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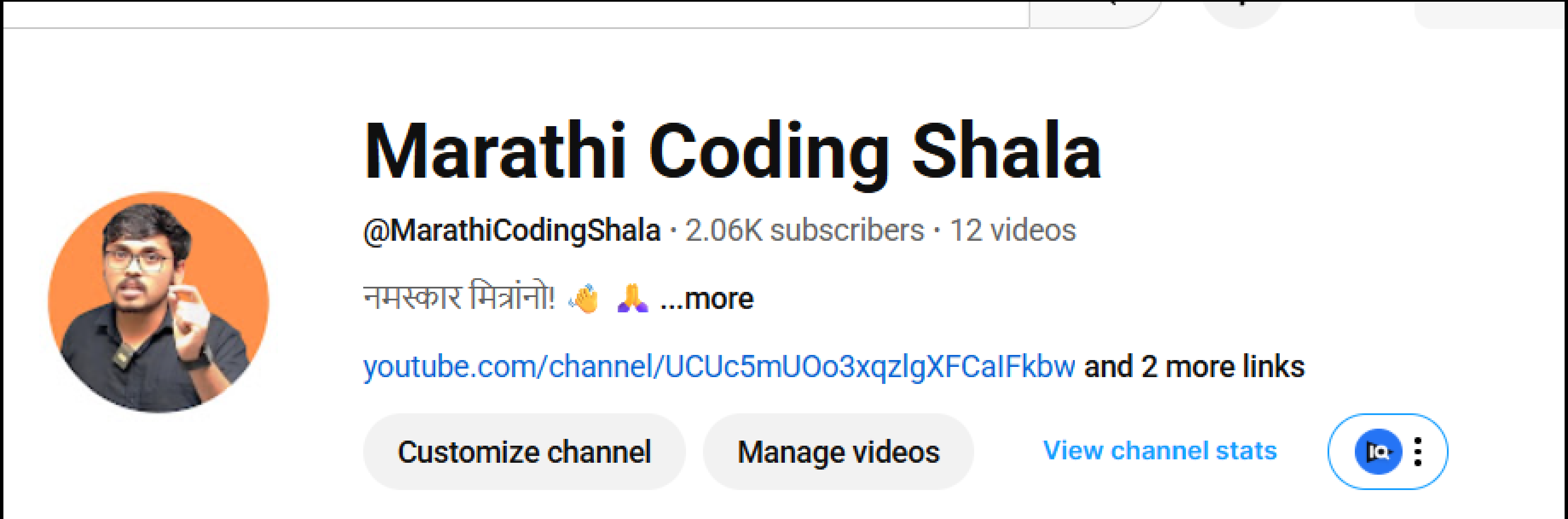

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Strings

In C, strings are essentially arrays of characters that end with a null character ('\0'). This null character indicates the end of the string

Declaring Strings

Using a Character Array:

```
char str[20];  // Can hold a string of up to 19 characters + 1 for '\0'
char str[] = "Hello";  // Implicitly null-terminated
```

```
Char str[20]={“AMIT”}
```

A	M	I	T																

‘\0’=It Represents string end
It is non printable character

```
char str[6] = {'H', 'e', 'l', 'l', 'o', '\0'};
```

Char a[10];

a=“AMIT” not allowed in c

Methods to Take String Input

```
#include <stdio.h>

int main() {
    char str[100];  // Declare a string with enough space
    printf("Enter a string: ");
    scanf("%s", str);  // Reads input until a space or newline
    printf("You entered: %s\n", str);
    return 0;
}
```

Limitation: Cannot read strings with spaces (e.g., "Hello World" will only store "Hello").

2. Using gets (Not Recommended)

```
#include <stdio.h>

int main() {
    char str[100];
    printf("Enter a string: ");
    gets(str);  // Not safe! Avoid using
it.
    printf("You entered: %s\n", str);
    return 0;
}
```

gets reads an entire line of input, including spaces,
but it is **not safe** because
it doesn't check for buffer overflow.

Warning: Avoid using gets in modern C programs. It has been removed in C11.

3. Using fgets (Recommended)

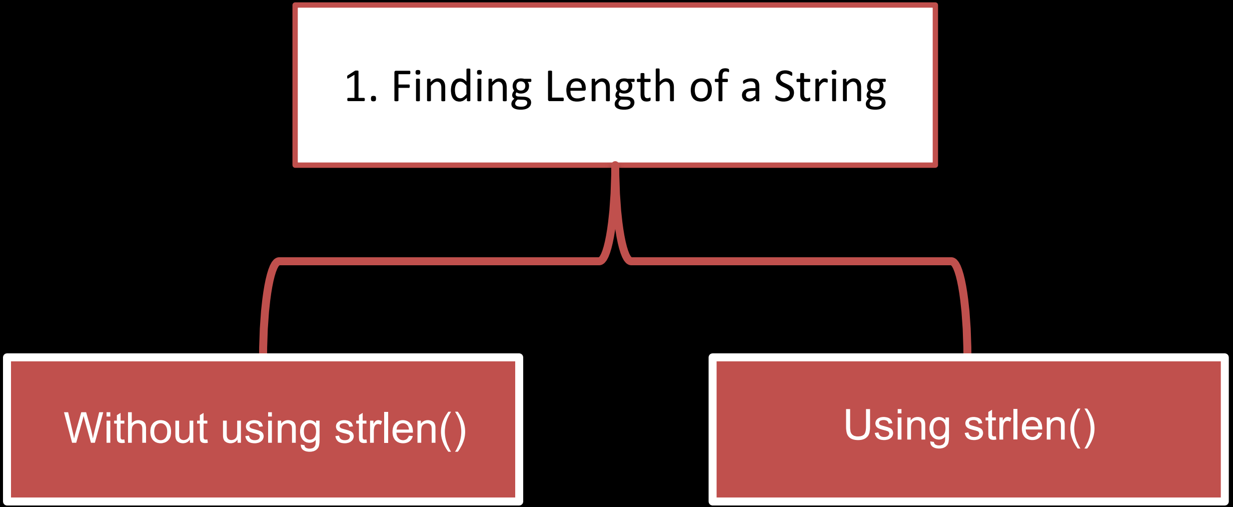
fgets is the safest way to take string input in C as it prevents buffer overflows.

```
#include <stdio.h>

int main() {
    char str[100];
    printf("Enter a string: ");
    fgets(str, sizeof(str), stdin);  // Reads up to sizeof(str) - 1 characters
    printf("You entered: %s", str);
    return 0;
}
```

String Predefined function

In C, predefined string functions are available in the **<string.h>** library. These functions are commonly used for string manipulation.

