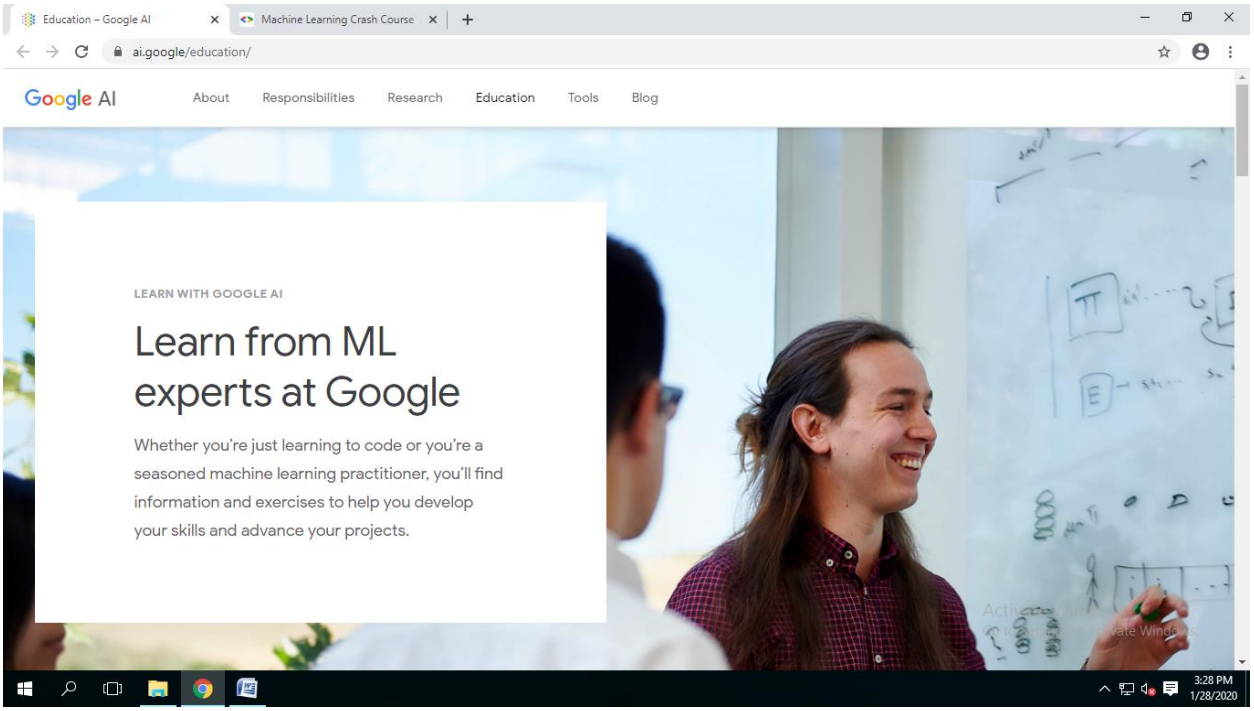
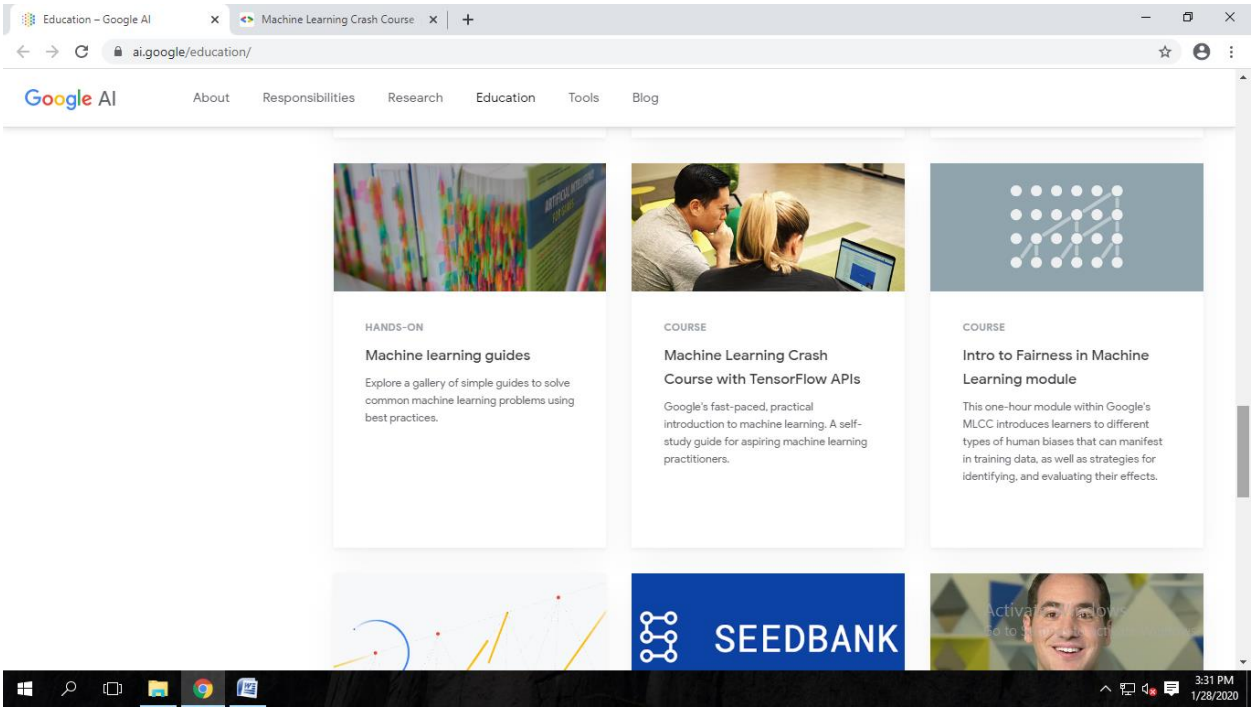
