2.3.2 Teachers uses ICT enabled tools for effective teaching learning process.

PowerPoint Presentation on subject Mathematics
Topic is:- INVERSE OF A MATRIX

Def : Inverse Of a Matrix

- Let A be a matrix of order nxn. If there exists a matrix B of same order nxn such that

  AB = BA = I ..... Identity matrix of same size.

Then we say that A is a invertible matrix and

A^{-1} = B .....(A inverse is B)

OR

B^{-1} = A .....(B inverse is A)

{If such matrix B do not exists we say A inverse do not exists }

Method to find inverse by elementary row operations

- Here A is given matrix. To find it's inverse say B
- Consider AB = I .... Identity matrix.
- Perform elementary row operations on both the sides of above equation in such way that A is converted into I .. Identity matrix .
- So we will get B matrix

Recall

- If I is identity matrix of order nxn then for any matrix A of same order we have

  A I = I A = A

Q1) Find inverse of A using elementary row operations

- $A = \begin{pmatrix} 2 & 4 \\ 3 & 5 \end{pmatrix}$ R1
  ..... R2
- Consider A B = I
- i.e.
- $\begin{pmatrix} 2 & 4 \\ 3 & 5 \end{pmatrix} B = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$

$R1 * \frac{1}{2}$ → $\begin{pmatrix} 1 & 2 \\ 3 & 5 \end{pmatrix} B = \begin{pmatrix} \frac{1}{2} & 0 \\ 0 & 1 \end{pmatrix}$ STEP 1

$R2 - 3R1$ → $\begin{pmatrix} 1 & 2 \\ 0 & -1 \end{pmatrix} B = \begin{pmatrix} \frac{1}{2} & 0 \\ -3/2 & 1 \end{pmatrix}$ STEP 2

Q1) Find inverse of A using elementary row operations

$R_2 * -1$ (STEP 3)

$$\begin{pmatrix} 1 & 2 \\ 0 & 1 \end{pmatrix} B = \begin{pmatrix} ½ & 0 \\ 3/2 & -1 \end{pmatrix}$$

$R_1 - 2R_2$ (STEP 4)

$$\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} B = \begin{pmatrix} -5/2 & 2 \\ 3/2 & -1 \end{pmatrix}$$

$$A^{-1} = \begin{pmatrix} 5/2 & 2 \\ 3/2 & -1 \end{pmatrix}$$

=

PowerPoint Presentation on subject Python
Topic is:- Introduction to Python

Introduction to Python

For MSC CS Students

Outline

- Introduction to Python
- Operators & Expressions
- Data Types & Type Conversion
- Variables: Names for data
- Functions
- Program Flow (Branching)
- Input from the user
- Iteration (Looping)

Introduction to Python

- Python is an interpreted programming language
- A program is a set of instructions telling the computer what to do.
- It has a strict syntax, and will only recognize very specific statements. If the interpreter does not recognize what you have typed, it will complain until you fix it.

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Operators

- Python has many operators. Some examples are:

`+, -, *, /, %, >, <, ==`

`print`

- Operators perform an action on one or more operands. Some operators accept operands before and after themselves:

`operand1 + operand2`, or `3 + 5`

- Others are followed by one or more operands until the end of the line, such as: `print "Hi!", 32, 48`
- When operators are evaluated, they perform action on their operands, and produce a new value.

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Example Expression Evaluations

- An expression is any set of values and operators that will produce a new value when evaluated. Here are some examples, along with the new value they produce when evaluated:

`5 + 10`	produces	15
`"Hi" + " " + "Jay!"`	produces	"Hi Jay!"
`10 / (2+3)`	produces	2
`10 > 5`	produces	True
`10 < 5`	produces	False
`10 / 3.5`	produces	2.8571428571
`10 // 3`	produces	3
`10 % 3`	produces	1

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List of Operators: +, -, *, /, <, >, <=, >=, ==, %, //

- Some operators should be familiar from the world of mathematics such as Addition (+), Subtraction (-), Multiplication (*), and Division (/).
- Python also has comparison operators, such as Less-Than (<), Greater-Than (>), Less-Than-or-Equal(<=), Greater-Than-or-Equal (>=), and Equality-Test (==). These operators produce a True or False value.
- A less common operator is the Modulo operator (%), which gives the remainder of an integer division. 10 divided by 3 is 9 with a remainder of 1:

`10 // 3` produces 3, while `10 % 3` produces 1

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DANGER! Operator Overloading!

- NOTE! Some operators will work in a different way depending upon what their operands are. For example, when you add two numbers you get the expected result: `3 + 3` produces 6.
- But if you "add" two or more strings, the + operator produces a concatenated version of the strings: `"Hi" + "Jay"` produces "HiJay"
- Multiplying strings by a number repeats the string!

`"Hi Jay" * 3` produces "Hi JayHi JayHiJay"

- The % sign also works differently with strings:

`"test %f" % 34` produces "test 34"

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`"test %f" % 34` produces "test 34"

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Effect of Data Types on Operator Results

- Math operators work differently on Floats and Ints:
  - int + int produces an int
  - int + float or float + int produces a float
- This is especially important for division, as integer division produces a different result from floating point division:

`10 // 3` produces 3

`10 / 3` produces 3.3333

`10.0 / 3.0` produces 3.3333333

- Other operators work differently on different data types: + (addition) will add two numbers, but concatenate strings.

