Fall 2021 Java
Lesson 9.4

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Herbert H. Lehman High School
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VOCAB:
str.indexOf(str String)

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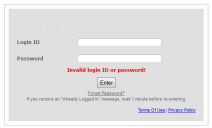
do now

be sure to: Get out your **binder**. Copy **goal** and answer **do now** questions below. Show all work or write a complete sentence for each answer:

You want to write a program with a method called `passwordCheck` to return if the string is a valid password. The method should have the signature shown in the starter code.

The password must be at least 8 characters long and may **only** consist of letters and digits.



1. How could you use string traversal to solve this problem?
2. Write out an algorithm, **in a paragraph or in pseudocode**, for how this task could be accomplished.

class: AP CS A **goal:** HDW implement string algorithms in Java?

1. You could go through a string and check if each character is a number or a letter.
2.
```
for char in string:
    if char is not letter and char is not number:
        return false
return true
```

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do now

be sure to: Get out your **binder**. Copy **goal** and answer **do now** questions below. Show all work or write a complete sentence for each answer:

As we develop more sophisticated algorithms, and tackle more complex problems, you'll find it very convenient to **make a plan before you start coding**!!!

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framing

- **what:** implement string algorithms in Java
- **why:** We've studied algorithms for string manipulation, now let's practice implementing them!
- **where to:** Nested iteration of for loops

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Vocab

be sure to: Keep your **notebook** open. Copy each definition, including the code sample, in your Java Glossary.

`string.indexOf(String str)`
Returns the index of the first occurrence of str; returns -1 if not found.

Make a prediction. What will the program below output? How do you know?

```
String str = "lehman lions";
System.out.println(str.indexOf("L");
System.out.println(str.indexOf("x");
```

class: AP CS A **goal:** HDW implement string algorithms in Java?

MAKE A PREDICTION: It will return 0, because the first occurrence of "l" is at index 0. The second line will return -1, because "x" does not occur in the string.

+why does it make sense to use -1 as the return value if there is no index with the associated the input string? because index values all have to be 0 or positive. there's no negative values.
+What do you predict str.indexOf("man") will return? it will return 3, because the substring "man" begins at index 3.

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Coding to learn

be sure to: Log in to Workstation. Work on CodeHS exercises below. Make sure to **write out a plan** before you start coding!

- Exercise 4.4.7: Password checker
- Exercise4.3.9: Fixing grammar

`string.indexOf(String str)`
Returns the index of the first occurrence of str; returns -1 if not found.

General formula for traversing a String `string`

```
for(int i = 0; i < string.length(); i++)
{
   String character = string.substring(i, i+1);
}
```

```
for(int i = 0; i < string.length(); i++)
{
    char character = string.charAt(i);
}
```

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BE SURE TO WRITE OUT A PLAN
+How could you use .indexOf() to solve the password checker assignment? You could make a string containing all lower case letters. and all digits 0-9. then you could check if a given character is in them because if not you'll return -1.
+
+How is fixing grammar similar to the 'remove' method we discussed in the mini-lesson? It's similar in that we want to make a new string with the corrected form of the input string.

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Coding to learn

be sure to: Log in to Workstation. Work on CodeHS exercises below. Make sure to **write out a plan** before you start coding!

Write a program with a method called `passwordCheck` to return if the string is a valid password. The method should have the signature shown in the starter code.

The password must be at least 8 characters long and may **only** consist of letters and digits.

In your main method, prompt the user for a password and then report back as to whether the password is valid. To pass the autograder, you will need to print the boolean return value from the `passwordCheck` method.

Hint: Consider creating a String that contains all the letters in the alphabet and a String that contains all digits. If the password has a character that isn't in one of those Strings, then it's an illegitimate password!

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See CodeHS program guide for detailed solution. Pre-planned questions on previous page.

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Coding to learn

be sure to: Log in to Workstation. Work on CodeHS exercises below. Make sure to **write out a plan** before you start coding!

Write a program that takes a String containing a text using the method signature

```
String useProperGrammar(String text)
```

Your method should replace the word '2' with 'to' and return the updated text.

For example,

```
useProperGrammar("can you go 2 the store?")
```

should return

```
"can you go to the store?"
```

This method should also print out the number of grammatical errors that were fixed.

For example, for `useProperGrammar("back 2 back 2 back")`, the method would also print:

```
Fixed 2 grammatical errors:
```

In the `main` method, ask the user to input a `String`, and print the results of `useProperGrammar` using the user input.

class: AP CS A **goal:** HDW implement string algorithms in Java?

See CodeHS program guide for detailed solution. Pre-planned questions on previous page.
+How could you pre-plan this before you could? Write out an algorithm in pseudocode. e.g.

```
newstring = "";
for each char in String:
        if char == "2":
                replace with "to"
                add to newString
        else:
                add char to newString
```

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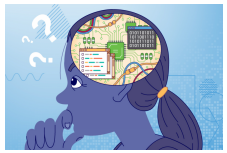
Reflection: Thinking about thinking

be sure to: Answer each question below with a complete sentence.

1. Why is it useful to apply loops to strings?
2. Do you think the algorithms we've learned about today can only work in Java? Or are the applicable for other programming languages? Explain why or why not



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1. Strings are sequences of characters. This sequence can be traversed with a for loop. We can traverse a string and perform various operations on individual characters.
2. Loops strings and characters appear in most other languages, including python. so these algorithms are not Java specific.