
 Marwadi University Marwadi Chandarana Group 	Marwadi University Faculty of Engineering & Technology Department of Information and Communication Technology	
Subject: Programming With Python (01CT1309)	Aim: Write a program to create, concatenate and print a string and accessing substring from a given string.	
Experiment No: 03	Date:	Enrollment No:92400133189

Aim: Write a program to create, concatenate and print a string and accessing substring from a given string.

IDE:

Slicing and indexing are two fundamental concepts in Python. They help us access specific elements in a sequence, such as a string or (list and tuple).

Indexing in Python

Indexing is the process of accessing an element in a sequence using its position in the sequence (its index). In Python, indexing starts from 0, which means the first element in a sequence is at position 0, the second element is at position 1, and so on. To access an element in a sequence, you can use square brackets [] with the index of the element you want to access.

Let's consider the following example:

```
# create a string using double quotes
string1 = "ICT Department"
print(string1)
# create a string using single quotes
string1 = ' ICT Department '
```

print(string1)

Output

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```
1 string1 = "ICT Department"
2 print(string1)
3 string1 = ' ICT Department '
4 print(string1)
5
```

PROBLEMS



OUTPUT

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```
● PS D:\MARWADI\YEAR2\SEM3\PYTHON> python
ICT Department
ICT Department
```

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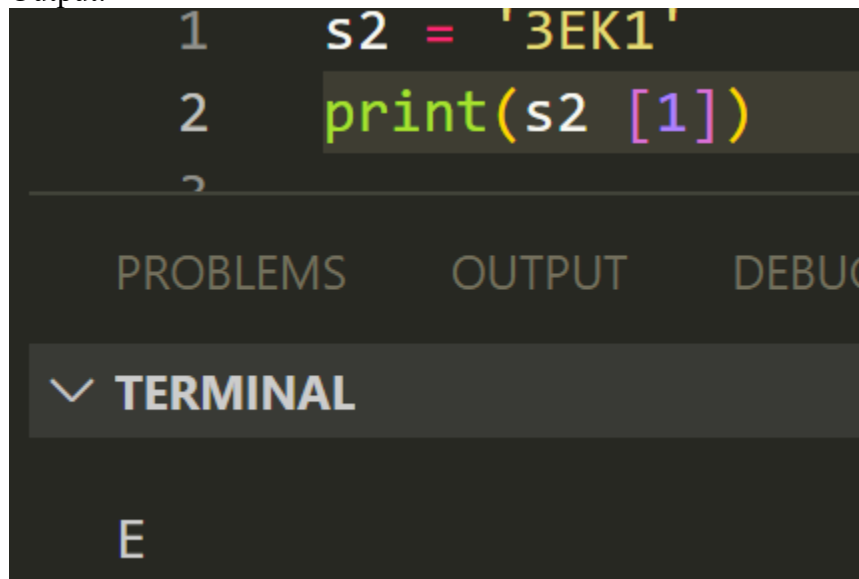
Access String Characters in Python

```
string2 = '3EK1'
```

```
# access 1st index element
```

```
print(string2 [1])
```

Output:



```


1  s2 = '3EK1'
2  print(s2 [1])
3

```

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Negative Indexing:

