

Practical No.1

Practical No.1

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Aim: write a Program to create, copy and print a String and accessing sub-string from a given String.

Aim: write a program to create, concatenate and print a string and accessing sub-string from a given string.

Theory: Strings are arrays of bytes representing unicode characters. However, Python does not have a character data type, a single character is simply a string with a length of 1. Square brackets can be used to access sequence of characters enclosed within single quotes ('), double quotes ("") or triple quotes for multiline string ('''') / ("""")

String Manipulation

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String manipulation is a process of changing the string by concatenation, conversion and partitioning.

my - str1 = "Hello"
my - str2 = "Welcome to Python"

Programming

```
my - str = my - str1 + my - str2  
print (my - str)  
print (my - str [5 : ])  
print (my - str [17 : ])
```

Conclusion :

Studied strings and relate operation like create, concatenate and print a string and accessing sub-string from a given string and implemented in the program.

Hello
Hello welcome to Python programming.
Method programming

Conclusion :- Studied strings & relate operat
create, concatenate and print a string and
accessing sub - string from a given string
implemented in the program.

Practical No. 2

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Aim:- Write a Program to demonstrate working with lists in Python.

Output = `for i in range(0, len(a) + len(b) - 1):`

`print(a[i] + b[i] - 1)`

Theory:-

Lists are just like dynamically sized arrays, declared in other languages (vector in C++ and ArrayList in Java). Lists need not be homogenous always which makes it the most powerful tool in Python. A single list may contain Datatypes like Integers, strings, as well as objects.

list are mutable, and hence, they can be altered even after their creation. Ordered collection of elements enclosed within. Can store heterogeneous data lists are mutable.

Program :-

```
l1 = [1, 2, 3, 4, 5]
```

```
l2 = [6, 7, 8, 9, 10]
```

```
l3 = l1 + l2
```

```
print(l3)
```

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Program code :-

```

list1 = [1, True, 'Ravi', True, 3+4j, 3.14]
print(list1)

print(list1[0])
print(list1[-1])
print(list1[2:])
print(list1[0])

list1[0] = 100
print(list1)

list1.append('value')
print(list1)

list1.pop()
print(list1)

list1.reverse()
print(list1)

list1.insert(1,'value')
print(list1)

```

Output :-

```

[1, True, 'Ravi', True, (3+4j), 3.14]
[100, 'Ravi', True, 'Ravi', 100, 3.14]
3.14
['Ravi', True, (3+4j), 3.14]
[100, True, 'Ravi', True, (3+4j), 3.14]
[100, True, 'Ravi', True, (3+4j), 3.14, 'value']
[100, True, 'Ravi', True, (3+4j), 3.14]
[3.14, (3+4j), True, 'Ravi', True, 100]
[3.14, 'Value', (3+4j), True, 'Ravi', True, 100]
['c', 'e', 'r', 'f', 'a']
['d', 'c', 'e', 'f', 'r']
3.14, 'Value', (3+4j), True, 'Ravi', True, 100, 'a'
[3.14, 'Value', (3+4j), True, 'Ravi', True, 100, 3.14, 'Value']
True, True, 'Ravi', True, 100

```

Point (list1 * 3)

Point (list1 + list2)

Point (list1 + list2)

Point (list1 * 3)

Conclusion :-

Studied lists sequence type
data type and related operation
like elements modifying from lists
and implemented in the program.

Conclusion :- Studied lists sequence type
data type and related operation like elements
modifying from lists and implemented
Program.

Practical No. 3

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Practical No. 3.

Aim :- write Python Program to print list of numbers using range and for loop.

(0 to 10)

(1 to 10)

(2 to 10)

(3 to 10)

(4 to 10)

(5 to 10)

(6 to 10)

(7 to 10)

(8 to 10)

(9 to 10)

(10 to 10)

Theory :-

The range() is an in-built function in Python. It returns a sequence of numbers starting from zero and increment by 1 by default and stops before the given number. Represents a sequence of numbers. Immutable (cannot modify element) used for repeating a for loop for a specific number of times.

