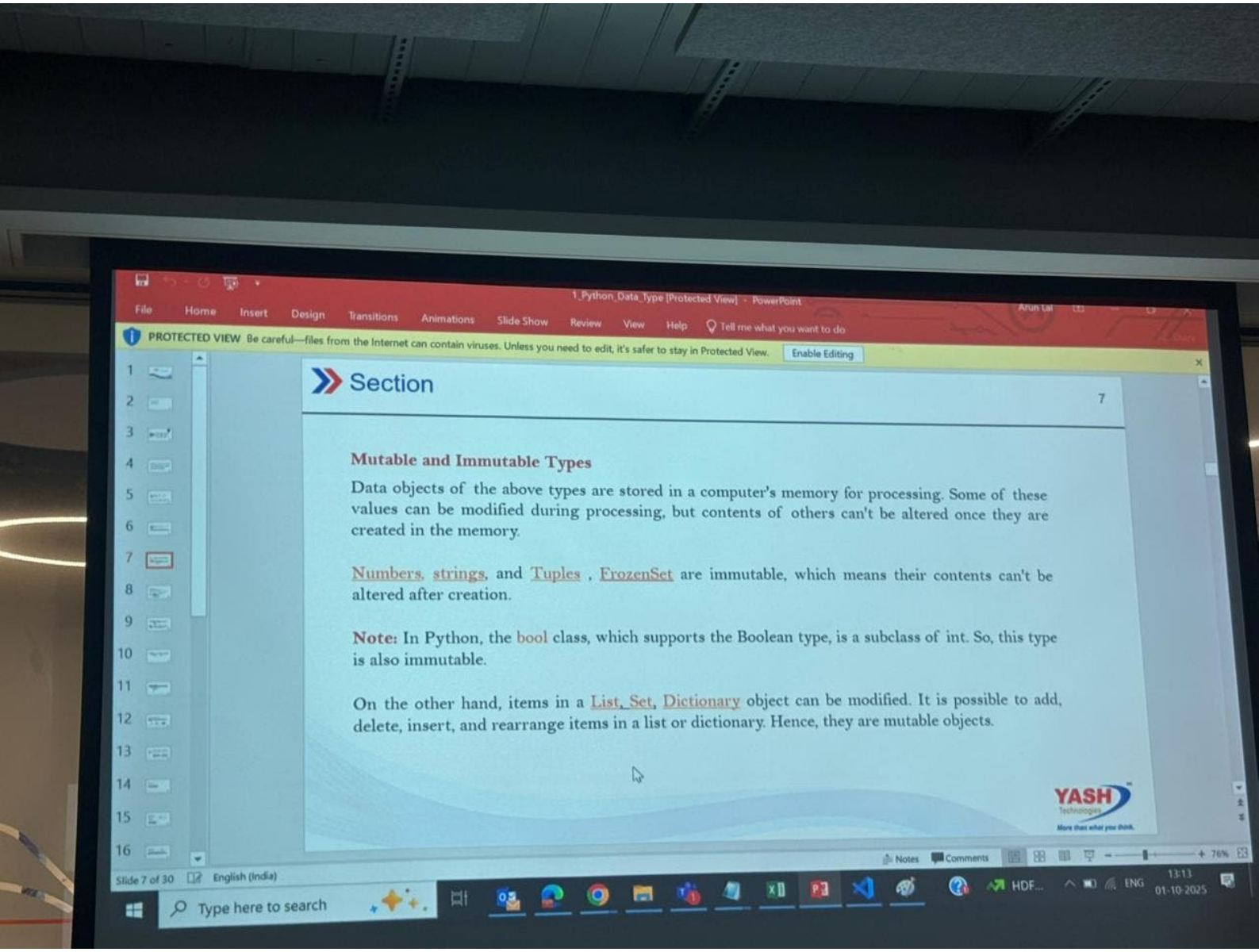
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Mutable and Immutable Types
Data objects of the above types are stored in a computer's memory for processing. Some of these values can be modified during processing, but contents of others can't be altered once they are created in the memory.
Numbers, strings, and Tuples , FrozenSet are immutable, which means their contents can't be altered after creation.
Note: In Python, the bool class, which supports the Boolean type, is a subclass of int. So, this type is also immutable.
On the other hand, items in a List, Set, Dictionary object can be modified. It is possible to add, delete, insert, and rearrange items in a list or dictionary. Hence, they are mutable objects.
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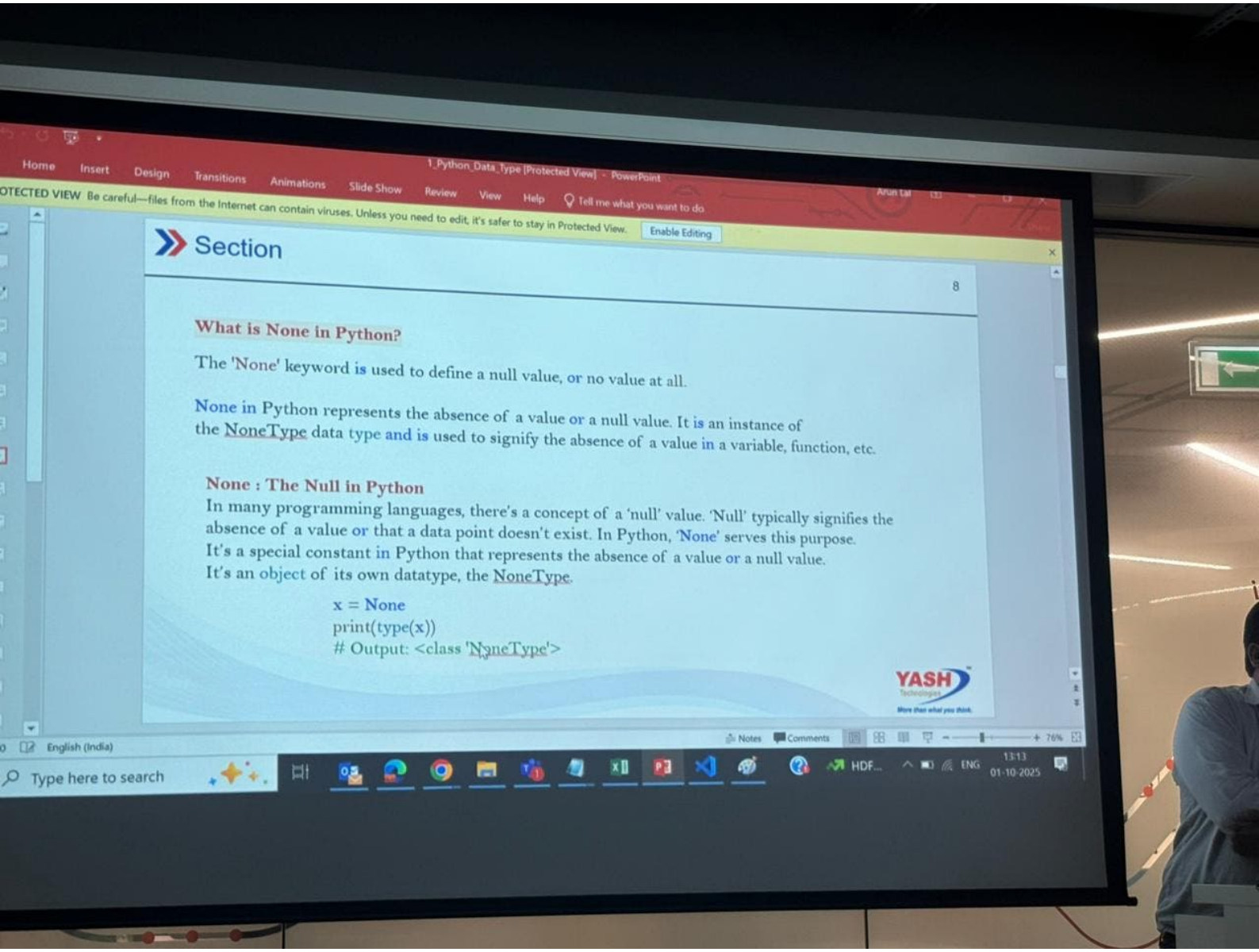
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What is None in Python?
The 'None' keyword is used to define a null value, or no value at all.
None in Python represents the absence of a value or a null value. It is an instance of the NoneType data type and is used to signify the absence of a value in a variable, function, etc.
