unit 4 (immutable data structure)- 10 marks

unit 5 - 15 marks

string:

- An immutable data structure
- it is an iterable & can be indexed. sliced or looped through

creating string

In [2]:
```
S = "H"
t = "hi"
u = "hello"
v = " this is python tutorial "
```

In [3]:
```
print(type(S),type(t),type(u),type(v))
```

```
<class 'str'> <class 'str'> <class 'str'> <class 'str'>
```

In [11]:
```
s = "hello world"
print(s[0])
print(s[2])
print(s[-1])
# print(s[100])
```

```
h
l
d
```

Out[11]:
```
'hello world'
```

In [23]:
```
s = "hello world"
s[:]
s[: :]
s[: :2]
# reverseing string
s[: :-1]
s[1:3]
s[1:]
s[1:-1]
s[1:-1:-1]
s[-1:1:-1]
s[-5:-2:1]
s[-2:-5:1]
s[-2:-5:-1]
s[-5:]
```

Out[23]:
```
'world'
```

universal methods

- len, min , max , sorted

In [24]:
```
s = 'hello world'
print(len(s))
```

```
11
```

In [25]:
```
print(min(s))
```

```
 
```

In [26]:
```
print(max(s))
# ans: from ascii value
```

```
w
```

In [27]:
```
#for ascii value
ord('w')
```

Out[27]:
```
119
```

In [28]:
```
sorted(s)
```

Out[28]:
```
[' ', 'd', 'e', 'h', 'l', 'l', 'l', 'o', 'o', 'r', 'w']
```

In [29]:
```
sorted(s,reverse = True)
```

Out[29]:
```
['w', 'r', 'o', 'o', 'l', 'l', 'l', 'h', 'e', 'd', ' ']
```

In [30]:
```
print(s)
# bcz string is immutable so its can't change
```

```
hello world
```

In [31]:
```
sorted??
# formula chacking in exam
```

comparison operator

In [33]:
```
'hi' == 'hi'
```

Out[33]:
```
True
```

In [34]:
```
"hi" < "Hi"
```

Out[34]:
```
False
```

In [35]:
```
print(ord("h") ,ord("H"))
```

```
104 72
```

In [37]:
```
"hEllo" < "hello"
```

Out[37]:
```
True
```

logical operator

In [38]:
```
'hello' or 'python'
```

Out[38]:
```
'hello'
```

```
In [41]: "" or 'python'
```

```
Out[41]: 'python'
```

```
In [42]: " " or 'python'
```

```
Out[42]: ' '
```

```
In [43]: 'hello' and 'python'
```

```
Out[43]: 'python'
```

```
In [44]: "" and 'python'
```

```
Out[44]: ''
```

```
In [45]: " " and 'python'
```

```
Out[45]: 'python'
```

```
In [46]: not ''
```

```
Out[46]: True
```

membership operator

```
In [55]: 'p' in 'python'

         'pt' in 'python'

         'py' in 'python'

         'z' not in 'python'

         'z'  in 'python'
```

```
Out[55]: False
```

iterating through string

```
In [57]: s = 'hello'
         for i in s :
             print(s)
```

```
hello
hello
hello
hello
hello
```

```
In [59]: s = 'hello'
         for i in s :
             print(i,end="🐍")
```

```
h🐍e🐍l🐍l🐍o🐍
```

Enumerate

In [60]:

```
s = 'hello'
for index,value in enumerate(s):
    print(index,"--",value)
```

```
0 -- h
1 -- e
2 -- l
3 -- l
4 -- o
```

In [61]:

```
s = 'python'
for i,j in enumerate(s):
    print(i,j)
```

```
0 p
1 y
2 t
3 h
4 o
5 n
```

In [62]:

```
enumerate??
```

In [63]:

```
s = 'python'
for i,j in enumerate(s,start=50):
    print(i,j)
```

```
50 p
51 y
52 t
53 h
54 o
55 n
```

string method

In [90]:

```
#in exam if you forget string methods then use this .................
s = "THis is a python 101 tutorial"
dir(s)
```

```
Out[90]: ['__add__',
          '__class__',
          '__contains__',
          '__delattr__',
          '__dir__',
          '__doc__',
          '__eq__',
          '__format__',
          '__ge__',
          '__getattribute__',
          '__getitem__',
          '__getnewargs__',
          '__gt__',
          '__hash__',
          '__init__',
          '__init_subclass__',
          '__iter__',
          '__le__',
          '__len__',
          '__lt__',
          '__mod__',
          '__mul__',
          '__ne__',
          '__new__',
          '__reduce__',
          '__reduce_ex__',
          '__repr__',
          '__rmod__',
          '__rmul__',
          '__setattr__',
          '__sizeof__',
          '__str__',
          '__subclasshook__',
          'capitalize',
          'casefold',
          'center',
          'count',
          'encode',
          'endswith',
          'expandtabs',
          'find',
          'format',
          'format_map',
          'index',
          'isalnum',
          'isalpha',
          'isascii',
          'isdecimal',
          'isdigit',
          'isidentifier',
          'islower',
          'isnumeric',
          'isprintable',
          'isspace',
          'istitle',
          'isupper',
          'join',
          'ljust',
          'lower',
          'lstrip',
          'maketrans',
          'partition',
          'replace',
          'rfind',
          'rindex',
          'rjust',
          'rpartition',
          'rsplit',
          'rstrip',
          'split',
          'splitlines',
          'startswith',
          'strip',
          'swapcase',
          'title',
          'translate',
          'upper',
          'zfill']
```

capitalize()