8.05 Loops

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Output :-

```
[0, 1, 2, 3, 4, 5, 6, 7, 8, 9]
[0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50]
```

```
list = list(range(10))
for i in list:
    print(i)
```

```
p = range(20, 40, 2)
for i in p:
    print(i)
```

```
Conclusion :-
```

```
studied range type sequence type
used for number sequence which is
immutable. And used for repeating
a for loop for a specific number
of time
```

Conclusion :-
studied range type sequence type
for number sequence which is immutable.
And used for repeating a for loop for
specific numbers of time.

Practical No. 9

Write a program to demonstrate working with tuples in Python (Complex) Part (a)

(Complex) Part (b)

(Complex) Part (c)

(Complex) Part (d)

(Complex) Part (e)

Simple tuple practice
1. Create a tuple consisting of integer values 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
2. Create a tuple consisting of string values "apple", "banana", "orange", "mango", "grapes", "kiwi", "cherry", "peach", "strawberry", "watermelon"
3. Create a tuple consisting of float values 1.1, 2.2, 3.3, 4.4, 5.5, 6.6, 7.7, 8.8, 9.9, 10.10

Output :-

(1, 3.14, 'Sam', (3+4j))

tup1 = (1, 3.14, 'Sam', 3+4j)

print(tup1)

(Sam', (3+4j))

print(tup1[0])

print(tup1[2:3])

tup2 = (4,5,6)

print(tup1 + tup2)

print(tup2*3)

Conclusion :-

studied tuple sequence type data

which is an ordered collection of elements enclosed within () . which can store heterogeneous data and it is immutable.

Conclusion :-

studied tuple sequence type data which is an ordered collection of elements enclosed within () . which can store heterogeneous data and it is immutable.

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Aim :- Write a program to demonstrate dictionaries in Python

(Input) =
(Output) =

(Input) =
(Output) =

Theory :-

Dictionary in Python is an unordered collection of data values, used to store data values like a map, which, unlike other Date types that hold only a single value as an element, Dictionary holds key: value pair. Key-value is provided in the dictionary to make it more optimized. A map represent a group of elements in the form of key-value pairs. dict data-type (dictionary) : Collection of key-value pairs enclosed in {}, key-value are separated enclosed by : mutable (can be modified)

Output:
 { 'Apple':50, 'banana':100, 'mango':80,
 'berries':30 }
 dict_keys(['Apple', 'banana', 'mango'])
 dict_values([50, 100, 80, 30])

{ 'Apple':30, 'banana':100, 'mango':80,
 'berries':100, 'jamun':40 }
 80
 fruit = { "Apple":50, "banana":100,
 "mango":80, "grapes":30 }
 print(fruit)

print (type(fruit))

print (fruit.keys())
 print (fruit.values())

{ 'Apple':30, 'banana':100, 'mango':80,
 'berries':100, 'jamun':40 }

fruit ['Apple'] = 30
 print (fruit)

fruit[2] = { 'berries':100, 'jamun':40 }
 fruit.update(fruit[2])
 print (fruit)

print (fruit.pop('mango'))
 print (fruit)

ncal

```
animal = { 'dog': 1500, 'cat': 2600, 'parrot':  
           500, 'snake': 600 }
```

```
print (animal)
```

```
print (type (animal))
```

```
print (animal.keys())
```

```
print (animal.values())
```

```
animal ['dog'] = 2500
```

```
print (animal)
```

```
animal1 = { 'rabbit': 3000, 'fish': 700 }  
animal1.update (animal)
```

```
print (animal)
```

```
print (animal.pop ('cat'))
```

```
print (animal)
```

Conclusion :-

studied dictionary type mapping type data. A map represents a group of elements in the form of key-value pairs. It dict datatype (dictionary) which is a collection of key-value pairs enclosed {} and implements the operation on dictionary type.