None : The Null in Python
In many programming languages, there's a concept of a 'null' value. 'Null' typically signifies the absence of a value or that a data point doesn't exist. In Python, 'None' serves this purpose.
It's a special constant in Python that represents the absence of a value or a null value.
It's an object of its own datatype, the NoneType.
x = None
print(type(x))
# Output: <class 'NoneType'>
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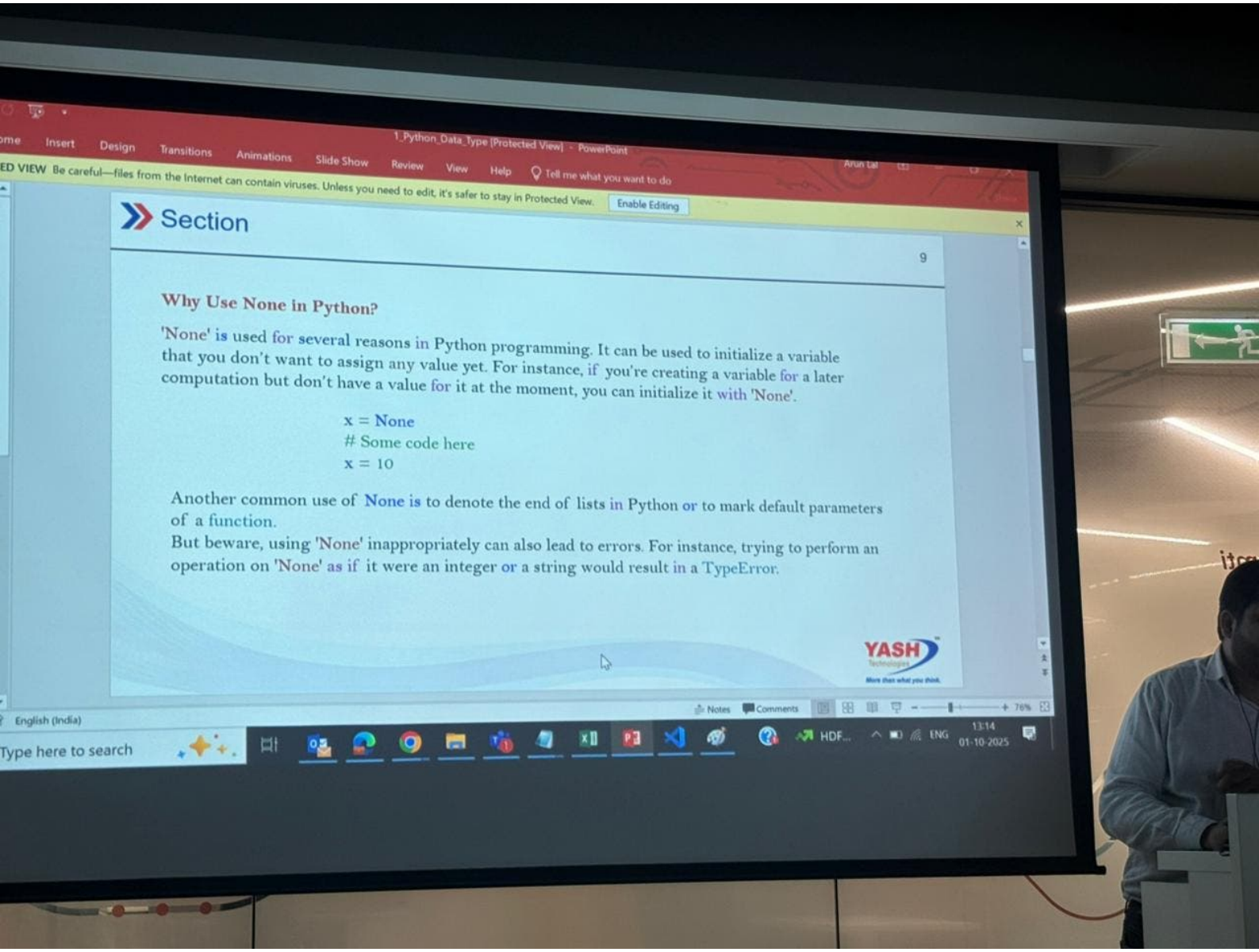
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Why Use None in Python?
'None' is used for several reasons in Python programming. It can be used to initialize a variable that you don't want to assign any value yet. For instance, if you're creating a variable for a later computation but don't have a value for it at the moment, you can initialize it with 'None'.
x = None
# Some code here
x = 10
Another common use of None is to denote the end of lists in Python or to mark default parameters of a function.
But beware, using 'None' inappropriately can also lead to errors. For instance, trying to perform an operation on 'None' as if it were an integer or a string would result in a TypeError.
