

Qno. 1 Programs of string and operators

The image displays three screenshots of a Jupyter Notebook interface, each showing a different Python program. The interface includes a menu bar (File, Edit, Selection, View, Go, Run), a toolbar with icons for generating code, code, markdown, stopping execution, clearing outputs, and navigating to the outline. The notebook is titled 'TASK 1 string 2.ipynb' and is running on a Python 3.13.3 kernel.

Program 1: Simple Addition

```
python.exe IntroductionToMatplotlib (2)
C:\Users> admin > Downloads > TASK 1 string 2
10
2
```

Program 2: Identity and Membership Operators

```
# Identity operator
x = [1, 2]
y = x
z = [1, 2]
print(x is y)
print(x is z)
print(x is not z)

# membership operator
text = "hello"
print("h" in text)
print("z" not in text)
```

Program 3: Conditional Logic

```
# if - else
x = 10
if x > 5:
    print("x is greater than 5")
else:
    print("x is 5 or less")

# elif
x = 0
if x > 0:
    print("Positive number")
elif x == 0:
    print("Zero")
else:
    print("Negative number")
```

The terminal output for each program is shown below the code cells. The first program outputs '10' and '2'. The second program outputs 'True', 'True', 'True', 'True', and 'True'. The third program outputs 'x is greater than 5' and 'Zero'.

```
File Edit Selection View Go Run ...
python.exe IntroductiontoMatplotlib (2) Python 3.13.3 ~AppData/Local/Microsoft/WindowsApps/python3.13.exe
C:\Users> admin > Downloads > TASK 1 string 2.i
Generate + Code + Markdown | Stop Execution | Clear All Outputs | Go To | Outline ...
[13] x = 4
x // 2
print(x)
Python
... 6

#Logical operator
a = True
b = False
print(a and b)
print(a or b)
print(not a)
Python
[14] False
True
False

#Bitwise operator
a = 5
b = 3
print(a & b)
Python
[15] 1
0000
3
```

```
File Edit Selection View Go Run ...
python.exe IntroductiontoMatplotlib (2) Python 3.13.3 ~AppData/Local/Microsoft/WindowsApps/python3.13.exe
C:\Users> admin > Downloads > TASK 1 string 2.i
Generate + Code + Markdown | Stop Execution | Clear All Outputs | Go To | Outline ...
[13] 1
1000
3

#Relationals operators
a = 5
b = 10
print(a == b)
print(a != b)
print(a > b)
print(a < b)
print(a >= b)
print(a <= b)
Python
[14] False
True
False
True
False
True

#Assignment operators
a = 5
```

```
File Edit Selection View Go Run ...
python.exe IntroductiontoMatplotlib (2) Python 3.13.3 ~AppData/Local/Microsoft/WindowsApps/python3.13.exe
C:\Users> admin > Downloads > TASK 1 string 2.i
Generate + Code + Markdown | Stop Execution | Clear All Outputs | Go To | Outline ...
[7] words = ['python', 'is', 'fun']
print(" ".join(words))
Python
... Python is fun

s = "hello world"
print(s.find("world"))
Python
[8] 6

s = "hello"
print(s.startswith("he"))
Python
[9] True

s = "12345"
print(s.isdigit())
Python
[10] True
```

File Edit Selection View Go Run ...

Select kernel for 'C:\Users\admin\Downloads\TASK 1 string 2.ipynb'

python.exe IntroductiontoMatplotlib (2) Python 3.13.3 --AppData\Local\Microsoft\WindowsApps\python3.13.exe

C:\Users> admin> Downloads> TASK 1 string 2\ Select Another Kernel...

Generate + Code + Markdown | Stop Execution | Clear All Outputs | Go To | Outline ...

Select Kernel

```
s = " hello "
print(s.strip())
```

[4] Python

... hello

```
s = "hello world"
print(s.replace("world", "Python"))
```

[5] Python

... hello Python

```
s = "a,b,c"
print(s.split(","))
```

[6] Python

... ['a', 'b', 'c']

```
words = ["Python", "is", "fun"]
print(" ".join(words))
```

[7] Python

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS JUPYTER

PS C:\Users\admin> & C:\Users\admin\AppData\Local\Programs\Python\Python313\python.exe "c:/Users/admin/Downloads/import matplotlib.py"

Spaces: 4 | Cell 1 of 23

Type here to search 27°C Mostly cloudy ENG 23:41 01-08-2025

File Edit Selection View Go Run ...

Select kernel for 'C:\Users\admin\Downloads\TASK 1 string 2.ipynb'

python.exe IntroductiontoMatplotlib (2) Python 3.13.3 --AppData\Local\Microsoft\WindowsApps\python3.13.exe

C:\Users> admin> Downloads> TASK 1 string 2\ Select Another Kernel...

