- **A string is one or more characters used as a constant in a program**
  - **e.g. “Hello”**

```
//program will need to use class Scanner to receive input from user
import java.util.Scanner;

//program will need to use class String to declare variables as strings
import java.lang.String;

public class Addition
{
        public static void main( String args[] )
        {
        //create Scanner to obtain input from command window
        //in is a variable name used to read an input from a user
        Scanner duh = new Scanner( System.in );
        String name;

        System.out.println ( “Enter your last name :” );
        name = duh.next();  //read string from user NOTICE we use in.next()

        System.out.print (“Your last name is ”);
        System.out.println (name);
        }
}
```

- **how do we enter spaces into a string?**

name = in.nextLine();

```
//program will need to use class Scanner to receive input from user
import java.util.Scanner;

//program will need to use class String to declare variables as strings
import java.lang.String;

public class Addition
{
        public static void main( String args[] )
        {
        //create Scanner to obtain input from command window
        //in is a variable name used to read an input from a user
        Scanner in = new Scanner( System.in );
        String name;

        System.out.println ( “Enter your full name :” );
        name = in.nextLine();  //read string from user NOTICE we use in.next()

        System.out.print (“Your last name is ”);
```

```
        System.out.println (name);
        }
}
```

ICS4U - Strings

1. **Write a program that has two variables: FName and LName. Assign your first name and last name to these variables, then print them in a user-friendly format on a single line.**

```
String Fname = "Gurpreet";
String Lname = "Singh";
System.out.println (Fname + " " + Lname);
```

2. **Write a fragment that forces a user to supply either y or n in response to the question "Continue? Respond with y or n".**

```
Scanner input = new Scanner (System.in);
System.out.println ("Continue?");
String response = input.next();
while (!response.equals("y") || !response.equals("y") ) {
        System.out.println ("Continue?");
        response = input.next();
}
```

3. **Write a program that continually prompts the user for a username and a password, both of type string. This program will determine if the username and password match "user" and "pass" respectively. If they match, output the message "Identity confirmed!". The user will only have three chances.**

```
Scanner input = new Scanner (System.in);
boolean UP = false;
int count = 1;
while (UP==false && count<=3) {
        System.out.println ("Username:");
        String username = input.next();
        System.out.println("Password:");
        String password = input.next();
        count++;
        if (username.equals("user") && password.equals("pass")) {
                UP = true;
                System.out.println("Identity confirmed");
        }
}
```

4. **Create the following variable called *name* of type string and initialize it to "Chens^1^Class"**

```
String name="Chens 1 Class";
```

Trace through the following segments.

Commands	Memory	Output
`System.out.println(name.length());`	length=13	13
`System.out.println(name.length() + 1);`	length=13+1 length=14	14
`System.out.println(name.charAt(4));`	charAt(4) = s	s
`System.out.println(name.charAt(22));`	charAt(22)=error	error

`char y = name.charAt(6);`
`System.out.println(y);`
`int z = y - '0';`
`System.out.println(z);`
	y='1'
	z='1'- '0'
	z='1'
		1

`System.out.println(name.indexOf('n'));`	indexOf('n')=3	3
`int x = name.indexOf('n'));`	x = 3	

`int x = name.indexOf('n');`
`char y = name.charAt(x);`
`System.out.println(x + " " + y);`
	x=3
	y=n
		3 n

`int x = name.indexOf('C');` `System.out.println(x);`	x=0	0

`int x = name.indexOf('C');`
`char y = name.charAt(x);`
`int z = name.indexOf('C', x);`
`System.out.println(x + " " + z);`
	x = 0
	y= 0
	z=0.0
		0 8

`int x = name.indexOf('C');`
`char y = name.charAt(x);`
`int z = name.indexOf('C', x+1);`
`System.out.println(x + " " + z);`
	x=0
	y='C'
		0 8

`String x = name.substring(6);` `System.out.println(x);`	x="1 Class "	1 Class
`String x = name.substring(6, 8);` `System.out.println(x);`	X="1 "	1

`int i = name.length();`
`String x = name.substring(i-2);`
`System.out.println(x);`
	i =13
	x=ss
		ss

`int i = name.length();`
`i=i-2;`
`String x = name.substring(i);`
`System.out.println(x);`
`i = i -2;`
`x = name.substring(i);`
`System.out.println(x);`
	i=13
	i=11
	x="ss"
	i=9
	x="las"
		ss
		lass

`int i = name.length();`
`int e = name.length();`
`i=i-2;`
`String x = name.substring(i,e);`
`System.out.println(x);`
`i =i-2;`
`e=e-2;`
`x = name.substring(i,e);`
`System.out.println(x);`
	i=13 ss
	e=13 la
	i=11
	x="ss"
	i=9
	e=11
	x="la"

5. **substring() - Write a program that duplicates the following input and input:**

```
Enter a string: Canada
Canada
Canad
Cana
Can
Ca
C
```

```
Scanner input = new Scanner (System.in);
System.out.print("Enter a string: ");
String string = input.next();
for (int x=string.length(); x>=1; x--){
        System.out.println(string.substring(0,x));
}
```

6. **Find the cumulative total of the digits in the following string: "12349456832". That is find out what 1 + 2 + 3 + 4 + 9 + 4 + 5 + 6 + 8 + 3 + 2**

```
String digits = "12349456832";
int temp=0;
int sum =0;
for (int x=0; x<digits.length(); x++) {
        temp = Integer.parseInt(digits.substring(x,x+1));
        sum = sum+temp;
}
System.out.println("The cumulative total of " + digits + " is " + sum);
```

7. **Write a program that will convert the following sequence of binary numbers (of type string) to letters. That is, Convert 8 bits a time and match the number to the ASCII chart.**

   00010101010001010100010101010101001010100000 1010

   <u>Steps:</u>
   - **Ensure that the string is divisible by 8 bits, add '0's to beginning of the string until the number is divisible by 8**

- **Convert each 8 bit segment to an integer value number**
- **Convert each decimal number to an ASCII value**

http://markup-
google docs

```
            String binary =
"00010101010001010100010101010101001010100000101O";
            int binaryLength = binary.length();
            int binaryDecimal=0;
            char ascii =0;

            while ((binaryLength%8)!=0) {
                  String binaryAdd = "0" + binary;
                  binary = binaryAdd;
                  binaryLength = binary.length();
            }
            System.out.println("Decimal: \t ASCII value");
            for (int x=0, y=8; y<=binaryLength-1; x=x+8, y=y+8) {
                  binaryDecimal =
Integer.parseInt((binary.substring(x,y+1)),2)/2;
                  ascii = (char) binaryDecimal;
                  System.out.println(binaryDecimal + " \t\t " + ascii);
            }
```