Useful Methods in the `String` Class

`int length()` Returns the length of the string
`char charAt(int index)` Returns the character at the specified index. Note: Strings indexed starting at 0.
`String substring(int p1, int p2)` Returns the substring beginning at **`p1`** and extending up to but not including **`p2`**
`String substring(int p1)` Returns substring beginning at **`p1`** and extending through end of string.
`boolean equals(String s2)` Returns true if string **`s2`** is equal to the receiver string. This is case sensitive.
`int compareTo(String s2)` Returns integer whose sign indicates how strings compare in lexicographic order
`int indexOf(char ch)` *or* **`int indexOf(String s)`** Returns index of first occurrence of the character or the string, or -1 if not found
`String toLowerCase()` *or* **`String toUpperCase()`** Returns a lowercase or uppercase version of the receiver string

Using portions of slides by Eric Roberts

reverseString

```
public void run() {
```

```
private String reverseString(String str) {
   String result = "";
   for ( int i = 0; i < str.length(); i++ ) {
      result = str.charAt(i) + result;
   }
   return result;
}
```

result	str	i
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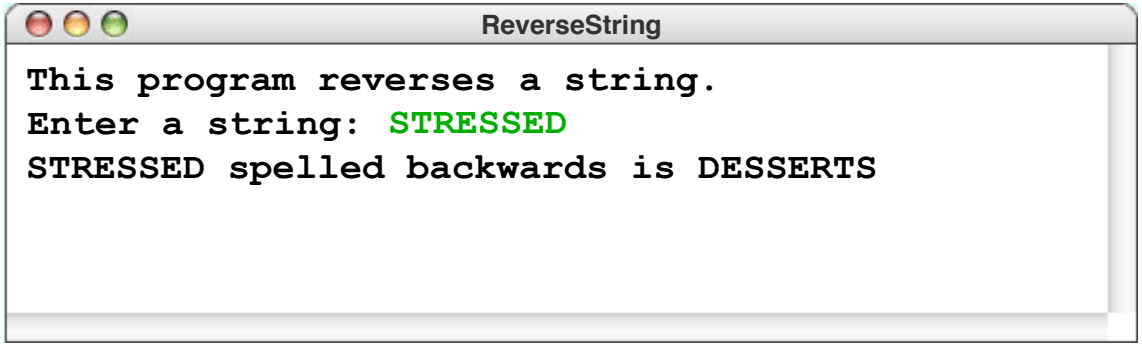

skip simulation

Caesar Cipher

- Rotate alphabet by *n* letters (*n* = 3 in example below)
  - *n* is called the **key**
- Wrap-around at the end
- Substitute letters based on this mapping

original	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
encrypt	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C

Letter Substitution Cipher

- Create mapping from 26 letters to 26 letters
  - This mapping is called the **key**
- Mapping is *arbitrary*
- Each letter can only appear once

original	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
encrypt	Q	W	E	R	T	Y	U	I	O	P	A	S	D	F	G	H	J	K	L	Z	X	C	V	B	N	M