PYTHON PROGRAMMING

AKTU SYLLABUS UNIT-1

Introduction to Python: Python variables, Python basic Operators, Understanding python blocks. Python Data Types, Declaring and using Numeric data types: int, float etc.

GATEWAY CLASSES
Gateway classes

PYTHON PROGRAMMING

UNIT -1 :Introduction to Python

Lec-1

Today's Target

- Basic about python
- Variable, print(), input()
- Some basic program
- AKTU PYQs

Gateway classes

What is python and its features?

- Python is a **high-level, general-purpose** programming language that is widely used for various applications like **web development, data science, automation, artificial intelligence,** and more.
- It was created by **Guido van Rossum** and released in **1991**.

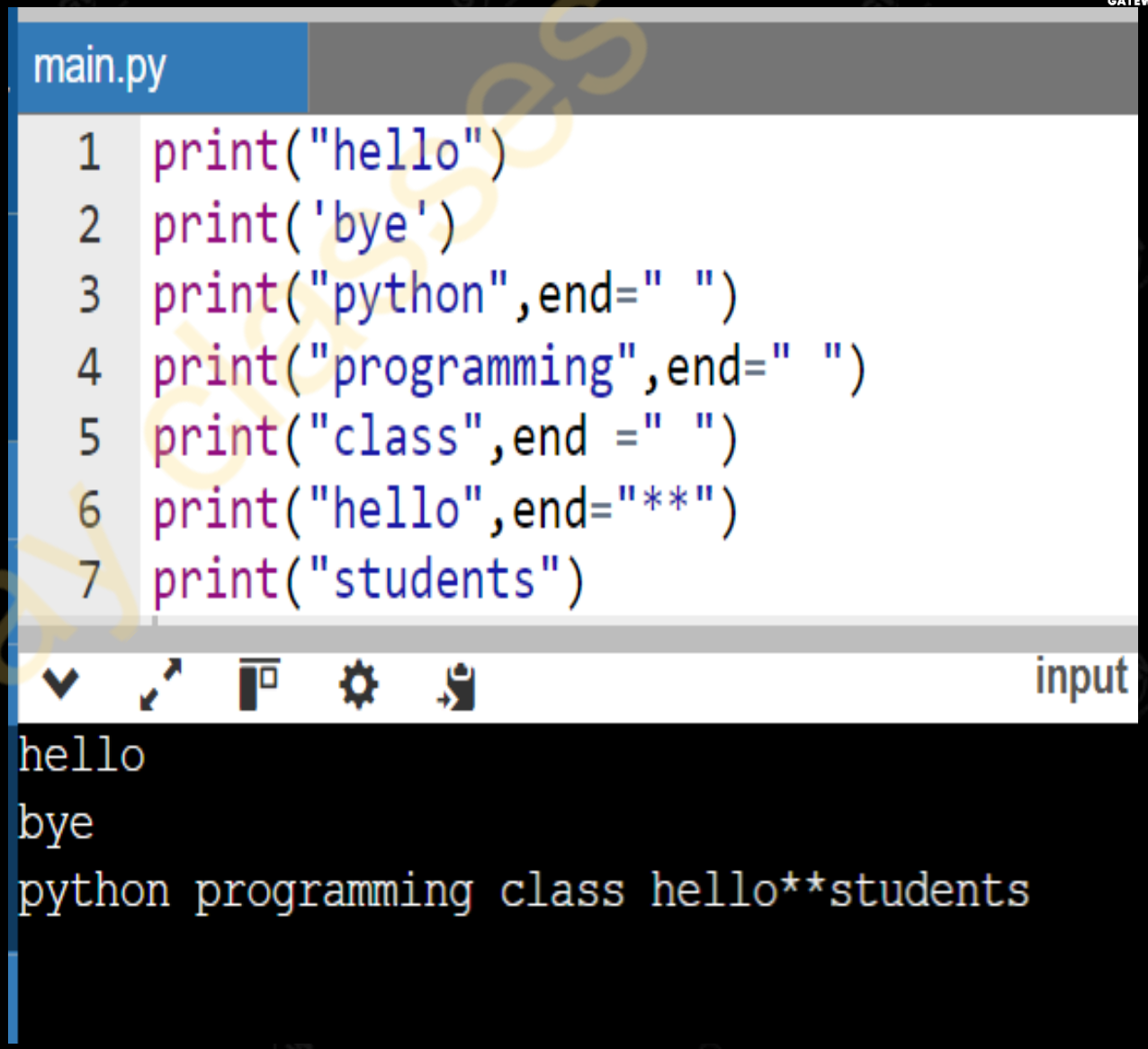
Features:

1. **Simple** and Easy to Learn:
2. It is an **interpreted language.**
3. Programs written in Python can run on various **operating systems** like Windows, macOS, Linux, etc., without any modifications. **(Cross platform compatible)**
4. Python is **open-source.**
5. Python is **dynamically typed**, meaning you don't need to declare variable types explicitly. Python automatically assigns data types at runtime.

