

Strings

September 6, 2016

Administrative Stuff

- ▶ Assignment 1 due tomorrow
- ▶ Assignment 2 posted soon
- ▶ Please make sure that you're getting comfortable with *some* C development environment.
- ▶ ACM

Last Time

- ▶ booleans as integers
- ▶ extra importance of `=` vs `==`
- ▶ arrays
 - ▶ what they are in Java, C
 - ▶ out of bounds accesses
 - ▶ no `length` field
 - ▶ passing to functions
- ▶ `getchar()`, `putchar()`
- ▶ EOF
- ▶ `man`
- ▶ shell redirection: `<`, `>`
- ▶ “file” copier
- ▶ char count
- ▶ line count

word counter

- ▶ counting spaces doesn't work
- ▶ counting transitions?

strings

- ▶ Java Strings
 - ▶ objects
 - ▶ data
 - ▶ methods
 - ▶ read only
 - ▶ automatic allocation of space
- ▶ C strings:
 - ▶ arrays of char
 - ▶ terminated by '`\0`' (null character)
 - ▶ not read only
 - ▶ you have to allocate space

Java API

<http://docs.oracle.com/javase/8/docs/api/>

int	lastIndexOf (int ch) Returns the index within this string of the last occurrence of the specified character.
int	lastIndexOf (int ch, int fromIndex) Returns the index within this string of the last occurrence of the specified character, searching backward starting at the specified index.
int	lastIndexOf (String str) Returns the index within this string of the last occurrence of the specified substring.
int	lastIndexOf (String str, int fromIndex) Returns the index within this string of the last occurrence of the specified substring, searching backward starting at the specified index.
int	length () Returns the length of this string.
boolean	matches (String regex) Tells whether or not this string matches the given regular expression .
int	offsetByCodePoints (int index, int codePointOffset) Returns the index within this String that is offset from the given index by codePointOffset code points.
boolean	regionMatches (boolean ignoreCase, int toffset, String other, int ooffset, int len) Tests if two string regions are equal.
boolean	regionMatches (int toffset, String other, int ooffset, int len) Tests if two string regions are equal.
String	replace (char oldChar, char newChar) Returns a string resulting from replacing all occurrences of oldChar in this string with newChar.

etc.

C string API

- ▶ `string.h`
- ▶ finding what's there:
 - ▶ man pages
 - ▶ Google
 - ▶ appendix of K&R
- ▶ many other APIs exist
- ▶ a sample:

```
...  
char *strcpy(char *dst, const char *src);  
char *strcat(char * s1, const char *s2);  
char *strchr(const char *s, int c);  
int strcmp(const char *s1, const char *s2);  
char *strcpy(char *s1, const char *s2);  
size_t strcspn(const char *s1, const char *s2);  
char *strerror(int errnum);  
size_t strlen(const char *s);  
char *strncat(char * s1, const char *s2, size_t n);  
...
```

Experimenting with Strings

- ▶ creating with double quotes.
 - ▶ printing
 - ▶ modifying individual characters
 - ▶ is `'\0'` really there?
- ▶ creating with array notation
 - ▶ what happens when we forget `'\0'`?