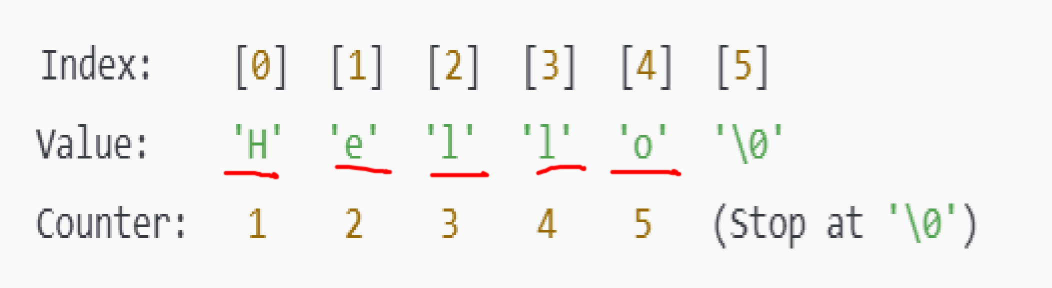
- **strlen()** - Get the length of a string.
- **strcpy()** - Copy one string to another.
- **strcat()** - Concatenate (append) one string to another.
- **strcmp()** - Compare two strings.



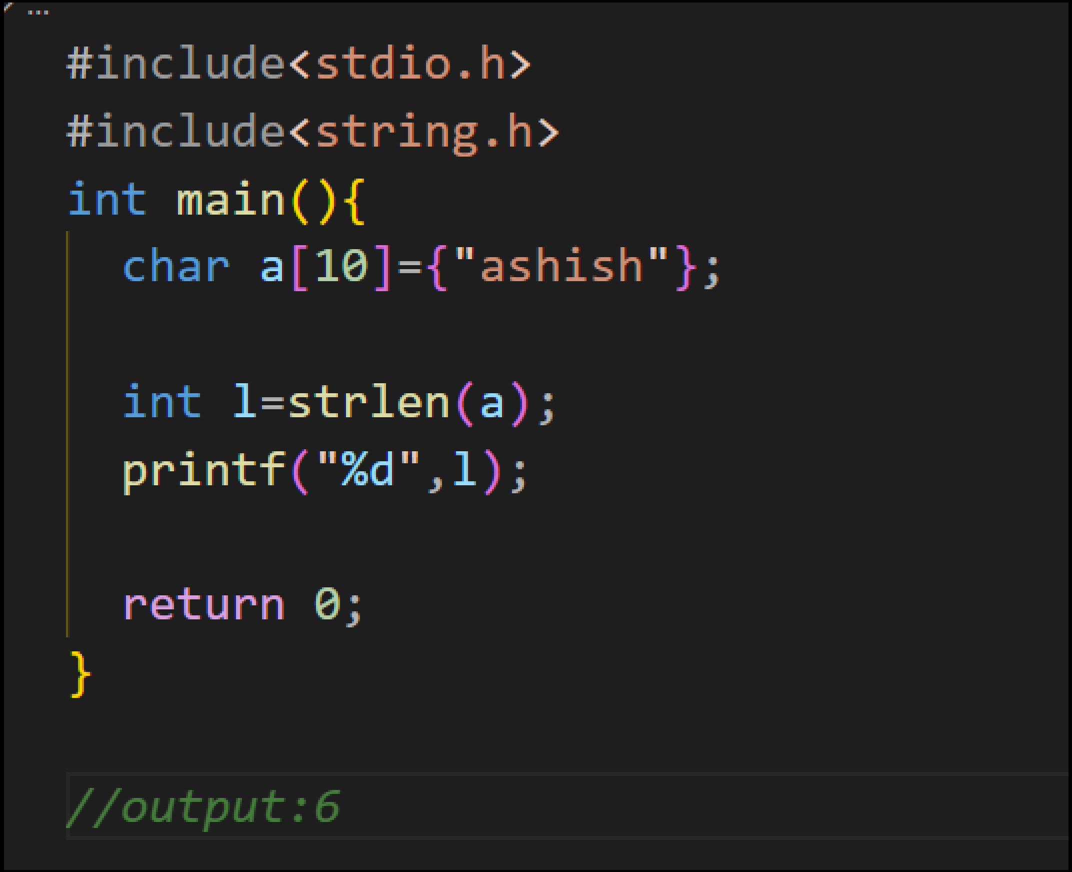
1. Finding Length of a String

Without using strlen()

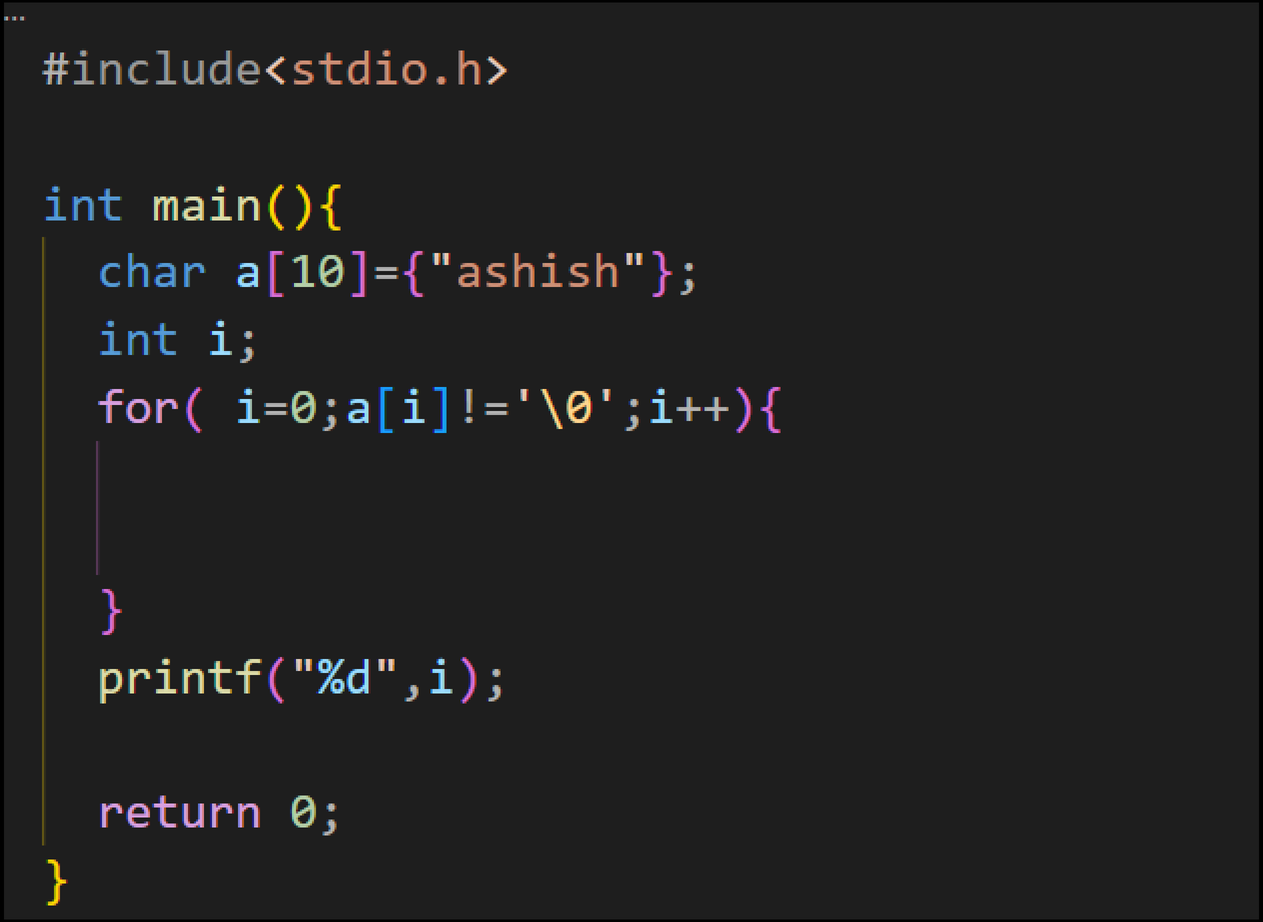
Using strlen()



