

1. ``isinstance()``

- Description: Used to check if an object is of a specific type.
- Syntax: ``isinstance(object, type)``
- Returns: ``True`` if the object is of the specified type, otherwise ``False``.

Example:

```
x = 10
```

```
print(isinstance(x, int)) True
```

```
y = "Hello"
```

```
print(isinstance(y, str)) True
```

```
print(isinstance(y, int)) False
```

2. ``isalnum()``

- Description: Checks if a string consists of only alphanumeric characters (letters and numbers). It returns ``False`` if there are any special characters or spaces.
- Syntax: ``string.isalnum()``
- Returns: ``True`` if all characters are alphanumeric, otherwise ``False``.



String Validation Methods

Example:

```
s = "Hello123"
```

```
print(s.isalnum()) True
```

```
s = "Hello 123"
```

```
print(s.isalnum()) False (space is not alphanumeric)
```

3. `isalpha()`

- Description: Checks if all characters in a string are alphabetic (letters only). - Syntax: `string.isalpha()`

- Returns: `True` if all characters are alphabetic, otherwise `False`.

Example:

```
s = "Hello"
```

```
print(s.isalpha()) True
```

```
s = "Hello123"
```

```
print(s.isalpha()) False (contains numbers)
```

String Validation Methods

4. ``isdigit()``

- Description: Checks if all characters in a string are digits (numbers).
- Syntax: ``string.isdigit()``
- Returns: ``True`` if all characters are digits, otherwise ``False``.

Example:

```
s = "12345"
```

```
print(s.isdigit()) True
```

```
s = "12345a"
```

```
print(s.isdigit()) False (contains a letter)
```

5. ``islower()``

- Description: Checks if all characters in a string are lowercase letters.
- Syntax: ``string.islower()``
- Returns: ``True`` if all alphabetic characters are lowercase, otherwise ``False``.

String Validation Methods

Example:

```
s = "hello"
```

```
print(s.islower()) True s = "Hello"
```

```
print(s.islower()) False (contains uppercase 'H')
```

6. ``isupper()``

- Description: Checks if all characters in a string are uppercase letters.

- Syntax: ``string.isupper()``

- Returns: ``True`` if all alphabetic characters are uppercase, otherwise ``False``.

Example:

```
s = "HELLO"
```

```
print(s.isupper()) True
```

```
s = "Hello"
```

```
print(s.isupper()) False (contains lowercase letters)
```

7. ``isspace()``

- Description: Checks if all characters in a string are whitespace characters (spaces, tabs, newlines).



String Validation Methods

- Syntax: ``string.isspace()``
- Returns: ``True`` if the string consists only of whitespace, otherwise ``False``.

Example:

```
s = " "
```

```
print(s.isspace()) True
```

```
s = "Hello World"
```

```
print(s.isspace()) False (contains non whitespace  
characters)
```

8. ``startswith()``

- Description: Checks if a string starts with a specific prefix.
- Syntax: ``string.startswith(prefix)``
- Returns: ``True`` if the string starts with the specified prefix, otherwise ``False``.

Example:

```
s = "Hello World"
```

```
print(s.startswith("Hello")) True
```



String Validation Methods

```
print(s.startswith("World")) False
```

9. `endswith()`

- Description: Checks if a string ends with a specific suffix.

- Syntax: `string.endswith(suffix)` - Returns: `True` if the string ends with the specified suffix, otherwise `False`.

Example:

```
s = "Hello World"
```

```
print(s.endswith("World")) True
```

```
print(s.endswith("Hello")) False
```

10. `isdecimal()`

- Description: Checks if all characters in a string are decimal characters (used in base-10 numbers).

- Syntax: `string.isdecimal()`

- Returns: `True` if all characters are decimal numbers, otherwise `False`.

String Validation Methods

Example:

```
s = "12345"
```

```
print(s.isdecimal()) True
```

```
s = "12.34"
```

```
print(s.isdecimal()) False (contains a decimal point)
```

Summary Table

Method	Checks for	Example Input	Returns
<code>isinstance()</code>	If the object is of a specified type	<code>isinstance(10, int)</code>	True
<code>isalnum()</code>	If the string consists of alphanumeric characters	<code>"Hello123".isalnum()</code>	True
<code>isalpha()</code>	If the string consists of only alphabetic characters	<code>"Hello".isalpha()</code>	True
<code>isdigit()</code>	If the string consists of only digits	<code>"12345".isdigit()</code>	True
<code>islower()</code>	If all alphabetic characters in the string are lowercase	<code>"hello".islower()</code>	True
<code>isupper()</code>	If all alphabetic characters in the string are uppercase	<code>"HELLO".isupper()</code>	True
<code>isspace()</code>	If the string consists only of whitespace characters	<code>" ".isspace()</code>	True
<code>startswith()</code>	If the string starts with the specified prefix	<code>"Hello".startswith("H")</code>	True
<code>endswith()</code>	If the string ends with the specified suffix	<code>"Hello".endswith("o")</code>	True
<code>isdecimal()</code>	If the string consists of only decimal characters	<code>"12345".isdecimal()</code>	True

These methods are commonly used in data validation, string manipulation, and type checking in Python.