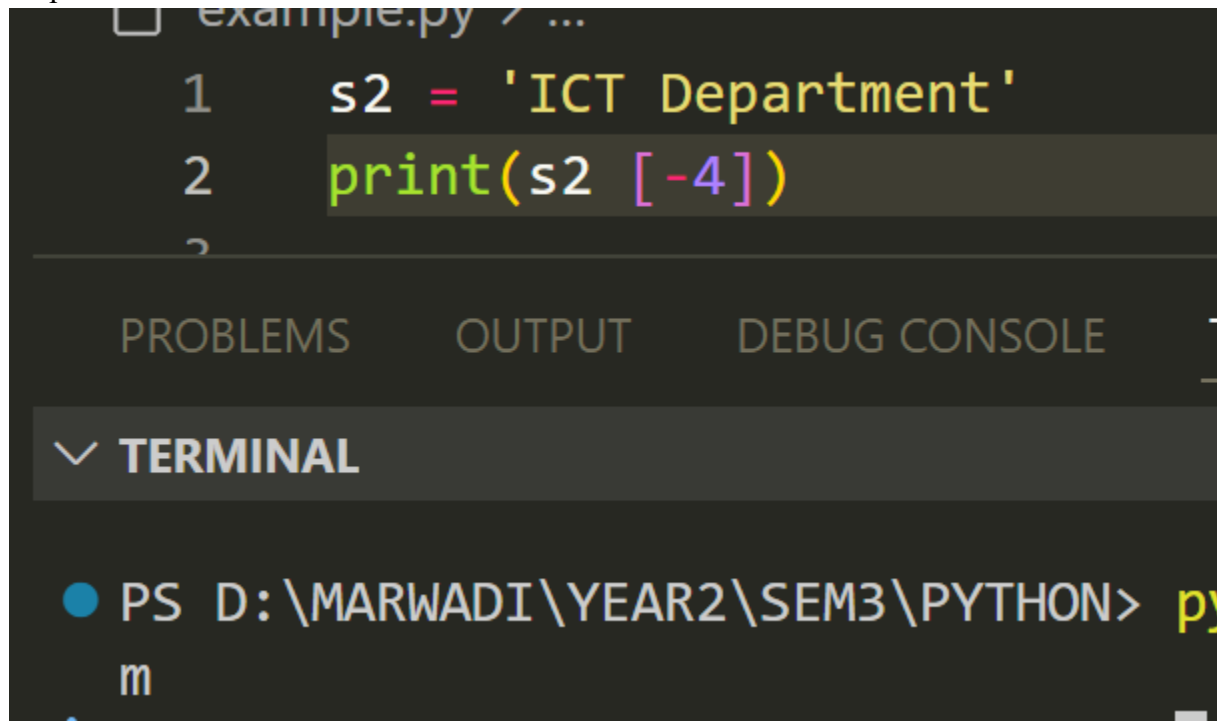
Python allows negative indexing for its strings. For example,

string3 = 'ICT Department'

access 4th last element

print(string3 [-4])

output:



```

1  s2 = 'ICT Department'
2  print(s2 [-4])

```

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PS D:\MARWADI\YEAR2\SEM3\PYTHON> py

Slicing in Python


Slicing is the process of accessing a sub-sequence of a sequence by specifying a starting and ending index. In Python, you perform slicing using the colon: operator. The syntax for slicing is as follows:

Example:

sequence[start_index:end_index]

where start_index is the index of the first element in the sub-sequence and end_index is the index of the last element in the sub-sequence (excluding the element at the end_index). To slice a sequence, you can use square brackets [] with the start and end indices separated by a colon.

For example,

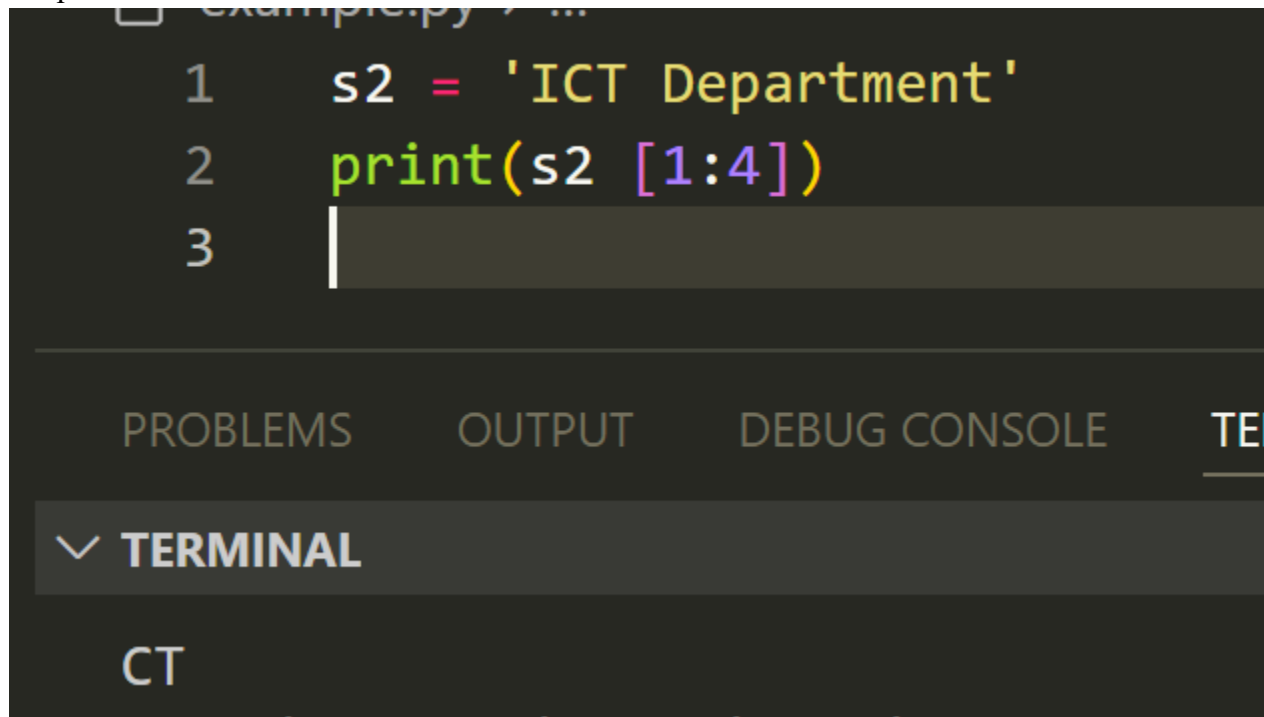
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```
string4 = 'ICT Department'
```