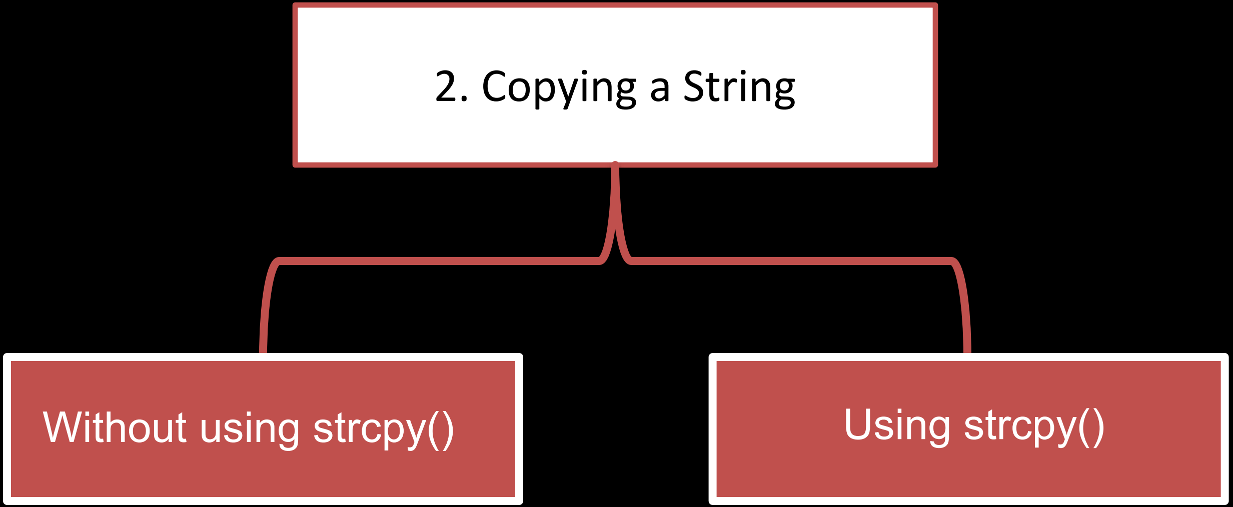
```
Index:    [0]  [1]  [2]  [3]  [4]  [5]
Value:    'H'  'e'  'l'  'l'  'o'  '\0'
Counter:   1    2    3    4    5   (Stop at '\0')
```



```c
#include<stdio.h>
#include<string.h>
int main(){
  char a[10]={"ashish"};

  int l=strlen(a);
  printf("%d",l);

  return 0;
}

//output:6
```



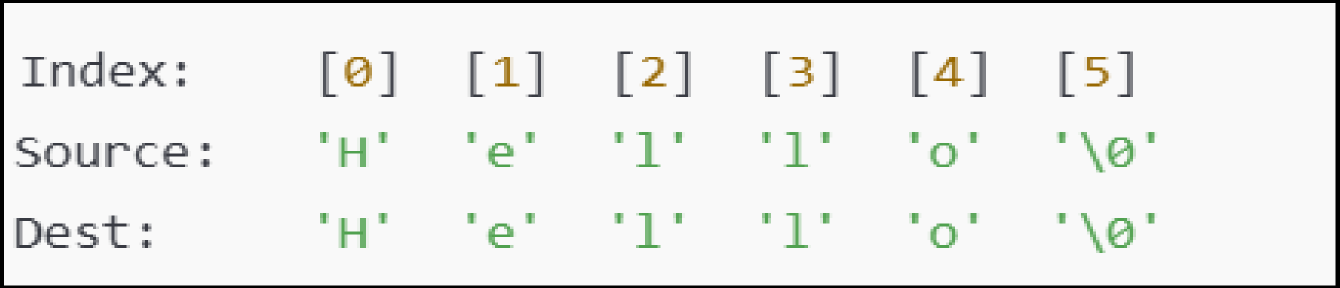
```c
#include<stdio.h>

int main(){
  char a[10]={"ashish"};
  int i;
  for( i=0;a[i]!='\0';i++){


  }
  printf("%d",i);

  return 0;
}
```



