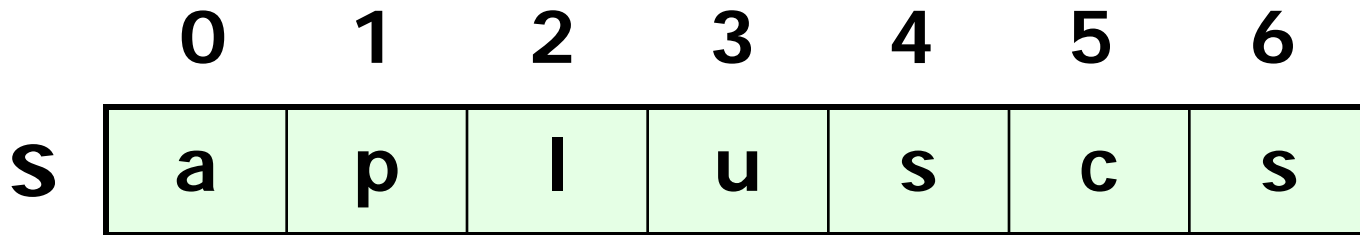


A+ Computer Science

strings

String

```
String s = "apluscs";
```



**A string is a group of characters.
The first character in the group is at spot 0.**

String

```
String s = "appluscompsci";  
String champ = new String("applus");
```

reference
variable

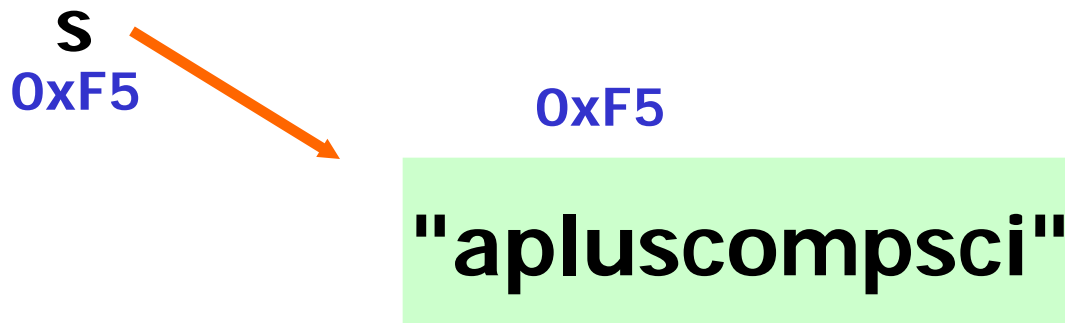


object
instantiation



String

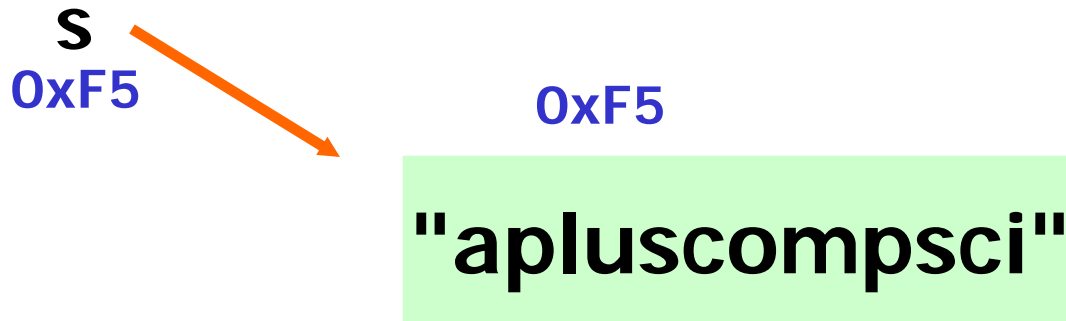
```
String s = "apuluscompsci";
```



A reference variable stores the memory address of an object.

String

```
String s;  
s = new String("apuluscompsci");
```



A reference variable stores the memory address of an object.

basics.java

String

Methods provide / grant access to an object's data / properties.

