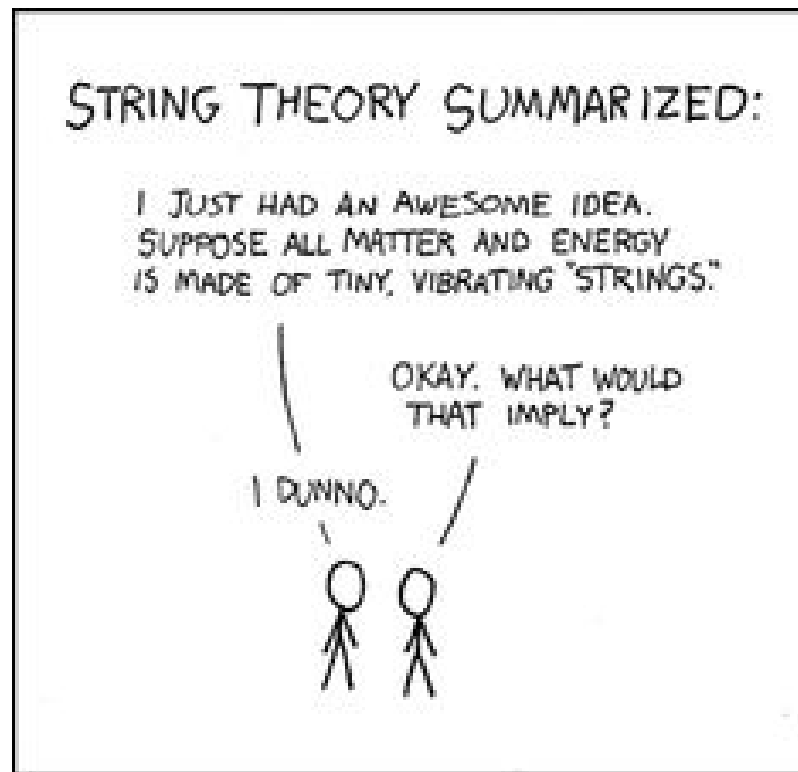


List of Java Concepts and Vocabulary From This Unit

- String Building
- The Anatomy of a String
- String Commands / Methods
- Extracting (Substring) Parts of a String
- Replacing Parts of a String
- String Equality
- String Comparison



String Building, Part I

The segment of code below shows you how to build a String. Is the message put together in the right order?

```
String msg = "have won ";

msg += "the 2016 ";           //have won the 2016
msg = "The Cubs " + msg; //The Cubs have won the 2016
msg = msg + " World Series!"; //The Cubs have won the 2016 World Series!
```

String Building Part II

The method below shows another way to build a String. How is this code similar to the way we accumulate number values?

```
public String generateCombination() {

    String randomCombo = ""; //empty string => equivalent of 0 for int's

    for(int i = 0; i < 3; i++) {
        int num = (int)(Math.random()*64) + 1;
        randomCombo += num;
        if(i != 2)
            randomCombo += "-";
    }

    return randomCombo;
}
```

Example Output: 24-45-11

The Anatomy of a String

String message = "One moon shows in every pool.\n\n every pool the one moon";

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	
O	n	e		m	o	o	n		s	h	o	w	s		i	n		e	v	e	r	y		p	o	o	l	.	\	n	\	n		e	v	e	r	y		p	o	o	l		t	h	e		o	n	e		m	o	o	n

Questions:

Java Command:

At what position is the first character in the String? _0__	int firstPos = 0;
At what position is the first "n"? _1__	int posN = message.indexOf("n");
At what position does the first "moon" began at? _4__	int posMoon = message.indexOf("moon");
At what position does the first "THE" began at? _-1__	int posTHE = message.indexOf("THE");
How long is the string? __56__	int len = message.length();
What word begins at position 9 and ends one before position 13? ____show____	String part = message.substring(9, 13);
What phrase begins at position 48 and ends at the end of the String? one moon	String partTwo = message.substring(48); String partThree = message.substring(48, 56); String partFour = message.substring(48, message.length());
Which word comes first in the dictionary, "every" or "pool"? every -11	int value = "every".compareTo("pool");

String Commands

```
class java.lang.String
• int length()
• String substring(int from, int to) // returns the substring beginning at from
                                     // and ending at to-1
• String substring(int from)         // returns substring(from, length())
• int indexOf(String str)            // returns the index of the first occurrence of str;
                                     // returns -1 if not found
• int compareTo(String other)        // returns a value < 0 if this is less than other
                                     // returns a value = 0 if this is equal to other
                                     // returns a value > 0 if this is greater than other
```

Show the output of the following code segments. If an error occurs, please write "error"