Generate + Code + Markdown | Stop Execution | Clear All Outputs | Go To | Outline ...

Select Kernel

```
1
1000
3
```

```
#Relational operators
a = 5
b = 10
print(a == b)
print(a != b)
print(a > b)
print(a < b)
print(a >= b)
print(a <= b)
```

[12] Python

... False
True
False
True
False
True

```
#Assignment operators
v = 5
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS JUPYTER

PS C:\Users\admin> & C:\Users\admin\AppData\Local\Programs\Python\Python313\python.exe "c:/Users/admin/Downloads/import matplotlib.py"

Spaces: 4 | Cell 1 of 23

Type here to search 27°C Mostly cloudy ENG 23:41 01-08-2025

File Edit Selection View Go Run ...

python.exe IntroductiontoMatplotlib (2) Python 3.13.3 --AppData\Local\Microsoft\WindowsApps\python3.13.exe

C:\Users> admin > Downloads > TASK 1 string 2

Generate + Code + Markdown | Stop Execution | Clear All Outputs | Go To | Outline ...

Select kernel for 'C:\Users\admin\Downloads\TASK 1 string 2.ipynb'

Select Another Kernel...

Python

```
s = " hello "
print(s.strip())
```

hello

```
s = "hello world"
print(s.replace("world", "Python"))
```

hello Python

```
s = "a,b,c"
print(s.split(","))
```

['a', 'b', 'c']

```
words = ["Python", "is", "fun"]
print(" ".join(words))
```

Python

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS JUPYTER

PS C:\Users\admin> & C:\Users\admin\AppData\Local\Programs\Python\Python313\python.exe "c:\Users\admin\Downloads\import matplotlib.py"

26 23

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File Edit Selection View Go Run ...

python.exe IntroductiontoMatplotlib (2) Python 3.13.3 --AppData\Local\Microsoft\WindowsApps\python3.13.exe

C:\Users> admin > Downloads > TASK 1 string 2

Generate + Code + Markdown | Stop Execution | Clear All Outputs | Go To | Outline ...

Select kernel for 'C:\Users\admin\Downloads\TASK 1 string 2.ipynb'

Select Another Kernel...

Python

```
s = "Hello"
print(len(s))
```

5

```
s = "HELLO"
print(s.lower())
```

hello

Generate + Code + Markdown

Add Code Cell

```
s = "hello"
print(s.upper())
```

HELLO

```
s = " hello "
print(s.strip())
```

Python

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS JUPYTER

PS C:\Users\admin> & C:\Users\admin\AppData\Local\Programs\Python\Python313\python.exe "c:\Users\admin\Downloads\import matplotlib.py"

26 23

Type here to search

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01-08-2025

File Edit Selection View Go Run ...

python.exe IntroductiontoMatplotlib (2) Python 3.13.3 --AppData\Local\Microsoft\WindowsApps\python3.13.exe

C:\Users> admin > Downloads > TASK 1 string 2

Generate + Code + Markdown | Stop Execution | Clear All Outputs | Go To | Outline ...

Select kernel for 'C:\Users\admin\Downloads\TASK 1 string 2.ipynb'

Select Another Kernel...

Python

```
s = " hello "
print(s.strip())
```

hello

```
s = "hello world"
print(s.replace("world", "Python"))
```

hello Python

```
s = "a,b,c"
print(s.split(","))
```

['a', 'b', 'c']

