

TASK 3

Embedded Systems Track

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Arrays

Definition: An array is a collection of elements of the same data type, stored in contiguous memory locations

Declaration:

```
data_type array_name[size] ;
```

```
int numbers[5];
```

Initialization:

```
int numbers[5] = {10, 20, 30, 40, 50};
```

Multidimensional Arrays:

```
int matrix[3][3] = {{1, 2, 3}, {4, 5, 6}, {7, 8, 9}};
```



Definition:

In C, a string is an array of characters ending with a null character (`'\0'`).

Declaration & Initialization:

```
char str1[] = "Hello"; // Automatically adds '\0'  
char str2[6] = {'H', 'e', 'l', 'l', 'o', '\0'};
```

String Input/Output:

```
char name[50];  
printf("Enter name: ");  
scanf("%s", name); // Reads until whitespace  
fgets(name, 50, stdin); // Reads entire line (safer)  
printf("Name: %s", name);
```

String Functions (<string.h>):

`strlen(str)` → Returns string length (excluding `'\0'`).
`strcpy(dest, src)` → Copies `src` to `dest`.
`strcat(dest, src)` → Concatenates `src` to `dest`.
`strcmp(str1, str2)` → Returns 0 if equal, <0 if `str1 < str2`, >0 otherwise.