

EECS 398 System Design in C++ Winter 2019 Utf8 Practice problem

No due date

1. You are to implement the various functions for reading and writing Utf8 characters described in the supplied Utf8.h header.
2. Using these functions, write a Linux wrapper utility, `flip.cpp`, that can convert a Utf8 or ASCII text file to Unicode or a Unicode file to Utf8, writing the output to stdout.
 - a. Use a file map to read the input and the Linux `write()` function to write the output.
 - b. Look for a byte order mark (BOM) at the beginning of the input to indicate Utf8 or Unicode. If there's no BOM, assume it's ASCII and read it as if it was Utf8.
 - c. Invalid Utf8 characters or incomplete Utf8 and Unicode characters should be replaced with the replacement character.
 - d. Write a correct BOM at the beginning of the output.
 - e. Behavior should be as follows with the supplied `Utf8-testcase.txt`, `Unicode.correct.txt` and `Utf8.correct.txt` files. The usage message should be written to `stderr`.

```
$ g++ flip.cpp Utf8.cpp -o flip
$ ./flip
Usage: flip <filename>
Convert Unicode to Utf8 and Utf8 or ASCII to Unicode
$ ./flip Utf8-testcase.txt > Unicode.txt
$ cmp Unicode.txt Unicode.correct.txt
$ ./flip Unicode.txt > Utf8.txt
$ cmp Utf8.txt Utf8.correct.txt
$
```