```
# access character from 1st index to 3rd index
```

```
print(string4[1:4])
```

Output:



```

1  s2 = 'ICT Department'
2  print(s2 [1:4])
3

```


The screenshot shows a code editor with a dark background. The code is written in a light-colored font. Below the code, there are tabs for 'PROBLEMS', 'OUTPUT', 'DEBUG CONSOLE', and 'TERMINAL'. The 'TERMINAL' tab is selected, and it shows the output 'CT'.

You can also omit either the start_index or the end_index in a slice to get all the elements from the beginning or end of the sequence. For example:

```
print(string4[:2])
```

```
print(string4[2:])
```

output:

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```

1  s2 = 'ICT Department'
2  print(s2[:2])
3  print(s2[2:])
4

```

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```

IC
T Department

```

In the first line of the above code, we have used slicing to get all the elements from the beginning of string4 up to (but not including) the element at index 2. In the second line, we have used slicing to get all the elements from index 2 to the end of string4.

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Python Strings are Immutable

In Python, strings are immutable. That means the characters of a string cannot be changed. For example,

```
message = 'ICT Department'
```

```
message[0] = 'H'
```

```
print(message)
```

Output:

```

1  s2 = 'ICT Department'
2  s2[0] = 'O'
3  print(s2)

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

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```

⊗ PS D:\MARWADI\YEAR2\SEM3\PYTHON> python -u "d:\MARWADI\YEAR2\SEM3\PYTHON\example.py"
Traceback (most recent call last):
  File "d:\MARWADI\YEAR2\SEM3\PYTHON\example.py", line 2, in <module>
    s2[0] = 'O'
    ~~~~^
TypeError: 'str' object does not support item assignment

```

However, we can assign the variable name to a new string. For example,

```
message = 'ICT'
```

```
# assign new string to message variable
```

```
message = 'ICT Department'
```

```
print(message)
```

Python Multiline String

We can also create a multiline string in Python. For this, we use triple double quotes """" or triple single quotes ""'".



For example,

