

Loops and Strings

For Loop

```
for (int count = 1; count <= 5; count++)  
{  
    System.out.println(count);  
}
```



While Loop

```
int count = 5;  
while (count <= 10)  
{  
    System.out.println(count);  
    count++;  
}
```



String Methods

Method	Use
<code>name.substring(int start, int end)</code>	returns a copy of the string between the two indices excluding the end
<code>name.substring(int start)</code>	returns a copy of the string starting at the index, up until the end
<code>name.equals(Object another)</code>	return true if the strings have identical contents
<code>name.length()</code>	returns the number of characters in str
<code>name.compareTo(String another)</code>	for less than/ greater than / equal comparison
<code>name.charAt(ind index)</code>	return the character at the index position of the String

How can we traverse Strings?

I want to print each character in a String on a new line using substring

```
String msg = "hello, smile!";
```

```
for (int i = 0; i < msg.length(); i++){
```

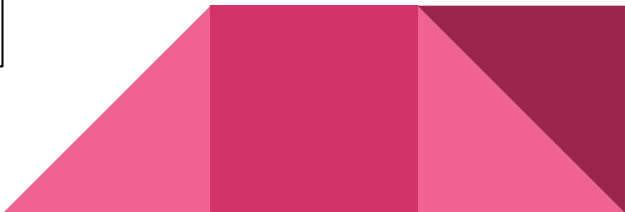
```
    System.out.println(msg.substring(i, i+1));
```

```
}
```

inclusive

exclusive

<= would cause an exception - WHY?



How can we traverse Strings?

I want to print each character in a String on a new line using charAt

```
String msg = "hello, smile!";
```

```
for (int i = 0; i < msg.length(); i++){
```

```
    char character = msg.charAt(i);
```

```
    System.out.println(character);
```

```
}
```



How can we traverse Strings?

I want to print each character in a String on a new line using substring and a while loop

```
String msg = "hello, smile!";
```

```
int i = 0;
```

```
while (i < msg.length()){
```

```
    System.out.println(msg.substring(i, i + 1));
```

```
    i++;
```

```
}
```



How we can determine how many letters 'e' are in the string?

```
public int countLetter(String msg){  
    int counter = 0;  
    for (int i = 0; i < msg.length(); i++){  
        char character = msg.charAt(i);  
        if (character == 'e'){  
            counter++;  
        }  
    }  
    System.out.println(counter);  
    return counter;  
}
```



Some algorithms that use loops and strings

- Build from an empty string: Given a string and a non-negative int n , return a larger string that is n copies of the original string.
 - `buildString("AP", 2) → "APAP"`
- Compare substrings: Count the number of "aa" in the given string. Overlapping is allowed ("aaa" contains 2 "aa")
 - `countSubstring("aaaa") → 3`



Visualizer

You may add print statements when you work with loops and strings to see what is done after each iteration.

You may also use this helpful tool:

https://cscircles.cemc.uwaterloo.ca/java_visualize