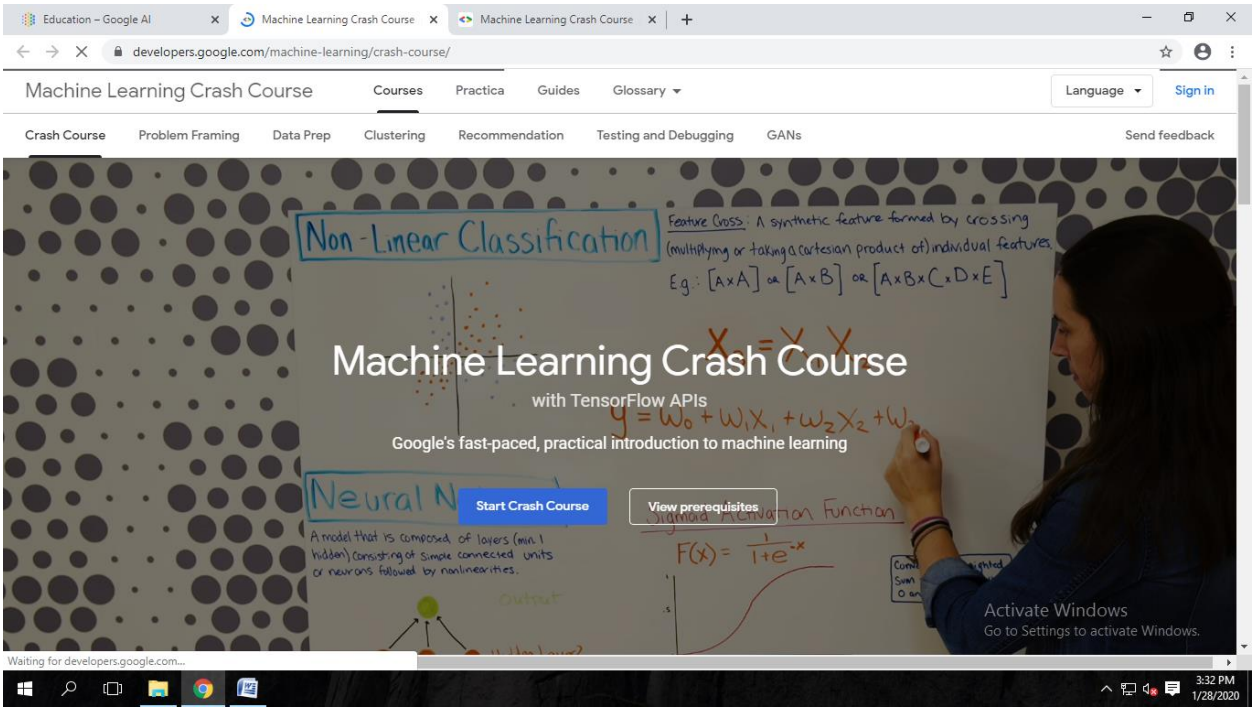
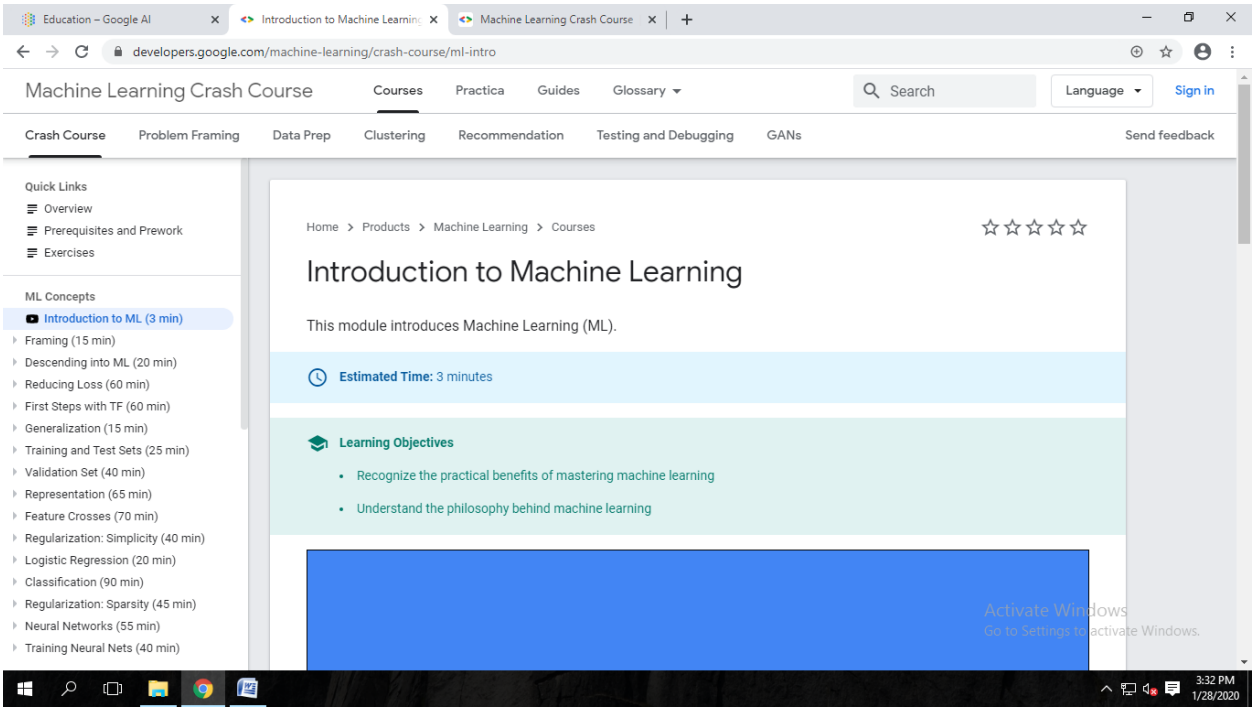