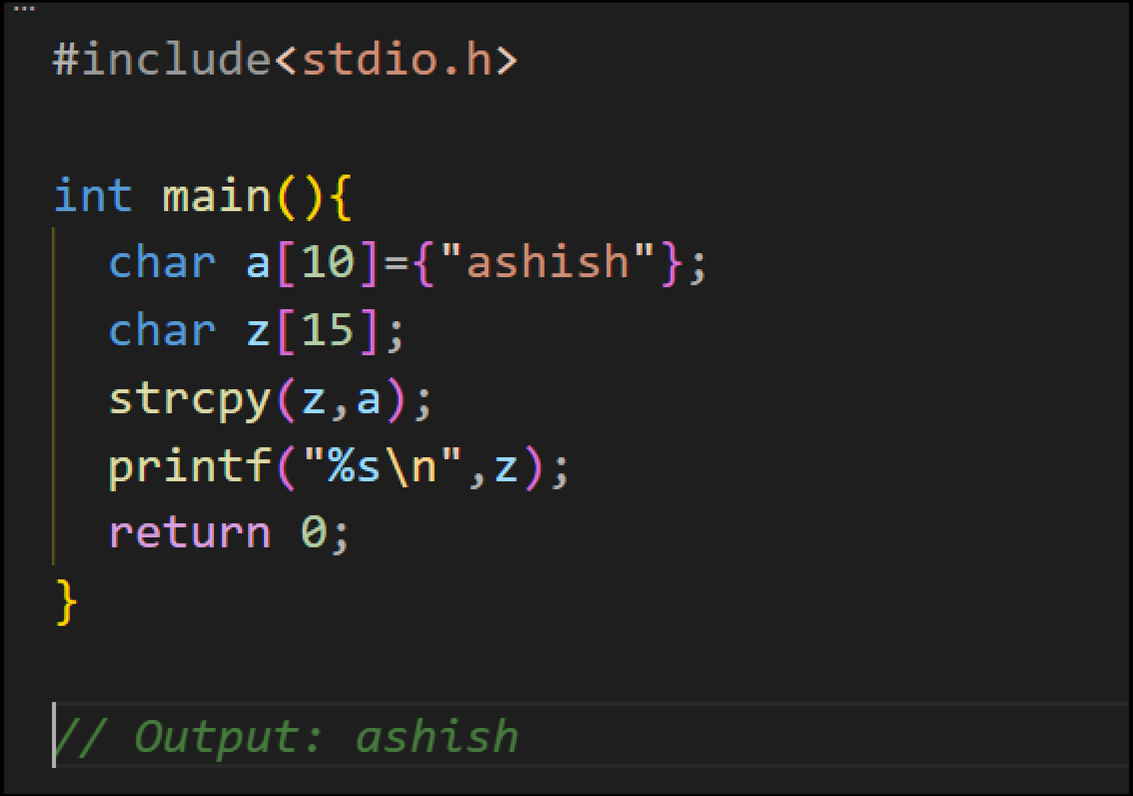
2. Copying a String

Without using strcpy()

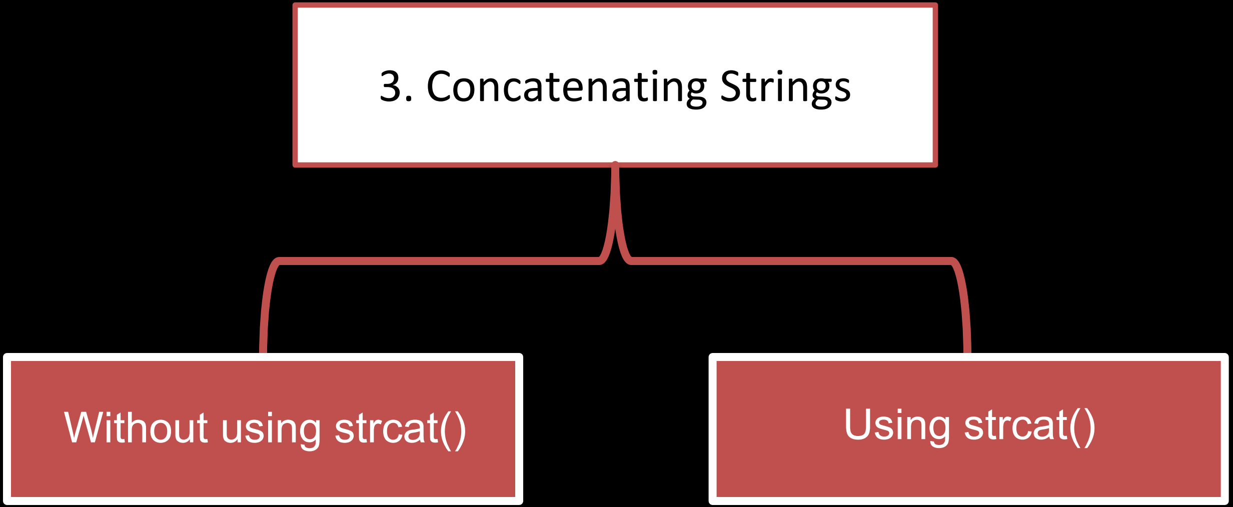
Using strcpy()



```
Index:     [0]  [1]  [2]  [3]  [4]  [5]
Source:    'H'  'e'  'l'  'l'  'o'  '\0'
Dest:      'H'  'e'  'l'  'l'  'o'  '\0'
```



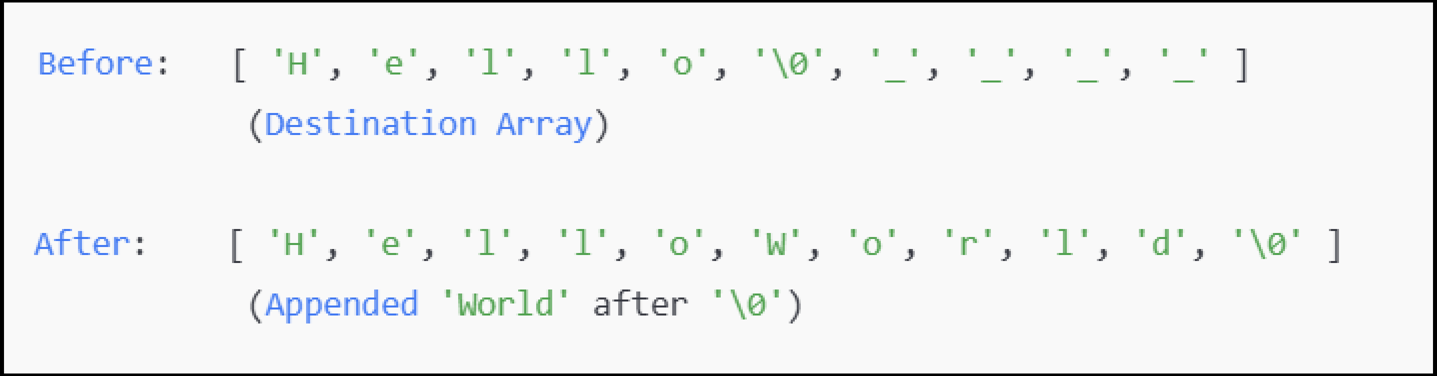
```c
#include<stdio.h>

int main(){
   char a[10]={"ashish"};
   char z[15];
   strcpy(z,a);
   printf("%s\n",z);
   return 0;
}

// Output: ashish
```



