```
public class ReverseString {
    public static void main(String[] args) {
        String str = "hello";
        String reversed = "";

        for (int i = str.length() - 1; i >= 0; i--) {
            reversed += str.charAt(i);
        }

        System.out.println("Reversed String: " + reversed);
    }
}
```

Reverse a String

Check if a String is Palindrome

```
public class PalindromeCheck {
    public static void main(String[] args) {
        String str = "madam";
        String reversed = "";

        for (int i = str.length() - 1; i >= 0; i--) {
            reversed += str.charAt(i);
        }

        if (str.equals(reversed)) {
            System.out.println(str + " is Palindrome");
        } else {
            System.out.println(str + " is NOT Palindrome");
        }
    }
}
```

Count Vowels and Consonants in a String

```
public class VowelConsonantCount {
    public static void main(String[] args) {
        String str = "hello";
        int vowels = 0, consonants = 0;
        str = str.toLowerCase(); // Convert to lowercase

        for (int i = 0; i < str.length(); i++) {
            char ch = str.charAt(i);
            if (ch >= 'a' && ch <= 'z') {
                if (ch == 'a' || ch == 'e' || ch == 'i' || ch == 'o' || ch == 'u') {
                    vowels++;
                } else {
                    consonants++;
```

```
                }
            }
        }

        System.out.println("Vowels: " + vowels);
        System.out.println("Consonants: " + consonants);
    }
}
```

Count the Occurrence of Each Character

```
public class CharacterFrequency {
    public static void main(String[] args) {
        String str = "hello";
        int[] freq = new int[256]; // For all characters

        for (int i = 0; i < str.length(); i++) {
            freq[str.charAt(i)]++;
        }

        for (int i = 0; i < str.length(); i++) {
            char ch = str.charAt(i);
            if (freq[ch] != 0) {
                System.out.println(ch + ": " + freq[ch]);
                freq[ch] = 0; // So it doesn't print again
            }
        }
    }
}
```

Convert String to Uppercase and Lowercase

```
public class StringCase {
    public static void main(String[] args) {
        String str = "Hello World";

        System.out.println("Uppercase: " + str.toUpperCase());
        System.out.println("Lowercase: " + str.toLowerCase());
    }
}
```

Count the Words in a String

```
public class WordCount {
```

```
    public static void main(String[] args) {
        String str = "Java is fun";
        String[] words = str.split(" "); // Split by space
        System.out.println("Number of words: " + words.length);
    }
}
```

Decimal to Binary

```
public class DecimalToBinary {
    public static void main(String[] args) {
        int num = 10; // Decimal number
        String binary = ""; // To store binary digits

        while (num > 0) {
            int remainder = num % 2;         // Get remainder (0 or 1)
            binary = remainder + binary;     // Add to front of binary string
            num = num / 2;                   // Divide by 2
        }

        System.out.println("Binary: " + binary);
    }
}
```

Another Logic

```
public class DecimalToBinaryArray {
    public static void main(String[] args) {
        int[] binaryPlaceValues = {128, 64, 32, 16, 8, 4, 2, 1};
        int number = 13;
        int[] binaryResult = new int[8];  // To store 0 or 1

        for (int i = 0; i < binaryPlaceValues.length; i++) {
            if (number >= binaryPlaceValues[i]) {
                binaryResult[i] = 1;
                number = number - binaryPlaceValues[i];
            } else {
                binaryResult[i] = 0;
            }
        }

        // Print the result
        System.out.print("Binary: ");
        for (int bit : binaryResult) {
            System.out.print(bit);
        }
    }
}
```

Most Common Methods

Method	What It Does	Simple Example
`length()`	Counts characters in the string	`"hello".length()` → `5`
`charAt(int index)`	Get character at specific position	`"cat".charAt(1)` → `'a'`
`equals(String s)`	Compares two strings (case-sensitive)	`"hi".equals("hi")` → `true`
`equalsIgnoreCase(String s)`	Compares two strings (ignores case)	`"Hi".equalsIgnoreCase("hi")` → `true`
`toUpperCase()`	Convert all letters to UPPERCASE	`"java".toUpperCase()` → `"JAVA"`
`toLowerCase()`	Convert all letters to lowercase	`"JAVA".toLowerCase()` → `"java"`
`substring(int start)`	Get part of string from position to end	`"hello".substring(2)` → `"llo"`
`substring(int start, int end)`	Get part of string between two positions	`"hello".substring(1, 4)` → `"ell"`
`contains(String s)`	Checks if string has another string in it	`"hello".contains("ll")` → `true`
`startsWith(String s)`	Checks if string starts with s	`"world".startsWith("wo")` → `true`
`endsWith(String s)`	Checks if string ends with s	`"world".endsWith("ld")` → `true`
`indexOf(char c)`	First position of char	`"banana".indexOf('a')` → `1`
`lastIndexOf(char c)`	Last position of char	`"banana".lastIndexOf('a')` → `5`
`trim()`	Removes spaces at start/end	`" java ".trim()` → `"java"`
`replace(char old, char new)`	Replace all old chars with new ones	`"java".replace('a','o')` → `"jovo"`
`split(String regex)`	Split string into array using delimiter	`"a,b,c".split(",")` → `["a", "b", "c"]`
`toCharArray()`	Converts string to array of characters	`"abc".toCharArray()` → `['a','b','c']`