Fig: Learning by doing for Machine Learning: Students are motivated to use ai.google/education website for having hands-on approach for learning "Crash course on machine learning with Tensor flow"




Education – Google AI
Machine Learning Crash Course
Machine Learning Crash Course
developers.google.com/machine-learning/crash-course/
Machine Learning Crash Course
Courses
Practica
Guides
Glossary
Language
Sign in
Crash Course
Problem Framing
Data Prep
Clustering
Recommendation
Testing and Debugging
GANs
Send feedback
Non-Linear Classification
Feature Cross: A synthetic feature formed by crossing (multiplying or taking a cartesian product of) individual features.
Eg: [A×A] or [A×B] or [A×B×C×D×E]
Machine Learning Crash Course
with TensorFlow APIs
Google's fast-paced, practical introduction to machine learning
Start Crash Course
View prerequisites
Neural N
A model that is composed of layers (min 1 hidden) consisting of simple connected units or neurons followed by nonlinearities.
Sigmoid Activation Function
Activate Windows
Go to Settings to activate Windows.
Waiting for developers.google.com...
3:32 PM
1/28/2020

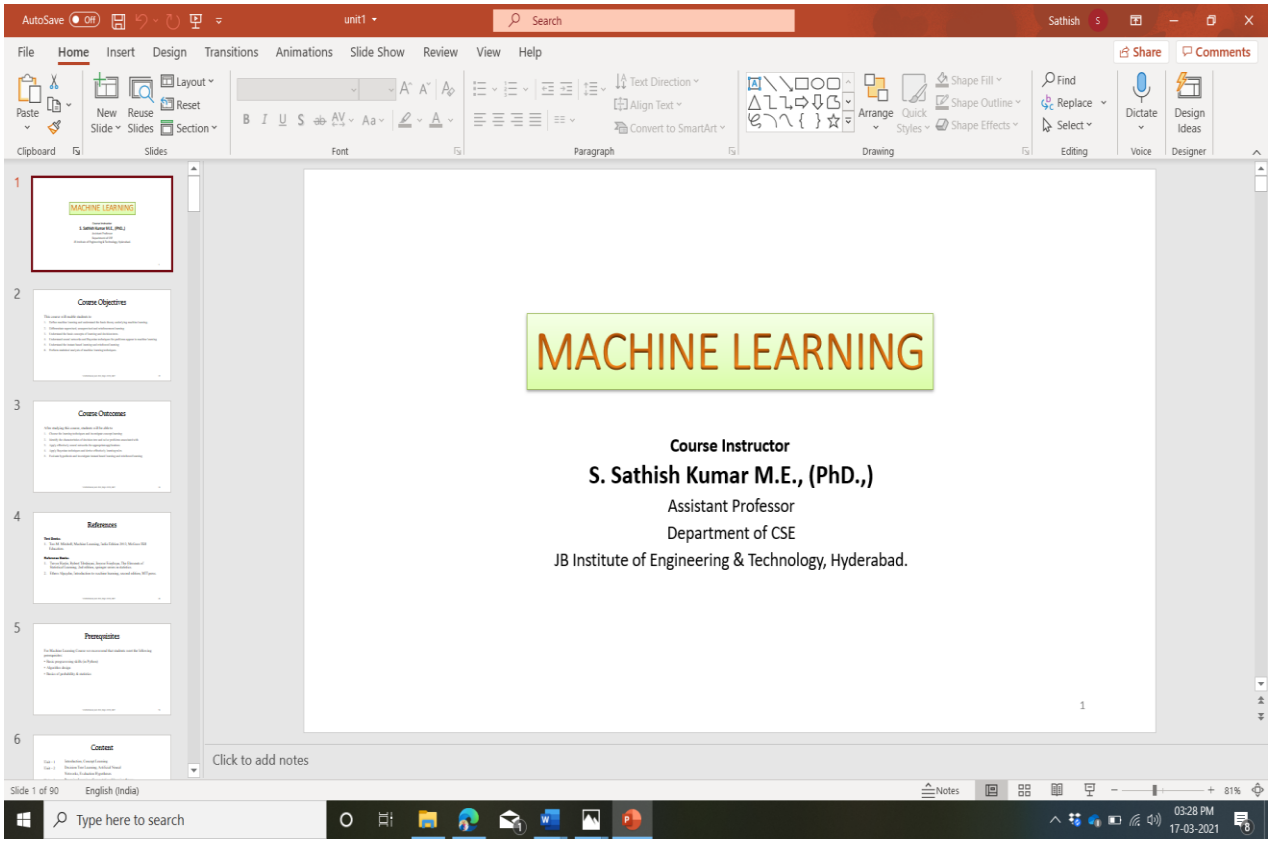

Education – Google AI
Introduction to Machine Learning
Machine Learning Crash Course
developers.google.com/machine-learning/crash-course/ml-intro
Machine Learning Crash Course
Courses
Practica
Guides
Glossary
Search
Language
Sign in
Crash Course
Problem Framing
Data Prep
Clustering
Recommendation
Testing and Debugging
GANs
Send feedback
Quick Links
Overview
Prerequisites and Prework
Exercises
ML Concepts
Introduction to ML (3 min)
Framing (15 min)
Descending into ML (20 min)
Reducing Loss (60 min)
First Steps with TF (60 min)
Generalization (15 min)
Training and Test Sets (25 min)
Validation Set (40 min)
Representation (65 min)
Feature Crosses (70 min)
Regularization: Simplicity (40 min)
Logistic Regression (20 min)
Classification (90 min)
Regularization: Sparsity (45 min)
Neural Networks (55 min)
Training Neural Nets (40 min)
Home > Products > Machine Learning > Courses
Introduction to Machine Learning
This module introduces Machine Learning (ML).
Estimated Time: 3 minutes
Learning Objectives
Recognize the practical benefits of mastering machine learning
Understand the philosophy behind machine learning
Activate Windows
Go to Settings to activate Windows.
3:32 PM
1/28/2020