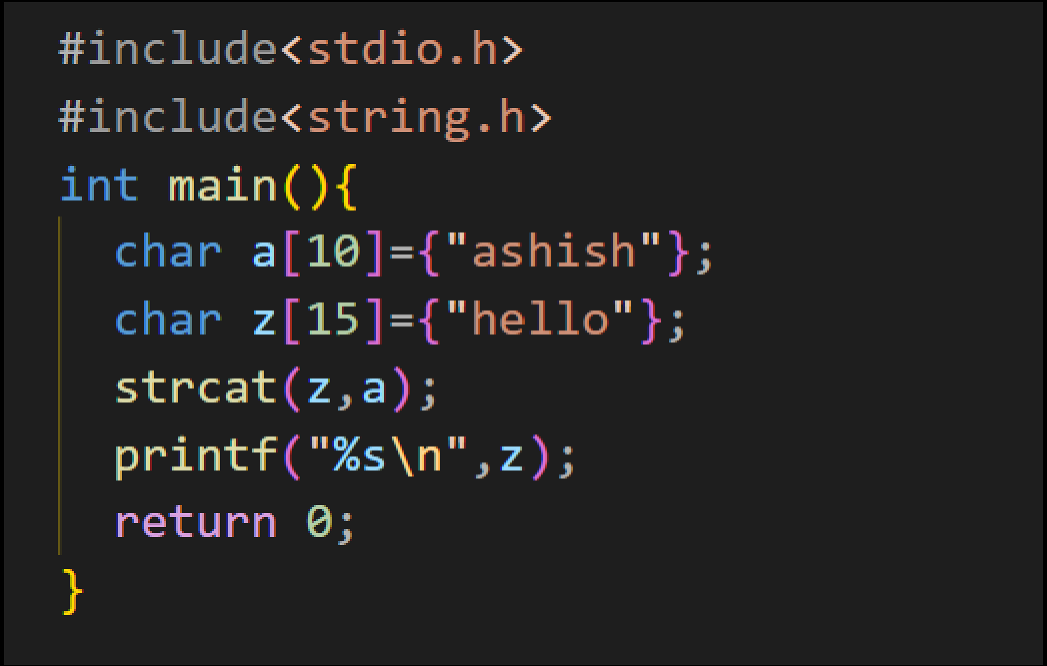
3. Concatenating Strings

Without using strcat()

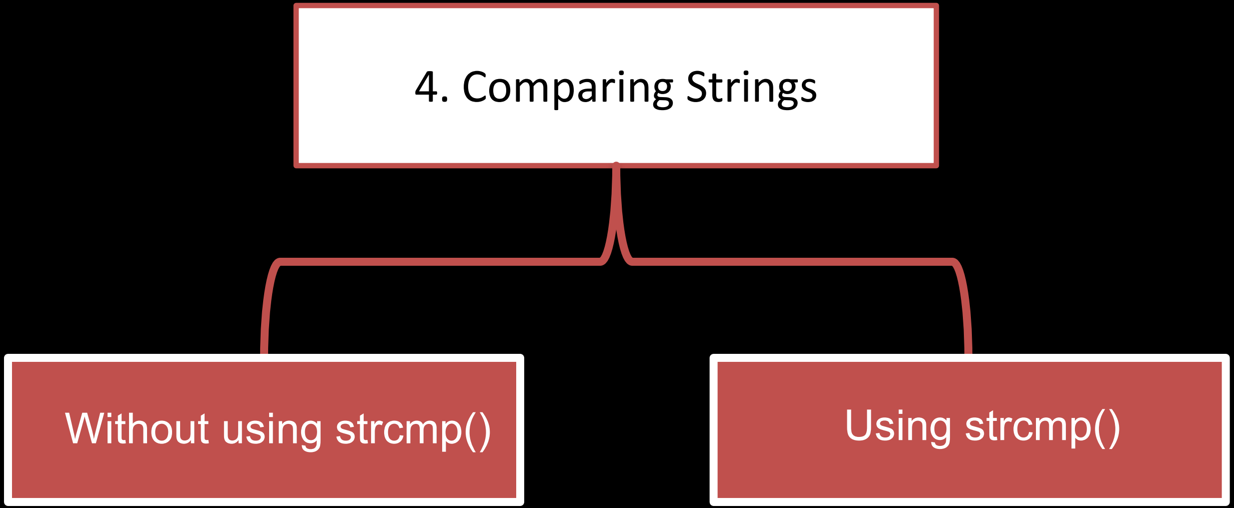
Using strcat()



```
Before:   [ 'H', 'e', 'l', 'l', 'o', '\0', '_', '_', '_', '_' ]
           (Destination Array)


After:    [ 'H', 'e', 'l', 'l', 'o', 'W', 'o', 'r', 'l', 'd', '\0' ]
           (Appended 'World' after '\0')
```



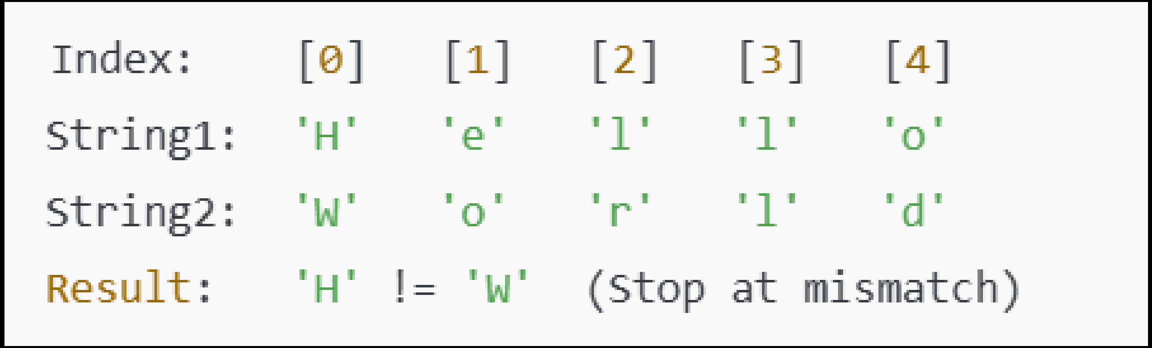
```
#include<stdio.h>
#include<string.h>
int main(){
  char a[10]={"ashish"};
  char z[15]={"hello"};
  strcat(z,a);
  printf("%s\n",z);
  return 0;
}
```



