Assignment 4 1 - Program

```
#open the output file in 'w'rite mode
2
   fout = open('assign_4_1.out','w')
3
4
   #loop over relevant range for the song
5
   for i in range(22,0,-1):
     if (i > 2):
6
7
       #if both are plural, write song like this...
8
       myline = str(i)+' bottles of beer on the wall '+str(i)+' bottles of beer,
       you take one down, pass it around, '+str(i-1)+' bottles of beer on the
      wall'
9
     elif (i == 2):
10
       #...if second is singular, write it like this...
       myline = str(i)+' bottles of beer on the wall '+str(i)+' bottles of beer,
11
       you take one down, pass it around, '+str(i-1)+' bottle of beer on the
      wall'
12
     elif (i == 1):
13
       #...if first is singular, write it like this.
14
       myline = str(i)+' bottle of beer on the wall '+str(i)+' bottle of beer,
      you take one down, pass it around, '+str(i-1)+' bottles of beer on the
      wall'
15
     print myline #print to screen
     fout.write(myline+'\n') #write to file. Remember the extra ' +'\n' ',
16
      needed to produce a line break between the song lines
17
18
19
   #####*OR*
20
21
   #define the whole line including formatting statements for values/words to be
       inserted later.
   # '%d' means integer, '%s' means string
23
   myline = '%d %s of beer on the wall %d %s of beer, you take one down, pass it
       around, %d %s of beer on the wall'
24
   for i in range(22,0,-1):
25
     if (i > 2):
26
       #if both are plural, both words are 'bottles'
27
       word1 = word2 = 'bottles'
28
     elif (i == 2):
29
       word1 = 'bottles'
30
       word2 = 'bottle'
     elif (i == 1):
31
32
       word1 = 'bottle'
33
       word2 = 'bottles'
34
     print myline%(i,word1,i,word1,i-1,word2)#the %() bit indicates what values/
      strings are meant to be filled into the waiting formatting statements
35
     fout.write(myline%(i,word1,i,word1,i-1,word2)+'\n')
36
37
   fout.close
```

Assignment 4 1 - Output

```
22 bottles of beer on the wall 22 bottles of beer, you take one down, pass it around, 21 bottles of beer on the wall
2 bottles of beer on the wall 21 bottles of beer, you take one down, pass it around, 20 bottles of beer on the wall
3 bottles of beer on the wall 20 bottles of beer, you take one down, pass it around, 19 bottles of beer on the wall
4 bottles of beer on the wall 19 bottles of beer, you take one down, pass it around, 18 bottles of beer on the wall
```