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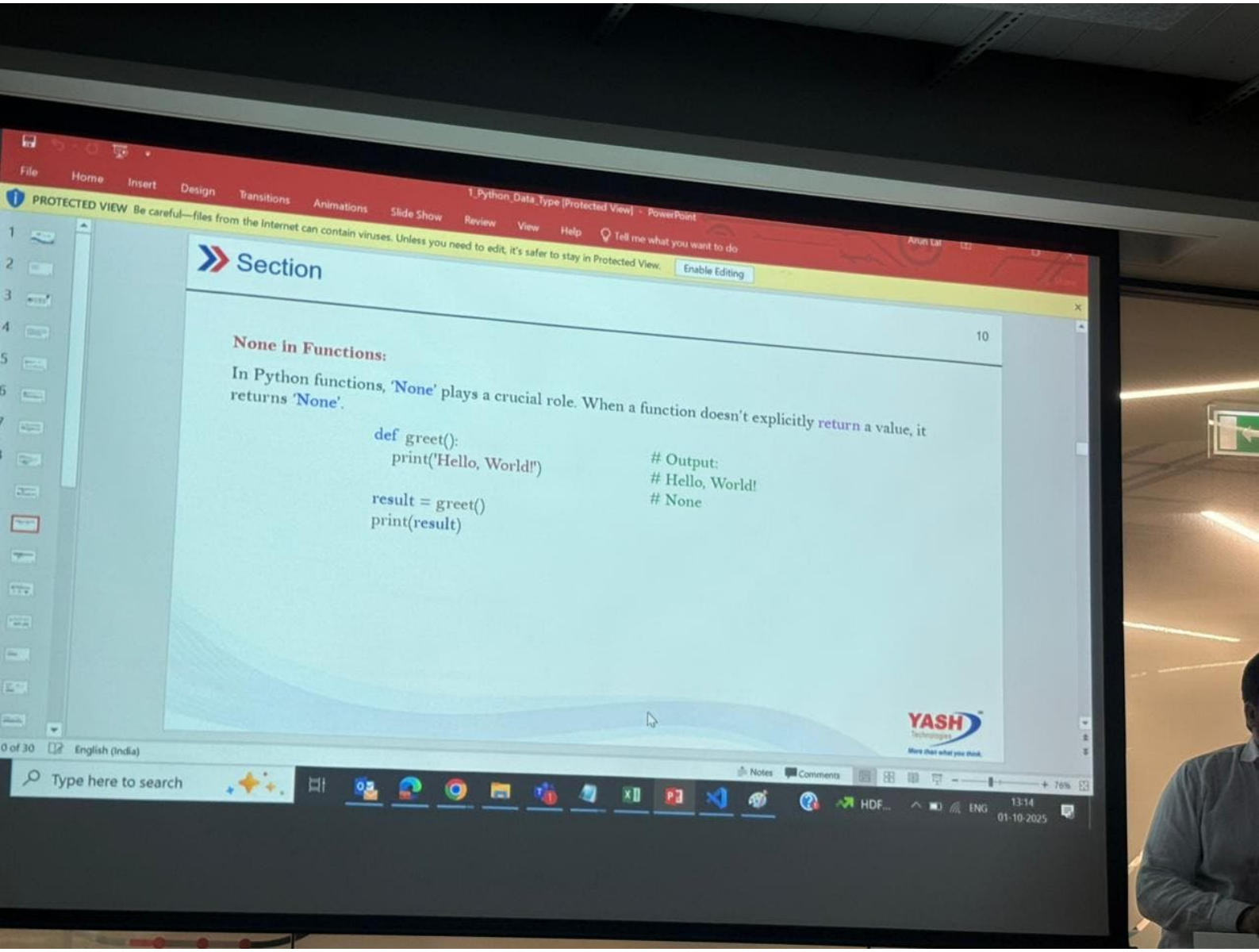
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None in Functions:
In Python functions, 'None' plays a crucial role. When a function doesn't explicitly return a value, it returns 'None'.
def greet():
print('Hello, World!')
result = greet()
print(result)
# Output:
# Hello, World!
# None
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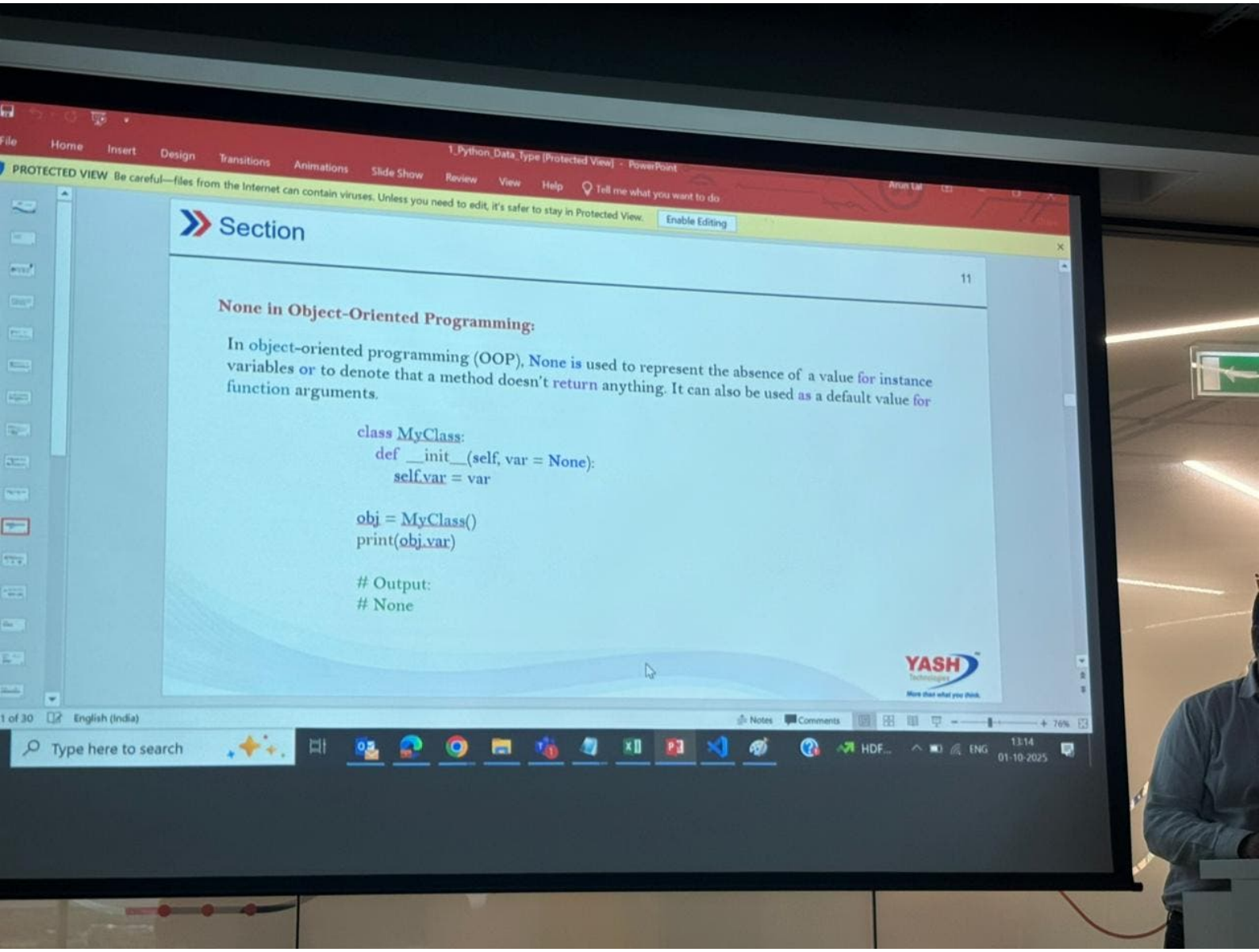
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None in Object-Oriented Programming:
In object-oriented programming (OOP), None is used to represent the absence of a value for instance variables or to denote that a method doesn't return anything. It can also be used as a default value for function arguments.
class MyClass:
def __init__(self, var = None):
self.var = var
obj = MyClass()
print(obj.var)
# Output:
# None
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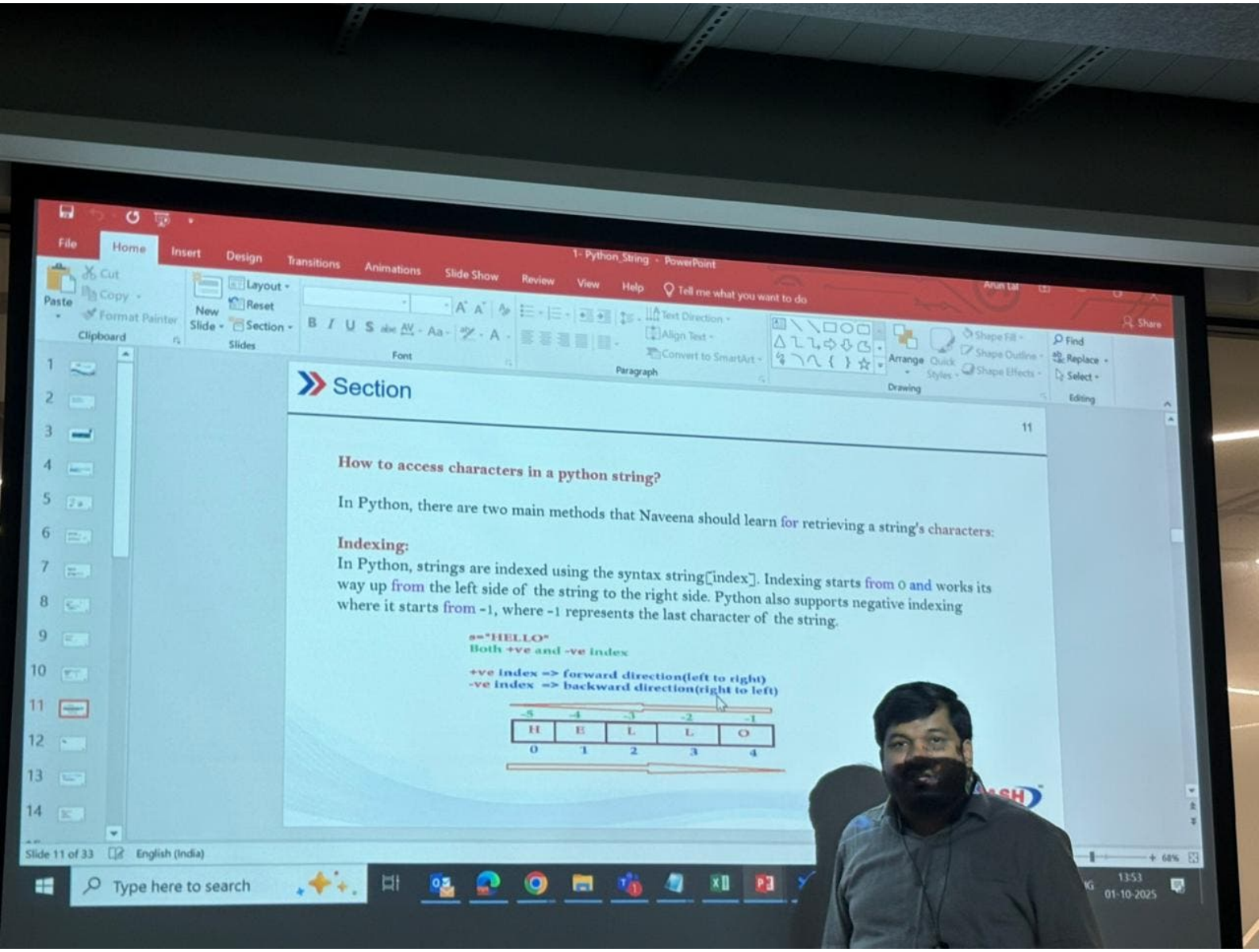
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How to access characters in a python string?
In Python, there are two main methods that Naveena should learn for retrieving a string's characters:
Indexing:
In Python, strings are indexed using the syntax string[index]. Indexing starts from 0 and works its way up from the left side of the string to the right side. Python also supports negative indexing where it starts from -1, where -1 represents the last character of the string.
s="HELLO"
Both +ve and -ve index
+ve index => forward direction(left to right)
-ve index => backward direction(right to left)
-5 -4 -3 -2 -1
H E L L O
0 1 2 3 4
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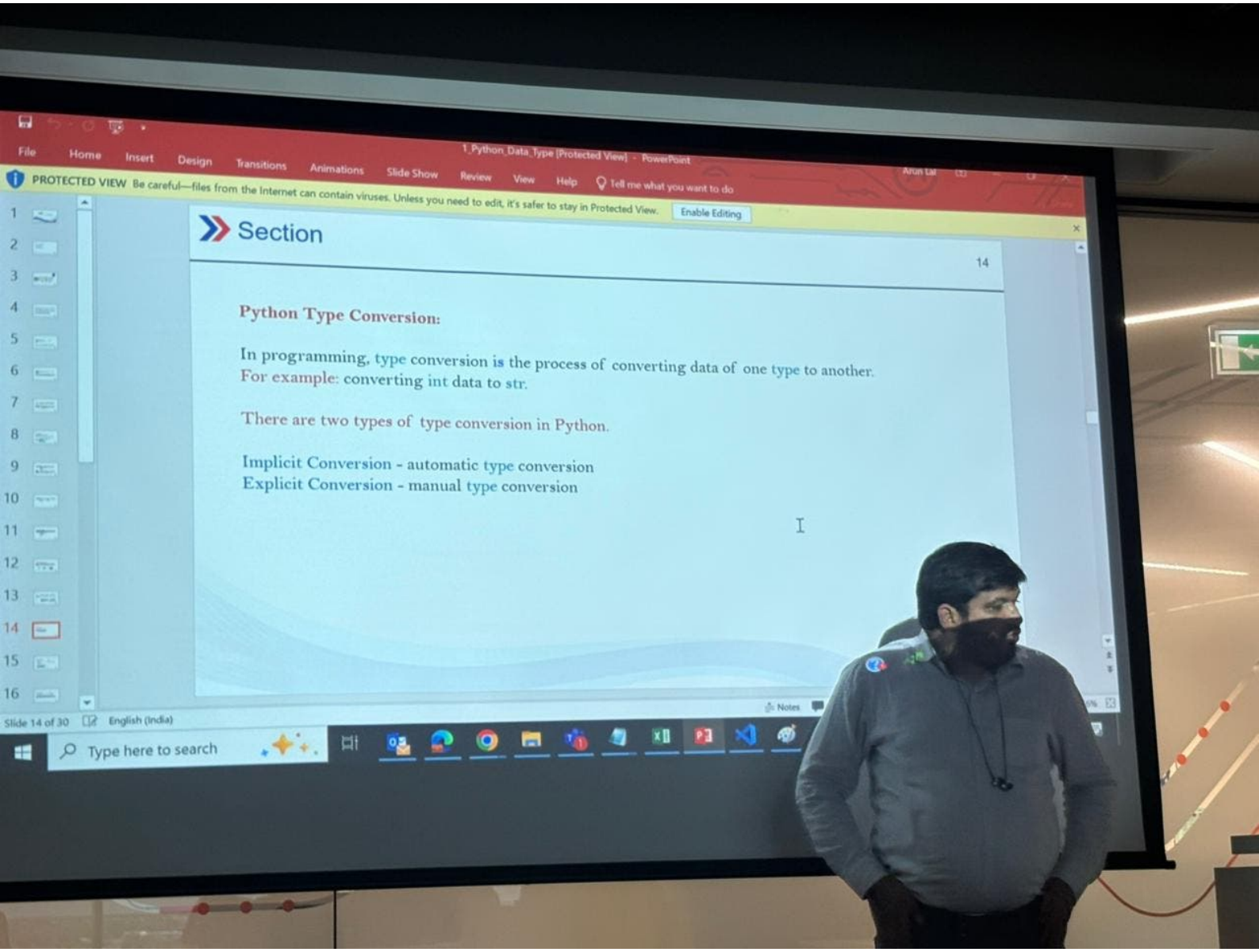
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Python Type Conversion:
In programming, type conversion is the process of converting data of one type to another.
For example: converting int data to str.
There are two types of type conversion in Python.
Implicit Conversion - automatic type conversion
Explicit Conversion - manual type conversion
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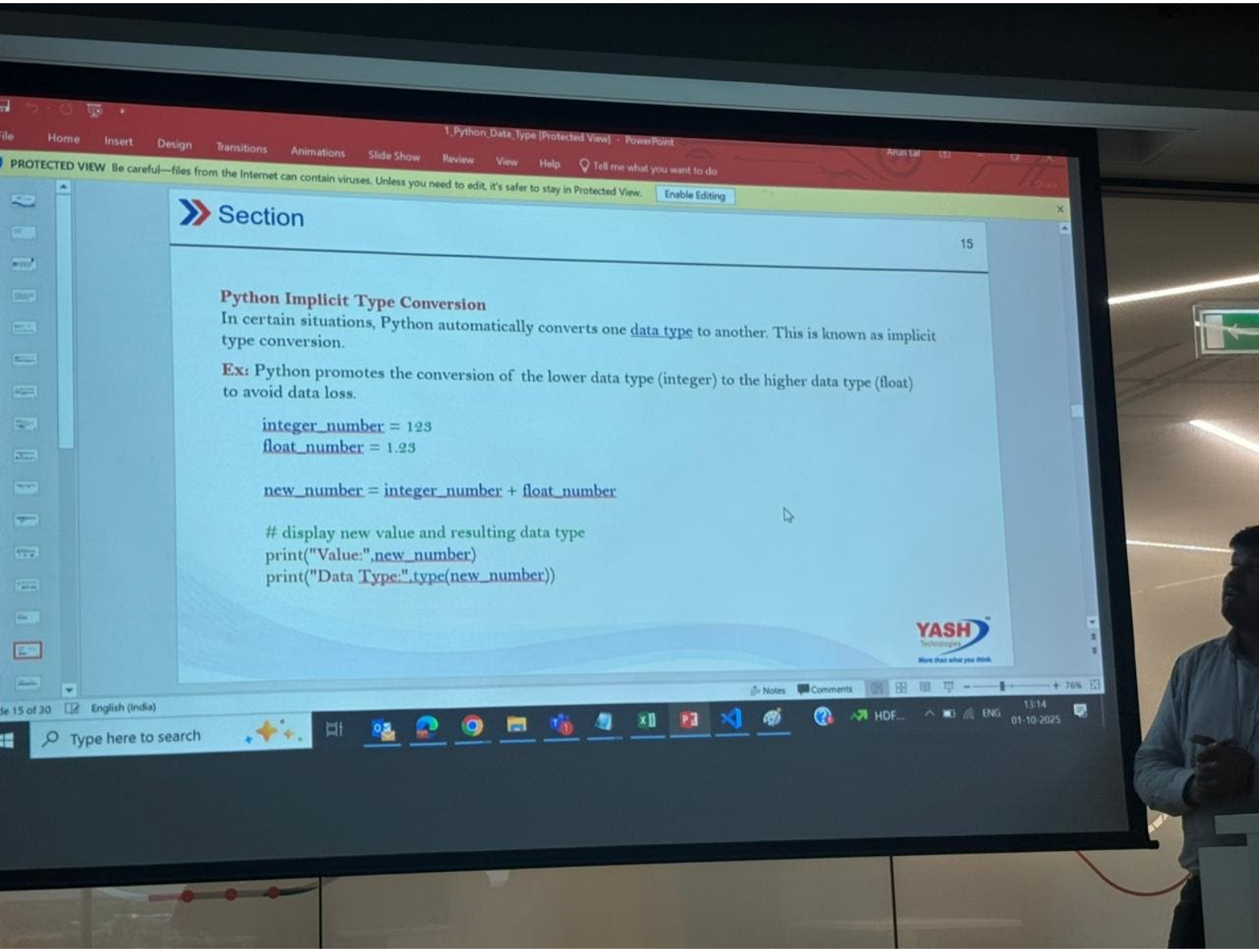
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Python Implicit Type Conversion
In certain situations, Python automatically converts one data type to another. This is known as implicit type conversion.
