Python String Built-In Functions

1. String Built-In Functions

Python provides many built-in functions to work with strings. A string in Python is a sequence of characters enclosed in single quotes (' '), double quotes (" "), or triple quotes ('" "' / """ """).

- **len(string)** → Returns the length of the string.
  ```
  s = "Python"
  print(len(s))   # 6
  ```
- **str()** → Converts other data types into a string.
  ```
  x = 123
  print(str(x))   # "123"
  ```
- **max(string)** → Returns the character with the highest Unicode value.
- **min(string)** → Returns the character with the lowest Unicode value.

2. Case Conversion Built-In Functions

These functions are used to change the case of characters in a string:

- **upper()** → Converts all characters to uppercase.
  ```
  text = "hello"
  print(text.upper())   # "HELLO"
  ```
- **lower()** → Converts all characters to lowercase.
  ```
  text = "HELLO"
  print(text.lower())   # "hello"
  ```
- **title()** → Converts the first letter of each word to uppercase.
  ```
  text = "python programming"
  print(text.title())   # "Python Programming"
  ```
- **capitalize()** → Converts the first letter of the string to uppercase and the rest to lowercase.
  ```
  text = "hello world"
  print(text.capitalize())   # "Hello world"
  ```
- **swapcase()** → Converts uppercase letters to lowercase and vice versa.
  ```
  text = "PyThOn"
  print(text.swapcase())   # "pYtHoN"
  ```

3. Trimming and Replace Built-In Functions

These functions are useful for removing or replacing characters:

- **strip()** → Removes whitespace (or specified characters) from both ends of a string.
  ```
  text = "   python   "
  print(text.strip())   # "python"
  ```
- **lstrip()** → Removes whitespace/characters from the left side.
  ```
  text = "---hello"
  print(text.lstrip('-'))   # "hello"
  ```
- **rstrip()** → Removes whitespace/characters from the right side.
  ```
  text = "hello!!!"
  print(text.rstrip('!'))   # "hello"
  ```
- **replace(old, new, count)** → Replaces a substring with another substring.
  ```
  text = "I love Java"
  print(text.replace("Java", "Python"))   # "I love Python"
  ```

4. Searching and Finding Built-In Functions:

These functions help in locating substrings:

- **find(substring, start, end)** → Returns the index of the first occurrence (or -1 if not found).
  ```
  text = "Python programming"
  print(text.find("pro"))   # 7
  ```
- **rfind(substring, start, end)** → Returns the last occurrence index.
  ```
  text = "banana"
  print(text.rfind("a"))   # 5
  ```
- **index(substring, start, end)** → Same as find(), but raises an error if not found.
  ```
  text = "Python"
  print(text.index("P"))   # 0
  ```
- **rindex(substring, start, end)** → Same as rfind(), but raises an error if not found.
- **startswith(prefix)** → Checks if a string starts with the given prefix (returns True/False).
  ```
  text = "Hello World"
  print(text.startswith("Hello"))   # True
  ```
- **endswith(suffix)** → Checks if a string ends with the given suffix.
  ```
  text = "Hello World"
  ```