

# Character String

Character strings are represented  
in Java by:

- The **String** class



# Your First Java Program

```
// a simple program
public class HelloWorld
{
    public static void main(String[] args)
    {
        System.out.println("Hello world!");
    }
}
```

A character string

```
// "Hello work!" is a string literal.
// The following would produce the same effect
//
// String greeting = "Hello world!";
// System.out.println(greeting);
```



# String Manipulation

- String – a sequence of characters
- The class String includes methods for
  - examining individual characters
  - comparing strings
  - searching strings
  - extracting substrings
  - converting strings to uppercase or lowercase



# Char - Character type

- A data type which is used to store exactly ONE character
  - char data type is a 16-bit Unicode character
  - Note: A pair of single quote ' ' is used

```
public class Students {  
  
    /* Instance variables */  
  
    private char gender = 'M'; // an example of character  
  
}
```



# Char - Character type

- A compilation error occurs if we type more than one character inside a pair of single quotes ''

```
public class Students {  
  
    /* Instance variables */  
  
    // A compilation error occurs if more than one characters  
    // are assigned to a char variable  
    private char gender = 'Mxle';  
}
```



# Char - Character type

- A compilation error occurs if we type more than one character inside a pair of single quotes ''

```
public class Students {  
  
    /* Instance variables */  
  
    // A compilation error occurs if more than one characters  
    // are assigned to a char variable  
    private String gender = "Male";  
}
```



# Escape sequence

- Escape sequence is for special characters
  - An extra backslash is added in front of the special character

// Examples of escape sequence

**char** singleQuote = `'\''`;

**char** doubleQuote = `'\"'`;

**char** tabChar = `'\t'`;

**char** nextLineChar = `'\n'`;

**char** backSlashChar = `'\\'`;

- `IO.outputln("She received an \"A\" in COMP1022P.");`  
would print out: She received an "A" in COMP1022P.



# String

- What happens if more than ONE character needs to be stored?
  - Examples: Record the student's name, student ID, etc.
- String
  - String is an abstract data type (ADT)
  - Example:
    - `String studentName;`





# String operations

- String is an Abstract Data Type (ADT)
- Some of the useful methods that can be performed on String include:
  - length()
    - Determines the length of a string
  - charAt(int index)
    - Returns a character located at the given index
  - substring(int i, int j)
    - Returns substring with character from index i to j-1
  - equals(String other)
    - Compares the current string with another string
  - String comparison
  - String concatenation
  - ...



# String

- String stores a sequence of characters
  - A string stores characters from index 0 to N-1, where N is the length of the string
  - Use a pair of double quotes “ ”

```
public class Students {  
    // An instance variable to store the name  
    private String studentName = "Martin";  
}
```

## Syntax:

String nameOfVariable = "String message";



# String – Reference Type

- In the previous example, studentName is a reference variable to a string
- Consider the following example:

```
public class Students {  
    // The variable can be used to reference any string  
    private String studentName ;  
    public Students(String stdName) {  
        studentName = stdName;  
    }  
}
```



# String class

More information about the String class can be found at:

<http://docs.oracle.com/javase/7/docs/api/java/lang/String.html>