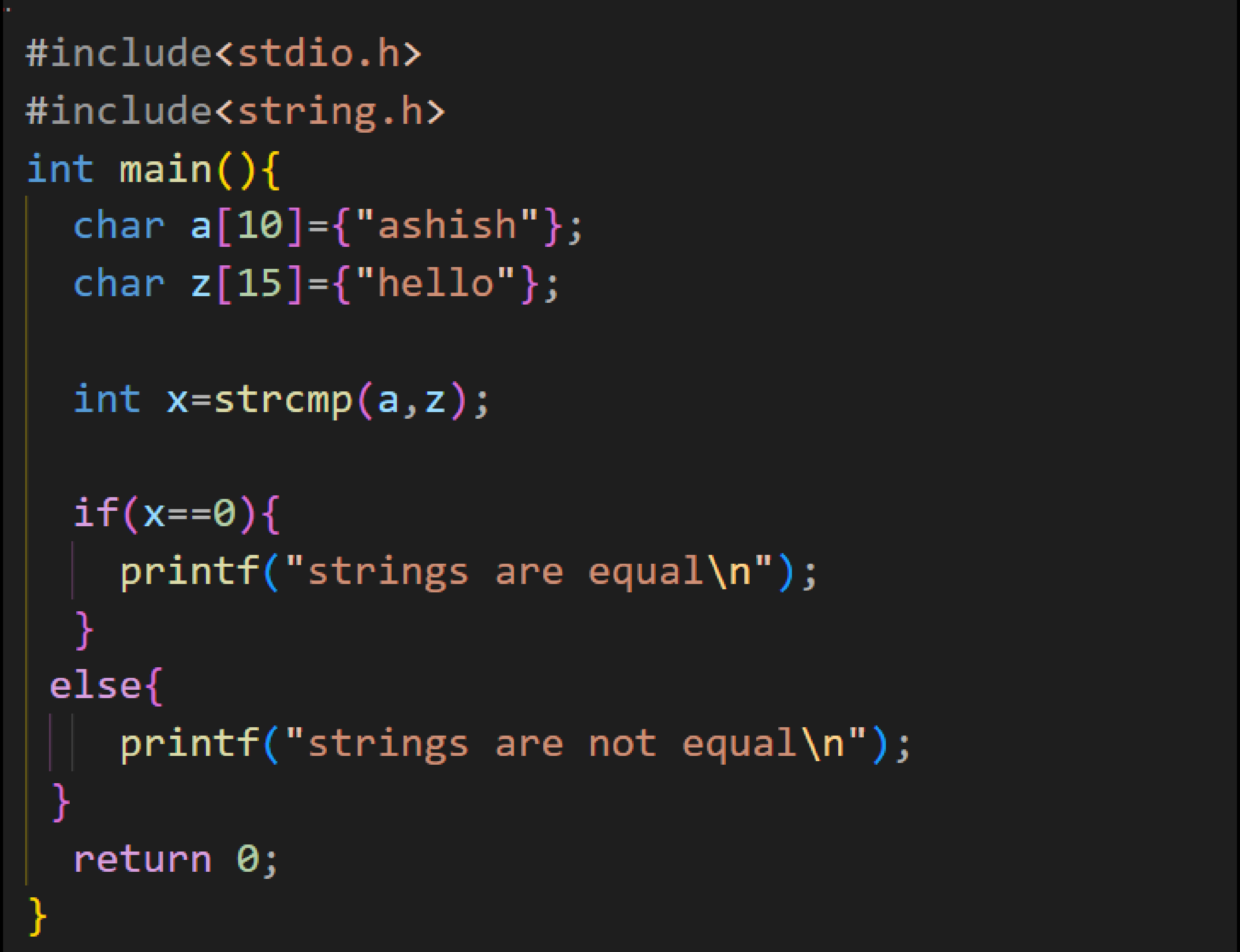
4. Comparing Strings

Without using strcmp()

Using strcmp()



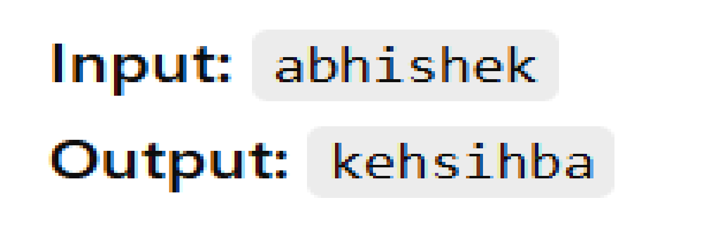
```
Index:     [0]    [1]    [2]    [3]    [4]
String1:   'H'    'e'    'l'    'l'    'o'
String2:   'W'    'o'    'r'    'l'    'd'
Result:    'H' != 'W'   (Stop at mismatch)
```



```
#include<stdio.h>
#include<string.h>
int main(){
  char a[10]={"ashish"};
  char z[15]={"hello"};

  int x=strcmp(a,z);

  if(x==0){
    printf("strings are equal\n");
  }
 else{
    printf("strings are not equal\n");
 }
  return 0;
}
```

