Mastering String Operations

String Operators:

1. Concatenate Operator (+)
2. Repetition Operator (*)
3. String Comparsion Operators (==, !=, >=, <=, >, <)
4. Membership Operators (in, not in)
5. Escape Sequence Operator (\, \n, \b, \ooo, \xhh)
6. String Formatting Operator (%s, %d, %f)

```
# concatenate operator (+)

print('RCB '+'CSK')
print("RCB "+"VS "+"CSK")
```

```
RCB CSK
RCB VS CSK
```

```
# Repetition operator (*)

print("Python"*2)
print("Python "*2)
print("Python"*5)
print("Python"*0)
print("Python"*-1)
print("Python"*1)
print(3*"Python")
print(5*"Python")
```

```
PythonPython
Python Python
PythonPythonPythonPythonPython


Python
PythonPythonPython
PythonPythonPythonPythonPython
```

```
"Python"*0
```

```
''
```

```
"Python"*-1
```

```
''
```

```
# string comparison operator
# (==, !=, >=, <=, >, <)
print("Venky"=="Venky")
print("Venky"=="venky")
```

```
True
False
```

```
print("Venky"!="Venky")
print("Venky"!="venky")
```

```
False
True
```

```
print("Venky"<="Venky")
print("Venky"<="venky")
```

```
True
True
```

```
print("Venky"<"Venky")
print("Venky"<"venky")
```

```
False
True
```

```
print("Venky">="Venky")
print("Venky">="venky")
```

```
True
False
```

```
print("Venky">"Venky")
print("Venky">"venky")
```

```
False
False
```

```
print("Venky"=="Venkat")
print("Venky"<"Venkatesh")
print("Venky"<"VenkyE")
print("Venky">"VenkyE")
```

```
False
False
True
False
```

```
ord('y')
```

```
121
```

```
ord('a')
```

```
97
```

```
ord('V')
```

```
86
```

```
ord('v')
```

```
118
```

```
# membership operators
```

```
# in, not in
```

```
print("Ven" in "Venky")
print("Veny" in "Venky")
print("Veny" not in "Venky")
print("Ven" not in "Venky")
```

```
True
False
True
```

```
False
```

```
# Escape Sequence Operator (\, \n, \b, \ooo, \xhh)

print("Today's Match: "India vs Pakistan"")
```

```
  File "<ipython-input-38-36a26b6822f1>", line 3
    print("Today's Match: "India vs Pakistan"")
          ^
SyntaxError: invalid syntax. Perhaps you forgot a comma?
```

Next steps: Fix error

```
print("Today's Match: \"India vs Pakistan\"")
print('Today\'s Match: \'India vs Pakistan\'')
```

```
Today's Match: "India vs Pakistan"
Today's Match: 'India vs Pakistan'
```

```
# \n - new line

print("Match 1: Afghanistan vs Newzeland\nMatch 2: India vs Pakistan")
```

```
Match 1: Afghanistan vs Newzeland
Match 2: India vs Pakistan
```

```
print("Venka\ntesh")
```

```
Venka
tesh
```

```
# \b  - indicates backspace
print("Hello World! \b")
```

```
Hello World!
```

```
print("Hello World!\b")
print("Hello\b World!")
print("Hello \bWorld")
```

```
Hello World
Hell World!
HelloWorld
```

```
print("Ve\bnka\btes\bh")
```

```
Vnkteh
```

```
# \ooo

print('\141')
print('\141\142')
print('\1412')
print('\1412981981789')
print('\1412akjfkjadkf')
```

```
a
ab
a2
a2981981789
a2akjfkjadkf
```

```
# \xhh

print("\x65")
```

```
e
```

```
ord('\141')
```

```
97
```

```
# string formatting operator
subject = "Java"
print("Python class is happening today")
print("%s class is happening today"% subject)
```

```
Python class is happening today
Java class is happening today
```

```
name = "Viky"
age = 32
print("I'm Venkatesh and age is 26")
print("I'm %s and age is %d"%(name, age))
```

```
I'm Venkatesh and age is 26
I'm Viky and age is 32
```

```
name = "Venkatesh"
city = "Chennai"
print("I'm %s and I live in %s"%(name, city))
print("I'm %s and I live in %s"%(city, name))
```

```
I'm Venkatesh and I live in Chennai
I'm Chennai and I live in Venkatesh
```

```
print("I'm %s and age is %s"%(name, age))
```

```
I'm Venkatesh and age is 32
```

```
print("I'm %d and age is %s"%(name, age))
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
<ipython-input-74-c82e47096896> in <cell line: 1>()
----> 1 print("I'm %d and age is %s"%(name, age))

TypeError: %d format: a real number is required, not str
```