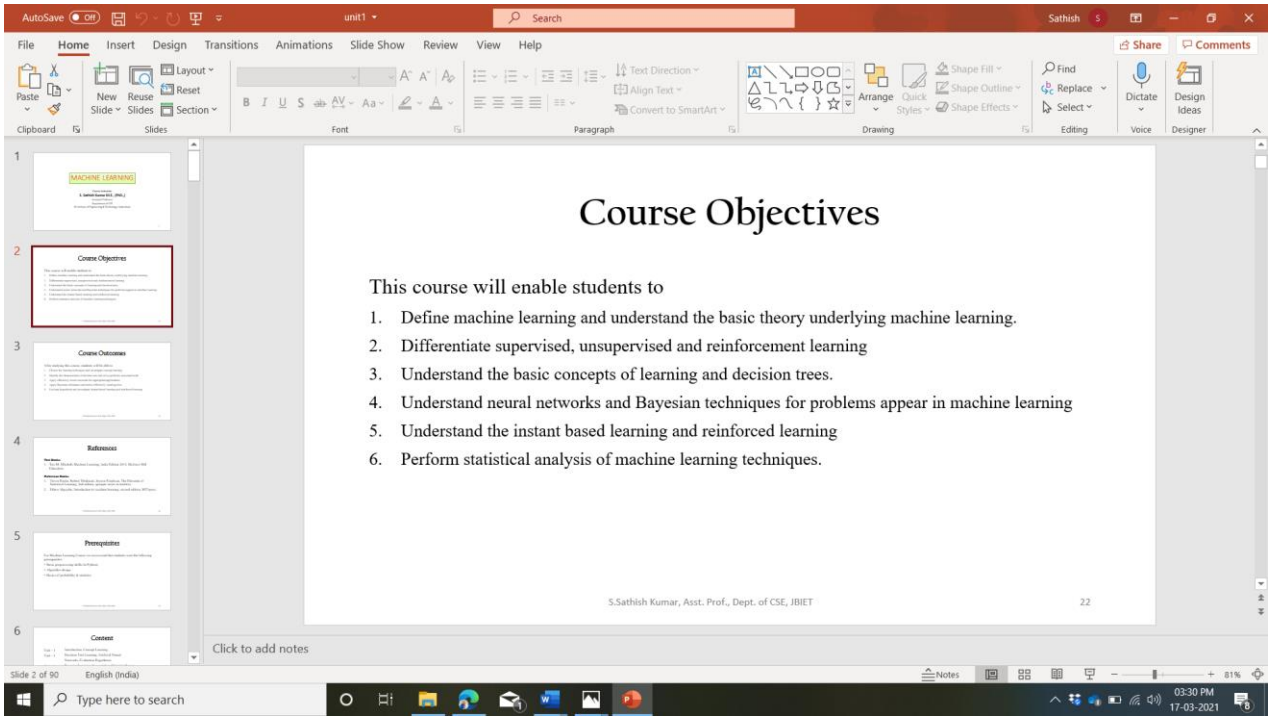
Power Point Presentations:

Subject: Machine Learning

PPTs are a good aid when we need complex models or diagrams especially for the subjects like Machine Learning. I use it to display the models or main points that I am discussing. It also helps supplement the readings that have been given in advance.

The blackboard is used with the PPT for explaining what is there on the PPT through points, drawing, sketches and in healthy peer-learning activities.





Assignment:

J.B. INSTITUTE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

III B. Tech – II Sem (2017 Batch)

CLOUD COMPUTING
(III CSE – B)

Assignment 1 **Total Marks: 5**

Note: Answer all the three questions

Q. No	Question	CO	Blooms Taxonomy
1	Detail on Cloud platforms for industry, healthcare and education	CO2	Analyze
2	What is virtualization? Explain the taxonomy of virtualization techniques.	CO1	Create, Evaluate
3	Illustrate Map reduce architecture with word count example	CO1	Analyze

Prepared by: Mr. S. Sathish Kumar, Asst. Professor, CSE dept.

Sample Assignment Answer

NAME : B. BHARGAVI

BRANCH : CSE SEC : B

ROLLNO: 176T1A0563

SUBJECT : CLOUD COMPUTING

ASSIGNMENT

1. Cloud platforms for industry, healthcare and education.

A. Cloud computing allows end users and developers to leverage large distributed computing infrastructures. This is made possible due to infrastructure management software and distributed computing platforms offering on-demand compute, storage and on top of these, more advanced services. There are several different options for building enterprise cloud computing applications or for using cloud computing technologies to integrate and extend existing industrial applications.

INDUSTRY:

Cloud services is a rapidly growing market modern technologies like big data analysis, IoT, artificial intelligence and even web and mobile app hosting all need heavy computing power. There are many companies that offer cloud platforms for development, management and deployment of applications. Top 5 cloud platforms are Amazon web services, Google cloud platform, Microsoft Azure IIBM Bluemix, Alibaba.

Amazon web services:

AWS is a subsidiary of Amazon. Under the umbrella term of AWS, Amazon provides on demand cloud computing platforms like storage, data analysis etc. with a shopping 35% market share, Amazon lends its services to individuals, companies and governments. AWS allow their subscribers to enjoy a full-fledged virtual cluster of computers through internet

Google cloud platform:

Google offers its public cloud computing solutions with the name of Google cloud platform. It offers services in all major spheres including compute, networking, storage, machine learning (ML) and the internet of things (IOT). The Google cloud storage is a highly dynamic storage solution that supports both SQL (cloud SQL) and No SQL database storage.

HEALTHCARE:

Adapting cloud computing solutions can make healthcare operations even more convenient and cost effective.

In most cases, end users are sure to find that cloud computing is the best choice for their health care business, as it's often less costly than having multiple computers in various medical rooms each needing proper hardware, update software and network accessibility to upload, store, and retrieve patient or other medical data.

With IT spending on the rise, cloud-based electronic health records (EHRS) is begining to have an impact on health industry

A private cloud could be implemented to connect healthcare providers to securely transfer electronic documents and share health information about patients. Such information might include

* clinical applications (EHRS, physicians enquiries, pharmacy orders etc)
* Non-clinical, healthcare management applications to handle revenue cycle management.
* Patient management such as patient billing and claims.

EDUCATION:

As educational technology influxes higher education, many universities are turning to cloud-hosted learning management systems (LMSs) that connect student databases with learning content. cloud computing is also a viable option for numerical modeling, data storage and visulization, facilitating collaboration with other scientists. cloud computing is an affordable resource that enables fast processing, large-data storage capacity, and the sharing of resources. It offers scientists flexibility, ease of data management, research

repetability. The education industry has been transformed by the cloud, from student email and mission - critical business - systems, to online distance learning platforms and student information systems.

2. Virtualisation and its types:

A. Virtualisation is a technique how to separate a service from the underlying physical delivery of that service. It is the process of creating a virtual version of something like Computer hardware. It was initially developed during the mainframe era. It involves using specialized software to create a virtual or software - created version of a computing resource rather than the actual version of the same resource with the help of virtualisation multiple operating systems and apps can run on some machine and its same hardware at the same time increasing the utilisation and flexibility of hardware.

