



(<https://apssdc.in>)

APSSDC

Andhra Pradesh State Skill Development Corporation



Strings in Python

Day Objectives

- Strings
 - Slicing in Python
 - String Methods
- Lists
 - Accessing the Elements from the list
 - List Methods
- Tuple
 - Accessing the Elements from the Tuple
 - Tuple Methods

```
In [1]: ▶ 1 s1 = """Python is an interpreted high-level general-purpose programming language. Python
2 Developer: Python Software Foundation
3 Stable release: 3.9.5 / 3 May 2021; 19 days ago
4 Preview release: 3.10.0b1 / 3 May 2021; 19 days ago
5 Typing discipline: Duck, dynamic, strong typing; gradual (since 3.5, but
6 First appeared: February 1991; 30 years ago
7 Paradigm: Multi-paradigm: object-oriented, procedural (imperative), functional
```

```
In [2]: ▶ 1 print(s1[0], s1[55], s1[-10])

P g r
```

```
In [3]: ▶ 1 print(len(s1))

565
```

String Slicing

Syntax

string_var[startingIndex: EndingIndex]

- Default SI -> 0

- Default EI -> Length if string -1

In [4]: `1 print(s1[0: 6])`

Python

In [5]: `1 print(s1[0: 100])`

Python is an interpreted high-level general-purpose programming language. Python's design philosophy

In [6]: `1 print(s1[-100:])`

radigm: Multi-paradigm: object-oriented, procedural (imperative), functional, structured, reflective

In [7]: `1 print(s1[6])`

In [9]: `1 print(s1[: 15], s1[0: 15])`

Python is an in Python is an in

In [10]: `1 print(s1[:])`

Python is an interpreted high-level general-purpose programming language. Python's design philosophy emphasizes code readability with its notable use of significant indentation. Wikipedia
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string_var[startingIndex: EndingIndex: stepSize]

In [11]: `1 print(s1[0: 10: 2])`

Pto s

In [12]: `1 print(s1[0: 10: 3])`

Ph

In [15]: `1 print(s1[-10: :-2])`

```
r,eucrs,aotnf,eiaem(lrdcr dter-cjo:gdrpilM:gdrPoasay0 19 rubF:eapatrF)otP i
drnitb,. ci(luag;nptgot cmd,cD:nlisdgiy
g yd9 10 a b.13:see evr
g yd9 10 a .. ealrebt
otduFeato otP:eoee
ieii nianditaiigsf s lao t twyiaareo eiapeypslh gsdshy eaga nmagr spu-ae
ee-ghdtrrtin inhy
```

In [16]: `1 print(s1[-10: :2])`

```
rfetv
```

In [17]: `1 print(s1[: : -1])`

```
evitcelfer ,derutcurts ,lanoitcnuf ,)evitarepmi( larudecorp ,detneiro-tcejb
o :mgidarap-itluM :mgidarap
oga sraey 03 ;1991 yraurbeF :deraepa tsriF
)nohtyPC ni derongi tub ,5.3 ecnis( laudarg ;gnipyT gnorts ,cimanyd ,kcuD :
enilpicsid gnipyT
oga syad 91 ;1202 yaM 3 / 1b0.01.3 :esaeler weiverP
oga syad 91 ;1202 yaM 3 / 5.9.3 :esaeler elbatS
noitadnuoF erawtfoS nohtyP :repoleveD
aidepikiW .noitatnedni tnacifingis fo esu elbaton sti htiw ytilibadaer edoc
sezisahpme yhposolihp ngised s'nohtyP .egaugnal gnimmargorp esoprup-lareneg
level-hgih deterpretni na si nohtyP
```

In [19]: `1 print(s1[: : 1])`

```
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ython's design philosophy emphasizes code readability with its notable use
of significant indentation. Wikipedia
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nored in CPython)
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nal, structured, reflective
```