Next steps: Explain error

```
score = 12.5
score_1 = 12
score_2 = 12.936687687687
print("Score is %f "%score)
print("Score 1 is %f "%score_1)
print("Score 2 is %f "%score_2)
print("Score is %d "%score)
print("Score 1 is %d "%score_1)
print("Score 2 is %d "%score_2)
print("Score is %s "%score)
print("Score 1 is %s "%score_1)
print("Score 2 is %s "%score_2)
```

```
Score is 12.500000
Score 1 is 12.000000
Score 2 is 12.936688
Score is 12
Score 1 is 12
Score 2 is 12
Score is 12.5
Score 1 is 12
Score 2 is 12.936687687687
```

String Slicing

1. Indexing in string and how to slice?
2. string[startVal:endVal:step]
3. Reversing a string

```
full_name = "Venkatesh Elangovan"
print(len(full_name))
print(full_name[5])
print(full_name[5:8])
print(full_name[5:9])
print(full_name[5:10])
print(full_name[5:11])
```

```
19
t
tes
tesh
tesh
tesh E
```

```
print(full_name[10:19])
print(full_name[10:19:2])
print(full_name[10:19:3])
print(full_name[10:24])
```

```
Elangovan
Eagvn
Env
Elangovan
```

```
print(full_name[2:])
print(full_name[:15])
```

```
nkatesh Elangovan
Venkatesh Elang
```

```
print(full_name[15:10])
```

```
print(full_name[15:10:-1])
```

```
ognal
```

```
print(full_name[18:10:-2])
```

```
nvga
```

```
print(full_name[5:len(full_name)+10])
```

```
tesh Elangovan
```

```
print(full_name[5:18:200])
```

```
t
```

```
print(full_name[-19:-13])
print(full_name[-19:-13:-1])
print(full_name[-13:-19])
print(full_name[-13:-19:-1])
```

```
Venkat

etakne
```

```
print(full_name[::-1])
print(full_name[::-2])
print(full_name[::-1][::-1])
```

```
navognalE hsetakneV
nvgaEheanV
Venkatesh Elangovan
```

```
print(full_name[11:-11])
print(full_name[11:-11:-1])
```

```

lE
```

```
v = "Madam"
v2 = "MaDaM"
print(v)
print(v[::-1])
print(v==v[::-1])
print(v2)
print(v2[::-1])
print(v2==v2[::-1])
```

```
Madam
madaM
False
MaDaM
MaDaM
True
```

```
print(full_name[15:10:0])
```

```
---------------------------------------------------------------------------
ValueError                                Traceback (most recent call last)
<ipython-input-98-3ce15efd9436> in <cell line: 1>()
----> 1 print(full_name[15:10:0])

ValueError: slice step cannot be zero
```

Next steps: Explain error

String Formatting

1. Using % Operator (old method)
2. str.format() method
3. f-strings

```
name = "Venky"
age = 26

print("My name is %s and I'm %d years old"%(name, age)) # % operator
```

```
My name is Venky and I'm 26 years old
```

```
# default arguments

print("My name is {} and I'm {} years old.".format(name, age))

# positional arguments

print("My name is {1} and I'm {0} years old.".format(name, age))
print("My name is {1} and I'm {1} years old.".format(name, age))
print("My name is {0} and I'm {0} years old.".format(name, age))
print("My name is {0} and I'm {2} years old.".format(name, age, "29"))
```

```
My name is Venky and I'm 26 years old.
My name is 26 and I'm Venky years old.
My name is 26 and I'm 26 years old.
My name is Venky and I'm Venky years old.
My name is Venky and I'm 29 years old.
```

```
# keyword arguments
print("My name is {name} and I'm {age} years old".format(age=26, name="Venky"))

# mixed arguments
print("My name is {} and I'm {age} years old.".format("Venky", age=26))
print("My name is {0} and I'm {age} years old.".format("Venky", age=26))
print("My name is {1} and I'm {age} years old.".format("Venky", "Viky", age=26))
```

```
My name is Venky and I'm 26 years old
My name is Venky and I'm 26 years old.
My name is Venky and I'm 26 years old.
My name is Viky and I'm 26 years old.
```

```
print("My name is {1} and I'm {age} years old.".format(age=26, "Venky"))
```

```
  File "<ipython-input-130-0e83ac004fef>", line 1
    print("My name is {1} and I'm {age} years old.".format(age=26, "Venky"))
                                                                          ^
SyntaxError: positional argument follows keyword argument
```