Ex: Python promotes the conversion of the lower data type (integer) to the higher data type (float) to avoid data loss.
integer_number = 123
float_number = 1.23
new_number = integer_number + float_number
# display new value and resulting data type
print("Value:",new_number)
print("Data Type:",type(new_number))
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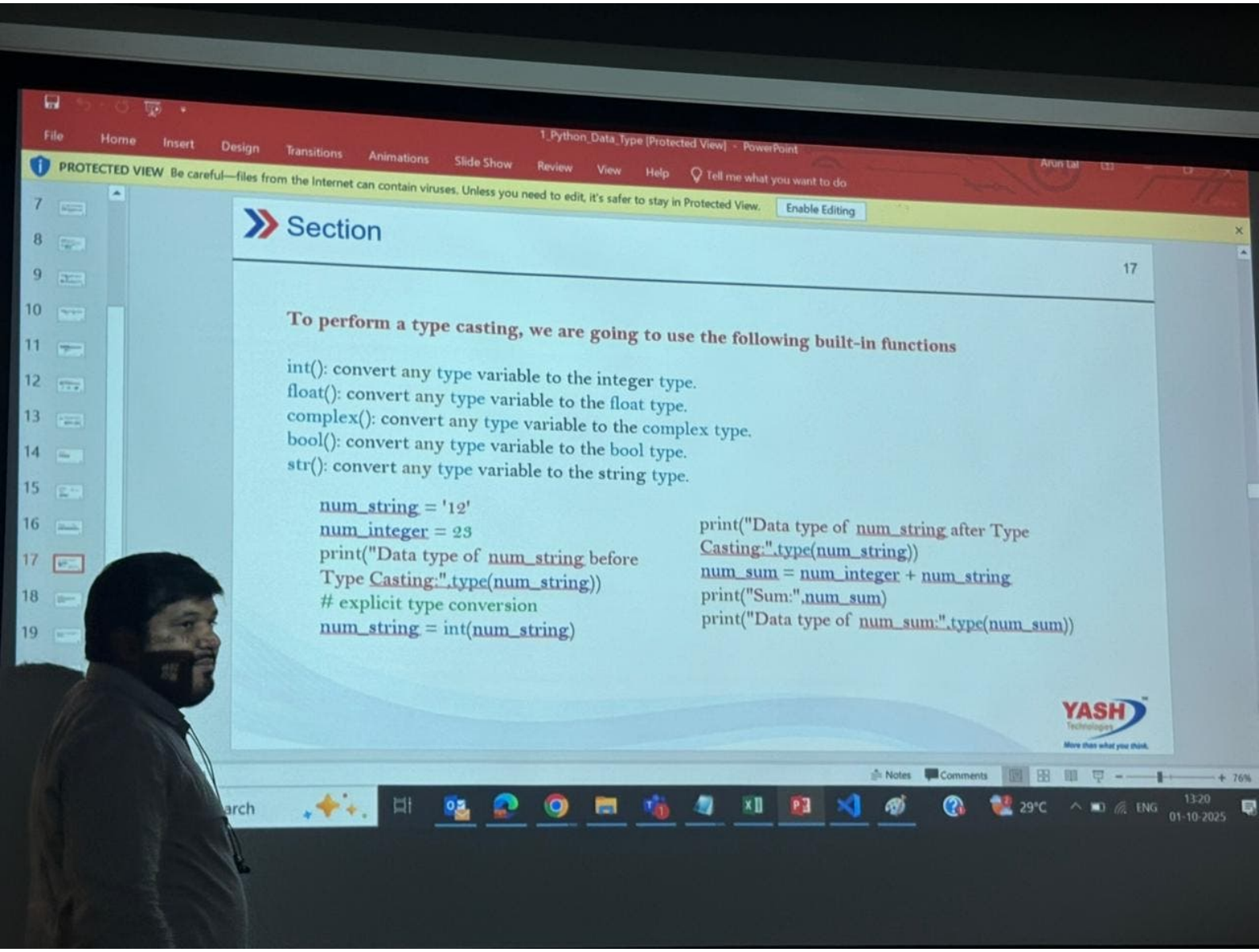
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To perform a type casting, we are going to use the following built-in functions
int(): convert any type variable to the integer type.
float(): convert any type variable to the float type.
complex(): convert any type variable to the complex type.
bool(): convert any type variable to the bool type.
str(): convert any type variable to the string type.
num_string = '12'
num_integer = 23
print("Data type of num_string before Type Casting:",type(num_string))
# explicit type conversion
num_string = int(num_string)
print("Data type of num_string after Type Casting:",type(num_string))
num_sum = num_integer + num_string
print("Sum:",num_sum)
print("Data type of num_sum:",type(num_sum))
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Key Points to Remember:

1. Type Conversion is the conversion of an object from one data type to another data type.
2. Implicit Type Conversion is automatically performed by the Python interpreter.
3. Python avoids the loss of data in Implicit Type Conversion.
4. Explicit Type Conversion is also called Type Casting, the data types of objects are converted using predefined functions by the user.
5. In Type Casting, loss of data may occur as we enforce the object to a specific data type.

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What does range do in Python?

In Python, the range() function returns a sequence of numbers. By default, Python follows these rules when defining the sequence:

It begins with 0.
It advances in increments of 1.

It does not include the final number in the specified range. You can change the parameters of your range if the default settings don't suit your needs.

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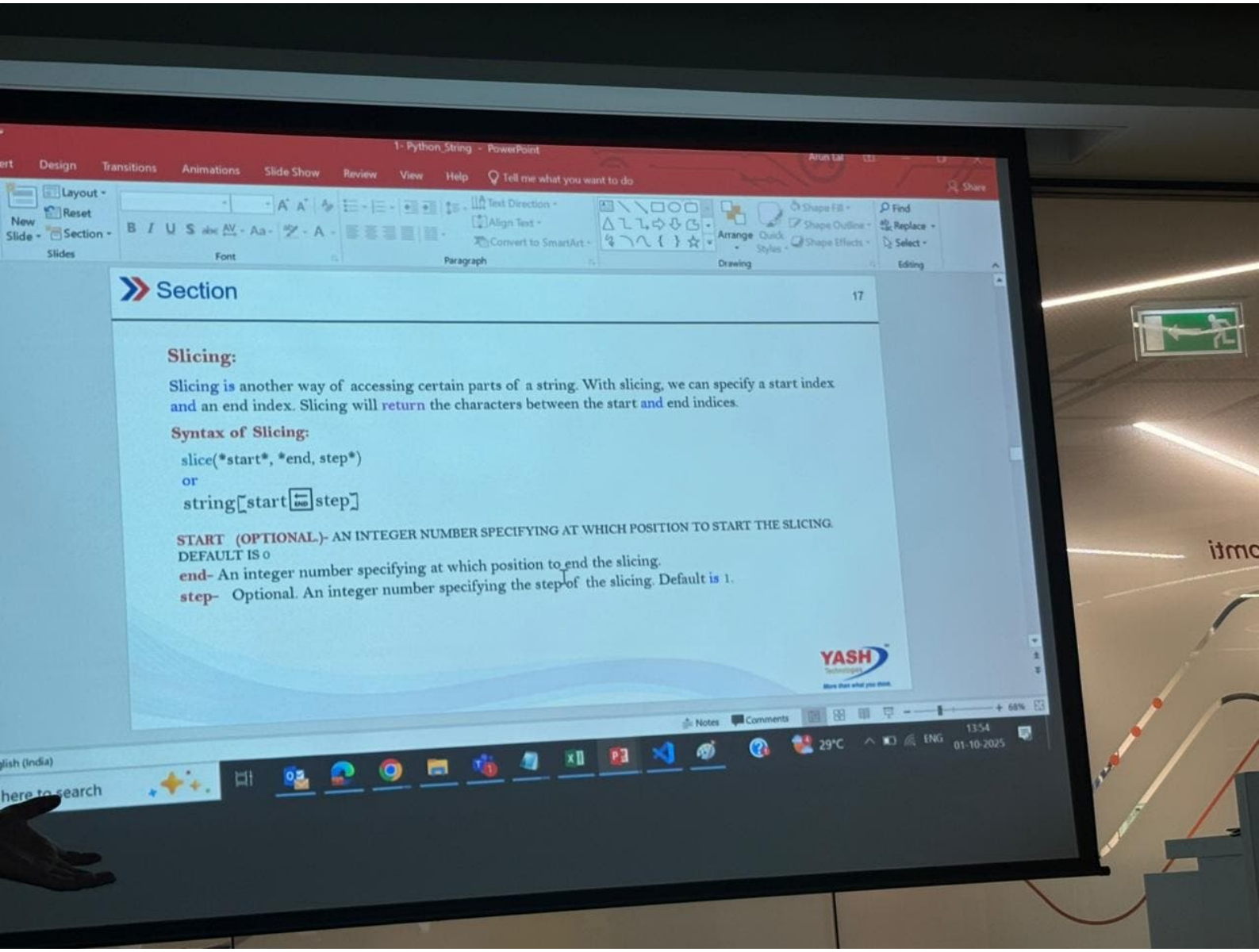
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Shape Outline
Shape Effects
Text Direction
