The C++ Standard Library provides a rich set of functions and classes for handling strings through the <string> library.

1. Creation and Initialization

- std::string str;: Declares an empty string.
- std::string str = "Hello, World!";: Initializes a string with a literal.
- std::string str2(str);: Initializes a string as a copy of another string.

2. Concatenation

- str += " more text";: Appends text to the string.
- std::string result = str1 + str2;: Concatenates two strings.

3. Access and Modification

- char ch = str[i];: Accesses the character at position i.
- str[0] = 'h';: Modifies the character at position 0.
- str.at(i): Accesses the character at position i with bounds checking.
- str.front(): Accesses the first character.
- str.back(): Accesses the last character.

4. Size and Capacity

- str.size(): Returns the number of characters in the string.
- str.length(): Synonym for size().
- str.empty(): Checks if the string is empty.
- str.capacity(): Returns the size of the storage space currently allocated.
- str.reserve(n): Requests a change in capacity to at least n characters.

5. Substrings

- std::string substr = str.substr(pos, len);: Returns a substring starting at position(pos) upto string length(len).

6. Comparison

- if (str1 == str2): Checks if two strings are equal.
- if (str1 != str2): Checks if two strings are not equal.
- if (str1 < str2): Lexicographically compares two strings.

7. Searching

- size_t pos = str.find("text");: Finds the first occurrence of the substring "text".
- size_t pos = str.rfind("text");: Finds the last occurrence of the substring "text".
- size_t pos = str.find_first_of("aeiou");: Finds the first occurrence of any character in the string "aeiou".

- size_t pos = str.find_last_of("aeiou");: Finds the last occurrence of any character in the string "aeiou".

8. Insertion and Deletion

- str.insert(pos, "text");: Inserts "text" at position pos.
- str.erase(pos, len);: Erases len characters starting from pos.
- str.clear(): Erases all characters, making the string empty.

9. Transformation

- std::transform(str.begin(), str.end(), str.begin(), ::toupper);: Converts the string to uppercase (requires <algorithm> and <cctype>).
- std::transform(str.begin(), str.end(), str.begin(), ::tolower);: Converts the string to lowercase (requires <algorithm> and <cctype>).

10. Conversion

- std::to_string(val): Converts a number to a string.
- std::stoi(str): Converts a string to an integer.
- std::stof(str): Converts a string to a float.
- std::stod(str): Converts a string to a double.

Note:

1. **size_t**: This is the type of the variable pos. size_t is an unsigned integer type that is used to represent the size of objects in bytes
2.