In [18]: `1 print(s1[: : -2])`

```
eicle drtut lnicu )vtrpi aueop,enioteb miaa-tu miaa
g re 3;91yare drep si
nhyCn eog u 53ens adr giy nrs,iay ku eipci npToasa 1;22yM3/100. ealrwiePoas
a 1;22yM3/593:see laSniano rwfSnhy rplvDadpkW.otten ncfni oeuebtnsihi tlbde
dcszshm hooipnie 'otP.gunlgimropeorplrnnglvlhi eeppen as otP
```

String Methods

```
In [20]: ▶ 1 s = 'Apssdc Data Science training program'
          2
          3 print(s.upper())
```

APSSDC DATA SCIENCE TRAINING PROGRAM

```
In [21]: ▶ 1 print(s)
```

Apssdc Data Science training program

```
In [22]: ▶ 1 print(s.lower())
```

apssdc data science training program

```
In [23]: ▶ 1 print(s.swapcase())
```

aPSSDC dATA sCIENCE TRAINING PROGRAM

```
In [24]: ▶ 1 su = 'APSSDC'
          2 sl = 'python'
          3 sn = '9876543210'
          4
          5
          6 print(su.isupper(), sl.isupper())
```

True False

```
In [26]: ▶ 1 print(sl.islower(), su.islower())
```

True False

```
In [27]: ▶ 1 print(su.isdigit(), sn.isdigit())
```

False True

Validating indian mobile Number

- +91 ->
- 10 digits -> len()
- 9,8,7,6

```
In [40]: ▶ 1 n1 = '+919876543210'
2 n3 = '9876543210'
3 n2 = '+91563214565'
4 n4 = '+5632147890'
5 n1 = '+91987654321o'
6
7 if n1[0] == '+':
8     if n1[1:3] == '91' and len(n1[3: ]) == 10 and n1[3] in '9876' and n1
9         print(n1, 'is valid indian mobile number')
10    else:
11        print(n1, 'is not valid indian mobile number')
12 elif len(n1) == 10 and n1[0] in '9876' and n1.isdigit():
13     print(n1, 'is valid indian mobile number')
14 else:
15     print(n1, 'is not valid indian mobile number')
```

+91987654321o is not valid indian mobile number

```
In [41]: ▶ 1 rollNo = '19KQ1A0237'
2
3 print(rollNo.startswith('19'))
```

True

```
In [42]: ▶ 1 email = 'anilkumar_t@apssdc.in'
2 email2 = 'anil@gmail.com'
```

```
In [44]: ▶ 1 print(email2.endswith('apssdc.in'))
```

False

```
In [47]: ▶ 1 email = 'anilkumar_t@apssdc.in'
2 email2 = 'swamy@apssdc.in'
3
4 print(email.index('@'))
```

11

```
In [51]: ▶ 1 print(email[0: email.index('@')])
```

anilkumar_t

```
In [50]: ▶ 1 print(email2[0: email2.index('@')])
```

swamy

```
In [55]: ▶ 1 email = 'anilkumar_t@apssdc.in'
          2 email2 = 'swamy@apssdc.in'
          3 email3 = 'anil@gmail.com'
          4
          5
          6 print(email2[email2.index('@') + 1: email2.index('.')])
```

apssdc

```
In [56]: ▶ 1 email3[email3.index('@') + 1: email3.index('.')]
```

Out[56]: 'gmail'

```
In [58]: ▶ 1 help(str.index)
```

Help on method_descriptor:

index(...)

S.index(sub[, start[, end]]) -> int

Return the lowest index in S where substring sub is found, such that sub is contained within S[start:end]. Optional arguments start and end are interpreted as in slice notation.

Raises ValueError when the substring is not found.

```
In [61]: ▶ 1 email = 'anil@apssdc@in'
          2
          3 print(email.index('@'))
```

4

```
In [62]: ▶ 1 email = 'anil@apssdc@in'
          2
          3 print(email.index('@', 5))
```

11

```
In [63]: ▶ 1 email = 'anil@apssdc@in'
          2
          3 print(email.index('@', 12))
```

ValueError Traceback (most recent call last)

<ipython-input-63-dc0e1649b7ee> in <module>

1 email = 'anil@apssdc@in'

2

----> 3 print(email.index('@', 12))