In [68]:

```
s.capitalize()
```

Out[68]:

```
'This  is a python 101 tutorial'
```

upper(),lower(),& swapcase()

In [69]:

```
s.upper()
```

Out[69]:

```
'THIS  IS A PYTHON 101 TUTORIAL'
```

In [70]:

```
s.lower()
```

Out[70]:

```
'this  is a python 101 tutorial'
```

In [71]:

```
s.swapcase()
```

Out[71]:

```
'thIS  IS A PYTHON 101 TUTORIAL'
```

title

In [72]:

```
s.title()
```

Out[72]:

```
'This  Is A Python 101 Tutorial'
```

count

In [80]:

```
s.count('i')

s.count('i',3)

s.count('i',3,5)

s.count('i',3,6,1)
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
<ipython-input-80-f68bd47d8a17> in <module>
      5 s.count('i',3,5)
      6 
----> 7 s.count('i',3,6,1)

TypeError: count() takes at most 3 arguments (4 given)
```

find

In [84]:

```
# s.find("is",3)
s.find("is",3,100)
```

Out[84]:

```
6
```

In [82]:

```
s.find("z")
```

Out[82]:

```
-1
```

index

In [86]:

```
print(s)
```

```
THis  is a python 101 tutorial
```

In [87]:

```
s.index("is")
```

Out[87]:

```
2
```

In [91]:

```
s.index("is",3)
```

Out[91]:

```
5
```

In [92]:

```
s.index("z")
```

```
---------------------------------------------------------------------------
ValueError                                Traceback (most recent call last)
<ipython-input-92-5dade37699b5> in <module>
----> 1 s.index("z")

ValueError: substring not found
```

isalpha(),isalnum(),isdigit(),isnumeric(),islower(),

In [96]:

```
print ("abc".isalpha())
print ("123abc".isalnum())
print ("123".isdigit())
print ("456".isnumeric())
print ("this".lower())
print ("THIS".upper())
print ("This Is".istitle())
print("".isspace())
```

```
True
True
True
True
this
THIS
True
False
```

split

In [100…

```
s = "this is a python class"
# s.split()

s.split(maxsplit=6)
```

Out[100…

```
['this', 'is', 'a', 'python', 'class']
```

In [98]:

```
s = 'python'
s.split()
```

Out[98]:

```
['python']
```

In [102…

```
'this.isa.python'.split(".")
```

Out[102…

```
['this', 'isa', 'python']
```

In [103…

```
'this#isa#python'.split("#")
```

Out[103…

```
['this', 'isa', 'python']
```

In [106…

```
'this#python#class'.split("#",1)
```

Out[106…

```
['this', 'python#class']
```

In [107…

```
'this#python#class'.split("#",-1)
```

Out[107…

```
['this', 'python', 'class']
```

join

In [108…

```
".".join(['this', 'is', 'a', 'python', 'class'])
```

Out[108…

```
'this.is.a.python.class'
```

In [109…

```
"".join(['this', 'is', 'a', 'python', 'class'])
```

Out[109…

```
'thisisapythonclass'
```

In [110…

```
" ".join(['this', 'is', 'a', 'python', 'class'])
```

Out[110…

```
'this is a python class'
```

replace

In [111…

```
s.replace("is","iz")
```

Out[111…

```
'thiz iz a python class'
```

In [114…

```
s.replace("is","🍕",1)
```

Out[114…

```
'th🍕 is a python class'
```

Strip method

In [119…

```
"   hello   ".strip()

"hello   ".strip()

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

```
this is a python class
```

In [122…

```
s.strip("ths")
```

Out[122…

```
'is is a python cla'
```

In [123…

```
"   hello   ".strip()
```

Out[123…

```
'hello'
```

In [125…

```
"hello   ".strip("oph")
```

Out[125…

```
'ello   '
```

wap to count number of spaces , uppercase , lo case & digits in a given string

-input:

```
- This is a Python 101 course
```

-output :

```
-lowercase : 17
-uppercase : 2
-digits:-3
-spaces -5
```

In [146…

```
# Input from user
text = input("Enter a string: ")

# Initialize counters
spaces = 0
uppercase = 0
lowercase = 0
digits = 0

# Loop through each character in the string
for char in text:
```

```python
    if char == ' ':
        spaces += 1
    elif char.isupper():
        uppercase += 1
    elif char.islower():
        lowercase += 1
    elif char.isdigit():
        digits += 1

# Display the results
print("Spaces:", spaces)
print("Uppercase letters:", uppercase)
print("Lowercase letters:", lowercase)
print("Digits:", digits)
```

```
Enter a string: This is a Python 101 course
Spaces: 5
Uppercase letters: 2
Lowercase letters: 17
Digits: 3
```

```
In [ ]:
```