Next steps: Fix error

```
# integer arguments

print("Class ends around {:d} AM".format(9))
```

```
Class ends around 9 AM
```

```
print("Class ends around {:d} AM".format(9.30))
```

```
---------------------------------------------------------------------------
ValueError                                Traceback (most recent call last)
<ipython-input-134-aaf4d4ba707e> in <cell line: 1>()
----> 1 print("Class ends around {:d} AM".format(9.30))

ValueError: Unknown format code 'd' for object of type 'float'
```

Next steps: Explain error

```
print("Class ends around {:d} AM".format("9"))
```

```
---------------------------------------------------------------------------
ValueError                                Traceback (most recent call last)
<ipython-input-136-2d81bc3ed0c1> in <cell line: 1>()
----> 1 print("Class ends around {:d} AM".format("9"))

ValueError: Unknown format code 'd' for object of type 'str'
```

Next steps: Explain error

```
# float arguments

print("Float value is given by {:f} ".format(120.4568976))
print("Float round off to 2 digits: {:.2f} ".format(120.4568976))
print("Float round off to 2 digits: {:.3f} ".format(120.4568976))
```

```
Float value is given by 120.456898
Float round off to 2 digits: 120.46
Float round off to 2 digits: 120.457
```

```
# padding

print("Learning padding for decimal number {:10d}".format(12897))
print("Learning padding for float number {:8.3f}".format(10.5678))
print("Learning padding for decimal number {:010d}".format(12897))
print("Learning padding for float number {:08.3f}".format(10.5678))
print("Learning padding for decimal number {:010d}".format(12897))
print("Learning padding for float number {:10.3f}".format(10.5678))
```

```
Learning padding for decimal number      12897
Learning padding for float number   10.568
Learning padding for decimal number 0000012897
Learning padding for float number 0010.568
Learning padding for decimal number 0000012897
Learning padding for float number     10.568
```

```
# integer with left alignment
print("Left Alignment Integer: {:<5d}".format(12))
print("Right Alignment Integer: {:>5d}".format(12))
print("Center Alignment Integer: {:^5d}".format(12))

print("Left Alignment Integer: {:<05d}".format(12))
print("Right Alignment Integer: {:>05d}".format(12))
print("Center Alignment Integer: {:^05d}".format(12))
print("Center Alignment Integer: {:^06d}".format(12))
print("Center Alignment Integer: {:^07d}".format(12))
```

```
Left Alignment Integer: 12
Right Alignment Integer:    12
Center Alignment Integer:  12
Left Alignment Integer: 12000
Right Alignment Integer: 00012
Center Alignment Integer: 01200
Center Alignment Integer: 001200
Center Alignment Integer: 0012000
```

```
# strings
print("Left Alignment Integer: {:*<20}".format("Venkatesh"))
print("Right Alignment Integer: {:#>20}".format("Venkatesh"))
print("Center Alignment Integer: {:0^20}".format("Venkatesh"))
```

```
Left Alignment Integer: Venkatesh***********
Right Alignment Integer: ###########Venkatesh
Center Alignment Integer: 00000Venkatesh000000
```

```
# truncating the strings

print("Truncated String: {:.3}".format("Python"))
print("Truncated String: {:.2}".format("Python"))
print("Truncated String with RA: {:*>10.2}".format("Python"))
print("Truncated String with LA: {:*<10.2}".format("Python"))
print("Truncated String with LA: {:*^10.2}".format("Python"))
```

```
Truncated String: Pyt
Truncated String: Py
Truncated String with RA: ********Py
Truncated String with LA: Py********
Truncated String with LA: ****Py****
```

```
print("Binary Value: {0:b}, Oct Value: {0:o}, Hex Value: {0:x}".format(12))
print("Binary Value: {:b}, Oct Value: {:o}, Hex Value: {:x}".format(12, 14, 15))
```

```
Binary Value: 1100, Oct Value: 14, Hex Value: c
Binary Value: 1100, Oct Value: 16, Hex Value: f
```

```
1_000_000+1_000
```

```
1001000
```

```
1,000,000+1,000
```

```
(1, 0, 1, 0)
```

```
1,000+1,000
```

```
(1, 1, 0)
```

f-strings

```
name = "Virat"
age = 35

print(f"Hello {name} and your age is {age} now")
print(F"Hello {name} and your age is {age} now")
```

```
Hello Virat and your age is 35 now
Hello Virat and your age is 35 now
```

```
print(f"""Name: Virat
Age: 36
Playing Cricket""")
```

```
Name: Virat
Age: 36
Playing Cricket
```

```
print(f"Printing Braces {{}}")
```

```
Printing Braces {}
```

```
float_val = 12.678
print(f"Float Value is given by : {float_val: .2f}")
```

```
Float Value is given by :  12.68
```

```
1,2,3
```

```
(1, 2, 3)
```

```
1,000+5,178
```

```
(1, 5, 178)
```