



جامعة المستقبل
AL MUSTAQBAL UNIVERSITY

كلية العلوم
قسم الانظمة الطبية الذكية

Lecture: (5)

String Part I

Subject: Computer Programming II
Level: First
Lecturer: Dr. Maytham N. Meqdad



String Part I

1. Strings

In **Java**, a **String** is an object that represents a sequence of characters, such as:

```
"Hello"  
"Java Programming"  
"12345"
```

- Strings are enclosed within double quotes " ".
- A String in Java is **immutable**, meaning its value cannot be changed after creation.

◆ 2. Declaring Strings

There are two common ways to declare a String in Java:

✓ Method 1 (Recommended):

```
String name = "Ali";
```

✓ Method 2 (Using new keyword):

```
String name = new String("Ali");
```

◆ Difference:

- The first method stores the string in the **String Pool** (more efficient).
- The second method creates a new object in memory.



◆ 3. String Representation

Internally, a String in Java is represented as a sequence (array) of characters.

Example:

```
String word = "Java";
```

It can be visualized as:

```
J   a   v   a  
0   1   2   3   ← index
```

- ◆ You can access individual characters using:

```
char ch = word.charAt(0); // J
```

◆ 4. Reading a String from the Console

To read a String from the user, we use the **Scanner** class:

```
import java.util.Scanner;  
  
public class Main {  
    public static void main(String[] args) {  
        Scanner input = new Scanner(System.in);  
  
        System.out.print("Enter your name: ");  
        String name = input.nextLine();  
  
        System.out.println("Hello " + name);  
    }  
}
```

◆ **Note:**

- next () → reads a single word



-
- `nextLine()` → reads a full line (sentence)
-

◆ 5. String Concatenation

Concatenation means **combining strings together**.

✓ Using (+) operator:

```
String firstName = "Ali";  
String lastName = "Hassan";  
  
String fullName = firstName + " " + lastName;  
System.out.println(fullName);
```

✓ Using `concat()` method:

```
String text1 = "Hello ";  
String text2 = "World";  
  
String result = text1.concat(text2);  
System.out.println(result);
```



Program 1: String Declaration and Representation

- ◆ Explains the definition of texts and character access

```
public class StringDemo {
    public static void main(String[] args) {

        // Declaring Strings
        String text1 = "Hello";
        String text2 = new String("Java");

        // Printing Strings
        System.out.println("Text1: " + text1);
        System.out.println("Text2: " + text2);

        // String Representation (Access characters)
        System.out.println("\nCharacters in text1:");
        for (int i = 0; i < text1.length(); i++) {
            System.out.println("Index " + i + ": " + text1.charAt(i));
        }
    }
}
```

StringDemo.java	Output
<pre>1- public class StringDemo { 2- public static void main(String[] args) { 3- 4- // Declaring Strings 5- String text1 = "Hello"; 6- String text2 = new String("Java"); 7- 8- // Printing Strings 9- System.out.println("Text1: " + text1); 10- System.out.println("Text2: " + text2); 11- 12- // String Representation (Access characters) 13- System.out.println("\nCharacters in text1:"); 14- for (int i = 0; i < text1.length(); i++) { 15- System.out.println("Index " + i + ": " + text1.charAt(i)); 16- } 17- } 18- } 19-</pre>	<pre>Text1: Hello Text2: Java Characters in text1: Index 0: H Index 1: e Index 2: l Index 3: l Index 4: o === Code Execution Successful ===</pre>



Program 2: Reading String from Console

◆ User text input is shown

```
import java.util.Scanner;

public class InputStringExample {
    public static void main(String[] args) {

        Scanner input = new Scanner(System.in);

        // Reading single word
        System.out.print("Enter your first name: ");
        String firstName = input.next();

        // Reading full sentence
        input.nextLine(); // clear buffer
        System.out.print("Enter your full name: ");
        String fullName = input.nextLine();

        // Output
        System.out.println("\nFirst Name: " + firstName);
        System.out.println("Full Name: " + fullName);
    }
}
```

InputStringExample.java	Output
<pre>1- import java.util.Scanner; 2 3- public class InputStringExample { 4- public static void main(String[] args) { 5 6 Scanner input = new Scanner(System.in); 7 8 // Reading single word 9 System.out.print("Enter your first name: "); 10 String firstName = input.next(); 11 12 // Reading full sentence 13 input.nextLine(); // clear buffer 14 System.out.print("Enter your full name: "); 15 String fullName = input.nextLine(); 16 17 // Output 18 System.out.println("\nFirst Name: " + firstName); 19 System.out.println("Full Name: " + fullName); 20 } 21 } 22 23</pre>	<pre>Enter your first name: maytham Enter your full name: ajam First Name: maytham Full Name: ajam === Code Execution Successful ===</pre>



Program 3: String Concatenation

◆ Explains how to merge texts in different ways

```
public class ConcatenationExample {
    public static void main(String[] args) {

        String firstName = "Ali";
        String lastName = "Hassan";

        // Using + operator
        String fullName1 = firstName + " " + lastName;

        // Using concat() method
        String fullName2 = firstName.concat(" ").concat(lastName);

        // Combining numbers and strings
        int age = 25;
        String info = "Name: " + fullName1 + ", Age: " + age;

        // Output
        System.out.println("Using + : " + fullName1);
        System.out.println("Using concat(): " + fullName2);
        System.out.println(info);
    }
}
```

ConcatenationExample.java	Output
<pre>1- public class ConcatenationExample { 2- public static void main(String[] args) { 3 4 String firstName = "Ali"; 5 String lastName = "Hassan"; 6 7 // Using + operator 8 String fullName1 = firstName + " " + lastName; 9 10 // Using concat() method 11 String fullName2 = firstName.concat(" ").concat(lastName); 12 13 // Combining numbers and strings 14 int age = 25; 15 String info = "Name: " + fullName1 + ", Age: " + age; 16 17 // Output 18 System.out.println("Using + : " + fullName1); 19 System.out.println("Using concat(): " + fullName2); 20 System.out.println(info); 21 } 22 }</pre>	<pre>Using + : Ali Hassan Using concat(): Ali Hassan Name: Ali Hassan, Age: 25 === Code Execution Successful ===</pre>