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Slicing:
Slicing is another way of accessing certain parts of a string. With slicing, we can specify a start index and an end index. Slicing will return the characters between the start and end indices.
Syntax of Slicing:
slice(*start*, *end, step*)
or
string[start:end:step]
START (OPTIONAL)- AN INTEGER NUMBER SPECIFYING AT WHICH POSITION TO START THE SLICING. DEFAULT IS 0
end- An integer number specifying at which position to end the slicing.
step- Optional. An integer number specifying the step of the slicing. Default is 1.
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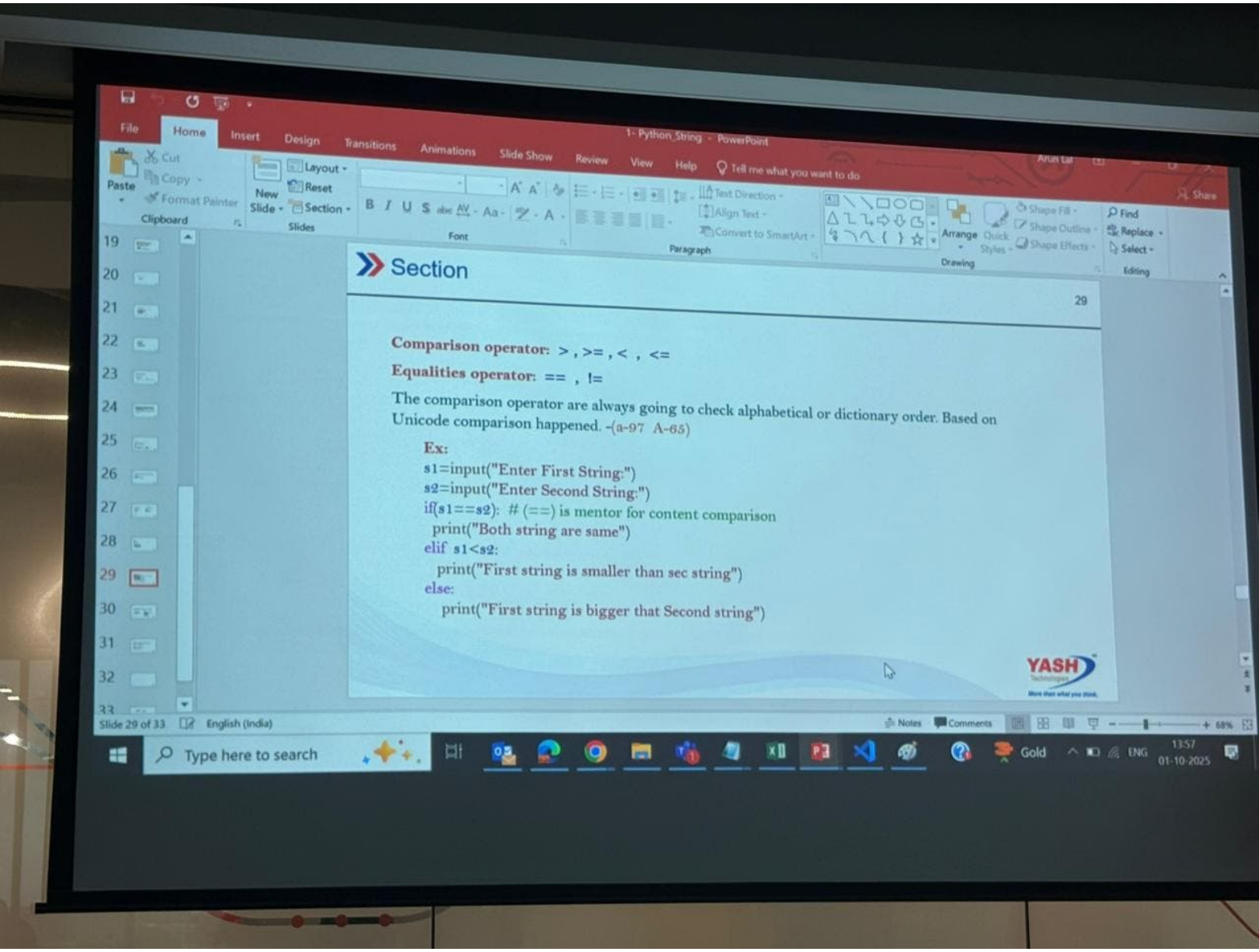
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Comparison operator: > , >= , < , <=
Equalities operator: == , !=
The comparison operator are always going to check alphabetical or dictionary order. Based on Unicode comparison happened. -(a-97 A-65)
Ex:
s1=input("Enter First String:")
s2=input("Enter Second String:")
if(s1==s2): # (==) is mentor for content comparison
print("Both string are same")
elif s1<s2:
print("First string is smaller than sec string")