```
# multiline string
```

```
message = """
```

```
ICT
```

```
Department
```

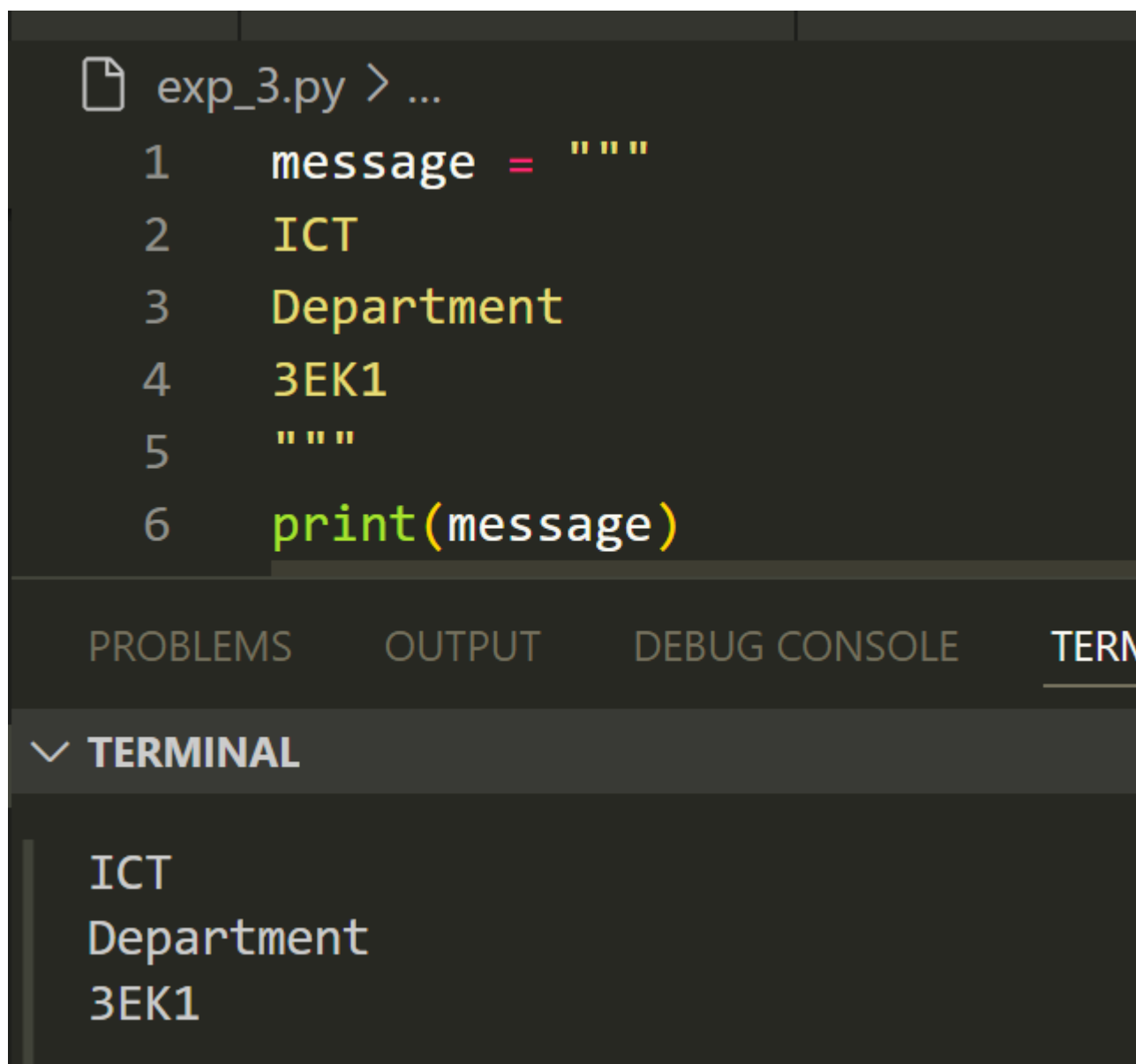
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3EK1

"""

print(message)

Output:



```

exp_3.py > ...
1  message = """
2  ICT
3  Department
4  3EK1
5  """
6  print(message)

```



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```

ICT
Department
3EK1

```


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Python String Operations

Many operations can be performed with strings, which makes it one of the most used data types in Python.

1. Compare Two Strings

For example,

```
str1 = "ICT"
```

```
str2 = "Department"
```

```
str3 = "3EK1"
```



```
# compare str1 and str2
```

```
print(str1 == str2)
```

```
# compare str1 and str3
```

```
print(str1 == str3)
```

Output:

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```

exp_3.py > ...
8     str1 = "ICT"
9     str2 = "Department"
10    str3 = "3EK1"
11    # compare str1 and str2
12    print(str1 == str2)
13    # compare str1 and str3
14    print(str1 == str3)

```

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False
❖ False

2. Join Two or More Strings


In Python, we can join (concatenate) two or more strings using the + operator.

```

greet = "ICT"
name = "Department"
# using + operator
result = greet + name
print(result)

```

Output:

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```

exp_3.py > ...
14  # print(str1 == str3)
15  #-----
16  greet = "ICT"
17  name = " Department"
18  # using + operator
19  result = greet + name
20  print(result)

```

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PS D:\MARWADI\YEAR2\SEM3\PYTHON> python -u "c
● ICT Department

Python String Length


In Python, we use the len() method to find the length of a string. For example,

```
greet = 'ICT'
```

```
# count length of greet string
```

```
print(len(greet))
```

Output:

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```

22     greet = 'ICT'
23     # count length of greet string
24     print(len(greet))
25

```

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```

● PS D:\MARWADI\YEAR2\SEM3\PYTHON> python -u
3

```

String Membership Test

We can test if a substring exists within a string or not, using the keyword in.

```
print('a' in 'program')
```



```
print('at' not in 'battle')
```

Methods of Python String

Python String upper()

The upper() method converts all lowercase characters in a string into uppercase characters and returns it.

```
message = 'python is fun'
```

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```
# convert message to uppercase
print(message.upper())
```

Output:

