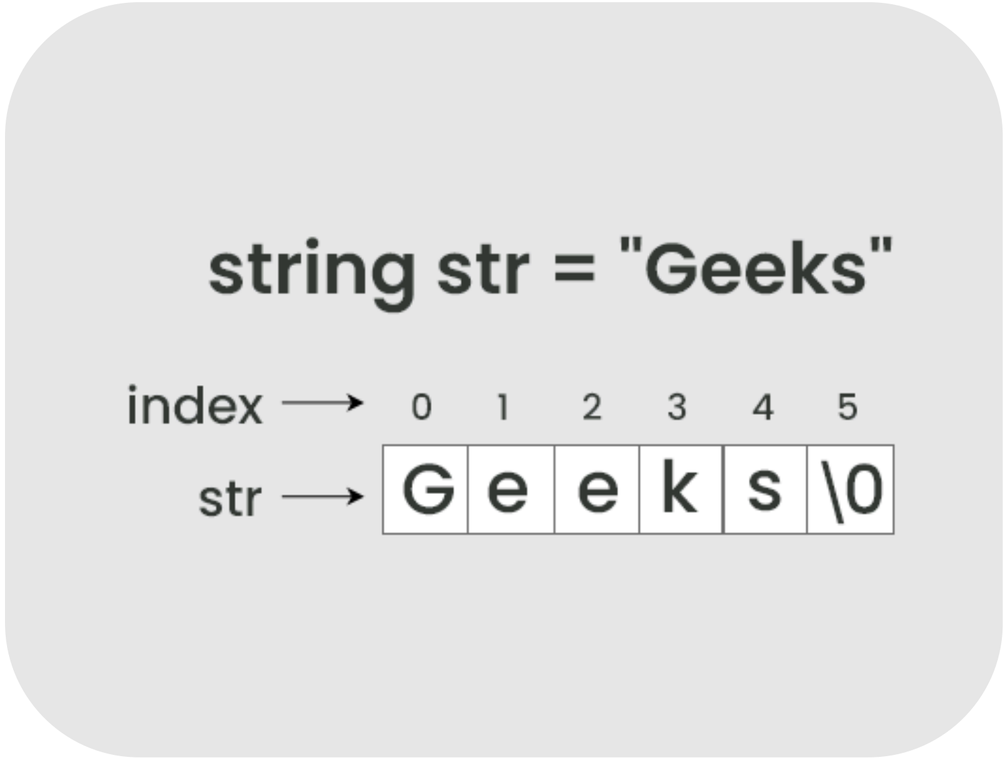
Session 7: Strings in C

TeachToTech

What is a String in C?

In C, a string is an array of characters that ends with a null character '\0'.
This null character tells the program where the string ends.



Why Strings are Important

Used to store names, messages, text data
Essential for user input/output
Core of file handling, searching, and text processing

String Declaration

Defining:

```
char str[20];
```

Initialization:

```
char str[] = "Hello";
```

Internally:

{'H','e','l','l','o','\0'}

String Input & Output

```
scanf("%s", str);
printf("%s", str);
```

⚠️ scanf stops at space.

Reading a Full Line

```
fgets(str, sizeof(str), stdin);
```

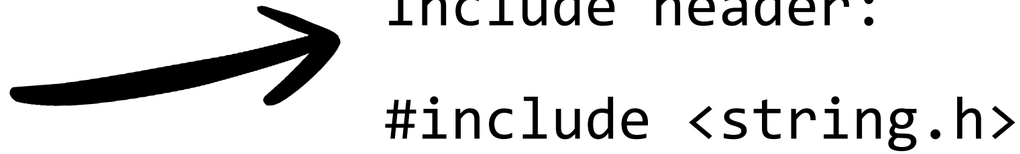
Built-in String Functions

Common functions:

- strlen()
- strcpy()
- strcmp()
- strcat()

But

All starts With



Include header:

#include <string.h>

strlen() –
Length of String

```
int len = strlen(str);
```

strcpy() – Copy String

```
strcpy(dest, src);
```

strcmp() –
Compare Strings

- 0 → equal
- <0 → str1 < str2
- >0 → str1 > str2

```
int res = strcmp(str1, str2);
```

strcat() – Concatenate Strings

Appends str2 to str1.

```
strcat(str1, str2);
```

Reverse String (Logic Based)

```
int i = 0, j = strlen(str)-1;
while(i < j){
    char temp = str[i];
    str[i] = str[j];
    str[j] = temp;
    i++;
    j--;
}
```

Remove Outermost Parentheses (Concept)

- Use a counter to track depth
- Ignore first (and last) of each primitive substring

Activity

Copy one string to another without using strcpy()

```
int i = 0;
while(src[i] != '\0') {
    dest[i] = src[i];
    i++;
}
dest[i] = '\0';
```

Summary

- Strings are character arrays
- Null character defines string end
- Built-in functions simplify operations
- Essential for real-world applications