

# Programming Technique II – SCJ1023

## String

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# What is ASCII?

- ASCII code (American Standard Code for Information Interchange) is the general accepted standard to represent the character.
- The ASCII standard contains:
  - letters a-z (both upper and lower case),
  - digits 0 – 9,
  - various special characters (e.g. '+', '%', and '\*'),
  - collection of non-printing control characters (e.g. <escape>, <return>, and <back space>)

# What is a string?

- A String is a sequence of characters.
- A **C-String** is a string stored as an array of characters and terminated with a null character (i.e. `'\0'`)
- A **C-String variable** is an array of characters and capable of storing C-String value with specific size.

# Example of initialization of C-String variables

- Declaration example:

```
char myMessage[13] = "Aim High";
```

- Memory layout:

0	1	2	3	4	5	6	7	8	9	10	11	12
A	I	M		H	I	G	H	\0				

If the size of the string is omitted during initialization, then the C-String variable will be given a size of one character longer than the length of the C-String

# Example of initialization of C-String variables

- If the size of the string is omitted, then the size will be given one character longer than the length of the variable

```
char myMessage[] = "Aim High";
```

- Memory layout:

0	1	2	3	4	5	6	7	8
A	I	M		H	I	G	H	\0

# C-String as pointer-based string

- A C-String also known as a pointer-based string.
- The array of characters can be accessed via a pointer.
- **Example:**

```
char nama[15] = "Nur Aqilah";  
char *nama = "Nur Aqilah";
```

# C-String library

- The C++ library provides numerous functions for handling C-String.
- For manipulating strings include the `<cstring>` header file at the top of the program file.

```
#include <cstring>
```

# C-String library

- For using the character testing functions include the header file `<cctype>`.

```
#include <cctype>
```

- For converting a string representation of a number to a numeric data type and vice versa provide the header file `<cstdlib>`.

```
#include <cstdlib>
```



# String library

- To store string, use the string class and include the header file should be included as follows `<string>`.

```
#include <string>
```

- Defining a string object is similar to defining a variable of a primitive type.

```
string articleTitle;
```