Find Duplicate Characters in a String

```
public class FindDuplicates {
    public static void main(String[] args) {
        String str = "programming";
        int[] count = new int[256];  // ASCII size

        for (int i = 0; i < str.length(); i++) {
            count[str.charAt(i)]++;
        }
```

```
        System.out.print("Duplicate characters: ");
        for (int i = 0; i < 256; i++) {
            if (count[i] <= 1) {
                System.out.print((char)i + " ");
            }
        }
    }
}
```

Remove Duplicate Characters from a String

```
public class RemoveDuplicates {
    public static void main(String[] args) {
        String str = "programming";
        String result = "";

        for (int i = 0; i < str.length(); i++) {
            char c = str.charAt(i);
            if (result.indexOf(c) == -1) {
                result += c;
            }
        }

        System.out.println("After removing duplicates: " + result);
    }
}
```

Find Longest Word in a Sentence

```
public class LongestWord {
    public static void main(String[] args) {
        String sentence = "I love programming in Java";
        String[] words = sentence.split(" ");
        String longest = "";

        for (String word : words) {
            if (word.length() > longest.length()) {
                longest = word;
            }
        }

        System.out.println("Longest word: " + longest);
    }
}
```

Swap Characters in a String

```
public class SwapCharacters {
    public static void main(String[] args) {
        String str = "hello";
        int i = 0, j = 4;  // swap first and last
        char[] arr = str.toCharArray();

        char temp = arr[i];
        arr[i] = arr[j];
        arr[j] = temp;

        String swapped = new String(arr);
        System.out.println("After swap: " + swapped);
    }
}
```

Check if Two Strings are Anagrams

```
import java.util.Arrays;

public class AnagramCheck {
    public static void main(String[] args) {
        String str1 = "listen";
        String str2 = "silent";

        char[] arr1 = str1.toCharArray();
        char[] arr2 = str2.toCharArray();

        Arrays.sort(arr1);
        Arrays.sort(arr2);

        boolean isAnagram = Arrays.equals(arr1, arr2);

        if (isAnagram) {
            System.out.println("Yes, Anagrams");
        } else {
            System.out.println("Not Anagrams");
        }
    }
}
```

Convert String to Uppercase/Lowercase Without Built-in Method

```
public class ToUpperCaseManual {
    public static void main(String[] args) {
        String input = "hello World";
        String result = "";
```

```
        for (int i = 0; i < input.length(); i++) {
            char ch = input.charAt(i);

            if (ch >= 'a' && ch <= 'z') {
                ch = (char)(ch - 32);  // Convert to uppercase
            }

            result += ch;
        }

        System.out.println("Uppercase: " + result);
    }
}

A=65 B-66 C-67   a-97 b-98 c-99
```

LowerCase

```
public class ToLowerCaseManual {
    public static void main(String[] args) {
        String input = "HELLO World";
        String result = "";

        for (int i = 0; i < input.length(); i++) {
            char ch = input.charAt(i);

            if (ch >= 'A' && ch <= 'Z') {
                ch = (char)(ch + 32);  // Convert to lowercase
            }

            result += ch;
        }

        System.out.println("Lowercase: " + result);
    }
}
```

Check if a String Contains Only Digits

```
public class DigitsOnlyCheck {
    public static void main(String[] args) {
        String input = "12345";
        boolean isOnlyDigits = true;

        for (int i = 0; i < input.length(); i++) {
            char ch = input.charAt(i);

            if (ch < '0' || ch > '9') {
                isOnlyDigits = false;
                break;  // Exit early if non-digit found
```

```
            }
        }

        if (isOnlyDigits) {
            System.out.println("The string contains only digits.");
        } else {
            System.out.println("The string contains non-digit characters.");
        }
    }
}
```

Compare Two Strings Without equals()

```
public class CompareStrings {
    public static void main(String[] args) {
        String str1 = "hello";
        String str2 = "hello";

        boolean isEqual = true;

        // Step 1: Check length first
        if (str1.length() != str2.length()) {
            isEqual = false;
        } else {
            // Step 2: Compare character by character
            for (int i = 0; i < str1.length(); i++) {
                if (str1.charAt(i) != str2.charAt(i)) {
                    isEqual = false;
                    break;
                }
            }
        }

        if (isEqual) {
            System.out.println("Strings are Equal.");
        } else {
            System.out.println("Strings are NOT Equal.");
        }
    }
}
```


Tasks:

Count Words in Sentence?

Reverse I Love india as india love i

Capitalize First Letter of Each Word (e.g., "java is fun" → "Java Is Fun")

Count Digits, Letters, Spaces, Special Characters

Check Rotation (e.g., "abcde" an d "deabc" → Yes)

“Indians”

“werq2345erty”

“12345”

I love India

India love i

I evol aidni