Ques:- [Ques] Explain

Conclusion :-
studied dictionary type mapping type data. A map represents a group of elements in the form of key-value pairs. It dict datatype (dictionary) which is a collection of key-value pairs enclosed {} and implements the operation {} on dictionary type.

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Aim :- write a python program to
find largest of three no.

Aim :- write a python program to
find largest of three no.

Aim :- write a Python Program to
Find largest of three numbers.

Theory :-

Three come situations in real life when we need to have make some decisions and based on these decisions, we decide what should we do next. Similarly situations are in Program also also where we need to make some decisions and based on these decision we will execute the next block of code. This is done with the help of decision making Statement in Python. an if.....elif....else Statement inside another if --- elif --- else statement. This is called nesting in Computer Programming.

Program code :-

```
num1 = input("Enter your value: ")
num2 = input("Enter your value: ")
num3 = input("Enter your value: ")

print("numbers are :" , num1 , num2 , num3)
if (num1 >= num2) and (num1 >= num3):
    largest = num1
elif (num2 >= num1) and (num2 >= num3):
    largest = num2
else:
    largest = num3

print("The largest number is " , largest)
```

Output :-

```
Enter your value: 8
Enter your value: 9
Enter your value: 5
Numbers are: 8 9 5
The largest number is 9
```

Ques. 3) Write a program to find largest element in a list.

Output:-
largest element is : 68
Output 3: Largest element is : 68

largest element is : 68
Output 3: Largest element is : 68

Output [4, 10, 20, 45, 55]

largest element is : 55

Conclusion:-

Studied nested if else and implemented for finding the largest no. from the given three numbers.

Conclusion :-

Studied nested if else and implemented for finding the largest no. from the given three numbers.

Ans

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Aim:- write python program in which an function is defined & calling that function prints Hello world.

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Practical T.B. 07.

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Aim:- write python Program in which an function is defined and calling that function prints Hello world.

Theory :-

- Python functions is a block of related statements designed to perform a computational, logical or evaluative task.
- The idea is to put some commonly or repeatedly done tasks together and make a function so that instead of writing the same code again and again for different inputs, we can do the function calls to reuse code contained in it over and over again.
- Function can be both built-in or user-defined. It helps the program to be concise, non-repetitive, and organized.

Name of Practical

Program Code :-

```
def hello():
    print("Hello World")
def add():
    a = 3
    b = 4
```

print("C =", a+b)

Output:-

Hello world

c=7

hello()

add()

Conclusion :- Studied defining and calling functions. After creating a function we can call it by using the name of the function followed by parenthesis containing parameters of that particular function.

QUESTION

Teacher's Signature

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Aim:- write python program in which an class is derive, then create object of that class and call print function define in class.

Theory :-

- A class is a user-defined blue point or prototype from which objects are created.
- Classes provided means of bundling data and functionality together.
- Creating a new class creates a new type of object, allowing new instances of that type to be made.
- Each class instance can have attributes attached to it for maintaining its state. Class instances can also have methods for modifying their state.
- To understand the need for creating a class let's consider an example, let's say you wanted to track the numbers

Name of Practical

- of dogs that may have different attributes like breed , age.
- If a list is used, the first element could be the dog's breed while the second element could represent it's age. Let's suppose there are 100 different dogs. Then how would you know which element is supposed to be which? what if you wanted to add other properties to these dogs? This lack organization and it's the exact need for classes.
- Class creates a user defined data structure, which holds its own data members and members function, which can be accessed and used by creating an instance of that class. A class is like a blueprint for an object.

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Program code :-

```

class person:
    def greet(self):
        print('Hello')
    def greet2(self):
        print('How are you')

```

Output :-

Hello
Hello

How are you

Conclusion :-

Studied creating class which are created by keyword class. Attributes are the variables that belong to a class.

Q2
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Practical No.09Practical No.09

Aim:- Write a python script that prints prime no. less than 20.