- 5 | 18 bottles of beer on the wall 18 bottles of beer, you take one down, pass it around, 17 bottles of beer on the wall
- 6 17 bottles of beer on the wall 17 bottles of beer, you take one down, pass it around, 16 bottles of beer on the wall
- 7 16 bottles of beer on the wall 16 bottles of beer, you take one down, pass it around, 15 bottles of beer on the wall
- 8 | 15 bottles of beer on the wall 15 bottles of beer, you take one down, pass it around, 14 bottles of beer on the wall
- 9 | 14 bottles of beer on the wall 14 bottles of beer, you take one down, pass it around, 13 bottles of beer on the wall
- 10 13 bottles of beer on the wall 13 bottles of beer, you take one down, pass it around, 12 bottles of beer on the wall
- 11 | 12 bottles of beer on the wall 12 bottles of beer, you take one down, pass it around, 11 bottles of beer on the wall
- 12 11 bottles of beer on the wall 11 bottles of beer, you take one down, pass it around, 10 bottles of beer on the wall
- 13 | 10 bottles of beer on the wall 10 bottles of beer, you take one down, pass it around, 9 bottles of beer on the wall
- |9| bottles of beer on the wall 9 bottles of beer, you take one down, pass it around, 8 bottles of beer on the wall
- 8 bottles of beer on the wall 8 bottles of beer, you take one down, pass it around, 7 bottles of beer on the wall
- 17 6 bottles of beer on the wall 6 bottles of beer, you take one down, pass it around, 5 bottles of beer on the wall
- 18 5 bottles of beer on the wall 5 bottles of beer, you take one down, pass it around, 4 bottles of beer on the wall
- |4| bottles of beer on the wall 4 bottles of beer, you take one down, pass it around, 3 bottles of beer on the wall
- 20 3 bottles of beer on the wall 3 bottles of beer, you take one down, pass it around, 2 bottles of beer on the wall
- 21 2 bottles of beer on the wall 2 bottles of beer, you take one down, pass it around, 1 bottle of beer on the wall
- 22 1 bottle of beer on the wall 1 bottle of beer, you take one down, pass it around, 0 bottles of beer on the wall
- 23 22 bottles of beer on the wall 22 bottles of beer, you take one down, pass it around, 21 bottles of beer on the wall
- 24 21 bottles of beer on the wall 21 bottles of beer, you take one down, pass it around, 20 bottles of beer on the wall
- 25 20 bottles of beer on the wall 20 bottles of beer, you take one down, pass it around, 19 bottles of beer on the wall
- 26 19 bottles of beer on the wall 19 bottles of beer, you take one down, pass it around, 18 bottles of beer on the wall
- 27 18 bottles of beer on the wall 18 bottles of beer, you take one down, pass it around, 17 bottles of beer on the wall
- 28 | 17 bottles of beer on the wall 17 bottles of beer, you take one down, pass it around, 16 bottles of beer on the wall
- 29 | 16 bottles of beer on the wall 16 bottles of beer, you take one down, pass it around, 15 bottles of beer on the wall
- $30\ |\ 15\$ bottles of beer on the wall 15 bottles of beer, you take one down, pass it around, 14 bottles of beer on the wall
- 31 | 14 bottles of beer on the wall 14 bottles of beer, you take one down, pass it around, 13 bottles of beer on the wall
- 32 | 13 bottles of beer on the wall 13 bottles of beer, you take one down, pass it around, 12 bottles of beer on the wall
- 33 12 bottles of beer on the wall 12 bottles of beer, you take one down, pass it around, 11 bottles of beer on the wall
- 34 11 bottles of beer on the wall 11 bottles of beer, you take one down, pass it around, 10 bottles of beer on the wall

```
35
   10 bottles of beer on the wall 10 bottles of beer, you take one down, pass it
       around, 9 bottles of beer on the wall
   9 bottles of beer on the wall 9 bottles of beer, you take one down, pass it
36
      around, 8 bottles of beer on the wall
   8 bottles of beer on the wall 8 bottles of beer, you take one down, pass it
37
      around, 7 bottles of beer on the wall
   7 bottles of beer on the wall 7 bottles of beer, you take one down, pass it
38
      around, 6 bottles of beer on the wall
   6 bottles of beer on the wall 6 bottles of beer, you take one down, pass it
39
      around, 5 bottles of beer on the wall
40
   5 bottles of beer on the wall 5 bottles of beer, you take one down, pass it
      around, 4 bottles of beer on the wall
   4 bottles of beer on the wall 4 bottles of beer, you take one down, pass it
41
      around, 3 bottles of beer on the wall
   3 bottles of beer on the wall 3 bottles of beer, you take one down, pass it
42
      around, 2 bottles of beer on the wall
43
   2 bottles of beer on the wall 2 bottles of beer, you take one down, pass it
      around, 1 bottle of beer on the wall
44
   1 bottle of beer on the wall 1 bottle of beer, you take one down, pass it
      around, 0 bottles of beer on the wall
```

Assignment 4 2 - Program

```
#open file for output
1
2
   fout = open('assign_4_2.out','w')
3
   #read in two integers from user
5
   num_students = int(raw_input('Specify number of students: '))
6
   num_assignments = int(raw_input('Specify number of assignments: '))
7
   #initialise counter to be used for counting all successful outputs
8
9
   total_outputs = 0
10
11
   #create a formatted header for the table; a string (%s), which is 12
      characters wide (%12s)
   header = '%12s %12s'%('Student', 'Assignment')
12
   print header
13
14
   fout.write(header+'\n')
15
   #nested loops for going through all assignments for a student, then next
16
      student, and so on
17
   for i in range(num_students):
     for j in range(num_assignments):
18
19
       # +1 because python default is to count and index from zero up, not from
      one up
20
       line = \frac{12d}{12d}%(i+1,j+1)
21
       print line
22
       fout.write(line+'\n')
23
       total_outputs += 1
24
25
   #line with the total number of outputs
   footer = 'Total of %d output lines'%(total_outputs)
26
27
   print footer
28
   fout.write(footer+'\n')
29
30
   fout.close()
```

Assignment 4 2 - Output

1	Student	Assignment
2	1	1
3	1	2
4	1	3
5	1	4
6	2	1
7	2	2
8	2	3
9	2	4
10	3	1
11	3	2
12	3	3
13	3	4
14	4	1
15	4	2
16	4	3
17	4	4
18	5	1
19	5	2
20	5	3
21	5	4
22	6	1
23	6	2
24	6	3
25	6	4
26	7	1
27	7	2
28	7	3
29	7	4
30	Total of 28 ou	tput lines