**Problems for February 3rd - While Loops**

**Problem A: Face**

Recall the face printing program from one of the video quizzes from the first week of 110. Rewrite the program to \*not\* use string multiplication, and instead use while-loops.

Some examples:

**What size face should be printed? 0**

**///|\\\**

**/ 0 0 \**

**| I |**

**| \\_\_\_/ |**

**\\_\_\_\_\_/**

**What size face should be printed? 3**

**///|\\\**

**/ 0 0 \**

**| |**

**| |**

**| |**

**| I |**

**| |**

**| |**

**| |**

**| \\_\_\_/ |**

**\\_\_\_\_\_/**

**Problem B: Numbers**

In this problem, the goal is to write a program that prints out one line of text, with three alternating numbers “1”, “2” and “3”. However, you cannot easily accomplish this by simply multiplying a string, because the number it ends on can vary based on size. Instead, use a while loop with if statement(s) within. Some examples:

**Line length: 7**

**1 2 3 1 2 3 1**

**Line length: 5**

**1 2 3 1 2**

**Line length: 3**

**1 2 3**

**Problem C: Numbers (pt 2)**

In this problem, you should build off of your solution from problem B. The goal is to write a program that prints out multiple lines of text, with three alternating numbers “1”, “2” and “3”. The output should form a triangle, where each row has one less number on it. Use one or more while loop(s) with if statement(s) within. Some examples:

**Line length: 7**

**1 2 3 1 2 3 1**

**1 2 3 1 2 3**

**1 2 3 1 2**

**1 2 3 1**

**1 2 3**

**1 2**

**1**

**Line length: 5**

**1 2 3 1 2**

**1 2 3 1**

**1 2 3**

**1 2**

**1**

**Solutions:**

**Problem A:**

size = int(input("What size face should be printed? "))

print(' ///|\\\\\\')

print('/ 0 0 \\')

i = 0

while i < size:

print('| |')

i += 1

print('| I |')

i = 0

while i < size:

print('| |')

i += 1

print('| \\_\_\_/ |')

print(' \\_\_\_\_\_/')

**Problem B:**

size = int(input('Line length: '))

i = 0

while i < size:

if i % 3 == 0:

print('1 ', end='')

elif i % 3 == 1:

print('2 ', end='')

else:

print('3 ', end='')

i += 1

print()

**Problem C:**

size = int(input('Line length: '))

while size > 0:

j = 0

while j < size:

if j % 3 == 0:

print('1 ', end='')

elif j % 3 == 1:

print('2 ', end='')

else:

print('3 ', end='')

j += 1

print()

size -= 1

print()