Aim: Write a Python script that prints prime numbers less than 20.

Theory:- The Python script is basically a file containing code written in Python. The file containing python script has the extension '.py'. It can also have the extension '.pyw' if it is being run on a windows machine. Here is a simple python script to print 'Hello World!':

```
print("Hello World!")
```

Here, the 'print()' function is to print out any text written within the parentheses. We can write the text that we want to be printed using either a single quote as shown in the above script or double quote.

Q. If you are coming from any other language then you will also notice that there is no semicolon at the end of the statement as with Python. You no need to specify the end of the line. And also we don't need to include or import any files to run a simple Python script.

Output -

```

Enter lower range:1
Enter upper range:20
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
    
```

← program code!

```

lower = int(input("Enter lower range:"))
upper = int(input("Enter upper range:"))

for num in range(lower,upper+1):
    if num >= 2:
        for i in range(2,num):
            if (num % i) == 0:
                break
        else:
            print(num)
    
```

Conclusion:-

Studied using script in python which contain python script has file extension '.py' or can also have file extension '.pyw' if implemented to display prime no. in given range.


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Conclusion

Practical No. 20.

Aim:- Write a python program to find Factorial of a number using Recursion.

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Aim:- Write a python program to find Factorial of a number using Recursion

Theory:-

The term recursion can be defined as the process of defining something in terms of itself. In simple words, it is a process in which a function calls itself directly or indirectly. A complicated function can be split down into smaller sub-problems utilizing any nested iteration.

Program code:-

```
def recur_factorial(n):  
    if n == 1:  
        return n  
    else:  
        return n * recur_factorial(n-1)
```

num = 4

Output :-

Enter number 8
The factorial of 8 is 40320.

If check if the no. is negative

```
if num < 0:  
    print("Sorry, factorial does not exist  
for negative no")  
elif num == 0:  
    print("The factorial of 0 is 1")  
else:  
    print("The factorial of", num, "is"  
        recur_factorial(num))
```

Conclusion:-

Studied recursion, its a common mathematical & programming concept. It means that a function calls itself. This has the benefit of meaning that you can loop through data to reach. Implemented to calculate factorial of a no.

Q3
20/11/24

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Practical No.11

Aim:- Write a python class to implement pow() function.

Program code:

```
class Py_Pow:  
    def pow(x, n):  
        if x == 0 or x == 1 or n == 1:  
            return x  
  
        if x == -1:  
            if n % 2 == 0:  
                return 1  
            else:  
                return -1  
  
        if n < 0:  
            return 1 / self.power(x, -n)  
        val = self.power(x, n // 2)  
        if n % 2 == 0:  
            return val * val  
        return val * val * x.
```

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Output

Enter x value : 5
Enter n value : 5
pow(x,n) value is : 3125.

Conclusion : Studied a python class to implement pow(x,n).

QD
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QUESTION : Write a python class to implement power function.

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Aim: write a Python class to convert an integer to a roman numeral.

Program code:

CLASS INCONVENT:

```
nom-map = [(100, 'M'), (900, 'CM'),  
(500, 'D'), (400, 'CD'), (100, 'C'),  
(90, 'XC'), (50, 'L'), (40, 'XL'),  
(10, 'X'), (9, 'IX'), (5, 'V'), (4,  
'IV'), (1, 'I')].
```

```
def num2roman(SRP, num):  
    roman = ""  
    while num > 0:  
        for i, m in SRF.num-map:  
            while num > i:  
                roman += m  
                num -= i  
    return roman.
```

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Enter any number : 12
 Roman number is : XII

num = int(input("Enter any number :"))
 print("Roman number is : ",
 roman(num))

Conclusion :

studied a python class to convert an integer to a roman number.

Parth Patel

QUESTION : Write a program to convert a Roman number into an integer.
 Solution :
 Roman to integer conversion
 Roman to integer conversion
 Roman to integer conversion
 Roman to integer conversion