```

26  message = 'python is fun'
27  # convert message to uppercase
28  print(message.upper())
29

```



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PYTHON IS FUN

Python String lower()
The lower() method converts all uppercase characters in a string into lowercase characters and returns it.
message = 'PYTHON IS FUN'
convert message to lowercase
print(message.lower())
Output:

Python String replace()
The replace() method replaces each matching occurrence of a substring with another string.
text = 'CE Department'
replaced_text = text.replace('CE', 'ICT')
print(replaced_text)
Output:

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```

29  # -----
30  text = 'CE Department'
31  replaced_text = text.replace('CE', 'ICT')
32  print(replaced_text)
33

```

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● PS D:\MARWADI\YEAR2\SEM3\PYTHON> python -u "d:\MARWADI\YEA
ICT Department

Python String find()



The find() method returns the index of first occurrence of the substring (if found). If not found, it returns -1.

```

message = 'Python is a fun programming language'
# check the index of 'fun'
print(message.find('fun'))

```

Output:

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```

34  message = 'Python is a fun programming language'
35  # check the index of 'fun'
36  print(message.find('fun'))
37

```

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● PS D:\MARWADI\YEAR2\SEM3\PYTHON> py
python -u "d:\MARWADI\YEAR2\SEM3\

Python String rstrip()



The rstrip() method returns a copy of the string with trailing characters removed (based on the string argument passed).

```

title = 'Python Programming '
result = title.rstrip()
print(result)

```

Output:

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```

38  title = 'Python Programming '
39  result = title.rstrip()
40  print(result)
41

```

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▼ TER

Focus folder in explorer (ctrl + click)

● PS D:\MARWADI\YEAR2\SEM3\PYTHON> python -u "d:\MARWADI

python -u "d:\MARWADI

Python Programming

Python String split()

The split() method breaks down a string into a list of substrings using a chosen separator.

```

text = 'Python is fun'
# split the text from space
print(text.split())

```



Python String startswith()

The startswith() method returns True if a string starts with the specified prefix(string). If not, it returns False.

```

message = 'Python is fun'

```


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check if the message starts with Python
print(message.startswith('Python'))
Output:

```

42  message = 'Python is fun'
43  # check if the message starts with Python
44  print(message.startswith('Python'))
45

```

Debug Console (Ctrl+Shift+Y)

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL



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● PS D:\MARWADI\YEAR2\SEM3\PYTHON> **pyt**

python -u "d:\MARWA

True

Python String isnumeric()
The isnumeric() method checks if all the characters in the string are numeric.

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```
pin = "523"
# checks if every character of pin is numeric
print(pin.isnumeric())
```

Output:



```

46  pin = "523"
47  # checks if every character of pin is numeric
48  print(pin.isnumeric())
49

```

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```

python -u "d:\MARWADI\YEA
True



```

Python String index()

The index() method returns the index of a substring inside the string (if found). If the substring is not found, it raises an exception.

```
text = 'Python is fun'
# find the index of is
result = text.index('is')
print(result)
```

Output:

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Python String Formatting (f-Strings)

Python f-Strings makes it easy to print values and variables. For example,

```
name = 'Cathy'
```

```
country = 'UK'
```

```
print(f'{name} is from {country}')
```

Output:

```

50     name = 'Cathy'
51     country = 'UK'
52     print(f'{name} is from {country}')
```

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```
python -u "d:\MARWA
Cathy is from UK
```


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Post Lab Exercise:

- a. Write a Python program to reverse a string.

```

exp-3post-1.py > ...
1  #reverse string
2  s="Hello World"
3  print(s[::-1])

```


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```

python -u "d:\MARWADI
1.py"
dlrow olleH

```

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b. Write a Python program to check if a string is a palindrome.

exp-3-post-2.py > ...

1 #check whether the string is palindrome

2 s = "madam"

3 if s == s[::-1]:

4 print(f"{s} is a palindrome")

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python -u "d:\MARWADI\YEAR2

-2.py"

madam is a palindrome

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c. Write a Python program to check if a string contains only digits.

```

exp-3-post-3.py > ...
1  # check if string contains only digits
2  s = "12345"
3  print(s.isdigit())
4


```

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python -u "d:\MARWADI\YEAR2\SE
-3.py"
True

d. Write a Python program to find the longest word in a sentence.

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```

1 sentence = 'i like programming in python'
2 longest = max(sentence.split(), key=len)
3 print("Longest word is:", longest)

```

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Longest word is: programming

e. Write a Python program to find the length of the last word in a sentence.

```

1 sentence = 'i like programming'
2 last_word = sentence.split()[-1]
3 print("Length of last word:", len(last_word))
4

```

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Length of last word: 11