<pre>String message = "Themouseranuptheclock"; String word = message.substring(3, 8); System.out.println(word);</pre>	
<pre>String message; message = "JackandJillwentupthehill"; System.out.println(message.substring(20));</pre>	
<pre>String message = "JackandJillwentupthehill"; System.out.println(message.substring(message.length() - 4));</pre>	
<pre>System.out.println("hello".substring(3));</pre>	
<pre>System.out.println("hello".substring(5));</pre>	
<pre>System.out.println("hello".substring(6));</pre>	
<pre>String digits = "1234567890"; int pos = digits.indexOf("6"); System.out.println(pos + digits.indexOf("a"));</pre>	
<pre>System.out.println("Ilovesandwiches".substring(5).length());</pre>	
<pre>String name = "John"; name += "Doe"; System.out.println(name);</pre>	
<pre>String word1 = "Hello"; String word2 = word1; word1 = word1.substring(1, 2); System.out.println(word2);</pre>	
<pre>String name1 = "Franklin Delano Roosevelt"; String name2 = name1.substring(0, 8) + name1.substring(16); System.out.println(name2);</pre>	
<pre>String name1 = "Franklin Delano Roosevelt"; int blank1 = name1.indexOf(" "); int blank2 = name1.substring(blank1 + 1).indexOf(" "); name1 = name1.substring(blank1 + 1, blank1 + 1 + blank2); System.out.println("**" + name1 + "**");</pre>	

String Extraction

```
public class EmilySays {  
    public static void main(String[] args) {  
        String babyTalk = "dada lala mama juju titi nono nana";  
  
        int indexOfSpace = babyTalk.indexOf(" ");  
        String firstWord = babyTalk.substring(0, indexOfSpace);  
  
        System.out.println("Emily's First Word Is: " + firstWord + "!");  
    }  
}
```

Output: Emily's First Word Is dada!

Find and Replace

```
public class SongLyricChanged {  
    public static void main(String[] args) {  
        String lyric = "It's the end of the world as we know it";  
  
        int wePos = lyric.indexOf("we");  
        lyric = lyric.substring(0, wePos) + "you" + lyric.substring(wePos + 2);  
  
        System.out.println("The fixed song lyric is: " + lyric);  
    }  
}
```

Output: The fixed song lyric is: It's the end of the world as you know it

One Symbol At A Time

```
public class RandomPassword {  
  
    public static void main(String[] args) {  
  
        String symbols = "abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789";  
  
        int passwordLength = 8;  
        String password = "";  
  
        for(int i = 0; i < passwordLength; i++) {  
            int randomPosition = (int)(Math.random() * symbols.length());  
  
            String symbol = symbols.substring(randomPosition, randomPosition + 1);  
            password += symbol;  
        }  
  
        System.out.println("Your random password is " + password);  
    }  
}
```

Counting Occurrences in a String

```
public class LineCount {  
  
    public static void main(String[] args) {  
  
        String poem = "A bit beyond perception's reach\nI sometimes believe I see\nthat Life is two locked boxes, each\ncontaining the other's key.";  
  
        int position = poem.indexOf("\n");  
        int count = 1;  
  
        while(position != -1) {  
            count++;  
            poem = poem.substring(position + 1);  
            position = poem.indexOf("\n");  
        }  
  
        System.out.println("The poem has " + count + " lines");  
    }  
}
```

So Many Choices

```
import java.util.Scanner;

public class MathAdditions {

    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);
        boolean notDone = true;

        while(notDone) {
            System.out.println("Welcome to my math program!");
            System.out.print("Would you like to find the area of a [t]riangle or of a [s]quare?");
            String choice = input.nextLine();

            if(choice.equals("t")) {
                System.out.print("Enter the height: ");
                double height = input.nextDouble();

                System.out.print("Enter the base: ");
                double base = input.nextDouble();

                double area = triangleArea(base, height);
                System.out.println("The area of the triangle is " + area + "\n");
            }
            else if(choice.equals("s")) {
                System.out.print("Enter the side length: ");
                double side = input.nextDouble();

                double area = squareArea(side);
                System.out.println("The area of the square is " + area + "\n");
            }
            else
                System.out.println("Invalid selection");
        }
    }

    public static double triangleArea(double w, double h) {
        return w * h / 2;
    }

    public static double squareArea(double s) {
        return s*s;
    }
}
```

Word Guess Game

```
import java.util.Scanner;

public class GuessTheWord {

    public static void main(String[] args) {

        Scanner input = new Scanner(System.in);

        String wordToGuess = "marathon";
        boolean done = false;

        while(!done) {
            System.out.print("Enter a guess: ");
            String guess = input.nextLine();

            int comparison = guess.compareTo(wordToGuess);

            if(comparison > 0)
                System.out.println("Your guess comes after the word I'm thinking of in the dictionary");
            else if(comparison < 0)
                System.out.println("Your guess comes before the word I'm thinking of in the dictionary");
            else {
                System.out.println("You guessed it!");
                done = true;
            }
        }
    }
}
```