Gateway Classes

Print ( )

- print( ) function prints the message to the screen or any other standard output device.
- The end keyword is used to specify the content that is to be printed at the end of the execution of the print( ) function.
- By default, it is set to "\n", which leads to the change of line after the execution of print( ) statement



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Variable

- Python Variable is **containers that store values.**
- Python is not **"statically typed".** We do not need to declare variables before using them or declare their type.
- The value stored in a variable can be changed during program execution.
- A **Variables** in Python is only a name given to a **memory location.**

```
1  x = 10
2  print(x)
3  print(type(x))
4  x = "Hello"
5  print(x)
6  print(type(x))
7  x = 5.7
8  print(x)
9  print(type(x))
```

```
10
<class 'int'>
Hello
<class 'str'>
5.7
<class 'float'>
```

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Input ( )

- This function first takes the input from the user and converts it into a string.
- The type of the returned object always will be <class 'str'>.

main.py

```
1 x=input("enter the number\n")
2 print(x)
3 print(type(x))
```

```
enter the number
3
3
<class 'str'>
```

- But if we want to input the data of any other type then we must convert it to that type (type casting/Explicit conversion)

main.py

```
1 a=int(input("enter the number\n"))
2 b=int(input("enetr the number\n"))
3 c=a+b
4 print("sum=",c)
```

input

```
enter the number
5
enetr the number
6
sum= 11
```

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What is dynamic typing? (AKTU 2023-24 EVEN)

- When you assign a value to a variable, Python's interpreter automatically infers the variable's type based on the assigned value.
- The type of a variable can change during the execution of the program, as Python doesn't enforce strict typing.
- Python automatically determines the type of the variable based on the value assigned to it at runtime.

```
1  x = 10
2  print(x)
3  print(type(x))
4  x = "Hello"
5  print(x)
6  print(type(x))
7  x = 5.7
8  print(x)
9  print(type(x))
```

```
10
<class 'int'>
Hello
<class 'str'>
5.7
<class 'float'>
```

GATEWAY CLASSES

What is dynamic typing? (AKTU 2023-24 EVEN)

main.py

```
1  name = input("Enter your name: ")
2  age = int(input("Enter your age: "))
3  print("Hello, " + name + "! You are " + str(age) + " years old.")
4
```

input

```
Enter your name: XYZ
Enter your age: 20
Hello, XYZ! You are 20 years old.
```

KEYPOINTS:

1. **The type of the variable is determined when a value is assigned.**
2. **No need to declare the type of a variable.**
3. **Variables can store different types of values at different times in the program, this provide greater flexibility.**

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ADVANTGES	DISADVANTAGES
➢ **Ease of Coding:** You don't have to worry about declaring types explicitly, making code faster and easier to write, especially for beginners. ➢ **Flexibility:** You can reuse the same variable for different types of data, which can be convenient in certain cases like handling multiple data types dynamically.	**Runtime Errors:** Errors related to type mismatches are only caught during execution (runtime), making it harder to catch bugs early compared to statically typed languages. **Less Explicit Code**: Since types are not declared, it may be harder to understand the intended usage of variables, leading to confusion and less maintainable code in large programs.

Gateway classes

GATEWAY CLASSES

GATEWAY CLASSES

```
1  age = 25
2  age = "twenty-five"
3  age = age + 5
```

input

```
Traceback (most recent call last):
  File "/home/main.py", line 3, in <module>
    age = age + 5
TypeError: can only concatenate str (not "int") to str
```

Gateway classes

Write a program of swapping of two number(using third /intermediate/temporary variable)

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```
a=int(input("enter the first number\n "))
b=int(input("enter the second number\n"))
print("value of a and b before swapping")
print("the value of a",a)
print("the value of b",b)
c=a
a=b
b=c
print("value of a and b after swapping")
print("the value of a",a)
print("the value of b",b)
```

```
enter the first number
 8
enter the second number
9
value of a and b before swapping
the value of a 8
the value of b 9
value of a and b after swapping
the value of a 9
the value of b 8
```

GATEWAY CLASSES
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Write a program of swapping of two number(without any third variable)

```
a=int(input("enter the first number\n "))
b=int(input("enter the second number\n"))
print("value of a and b before swapping")
print("the value of a",a)
print("the value of b",b)
a=a+b
b=a-b
a=a-b
print("value of a and b after swapping")
print("the value of a",a)
print("the value of b",b)
```

```
enter the first number
 8
enter the second number
9
value of a and b before swapping
the value of a 8
the value of b 9
value of a and b after swapping
the value of a 9
the value of b 8
```

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Gateway Classes