CSE 1321L: Programming and Problem Solving I Lab

Assignment 5 (Methods) – 100 points

Program 0: Insulted yet? Most people get harassed by telemarketers, so for your warmup question, you're going to design (pseudocode) and write (source code) a program that generates (clean) insults at random. The program must have a function that takes in the name of a person and prints out an insult directed to them. Further, the program should ask if the person has had enough insults and continue until they type "yes". Your code must have at least five different kinds of insults. Any profanity receives an automatic grade of 0. If you don't recognize these insults, shame on you! See Appendix for language-specific help.

Sample run 1:

```
Enter your name: King Arthur
King Arthur, your mother was a hamster!
Shall I taunt you another time [yes/no]? yes
King Arthur, you English pig dog!
Shall I taunt you another time [yes/no]? yes
King Arthur, you don't frighten me!
Shall I taunt you another time [yes/no]? yes
King Arthur, you don't frighten me!
Shall I taunt you another time [yes/no]? yes
King Arthur, you English pig dog!
Shall I taunt you another time [yes/no]? no
Now go away, you silly English Knnnnniggets!
```

Program 1: Social Security Payout. If you're taking this course, chances are that you're going to make a pretty good salary – especially 3 to 5 years after you graduate. When you look at your paycheck, one of the taxes you pay is called Social Security. In simplest terms, it's a way to pay into a system and receive money back when you retire (and the longer you work and the higher your salary, the higher your monthly benefit). Interestingly, your employer will pay the same amount for you. The current tax rate is 6.2% until you make approximately $132,900.

For this assignment, we're going to help out hourly employees. Design (pseudocode) and implement (source code) a program that asks users how much they make per hour, the number of hours they work per week, and calculates the yearly income. For the second half, the program should calculate and display the amount of Social Security tax the user will pay for that year. You must write and use at least two functions in addition to the main function. At least one function must not have a `void` return type. Note, don't forget to put the keywords "public" and "static" in front of your functions. Document your code and properly label the input prompt and the outputs as shown below.

Sample run 1:

```
Enter hourly wage: 10
Enter your hours per week: 40
You will earn $20800.0 per year
You will pay $1289.6 in Social Security tax
```

Sample run 2:

```
Enter hourly wage: 40
Enter your hours per week: 60
You will earn $124800.0 per year
You will pay $7737.6 in Social Security tax
```

Program 2: P0\/\/|\|3D. In the early 80s, hackers used to write in an obfuscated, but mostly readable way called "leet" – short for "elite". In essence, it was a simple character replacement algorithm, where a single "regular" character was replaced by one or more "leet" characters; numbers remained the same. Here's one of the most readable versions:

a	4	g	9	m	/\/\\	s	$	y	'/
b	B	h	|-|	n	|\\\|	t	7	z	Z
c	(	i	1	o	0	u	U		
d	D	j	j	p	P	v	\\/		
e	3	k	|<	q	Q	w	\\/\\/		
f	Ph	l	L	r	R	x	><		

Note! You will need to know how to 1) get the length of a string (the number of characters) and 2) access individual characters of the string. See the appendix for more information. You must use at least one method in addition to main – preferably one that translates individual characters! Note #2: your first task should be to try to print out a single '\' character…

```
Sample run 1:
Enter a string: you have been powned
'/0U |-|4\\/3 B33|\\| P0\\/\\/|\\|3D
```

```
Sample run 1:
Enter a string: you have programming skrilz
'/0U |-|4\\/3 PR09R4/\\/\\/\\/\\1|\\|9 $|<R1LZ
```

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.

Appendix:
Java: to get the length (number of characters) in a string, you can call the length() method of the string. You'll use charAt() to get individual characters.

```
String myName = "Freakzilla";
int length = myName.length();
char firstChar = myName.charAt(0);
char secondChar = myName.charAt(1);
if (myName.equals("Bob")) {
  System.out.println ("Sorry, Bob!");
}
```

C#: it's almost the same thing. You'll use the Length attribute for length. However, you'll use brackets to access individual characters.

```
string myName = "Freakzilla";
int length = myName.Length;
char firstChar = myName[0];
char secondChar = myName[1];
if (myName == "Bob") {
  Console.WriteLine ("Sorry, Bob!");
}
```

C++: a few things. First, you need to know how to read in strings that contain spaces. By default, cin will only read in the first word, so you have to use a function called 'getline'. Accessing individual characters can be done using a pair of brackets, similar to the code above. Here's how that looks in C++:

```
#include <iostream>
#include <string>

using namespace std;

int main() {
  string s1, s2;
  // Good way - reads an entire line of text, spaces too!
  cout << "Enter your first and last name: ";
  getline(cin,s1);
  cout << "Hi, " << s1 << endl;

  // Print out the first letter
  cout << s1[0] << endl;
  cout << s1.length() << endl;

  // Bad way
  cout << "Enter your first and last name again: ";
  cin >> s2;
  cout << "Hi, " << s2 << endl;
}
```