String

instance variables / data / properties

length()

substring()

indexOf()

toString()

String

frequently used methods

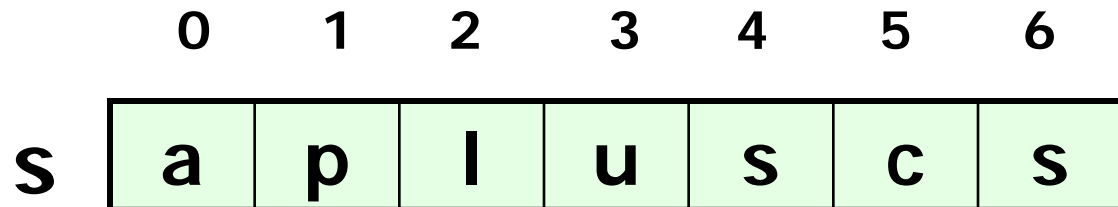
Name	Use
substring(x,y)	returns a section of the string from x to y not including y
substring(x)	returns a section of the string from x to length-1
charAt(x)	returns the char at spot x
length()	returns the # of chars

String length()

```
String s = "apluscs";  
int len = s.length();  
System.out.println( len );
```

OUTPUT

7



String length()

Return methods perform some action and return a result back.

`.length()` is a return method.

```
String s = "apluscs";  
int len = s.length();  
System.out.println( len );
```

`length()` returns an integer back to the calling location.
The value returned is then assigned to variable `len`.

String charAt()

```
String s = "apuluscs";
```

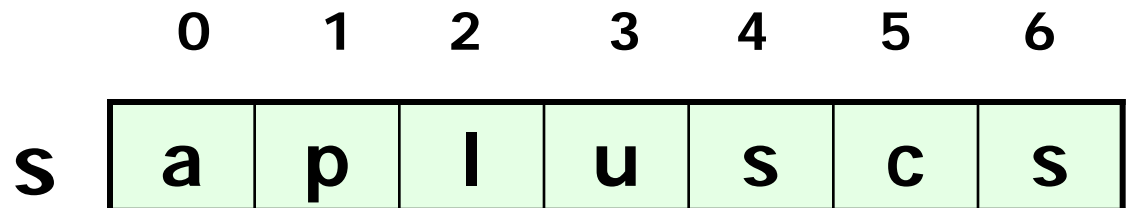
```
out.print(s.charAt(0) + " ");
```

```
out.print(s.charAt(2) + " ");
```

```
out.println(s.charAt(6));
```

OUTPUT

a l s



length.java
charat.java

String substring()

```
String s = "aplusc";  
String sub = "";
```

```
sub = s.substring(3);  
out.println(sub);
```

```
sub = s.substring(0,3);  
out.println(sub);
```

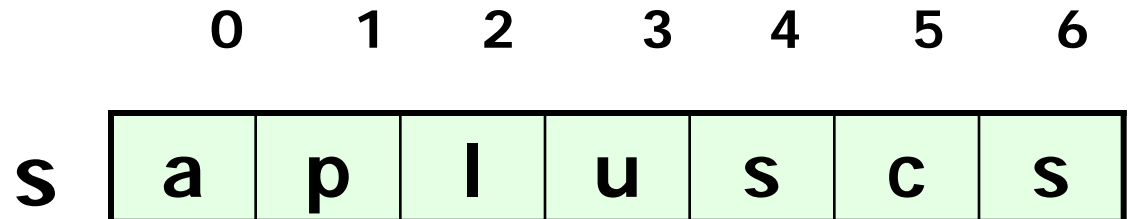
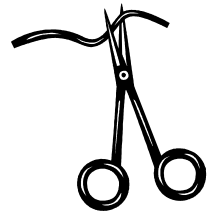
```
sub = s.substring(4);  
out.println(sub);
```

OUTPUT

uscs

apl

scs



String substring()

```
String s = "apluscs";  
String sub = "";
```

```
sub = s.substring(3);  
out.println(sub);
```

```
sub = s.substring(2,5);  
out.println(sub);
```

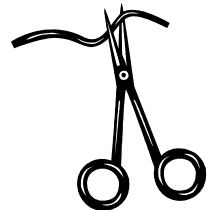
```
sub = s.substring(4,6);  
out.println(sub);
```

OUTPUT

uscs

lus

sc



0 1 2 3 4 5 6

s	a	p	l	u	s	c	s
---	---	---	---	---	---	---	---

substring.java

String

frequently used methods

Name	Use
<code>indexOf(str)</code>	returns the loc of String str in the string, searching from spot 0 to spot length-1
<code>indexOf(ch)</code>	returns the loc of char ch in the string, searching from spot 0 to spot length-1
<code>lastIndexOf(str)</code>	returns the loc of String str in the string, searching from spot length-1 to spot 0
<code>lastIndexOf(ch)</code>	returns the loc of char ch in the string, searching from spot length-1 to spot 0