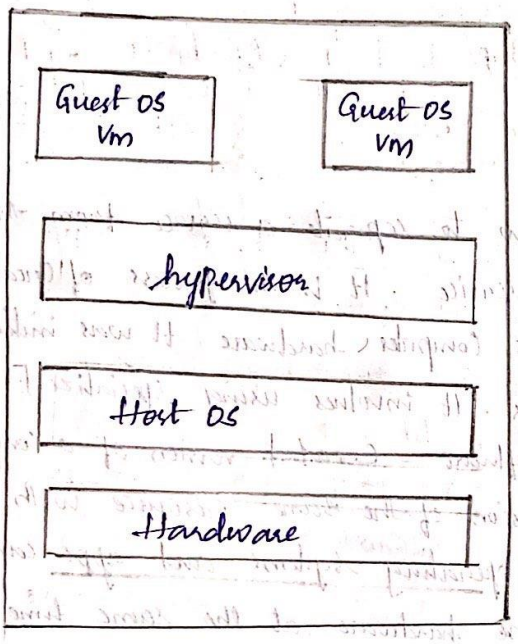
The physical resource such as computing, storage memory and network resource are virtualized. The virtualization layer partitions the physical resource into multiple virtual machine. The virtualisation layer allows multiple operating systems instance to run currently as virtual machine on same underlying physical resource

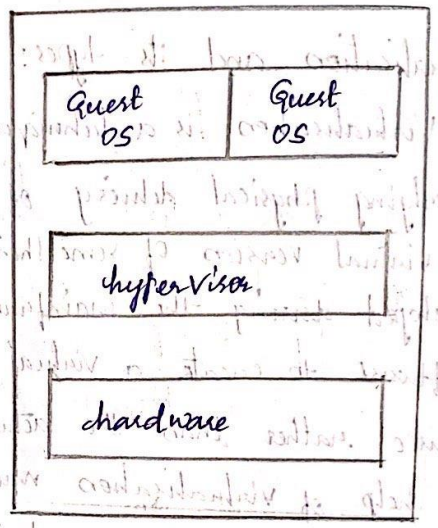
HYPERVISOR:

The virtual layer consist of a hypervisor or virtual machine monitor (VMM). The hypervisor presents a virtual operating platforms to get operating systems.

There are two types of hypervisors. They are

(1) Type - 1 hypervisor
(2) Type - 2 hypervisor





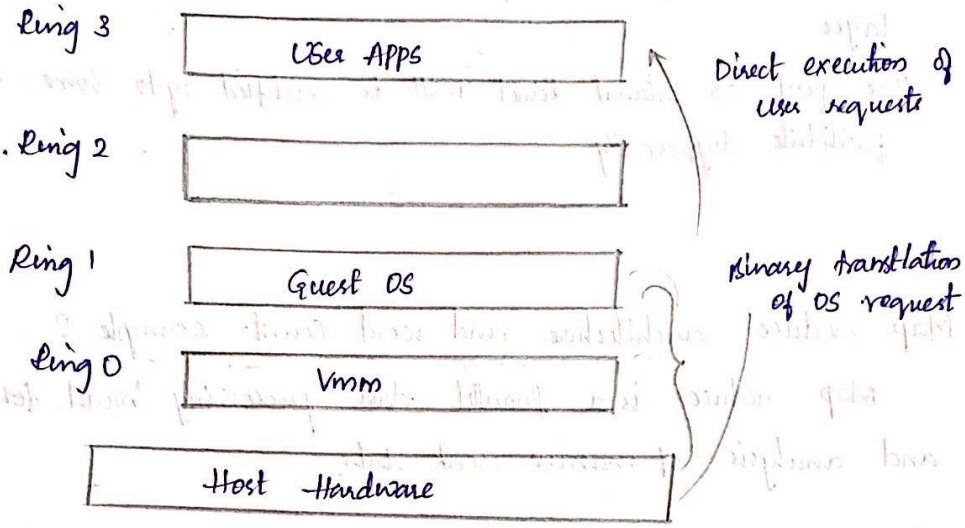
Various forms of virtualisation are

(i) full virtualisation
(ii) Half virtualisation

(i) full virtualisation :

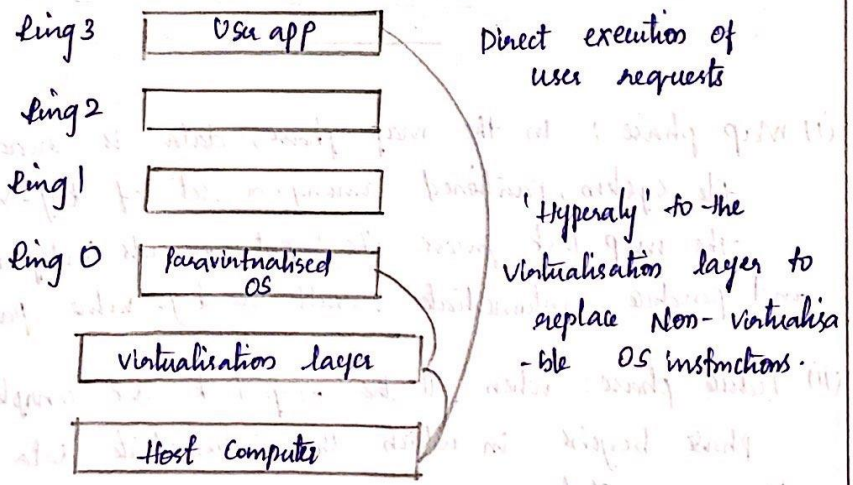
In full virtualisation, the virtualisation layer completly decouples the guest OS from the underlying hardware.

