

String and its Real-life Implementation

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Introduction to Strings

- ▶ An array of character is known as string.
- ▶ A string in C programming is a sequence of characters terminated with a null character.
- ▶ In programming, strings are used to store and manipulate text.
- ▶ The difference between a character array and a C string is that the string in C is terminated with a unique character.

Properties of Strings

- ▶ Strings can contain letters, digits, punctuation, and other symbols.
- ▶ Strings are typically immutable (they cannot be changed directly once created in many programming languages like Python, Java).
- ▶ String length can be measured.
- ▶ Strings can be concatenated (joined together).
- ▶ Strings can be compared lexicographically (in dictionary order).

Real-Life Implementation of Strings

Example: User Input in Web Applications

- ▶ When you log into a website, your username and password are strings.
- ▶ Strings are used for validation, comparison, and storage.
- ▶ Example: "Himon Gogoi" (username) and "mypassword123" (password).

Example: Text Processing in Word Processing Software

- ▶ In word processors, text (strings) is processed for spelling checks, grammar correction, formatting, etc.
- ▶ String manipulation includes operations like searching, replacing, or modifying characters.

Real-life Example: String Manipulation in Social Media

- ▶ In social media applications like Facebook, Twitter, or Instagram, strings are used to represent usernames, posts, comments, etc.
- ▶ Example: Searching for posts using keywords or hashtags involves string matching.
- ▶ String operations include searching, filtering, and transforming text.

Example: String Manipulation in Search Engines

- ▶ When you type a search query, the search engine processes the string to find the most relevant results.
- ▶ String operations include tokenization, ranking, matching, and displaying results.
- ▶ Example: Google search handles strings such as "Strings Functions."

String handling function in C

- ▶ **strlen()** function : It is use to find the length of a character string. For e.g.

```
int n;
```

```
char st[20] = "Dibrugarh";
```

```
n = strlen(st);
```

This will return the length of the string 9.

- ▶ **strcpy()** function : It is use to copy a character variable to a character string. For e.g.

```
char city[20]; strcpydist, "Dibrugarh";
```

This will assign the string "Dibrugarh" to the character variable dist.

- ▶ **strcat()** function : It is used to join character strings.

```
char dist[20] = "Dibrugarh";
```

```
char pin[10] = "-786004";
```

```
strcat(city,pin);
```

This will join the two strings and store the result in city as "Dibrugarh-786004".

- ▶ **strcmp() function** : It is use to compare two character strings.

```
char dist1[20] = "Dibrugarh";
```

```
char dist2[20] = "Tinsukia";
```

```
strcmp(dist1, dist2);
```

It will return an integer value -16 which is the difference in the ASCII value of the first mismatching letters 'D' and 'T'.

Use of Strings in Databases

- ▶ Strings are used in databases to store text data such as customer names, addresses, and product descriptions.
- ▶ SQL queries often manipulate strings for searching or retrieving specific data.
- ▶ Example: Finding a customer by name in a database table using a string:

Conclusion

- ▶ Strings are essential in both real-world applications and programming.
- ▶ They are used for everything from simple text display to complex data processing tasks.
- ▶ Understanding string manipulation is fundamental to solving many problems in computer science and software development.
- ▶ From social media, web search, to database queries, strings play a crucial role in everyday computing.

Thank You!

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