```
words = ["Python", "is", "fun"]
print(" ".join(words))
```

Python

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS JUPYTER

PS C:\Users\admin> & C:\Users\admin\AppData\Local\Programs\Python\Python313\python.exe "c:\Users\admin\Downloads\import matplotlib.py"

26 23

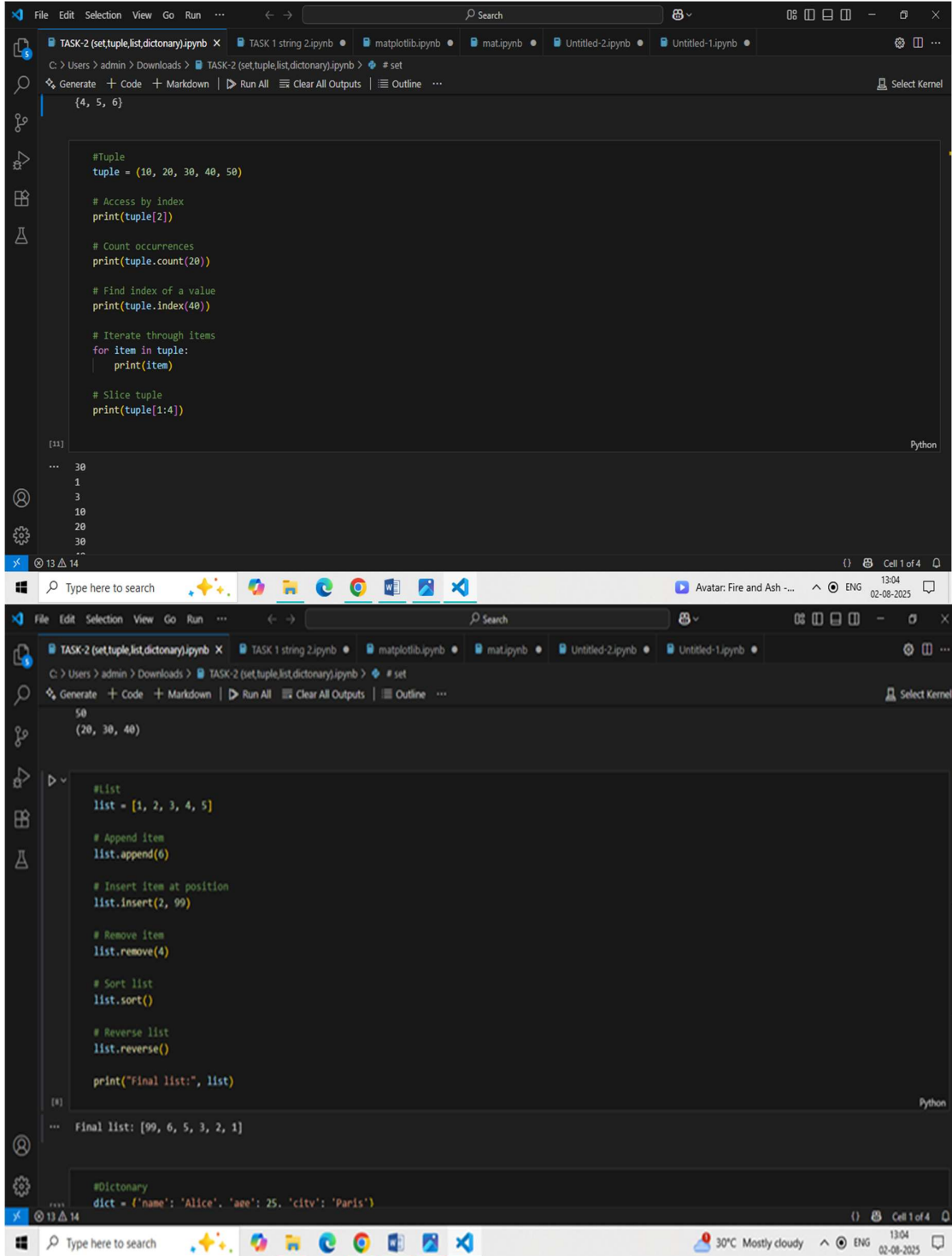
Type here to search

27°C Mostly cloudy

ENG

01-08-2025

Qno.2 Sets, tuple, list , dictionary



The image displays two screenshots of a Jupyter Notebook interface, showing Python code for working with tuples, lists, and dictionaries.

Top Screenshot: Tuple Operations

```
#Tuple
tuple = (10, 20, 30, 40, 50)

# Access by index
print(tuple[2])

# Count occurrences
print(tuple.count(20))

# Find index of a value
print(tuple.index(40))

# Iterate through items
for item in tuple:
    print(item)

# Slice tuple
print(tuple[1:4])
```

Output:

```
... 30
1
3
10
20
30
--
```

Bottom Screenshot: List and Dictionary Operations

```
#List
list = [1, 2, 3, 4, 5]

# Append item
list.append(6)

# Insert item at position
list.insert(2, 99)

# Remove item
list.remove(4)

# Sort list
list.sort()

# Reverse list
list.reverse()

print("Final list:", list)
```

Output:

```
... Final list: [99, 6, 5, 3, 2, 1]
```

Dictionary

```
dict = {'name': 'Alice', 'age': 25, 'city': 'Paris'}
```

```
File Edit Selection View Go Run ... Search
TASK-2 (set,tuple,list,dictionary).ipynb TASK-1 string 2.ipynb matplotlib.ipynb matplotlib.ipynb Untitled-2.ipynb Untitled-1.ipynb
C:\Users> admin > Downloads > TASK-2 (set,tuple,list,dictionary).ipynb > # set
Generate + Code + Markdown | Run All | Clear All Outputs | Outline ... Select Kernel

# set
set = {1, 2, 3, 4, 5}

# Add an item
set.add(6)

# Remove an item
set.remove(2)

# Check membership
print(3 in set)

# Union with another set
print(set.union({7, 8}))

# Intersection
print(my_set.intersection({4, 5, 6, 10}))

[9] Python

... True
{1, 3, 4, 5, 6, 7, 8}
{4, 5, 6}

# Tuple
tuple = (10, 20, 30, 40, 50)

[11] # Access by index
```

```
File Edit Selection View Go Run ... Search
TASK-2 (set,tuple,list,dictionary).ipynb TASK-1 string 2.ipynb matplotlib.ipynb matplotlib.ipynb Untitled-2.ipynb Untitled-1.ipynb
C:\Users> admin > Downloads > TASK-2 (set,tuple,list,dictionary).ipynb > # set
Generate + Code + Markdown | Run All | Clear All Outputs | Outline ... Select Kernel

