

## 2018 AP<sup>®</sup> COMPUTER SCIENCE A FREE-RESPONSE QUESTIONS

3. The `StringChecker` interface describes classes that check if strings are valid, according to some criterion.

```
public interface StringChecker
{
    /** Returns true if str is valid. */
    boolean isValid(String str);
}
```

A `CodeWordChecker` is a `StringChecker`. A `CodeWordChecker` object can be constructed with three parameters: two integers and a string. The first two parameters specify the minimum and maximum code word lengths, respectively, and the third parameter specifies a string that must not occur in the code word. A `CodeWordChecker` object can also be constructed with a single parameter that specifies a string that must not occur in the code word; in this case the minimum and maximum lengths will default to 6 and 20, respectively.

The following examples illustrate the behavior of `CodeWordChecker` objects.

### Example 1

```
StringChecker sc1 = new CodeWordChecker(5, 8, "$");
```

Valid code words have 5 to 8 characters and must not include the string "\$".

Method call	Return value	Explanation
<code>sc1.isValid("happy")</code>	<code>true</code>	The code word is valid.
<code>sc1.isValid("happy\$")</code>	<code>false</code>	The code word contains "\$".
<code>sc1.isValid("Code")</code>	<code>false</code>	The code word is too short.
<code>sc1.isValid("happyCode")</code>	<code>false</code>	The code word is too long.

### Example 2

```
StringChecker sc2 = new CodeWordChecker("pass");
```

Valid code words must not include the string "pass". Because the bounds are not specified, the length bounds are 6 and 20, inclusive.

Method call	Return value	Explanation
<code>sc2.isValid("MyPass")</code>	<code>true</code>	The code word is valid.
<code>sc2.isValid("Mypassport")</code>	<code>false</code>	The code word contains "pass".
<code>sc2.isValid("happy")</code>	<code>false</code>	The code word is too short.
<code>sc2.isValid("1,000,000,000,000,000")</code>	<code>false</code>	The code word is too long.

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Write the complete `CodeWordChecker` class. Your implementation must meet all specifications and conform to all examples.