ValueError: substring not found

```
In [64]: 1 print(email.count('a'))
```

2

```
In [65]: 1 print(email.count('@'))
```

2

```
In [66]: 1 print(email.count('ss'))
```

1

```
In [67]: 1 s = '  APSSDC python  '
2
3
4 print(s.lstrip(), s.rstrip(), s.strip())
```

APSSDC python APSSDC python APSSDC python

```
In [68]: 1 s = '((((APSSDC python))))'
2
3
4 print(s.lstrip('('), s.rstrip(')'), s.strip('('))
```

APSSDC python)))))) (((APSSDC python APSSDC python

```
In [71]: 1 s = '((((())))[[[[[]]]]]{{{}}}{Cleaned data{{{}}}}]]]))'
2
3
4 print(s.strip('([{}])'))
```

Cleaned data

```
In [73]: 1 print(s1)
```

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Paradigm: Multi-paradigm: object-oriented, procedural (imperative), functional, structured, reflective

In [74]: `1 print(s1.split(' '))`

```
['Python', 'is', 'an', 'interpreted', 'high-level', 'general-purpose', 'pro  
gramming', 'language.', "Python's", 'design', 'philosophy', 'emphasizes',  
'code', 'readability', 'with', 'its', 'notable', 'use', 'of', 'significan  
t', 'indentation.', 'Wikipedia\nDeveloper:', 'Python', 'Software', 'Foundat  
ion\nStable', 'release:', '3.9.5', '/', '3', 'May', '2021;', '19', 'days',  
'ago\nPreview', 'release:', '3.10.0b1', '/', '3', 'May', '2021;', '19', 'da  
ys', 'ago\nTyping', 'discipline:', 'Duck,', 'dynamic,', 'strong', 'typin  
g;', 'gradual', '(since', '3.5,', 'but', 'ignored', 'in', 'CPython)\nFirs  
t', 'appeared:', 'February', '1991;', '30', 'years', 'ago\nParadigm:', 'Mul  
ti-paradigm:', 'object-oriented,', 'procedural', '(imperative)', 'function  
al,', 'structured,', 'reflective']
```

In [75]: `1 print(s1.split('\n'))`

```
["Python is an interpreted high-level general-purpose programming language.  
Python's design philosophy emphasizes code readability with its notable use  
of significant indentation. Wikipedia", 'Developer: Python Software Foundat  
ion', 'Stable release: 3.9.5 / 3 May 2021; 19 days ago', 'Preview release:  
3.10.0b1 / 3 May 2021; 19 days ago', 'Typing discipline: Duck, dynamic, str  
ong typing; gradual (since 3.5, but ignored in CPython)', 'First appeared:  
February 1991; 30 years ago', 'Paradigm: Multi-paradigm: object-oriented, p  
rocedural (imperative), functional, structured, reflective']
```

In [77]: `1 print(s1.split('.')
2
3 sen = s1.split('.')`

```
['Python is an interpreted high-level general-purpose programming languag  
e', " Python's design philosophy emphasizes code readability with its notab  
le use of significant indentation", ' Wikipedia\nDeveloper: Python Software  
Foundation\n\nStable release: 3', '9', '5 / 3 May 2021; 19 days ago\nPreview  
release: 3', '10', '0b1 / 3 May 2021; 19 days ago\nTyping discipline: Duck,  
dynamic, strong typing; gradual (since 3', '5, but ignored in CPython)\nFir  
st appeared: February 1991; 30 years ago\nParadigm: Multi-paradigm: object-  
oriented, procedural (imperative), functional, structured, reflective']
```

In [78]: `1 '..'.join(sen)`

Out[78]: "Python is an interpreted high-level general-purpose programming language. Python's design philosophy emphasizes code readability with its notable use of significant indentation. Wikipedia\nDeveloper: Python Software Foundatio
n\nStable release: 3.9.5 / 3 May 2021; 19 days ago\nPreview release: 3.10.0
b1 / 3 May 2021; 19 days ago\nTyping discipline: Duck, dynamic, strong typi
ng; gradual (since 3.5, but ignored in CPython)\nFirst appeared: February 1
991; 30 years ago\nParadigm: Multi-paradigm: object-oriented, procedural (i
mperative), functional, structured, reflective"