String indexOf()

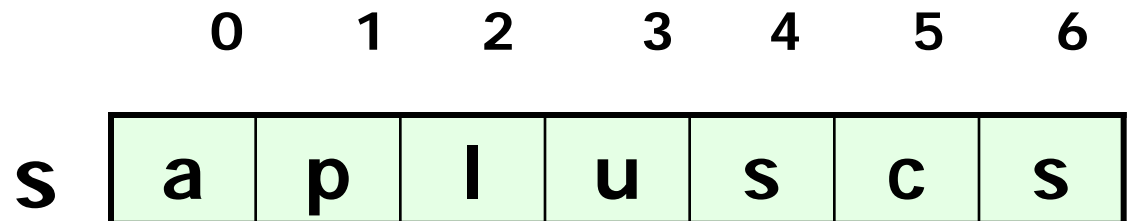
```
String s = "apulus";  
int index = s.indexOf("us");  
out.println(index);  
index = s.indexOf("c");  
out.println(index);  
index = s.indexOf('x');  
out.println(index);
```

OUTPUT

3

5

-1

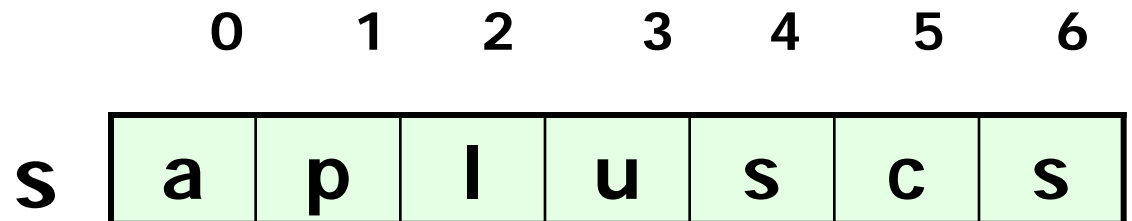


String indexOf()

```
String s = "apluscs";  
int index = s.indexOf("pl");  
out.println(index);  
index = s.lastIndexOf('c');  
out.println(index);  
index = s.lastIndexOf("plus");  
out.println(index);
```

OUTPUT

1
5
1



indexOf.java

Concatenate

```
String one = "computer";  
String two = "-sci";  
String s = one.substring(0,4) + two;  
out.println(s);  
out.println(s.length());
```

OUTPUT

aplu-sci

8

Concatenate is the process of combining strings together to make a new string.

concatenate.java

Return Methods

Return Methods

Return methods perform some action and return a result back to the **calling location**.

```
int num = keyboard.nextInt();
```

`nextInt()` returns an int back to the calling location.

The value returned is assigned to num.

Return Methods

```
Scanner keyboard =  
    new Scanner(System.in);
```

```
int num = keyboard.nextInt();  
out.println(num);
```

num
1

return
method



INPUT

1

OUTPUT

1

Return Methods

```
Scanner keyboard =  
    new Scanner(System.in);
```

```
double num = keyboard.nextDouble();  
out.println(Math.ceil(num));
```

num
3.45

return
methods

INPUT

3.45

OUTPUT

4.0

Return Methods

```
public class ReturnOne
{
    public int twice( int x ) //this is a return method
    {
        return 2*x;
    }
}
```

//code in the main of another class

```
ReturnOne demo = new ReturnOne();
out.println(demo.twice(25) );
out.println(demo.twice(17) );
```

OUTPUT

50

34

Return Methods

access

return type

name

params

code

```
public          int          twice( int x )  
{  
    return 2*x;  
}
```

returnnone.java

returntwo.java

chunk.java

toString() Method

```
class Triangle
{
    private int sideA, sideB, sideC;

    public Triangle(int a, int b, int c)
    {
        sideA=a;
        sideB=b;
        sideC=c;
    }

    public String toString()
    {
        return sideA + " " + sideB + " " + sideC;
    }
}
```

The diagram highlights the components of the `toString()` method signature. A blue box labeled "return type" points to the word `String`. A red box labeled "return method" points to the text `toString()`.

toString.java

Work on Programs!

Crank

Some Code!