else:
print("First string is bigger that Second string")
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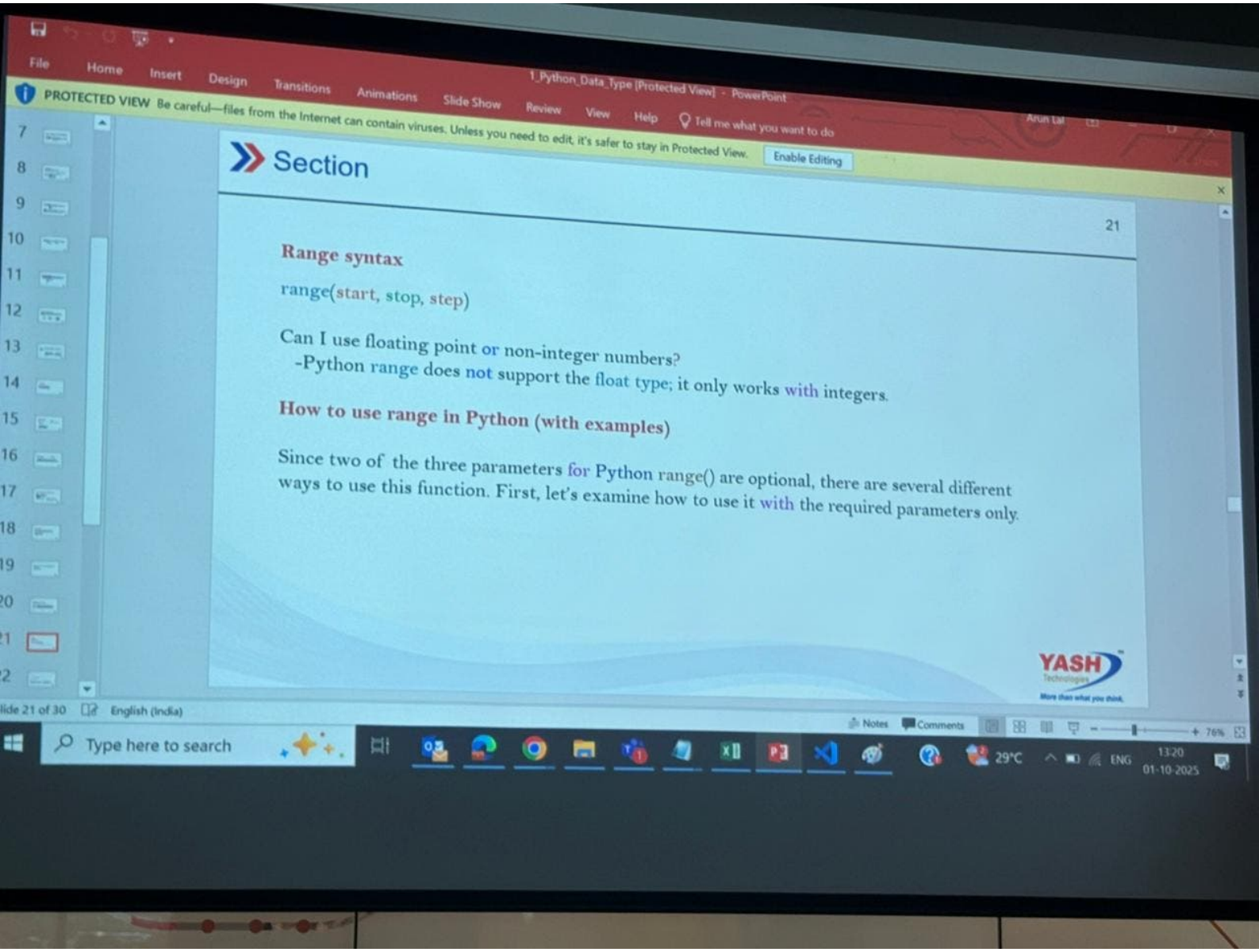
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Range syntax
range(start, stop, step)
Can I use floating point or non-integer numbers?
-Python range does not support the float type; it only works with integers.
How to use range in Python (with examples)
Since two of the three parameters for Python range() are optional, there are several different ways to use this function. First, let's examine how to use it with the required parameters only.
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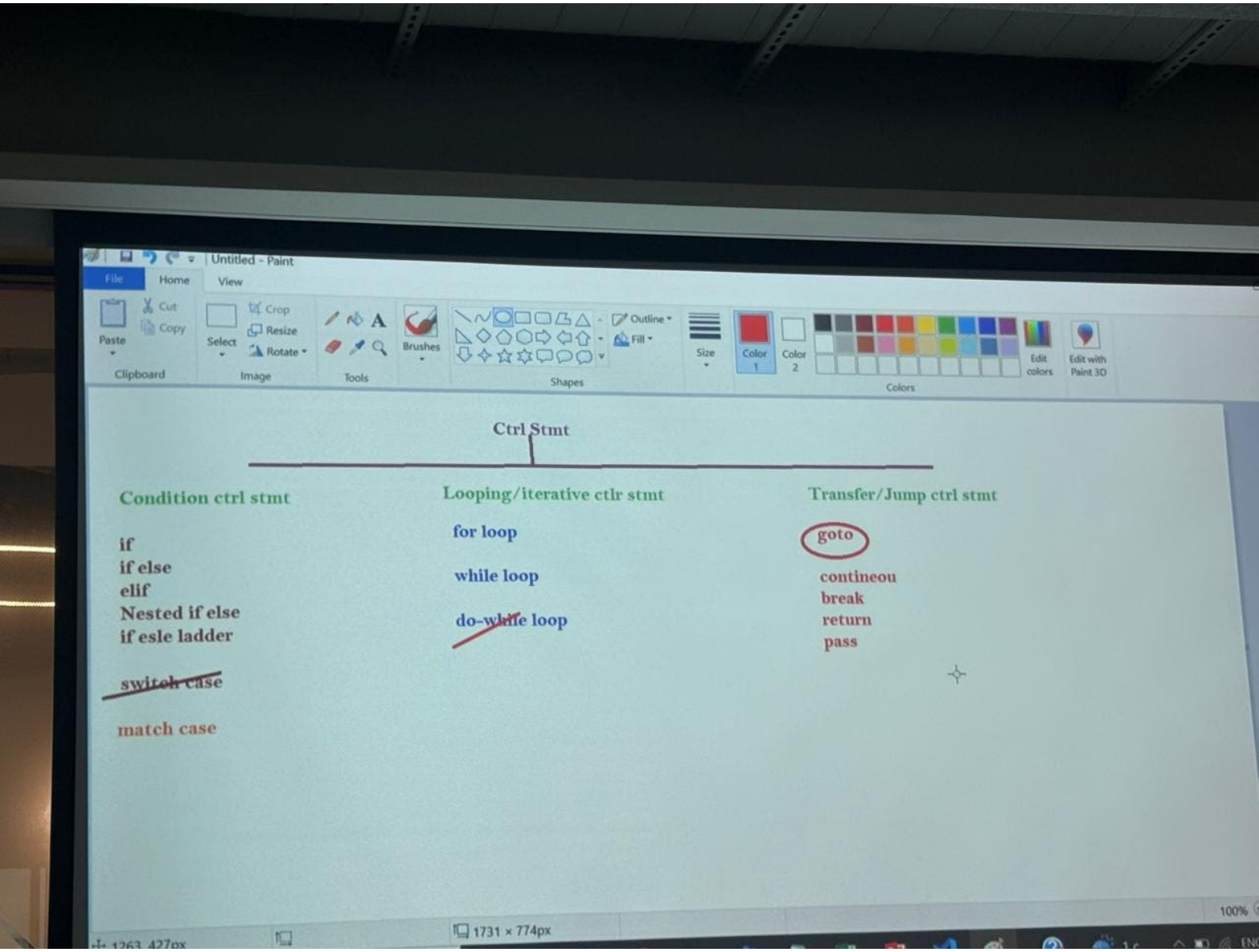
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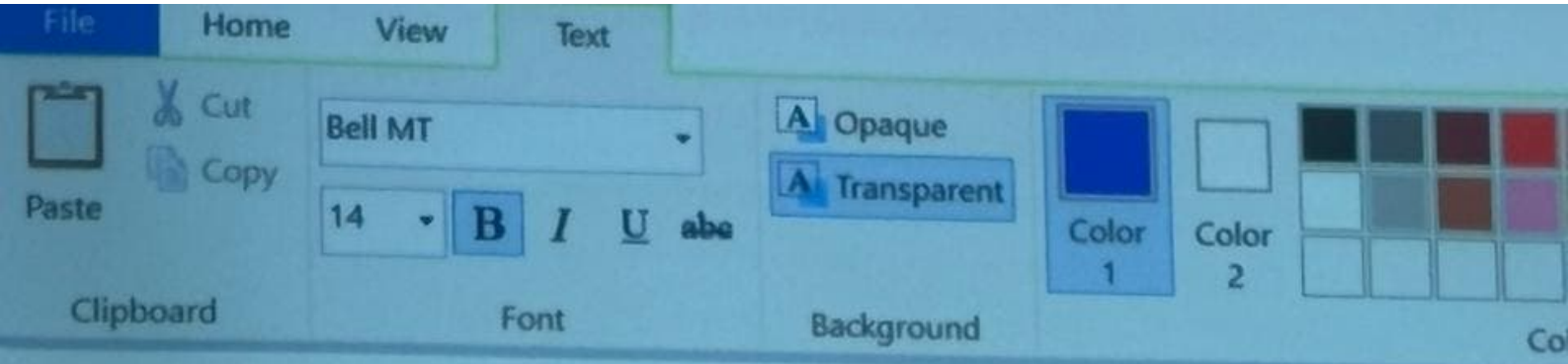

Ctrl Stmt

Condition ctrl stmt

- if
- if else
- elif
- Nested if else
- if esle ladder

~~switch case~~

Looping/iterative ctl

- for loop
- while loop
- ~~do-while~~ loop

-1

range(start : stop : step)

range(5) (0: 4 : 1)

range(10,2) - (0:9:2)

range(10:2) - ()

range(10:2:0) -