HOMEWORK 8

CS 125

due at 11:45am (classtime) on Tuesday, September 22

Write a Python *function* to solve each of the following problems. Plan each function on paper before you implement it in code.

Prepare your solutions in a single Python file. Use comments to clearly state the problem number for each of your solutions. For problems 2, 3, and 4, provide test cases to show that your functions produce the desired output. Upload your file to the Homework 8 assignment on Moodle.

1. **Count substrings**: Write a function that counts how many times a substring occurs in a string. Your function header should be:

   ```
   def countOccurrences(mystr, sub):
   ```

   Your function should count the number of times that string `sub` occurs in string `mystr`. For example:

   `countOccurrences("Mississippi", "ss")` returns `2`

   `countOccurrences("Mississippi", "abc")` returns `0`

2. **Remove substrings**: Write a function that removes all occurrences of a substring from a string. Your function header should be:

   ```
   def removeAll(mystr, sub):
   ```

   Your function remove all occurrences of the string `sub` from string `mystr`. Your function must return a string. For example:

   `removeAll("Mississippi", "ss")` returns `"Miiippi"`

   `removeAll("Mississippi", "abc")` returns `"Mississippi"`

   `removeAll("abc", "abc")` returns `""`

3. **Binary numbers:** Write a function `intToBinary(n)` that accepts an integer n and returns the binary representation of n as a string.

   `intToBinary(22)` returns `"10110"`

   `intToBinary(45)` returns `"101101"`

   Your function must return a string.

   Hint: Remember the algorithm for converting to binary from the first day of class, or check the slides from that day on the course web site.

4. **Email addresses:** Write a function `isEmailAddress(mystr)` that returns `True` if `mystr` is a properly-formatted email address and `False` otherwise.

   The format of an email address is local_part@domain. For simplicity, assume that:

   - `local_part` can be any string of letters, numbers, and characters in the string `"._-!+"`
   - `domain` can be any string of letter, numbers, periods, and underscores, as long as it contains at least one period

   For example:

   `isEmailAddress("cool-address!@mydomain.net")` returns `True`

   `isEmailAddress("me@domain@net")` returns `False`

   `isEmailAddress("notAnEmailAddress")` returns `False`