In [79]: `1 '*****'.join(sen)`

Out[79]: "Python is an interpreted high-level general-purpose programming language**
***** Python's design philosophy emphasizes code readability with its no
table use of significant indentation***** Wikipedia\nDeveloper: Python
Software Foundation\nStable release: 3*****9*****5 / 3 May 2021;
19 days ago\nPreview release: 3*****10*****0b1 / 3 May 2021; 19 d
ays ago\nTyping discipline: Duck, dynamic, strong typing; gradual (since 3*
*****5, but ignored in CPython)\nFirst appeared: February 1991; 30 year
s ago\nParadigm: Multi-paradigm: object-oriented, procedural (imperative),
functional, structured, reflective"

In [81]: `1 print(s1.replace(' ', '-'))`

Python-is-an-interpreted-high-level-general-purpose-programming-language.-P
ython's-design-philosophy-emphasizes-code-readability-with-its-notable-use-
of-significant-indentation.-Wikipedia
Developer:-Python-Software-Foundation
Stable-release:-3.9.5-/-3-May-2021;-19-days-ago
Preview-release:-3.10.0b1-/-3-May-2021;-19-days-ago
Typing-discipline:-Duck,-dynamic,-strong-typing;-gradual-(since-3.5,-but-ig
nored-in-CPython)
First-appeared:-February-1991;-30-years-ago
Paradigm:-Multi-paradigm:-object-oriented,-procedural-(imperative),-functio
nal,-structured,-reflective

In [82]: `1 print(s1.title())`

Python Is An Interpreted High-Level General-Purpose Programming Language. P
ython'S Design Philosophy Emphasizes Code Readability With Its Notable Use
Of Significant Indentation. Wikipedia
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Stable Release: 3.9.5 / 3 May 2021; 19 Days Ago
Preview Release: 3.10.0B1 / 3 May 2021; 19 Days Ago
Typing Discipline: Duck, Dynamic, Strong Typing; Gradual (Since 3.5, But Ig
nored In Cpython)
First Appeared: February 1991; 30 Years Ago
Paradigm: Multi-Paradigm: Object-Oriented, Procedural (Imperative), Functio
nal, Structured, Reflective

In [83]: `1 print(s1.capitalize())`

Python is an interpreted high-level general-purpose programming language. p
ython's design philosophy emphasizes code readability with its notable use
of significant indentation. wikipedia
developer: python software foundation
stable release: 3.9.5 / 3 may 2021; 19 days ago
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typing discipline: duck, dynamic, strong typing; gradual (since 3.5, but ig
nored in cpython)
first appeared: february 1991; 30 years ago
paradigm: multi-paradigm: object-oriented, procedural (imperative), functio
nal, structured, reflective

In [84]: `1 print(s1.istitle())`

False

In [86]: `1 print(s1.casefold())`

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paradigm: multi-paradigm: object-oriented, procedural (imperative), functional, structured, reflective

In [87]: `1 s = 'Python Programming'
2
3
4 print(s.istitle())`

True

In [89]: `1 certificate = 'I"m certify that {} from Institute, on Program, form Date'
2
3 print(certificate)`

I"m certify that Anil from Institute, on Program, form Date

In [91]: `1 print('I"m certify that {} from Institute, on Program, form {}'.format('`

I"m certify that Anil from Institute, on Program, form 01-June

In [92]: `1 print('I"m certify that {} from Institute, on Program, form {1}, {} per`

I"m certify that Anil from Institute, on Program, form 01-June, Anil performance is excellant

In [93]: `1 s = 'asdfg'
2 s3 = 'asd456'
3
4 print(s.isalpha(), s3.isalnum())`

True True

```
In [94]: ▶ 1 s4 = 'kubksvad wkek'
          2
          3 print(s4.isalnum())
```