The guest OS requires no modification and is not aware that it is being virtualized. full virtualisation is enabled by direct execution of user request and binary translation



2. Para (or) Half Virtualisation :

In para virtualisation, the guest OS is modified to enable communication with the hyper-visor to improve performance and efficiency. The guest OS kernel is modified to replace non-virtualisation instruction with hypercell that communicate directly with virtualisation hypervisor. The hardware assisted virtualisation, the Privileged and sensitive calls are automatically trap the hypervisor



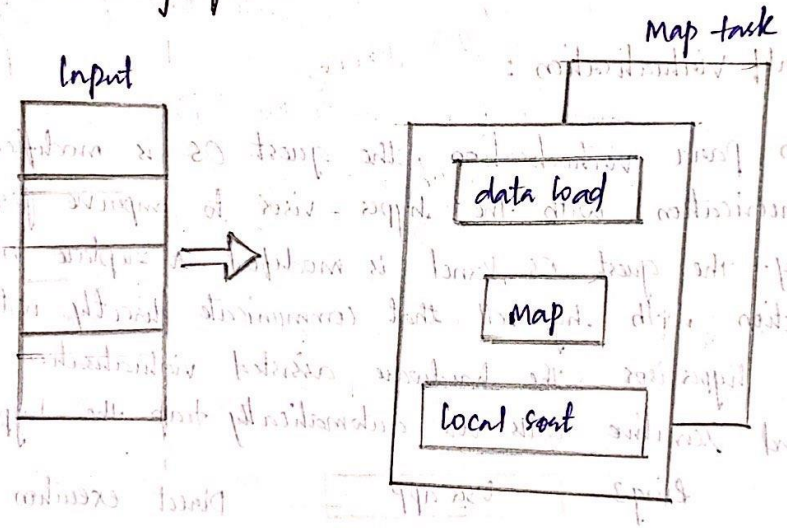
Guest OS will generate hypercalls to communicate with Virtualisation layer

Here guest OS internal Kernel will be modified upto some extent to facilitate hypercalls

3. Map reduce architecture and word count example ?

Map reduce is a parallel data processing model for processing and analysis of massive scale data

* Map reducing phases :



(i) Map phase : In the map phase, data is read from a distributed file system, partitioned among a set of key-value pairs.

The map-task process the input records independently of each other and produce - intermediate result as key-value pair.

(ii) Reduce-phase : when all the map-task are completed, the reduce phase begins in which the intermediate data with same key is aggregated

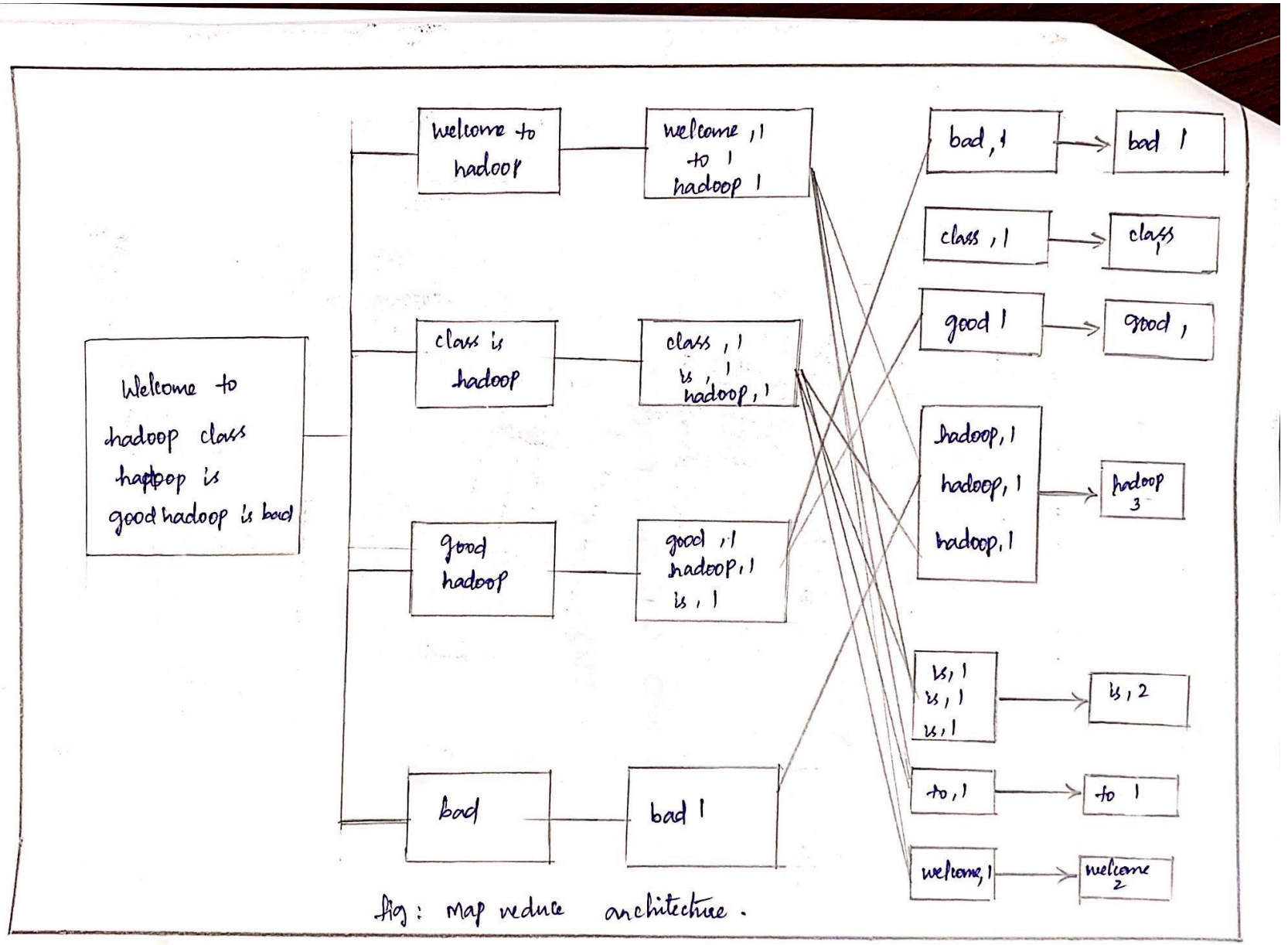


fig: map reduce architecture.