# Reverse list
list.reverse()

print("Final list:", list)

[8] Python

... Final list: [99, 6, 5, 3, 2, 1]

# Dictionary
dict = {'name': 'Alice', 'age': 25, 'city': 'Paris'}

# Access value by key
print(dict['name'])

# Add or update key
dict['age'] = 26

# Delete key
del dict['city']

# Get all keys/values
print(dict.keys())
print(dict.values())

# Check if key exists
print('age' in dict)

[13] Python
```

Qno.3 numpy programs

The screenshot displays a Jupyter Notebook with three tasks. The first task imports numpy. The second task demonstrates indexing and slicing on a 1D array. The third task shows mathematical operations, aggregate functions, and indexing on a 2D array.

```
File Edit Selection View Go Run ... Search
TASK-2 (set,tuple,list,dictionary).ipynb TASK-3 numpy.ipynb x TASK 1 string 2.ipynb matplotlib.ipynb mat.ipynb Untitled-2.ipynb Untitled-1.ipynb
C:\Users> admin > Downloads > TASK-3 numpy.ipynb > import numpy as np
Generate + Code + Markdown Run All Clear All Outputs Outline ... Select Kernel
```

... 10
2.5
4

```
#Indexing & slicing
arr = np.array([10, 20, 30, 40, 50])
print(arr[1:4])
```

[0] ... [20 30 40]

Python

13 14

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```
File Edit Selection View Go Run ... Search
TASK-2 (set,tuple,list,dictionary).ipynb TASK-3 numpy.ipynb x TASK 1 string 2.ipynb matplotlib.ipynb mat.ipynb Untitled-2.ipynb Untitled-1.ipynb
C:\Users> admin > Downloads > TASK-3 numpy.ipynb > import numpy as np
Generate + Code + Markdown Run All Clear All Outputs Outline ... Select Kernel
```

```
#mathematical operations
x = np.array([1, 2, 3])
y = np.array([4, 5, 6])
print(x + y)
print(x * y)
print(x ** 2)
```

[7] ... [5 7 9]
[4 10 18]
[1 4 9]

```
#Aggregate function
a = np.array([1, 2, 3, 4])
print(a.sum())
print(a.mean())
print(a.max())
```

[8] ... 10
2.5
4

```
#Indexing & slicing
arr = np.array([10, 20, 30, 40, 50])
print(arr[1:4])
```

[9]

Python

13 14

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```
File Edit Selection View Go Run ... Search
TASK-2 (set,tuple,list,dictionary).ipynb TASK-3 numpy.ipynb x TASK 1 string 2.ipynb matplotlib.ipynb mat.ipynb Untitled-2.ipynb Untitled-1.ipynb Select Kernel
C:\Users\> admin > Downloads > TASK-3 numpy.ipynb > import numpy as np
Generate + Code + Markdown Run All Clear All Outputs Outline
Python
[6] #reshape an array
b = np.array([1, 2, 3, 4, 5, 6])
reshaped = b.reshape((2, 3))

Python
[7] #mathematical operations
x = np.array([1, 2, 3])
y = np.array([4, 5, 6])
print(x + y)
print(x * y)
print(x ** 2)

Python
... [5 7 9]
[ 4 10 18]
[1 4 9]

Python
[8] #Aggregate function
a = np.array([1, 2, 3, 4])
print(a.sum())
print(a.mean())
print(a.max())

Python
... 10
13 14
```

```
File Edit Selection View Go Run ... Search
TASK-2 (set,tuple,list,dictionary).ipynb TASK-3 numpy.ipynb x TASK 1 string 2.ipynb matplotlib.ipynb mat.ipynb Untitled-2.ipynb Untitled-1.ipynb Select Kernel
C:\Users\> admin > Downloads > TASK-3 numpy.ipynb > import numpy as np
Generate + Code + Markdown Run All Clear All Outputs Outline
Python
[1] import numpy as np

Python
[2] #Create an array
arr = np.array([1, 2, 3, 4])

Python
[3] # Array of Zeros or Ones
zeros = np.zeros((2, 3))
ones = np.ones((3, 2))

Python
[5] # generate range of values
a = np.arange(0, 10, 2)

Python
[6] #reshape an array
b = np.array([1, 2, 3, 4, 5, 6])
reshaped = b.reshape((2, 3))

Python
13 14
```


Qno.4 10 different styles of matplotlib