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Simple Data types in Python

The simple data types in Python are:

- Numbers
  - int – Integer: -5, 10, 77
  - float – Floating Point numbers: 3.1457, 0.34
- bool – Booleans (True or False)
- Strings are a more complicated data type (called Sequences) that we will discuss more later. They are made up of individual letters (strings of length 1)

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Variables

- Variables are names that can point to data.
- They are useful for saving intermediate results and keeping data organized.
- The assignment operator (=) assigns data to variables.
  - Don't confuse the assignment operator (single equal sign, =) with the Equality-Test operator (double equal sign, ==)
- Variable names can be made up of letters, numbers and underscores (_), and must start with a letter.

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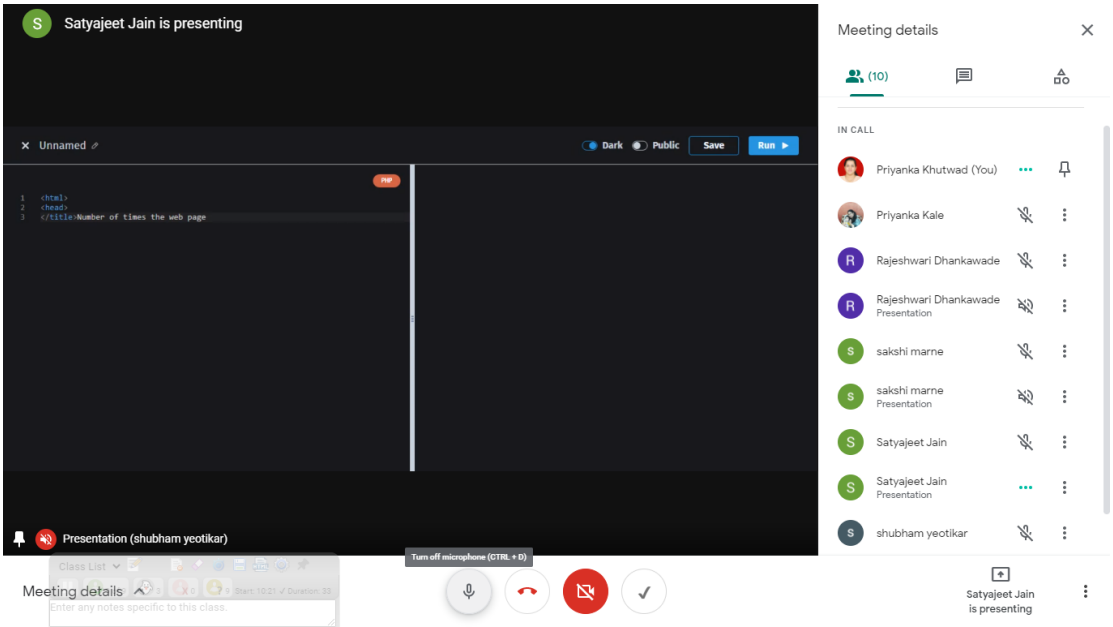

