CSE 1321L: Programming and Problem Solving I Lab

Assignment 7 – 100 points

Arrays

Program 0 (Warm-up, 40 pts): Deoxyribonucleic acid, or DNA, is comprised of four bases: (G)uanine, (C)ytosine, (A)denine and (T)hymine. Ribonucleic acid, or RNA, is different than DNA in that it contains no Thymine; thymine is replaced with something called (U)racil. For this assignment, you will create an array of 255 characters. You must start by filling the array with random characters of G, C, A and T. You must then print out the array. Next, replace all the instances of Thymine with Uracil. Finally, you must print out the array again. In your solution, you must write at least one function that contributes to the solution. You must use the length attribute of the array in your answer.

Sample run

```
CATGGCGTCTTGCCAAGGCGGTTCCTTGTCTTGATGATGGCTGCGAGTTCCGAGTCGCCTTTTCTATGAGTCGCGA
AGTATGCGGTCAAATTATGCTTGTCCGCTGTACTAGGCCCACGGATCTCCTCAGACAGCGTCGATGTCGGAATTCG
CGGGGAGGAATACTAAACATGCTGAAGTTGATACATGTACAATTGCCGCGAACCAGGTGCACAGGGTGCCCAACGA
TCCATGTGGAACGAGAGCGATCTAGCC

CAUGGCGUCUUGCCAAGGCGGUUCCUUGUCUUGAUGAUGGCUGCGAGUUCCGAGUCGCCUUUUCUAUGAGUCGCGA
AGUAUGCGGUCAAAUUAUGCUUGUCCGCUGUACUAGGCCCACGGAUCUCCUCAGACAGCGUCGAUGUCGGAAUUCG
CGGGGAGGAAUACUAAACAUGCUGAAGUUGAUACAUGUACAAUUGCCGCGAACCAGGUGCACAGGGUGCCCAACGA
UCCAUGUGGAACGAGAGCGAUCUAGCC
```

Program 1 (60 pts): Find the Rabbit! For this assignment, you will write a program that asks the user to find a rabbit in one of 10 holes (0-9). The holes and guesses are visualized on the screen (as shown below), but as the user guesses, you should not show where the rabbit is hidden. The rabbit is assigned a random hole each time the program is run. You must write and use at least two functions for this question (maybe printing as one?). Further, you should actually use the array to solve this problem (i.e. not "hack your way" through it). Design (pseudocode) and implement (source code) this program. **Extra credit (5 pts)**: if the user guesses the correct hole, show the rabbit with the letter 'R'.

Sample run

```
Find the Rabbit!
| | | | | | | | | |
Pick a hole (0-9): 9
| | | | | | | | |X|
Pick a hole (0-9): 6
| | | | | | |X| | |X|
Pick a hole (0-9): 4
| | | | |X| |X| | |X|
Pick a hole (0-9): 3
| | | |R|X| |X| | |X|
You found the rabbit!
```

Submission:

Part 1: Pseudocode:

1. Review the assignment submission requirements and grading guidelines.
2. Upload the pseudocode files (Word doc or PDF) to the assignment submission folder in D2L.
3. The files must be uploaded to D2L by the due date.
4. The Pseudocode must be complete and following the standards listed at http://ccse.kennesaw.edu/fye/Pseudocode.php

Part 2: Source Code:

1. Review the assignment submission requirements and grading guidelines.
2. Upload the source code files to the assignment submission folder in D2L.
3. The files must be uploaded to D2L by the due date.