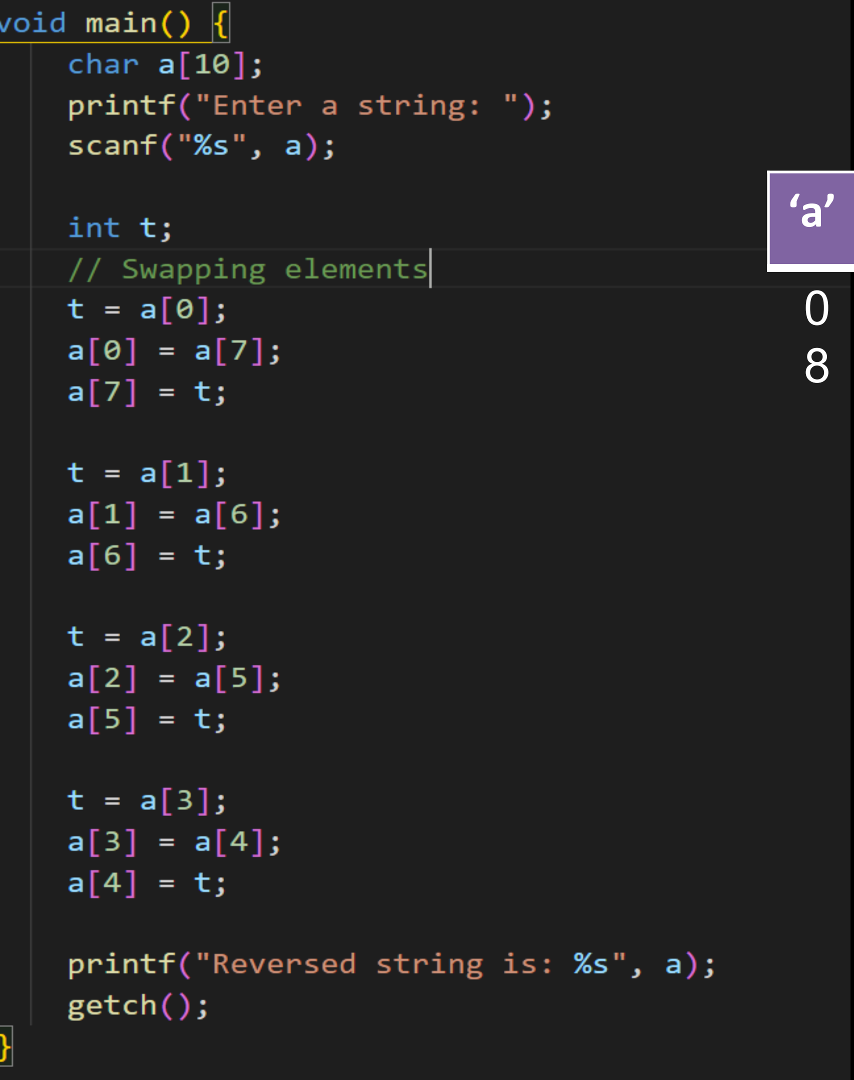
Reverse String

‘a’	‘b’	‘h’	‘i’	‘s’	‘h’	‘e’	‘k’	‘\0’

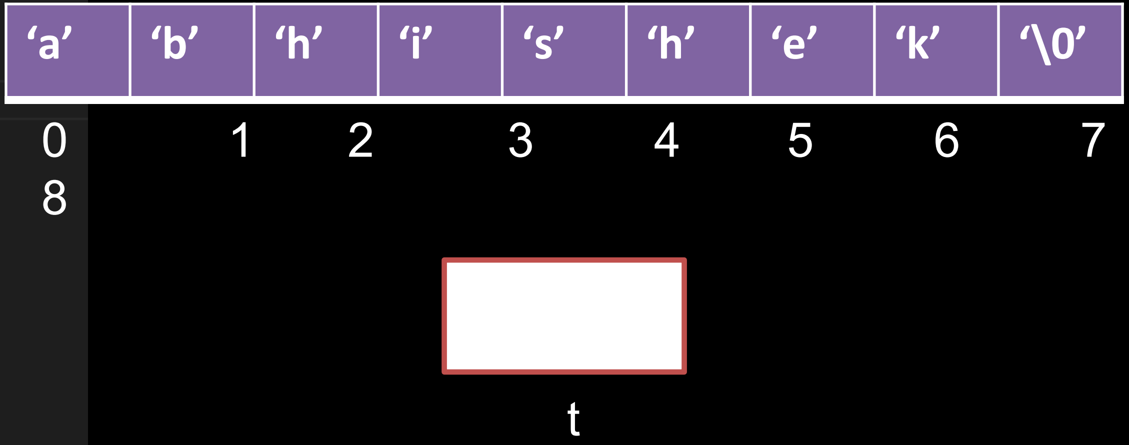


Input: `abhishek`

Output: `kehsihba`



```c
void main() {
    char a[10];
    printf("Enter a string: ");
    scanf("%s", a);

    int t;
    // Swapping elements
    t = a[0];
    a[0] = a[7];
    a[7] = t;

    t = a[1];
    a[1] = a[6];
    a[6] = t;

    t = a[2];
    a[2] = a[5];
    a[5] = t;

    t = a[3];
    a[3] = a[4];
    a[4] = t;

    printf("Reversed string is: %s", a);
    getch();
}
```



```
len = strlen(a);
```

```
for (i = 0; i < len / 2; i++) {

t = a[i];
a[i] = a[len - i - 1];
a[len - i - 1] = t;


 }
```

‘a’	‘b’	‘h’	‘i’	‘s’	‘h’	‘e’	‘k’	‘\0’

0 1 2 3 4 5 6 7
8

Palindrome

Example 1:

Input: madam
String: m a d a m
Index: 0 1 2 3 4

Step-by-Step Comparisons:
1.Compare a[0] (m) with a[4] (m) → Match
2.Compare a[1] (a) with a[3] (a) → Match
3.Compare a[2] (d) with a[2] (d) → Match
Result: All characters match → Palindrome

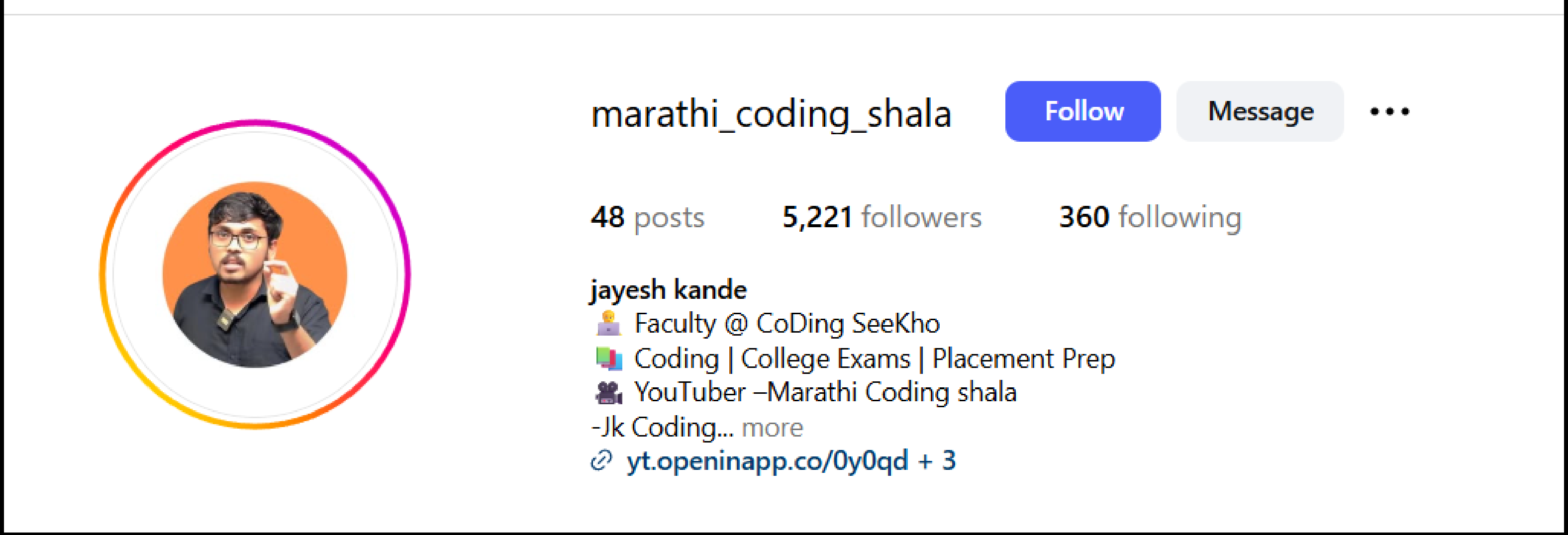
Example 2: Input: hello

String: h e l l o
Index: 0 1 2 3 4

Step-by-Step Comparisons:

1.Compare a[0] (h) with a[4] (o) → **Mismatch**

Result: Mismatch found → **Not a Palindrome**



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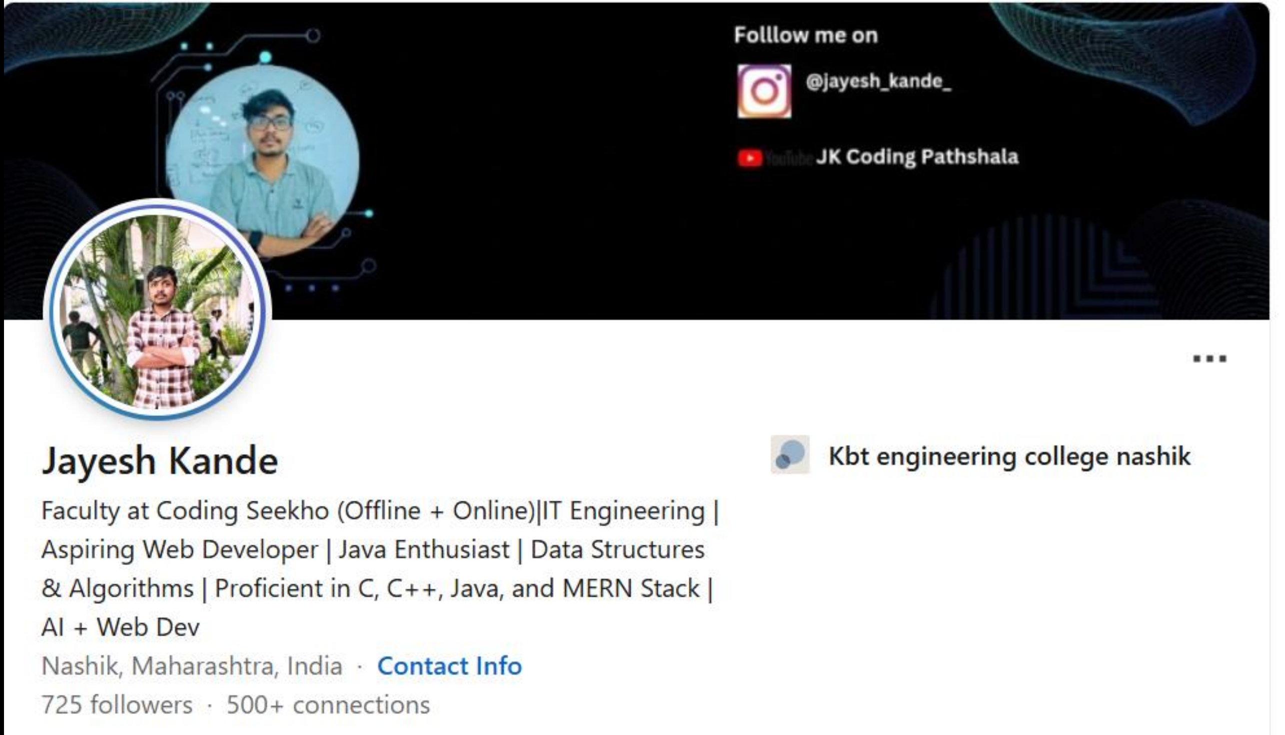

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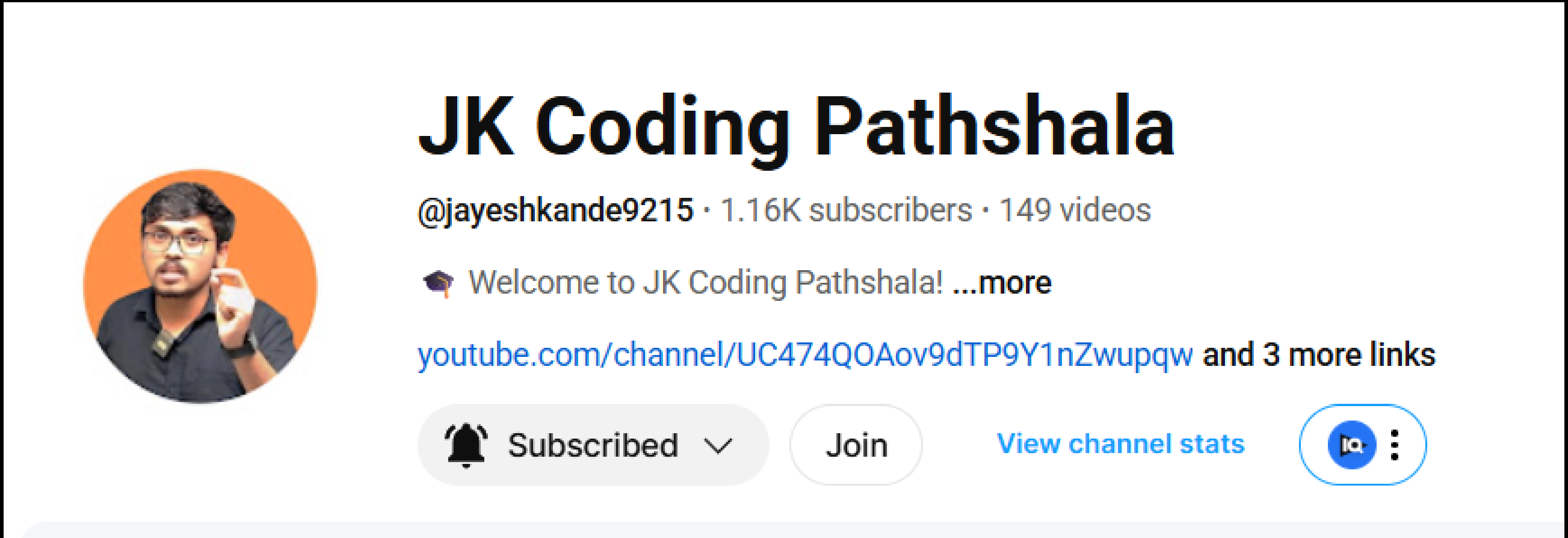

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