Stat 580 (Spring 2017): Homework 1

Please submit your homework with codes (hard copy) in class and upload the corresponding codes to the Blackboard. Problems marked with * will be graded in detail and they are worth 50% of the total score. Remaining problems, worth the remaining 50% of the total score, will be given full mark if reasonable amount of work is shown.

1. Similar to slide set 1 p.30, write a C program that prints the correspondence table of Fahrenheit temperatures and their Celsius equivalents using

$$C = (5/9)(F - 32).$$

Instead of specifying the step size, the program should allow the user to specify the number of rows (through a symbolic constant). For instance, if the number of rows is 11 with lower and upper limts set as 0 and 200, the rows of the table should correspond to 0F, 20F, 40F, 60F, 80F, 100F, 120F, 140F, 160F, 180F, 200F. Note that the program should allow any (reasonable) positive number of rows (and so the corresponding Fahrenheit temperatures may not be integers).

2. Similar to slide set 1 p.34, write a program that prints only the numeric input. Say, if the input is "I am 1not2 n34umber", the program should print "1234".

3. * Similar to slide set 1 p.34, write a program that shifts the lower case English characters by 2 characters. That means: 'a' to 'c', 'b' to 'd', ..., 'x' to 'z'. Keep 'y' and 'z' unchanged. For instance, if the input is "amppcar ABC 123z", the program should print "correct ABC 123z".

4. Similar to slide set 1 p.35, write a program that counts the number of words. If a series of characters is separated from others by ' ' (space), '\t' (horizontal tab), '\n' (newline) or combination of them, it is regarded as a word. For example, " first.123word   secondword" has 2 words.

5. * Using the precedence table, analyze the operator precedence and write down the value of the following expressions. Example:

```
3+4/3==4==0
```

- Operator precedence: (1 means first)

```
3+4/3==4==0
 2 1   3  4
```

- The value of this expression is 0.

(a) `3/2 + 1`

(b) `1/2 + 3.0/4.0`

(c) `3 < 10 && 2 * 8 < 2`

(d) `x=3+2`
   (assuming x is declared as an int.)

(e) `j+=i++`
   Suppose i=0 and j=2. Also, write down the value of i.