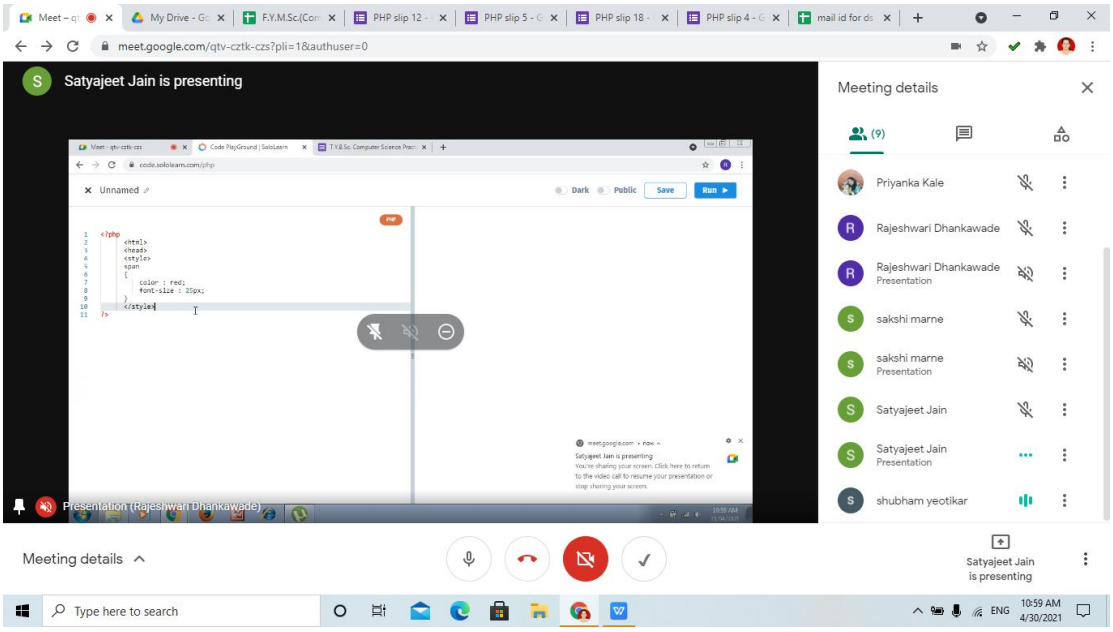

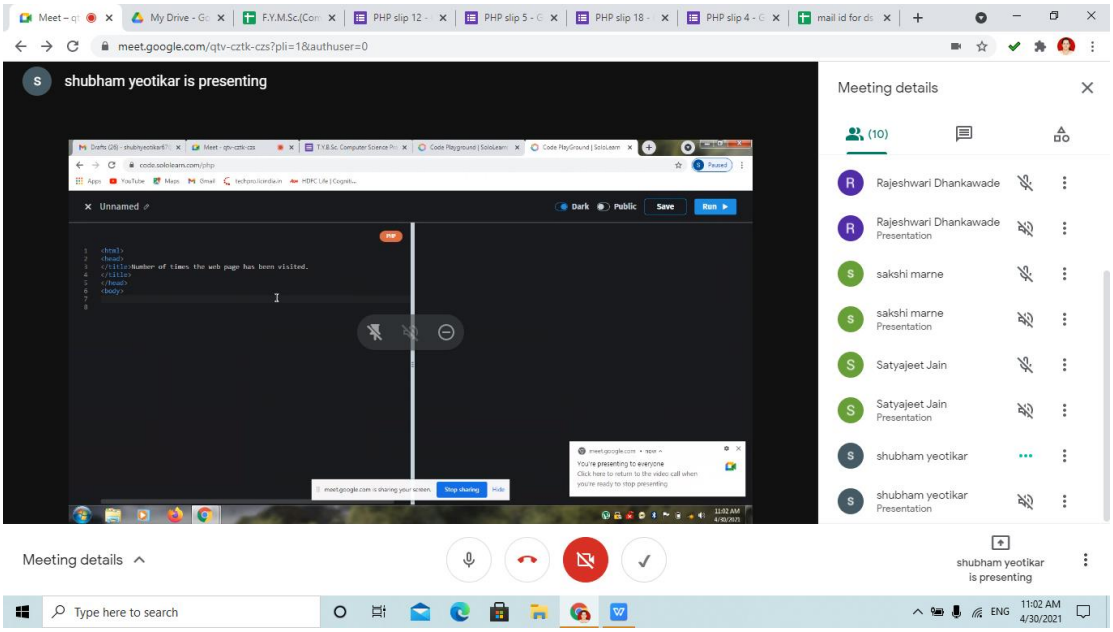
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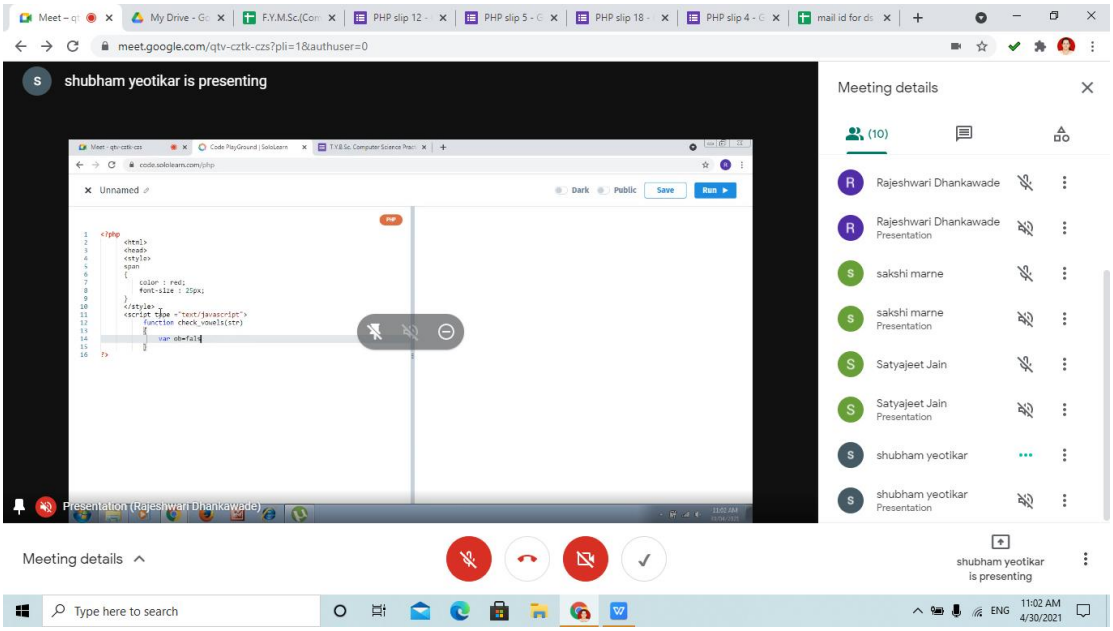
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