Working Models:

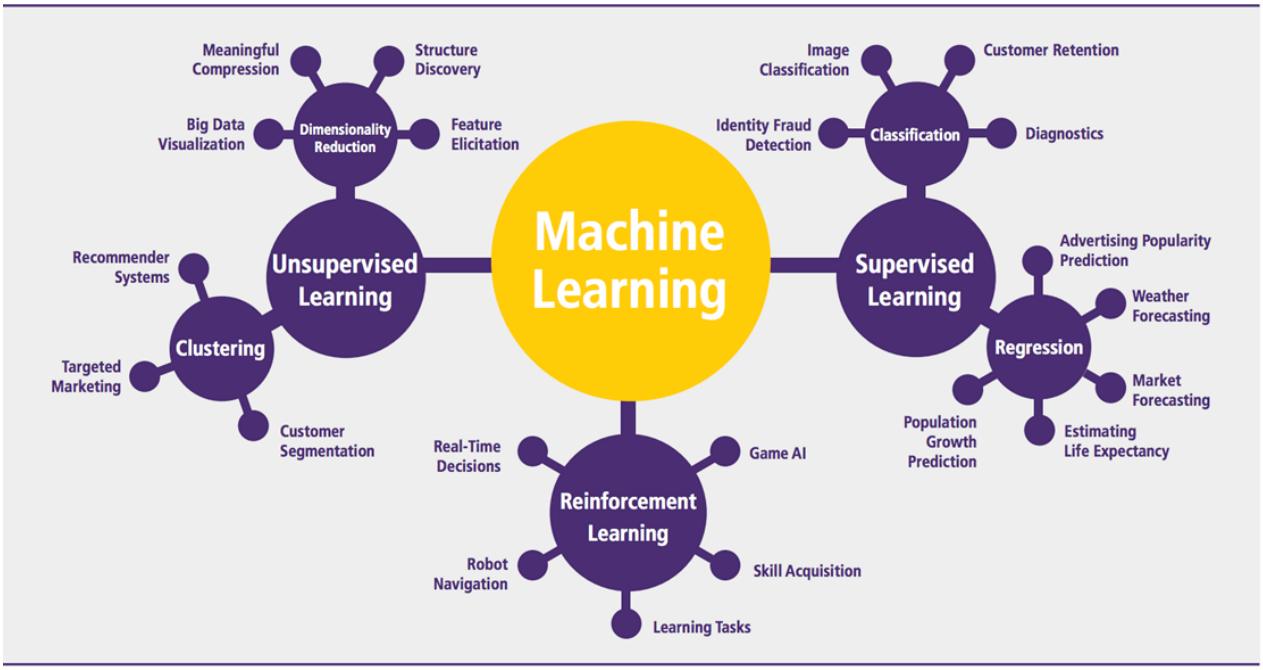


Fig: Types of Learning

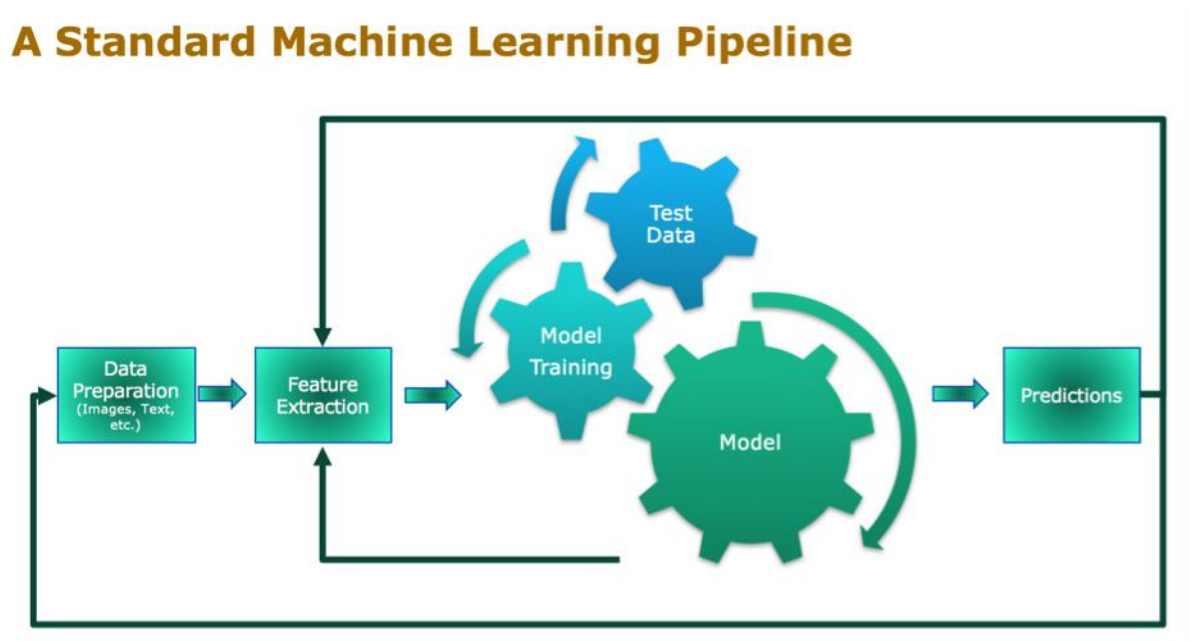


Fig. Machine Learning Pipeline

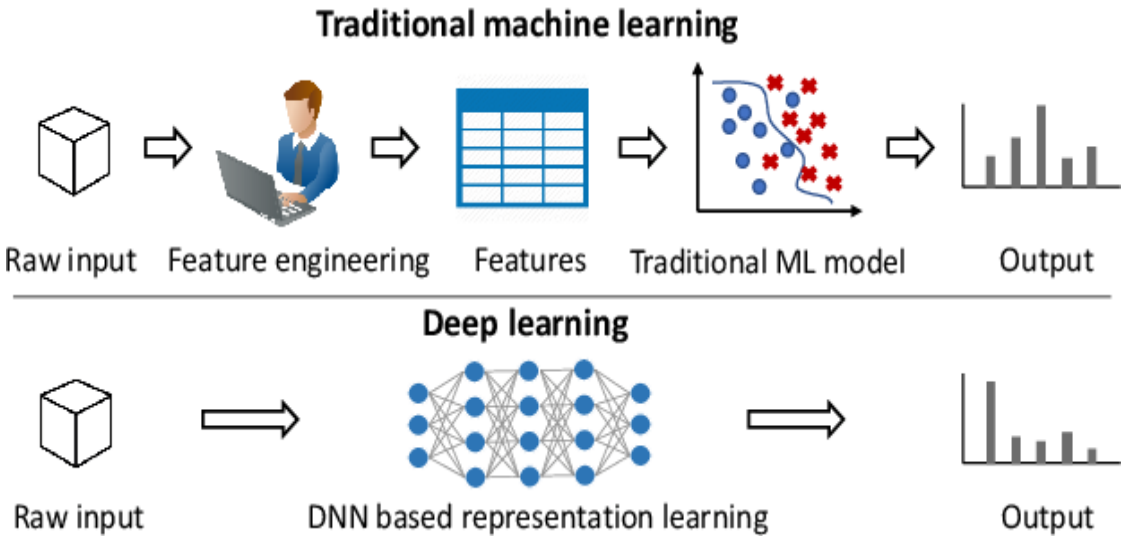


