String

String

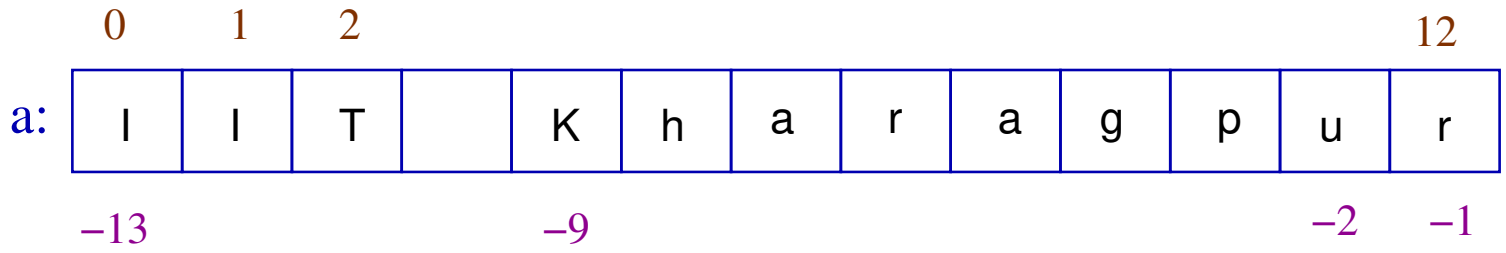
A string literal is specified with single or double quotes.

```
>>> a = "IIT Kharagpur"
>>> a
'IIT Kharagpur'
>>> b = 'IIT Bombay'
>>> b
'IIT Bombay'
>>> e = ""  # empty string
>>> e
''
```

Operations

```
>>> c = a + ' and ' + b
>>> c
'IIT Kharagpur and IIT Bombay'
>>> a + e
'IIT Kharagpur'
>>> d = 3*a
>>> d
'IIT KharagpurIIT KharagpurIIT Kharagpur'
>>> 'p' in a
True
>>> 'q' in a
False
```

Representation and Indices



Note

The content of a string cannot be modified. It is an immutable object.

```
>>> a = 'cat'
>>> a[1]
'a'
>>> a[1] = 'o'
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
TypeError: 'str' object does not support
                              item assignment
```

Slicing a String

```
>>> a[0]
'I'
>>> a[5]
'h'
>>> a[0:7]
'IIT Kha'
>>> a[:]
'IIT Kharagpur'
>>> a[2:]
'T Kharagpur'
>>> a[-10:-2]
' Kharagp'
```

Slicing a String

```
>>> a[0:13:2]
'ITKaapr'
>>> len(a)
13
```

Note

A large number of functions are supported by Python string (`str`) library.

`docs.python.org/2/library/string.html`

Note

A string is a sequence of characters. It is an iterator in Python. Essentially there is a notion of first character (index 0), last character (index $len(s) - 1$) and next character (index $i + 1$). This can be used to iterate over a sequence of code.

Python `for` Statement

A `for`-statement in Python is used to iterate over the elements of a sequence e.g. string, list, tuple etc. The structure or syntax of `for`-statement is as follows.

```
for    target in iterator-exp:

       statement1

else:

       statement2
```

Note

The *iterator-exp* is evaluated before entering the loop. The value should be an iterable object (a sequence). Number of iterations are determined by the number of elements of the sequence. In each iteration element of the sequence according to their order of indices is assigned to the *target* and $statement_1$ is executed.

Note

The loop terminates at the end of the sequence. The `else` part is optional. It is executed after a normal termination of the loop. Both $statement_1$ and $statement_2$ may be block of statements.
The effect of `break` and `continue` are similar to `while`-loop.

Example

```
# numAs.py : number of A's in a string
s = input("Enter a string: ")
aCount = 0
for x in s:
    if x == 'a' or x == 'A':
        aCount = aCount + 1
print s, ':', aCount, "a's"
```

Assignment 9

Write a Python program that reads a non-negative integer n and computes $n!$, where $0! = 1$ and $n! = n \cdot (n-1) \cdots 2 \cdot 1$ if $n > 0$.

Assignment 10

Write a Python program that reads a positive integer n and reports whether it is a prime number.
First 10 prime numbers are: 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31.

Assignment 11

Write a Python program that reads a string `s` of characters and forms a new string with the characters in the odd-indices of `s`.
Input: IIT Kharagpur
Output: I hrgu
Note: `range(len(s))` will give you the sequence of index, and you may use `for`-loop.

Assignment 12

Write a Python program that reads a string s of characters and forms a new string by concatenation of s and s reverse. It will form an even length palindrome.
Input: IIT Kharagpur
Output: IIT KharagpurrupgarahK TII