Strings in C

Strings in C
Introduction to Strings

Strings are arrays of characters terminated with a null character \0.

Example:

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

char str[5] = "Hello\0"

↑

mention the Size

Input and Output of Strings

Using scanf and printf:

```
char name[50];
printf("Enter your name: ");
scanf("%s", name); // Reads a single word
printf("Hello, %s\n", name);
```

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

← "Python" ✓

"The_Python" ✗

Using gets and puts:

```
char sentence[100];
printf("Enter a sentence: ");
gets(sentence); // Reads a full sentence
puts(sentence); // Prints the sentence
```

along with Space

String Manipulation Functions

Use the <string.h> library.

```
//1.strlen() function used to find the length of the given string
    //example
    char str[] = "Hello, world";
    size_t len = strlen(str);

    //2.strcpy() function used to copy the  entire string to the other
    //example
    char src[] = "Hello";
    char dest[20]; // dest size should be greater then or equal to the src size
    strcpy(dest,src);
    //printf("%s",dest);

    //3.strncpy() function used to copy exactly n character from src to dest
    strncpy(dest,src,3);
    dest[3] ='\0';

    //4.strcat() function used to concatenate two strings
    char str1[20] = "Hello"; // should need to mention the size for the str1
    //because we are adding str2 to str1
    char str2[] = " Wolrd";
    strcat(str1,str2);
    printf("%s",str1);

    //5.strncat() function used to concatenate n characters from str2
    strncat(str1,str2,3);
```

```
//6.strcmp() function used to compare whether two strings are equal or not
    //if equal returns 0 otherwise return any other nonzero number
    char s1[] = "Hello";
    char s2[] = "Hello";
    int res = strcmp(s1,s2);

    //7.strchr() function used to find the position of a given character in a string
    char s3[] = "Hello, World";
    char *pos = strchr(s3,'W');
    //if(pos)printf("%ld",pos-s3);

    //8.strstr( function used to find the give string present in the original
    //string
    char s4[] = "Hello, World";
    char *p = strstr(s4,"World");//returns the address of the first character in
    //the World
    //if(p) printf("Substring found:%s\n",p);
```

Reversing a String

```
void reverse(char str[]) {
    int n = strlen(str);
    for (int i = 0; i < n / 2; i++) {
        char temp = str[i];
        str[i] = str[n - i - 1];
        str[n - i - 1] = temp;
    }
}
```

Palindrome Check

```
int isPalindrome(char str[]) {
    int n = strlen(str);
    for (int i = 0; i < n / 2; i++) {
        if (str[i] != str[n - i - 1]) {
            return 0; // Not a palindrome
        }
    }
    return 1; // Is a palindrome
}
```

Substring Search

```
if (strstr("Hello, World!", "World")) {
    printf("Substring found.\n");
}
```

String to Integer Conversion

```
int num = atoi("12345");
printf("Number: %d\n", num);
```