

UNC Charlotte, Department of Electrical and Computer Engineering
ECGR 4101/5101, Spring 2012, Homework #3
(20 points)

Assignment should be submitted to Moodle.

1. Write the complete pseudocode for a function to describe how change to toggle the case all of the vowels (including the sort-of vowel “y”) in a string S and convert spaces to the underscore character (_). Do not use any function calls. (2 points)
2. Write a C function to implement the pseudocode of the previous question. (4 points)
Assume the *address* of the global variable

```
char S[80]; /* the string */
```

is passed into the function, i.e. the call would be

```
ChangeChar(&S);
```
3. A) What is the number of address bits needed to address any byte in a memory that contains 1048576 bytes? (1 point)
B) Assume the memory from part A is actually a microcontroller’s memory space. 8K is allocated at the top (starting at address 0) for the special function registers, followed by 16K of RAM, followed by 8K of EEPROM; 128K of flash is located all the way at the end of the memory space. Show a picture of what this would look like. (4 point)
4. Consider the switches configured below. Write a C code function called `checkswitches` to interrogate the switches and print “**Switch n pressed**” if it is being pressed. Print “**No switches printed**” if none are being pressed. Ensure that **ONLY ONE** message is printed, with the priority being SW3, then SW2, then SW1.