False

```
In [95]: ▶ 1 s1 = """Python is an interpreted high-level general-purpose programming
          2 Developer: Python Software Foundation
          3 Stable release: 3.9.5 / 3 May 2021; 19 days ago
          4 Preview release: 3.10.0b1 / 3 May 2021; 19 days ago
          5 Typing discipline: Duck, dynamic, strong typing; gradual (since 3.5, but
          6 First appeared: February 1991; 30 years ago
          7 Paradigm: Multi-paradigm: object-oriented, procedural (imperative), funct
```

```
In [98]: ▶ 1 for char in s1:
          2     print(char, end = '\t')
```

```
e      d      i      a
      D      e      v      e      l      o      p      e      r
:      P      y      t      h      o      n      S
o      f      t      w      a      r      e      F      o
u      n      d      a      t      i      o      n
l      S      t      a      b      l      e      r      e
.      5      a      s      e      :      3      .      9
2      0      2      1      ;      1      9      d
a      y      s      a      g      o      w      r
e      l      e      a      s      e      :      3      .
1      0      .      0      b      1      /      3
M      a      y      2      0      2      1      ;
1      9      d      a      y      s      a      g
o      T      y      p      i      n      g      d      i
s      c      i      p      l      i      n      e      :
D      u      c      k      ,      d      y      n      a
... : - - - + - - -
```

In [100]: ▶

```

1 for char in s1:
2     if char.isalpha():
3         print(char, end = '\t')

```

d e s i g n p h i l
o s o p h y e m p h
a s i z e s c o d h
r e a d a b i t l i t
y w i t h i t s n o
t a b l e u s e o f
s i g n n i f i c a n
t i n d e n t a t i
o n W i k i p e d i
a D e v e l o p e r t
P y t h o n S o n f t
w a r e F o u n d a
t i o n S t a b l e
r e l e a s e M a y
d a y s a g o P r e
v i e w r e l e a s
e b M a y d a y s
g o T y p i n g d i
s c i p l i n e D u
c k d y n a m i c

In [102]: ▶

```

1 for char in s1:
2     if char.isdigit():
3         print(char, end = '\t')

```

3 9 5 3 2 0 2 1 1 9
3 1 0 0 1 3 2 0 2 1
1 9 3 5 1 9 9 1 3 0

In [103]: ▶

```

1 for char in s1:
2     if char in 'AEIOUaeiou':
3         print(char, end = '\t')

```

o i a i e e e i e e
e e a u o e o a i a
u a e o e i i o o e
a i e o e e a a i i
i i o a e u e o i i e
i a i e a i o o a e
o u a i o a e e e a
e a a a o e i e e e
a e a a a o i i i i
e u a i o i i a u a i
e u i o e i o i a e
a e e u a e a a o a
a i u i a a i o e o
i e e o e u a a i e a
i e u i o a u u e e
e i e

```
In [104]: ▶ 1 ac = 0
2 nc = 0
3 sc = 0
4
5 for char in s1:
6     if char.isalpha():
7         ac += 1
8     elif char.isdigit():
9         nc += 1
10    else:
11        sc += 1
12
13 print('Alpha', ac, 'Digits', nc, "Special Charac", sc)
```

Alpha 426 Digits 30 Special Charac 109

Problems

- sum of the digits in the string
- sum of the even digits and odd digits in the string

Lists

It is used to store the non-homogenous group of valid datatypes in python

Properties

- it is declared as []
- List mutable dataType
- List is an ordered data
- It is iterable

```
In [105]: ▶ 1 li = []
2
3 li2 = list()
```

```
In [106]: ▶ 1 print(type(li), type(li2))

<class 'list'> <class 'list'>
```

```
In [107]: ▶ 1 li = [1, 5.5, 5 + 6j, 'Python', [1, 2, 3]]
2
3 print(li)

[1, 5.5, (5+6j), 'Python', [1, 2, 3]]
```

```
In [108]: 1 print(rollNo)
```

```
19KQ1A0237
```

```
In [109]: 1 rollNo[-4:-2] == '02'
```

```
Out[109]: True
```

```
In [110]: 1 rollNo[-4:-2].endswith('02')
```

```
Out[110]: True
```

Day Outcomes

- Strings
 - Slicing in Python
 - String Methods
- Lists
 - Declaring a List