Fig. Traditional Machine Learning Vs. Deep Learning

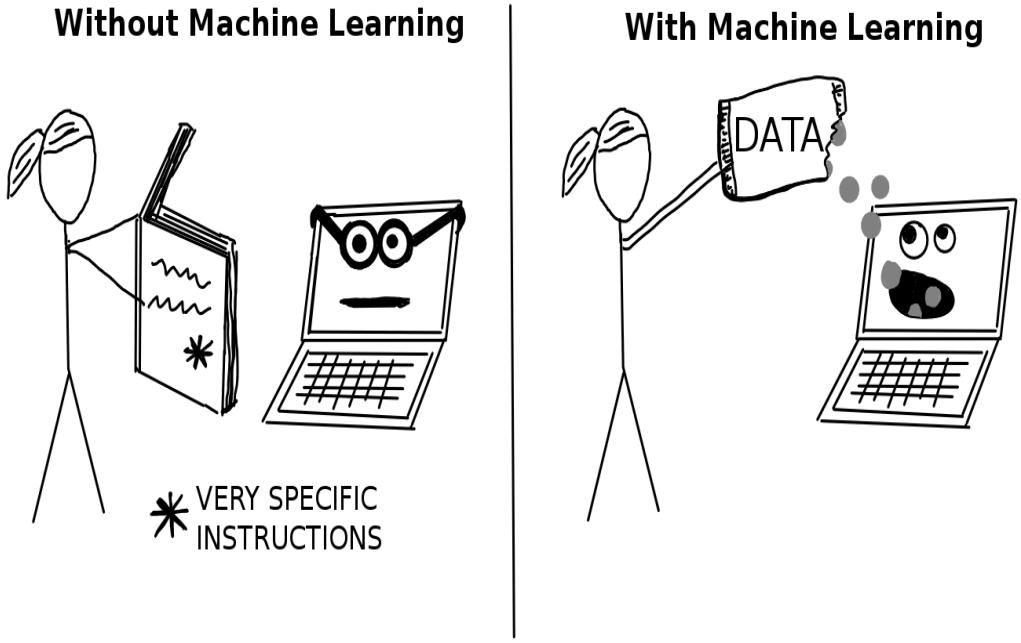


Fig: With & Without Machine Learning

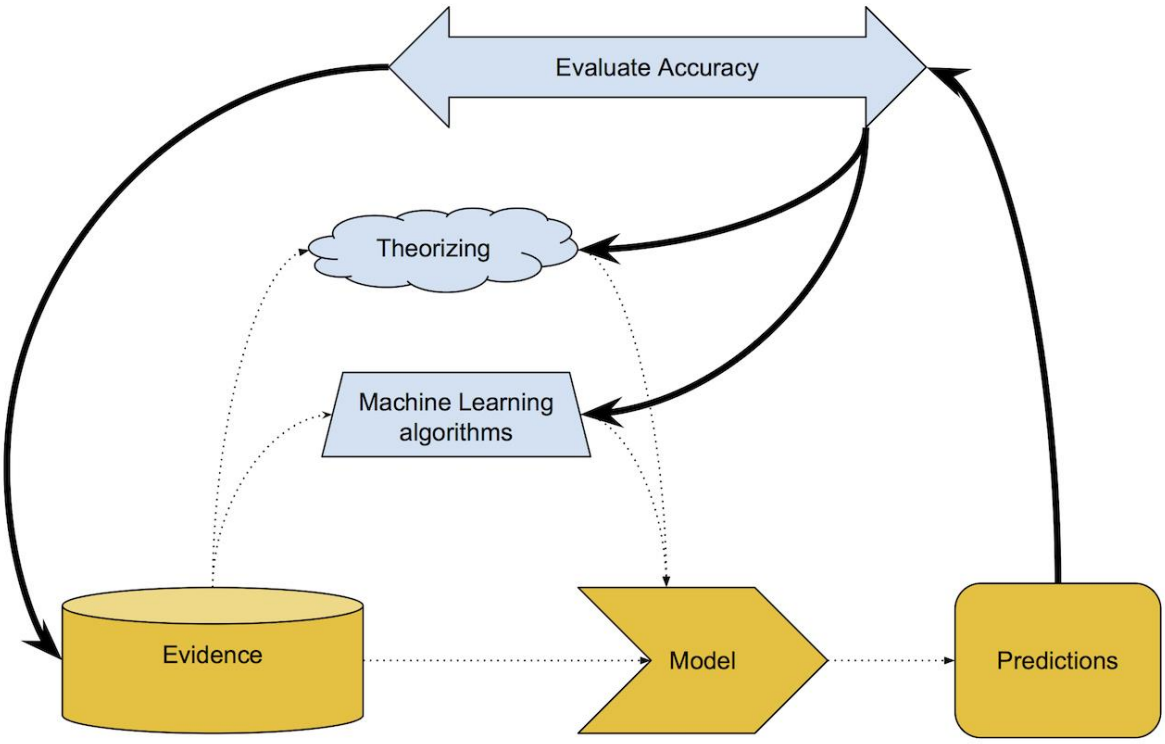


Fig: Evaluating Models