CPSC 1301, Computer Science I Lab Assignment

Lab 02b Solutions

Problem 1

Write a Python program that prints "Hello World."

```
1  #-----------------------------------------------------------------------
2  # helloworld.py
3  #-----------------------------------------------------------------------
4
5  # Write 'Hello, World' to standard output.
6  print('Hello, World')
```

Problem 2

Write a Python program that accepts a command line argument and prints it as output.

```
1  #-----------------------------------------------------------------------
2  # useargument.py
3  #-----------------------------------------------------------------------
4
5  import sys
6
7  # Accept a name as a command-line argument. Write a message containing
8  # that name to standard output.
9
10 print('Hi, '+ sys.argv[1] + '. How are you?')
```

Problem 3

Write a Python program that accepts several command line arguments and prints the number of arguments as output.

```
1  #-----------------------------------------------------------------------
2  # useargument_2.py
3  #-----------------------------------------------------------------------
4
5  import sys
6
7  # Accept a name as a command-line argument. Write a message containing
8  # the number of the command line arguments.
9
10 arglen = len(sys.argv)
11 print('There are', arglen, 'command line arguments.')
```

Problem 4

Write a Python program that accepts several command line arguments and prints the arguments as output.

```
#-------------------------------------------------------------------
# useargument_3.py
#-------------------------------------------------------------------

import sys

# Accept a name as a command-line argument.
# Writes all arguments as output.

arglen = len(sys.argv)
print("There are", arglen, "arguments from the command line.")

for a in sys.argv:
    print("-\t", a)
```

Problem 5

A ruler divided in sixteenths of an inch has these fractions: $\frac{1}{16}$, $\frac{1}{8}$, $\frac{3}{16}$, $\frac{1}{4}$, ... Write a program that prints the *denoinators* of an inch, i.e., 16, 8, 16, 4, ...

```
#-------------------------------------------------------------------
# ruler.py
#-------------------------------------------------------------------


# Write to standard output the relative lengths of the subdivisions on
# a ruler. The nth line of output is the relative lengths of the marks
# on a ruler subdivided in intervals of 1/2^n of an inch.  For example,
# the fourth line of output gives the relative lengths of the marks
# that indicate intervals of one-sixteenth of an inch on a ruler.

ruler1 = '16'
ruler2 = ruler1 + ' 8 ' + ruler1
ruler3 = ruler2 + ' 4 ' + ruler2
ruler4 = ruler3 + ' 2 ' + ruler3
print(ruler1)
print(ruler2)
print(ruler3)
print(ruler4)
```

Problem 6

Write a Python program that accempts two integers as command line arguments and illustrates the following arithmetic operations:

- addition
- subtraction
- multiplication
- integer division
- modulus
- square (exponentiation)

```
#-------------------------------------------------------------------
# intops.py
#-------------------------------------------------------------------

import sys

# Accept int command-line arguments a and b. Use them to illustrate
# integer operators. Write the results to standard output.

a = int(sys.argv[1])
b = int(sys.argv[2])
```

```
12
13  total = a +  b
14  diff  = a -  b
15  prod  = a *  b
16
17  quot  = a // b
18  # In Python 2.x, / does classic division and // does floor division
19  # In Python 3.x, / does true division and // does floor division
20  # It's wise to use // to divide integers, and / to divide floats.
21
22  rem   = a %  b
23  exp   = a ** b
24
25  print(str(a) + ' + ' + str(b) + ' = ' + str(total))
26  print(str(a) + ' - ' + str(b) + ' = ' + str(diff))
27  print(str(a) + ' * ' + str(b) + ' = ' + str(prod))
28  print(str(a) + ' // ' + str(b) + ' = ' + str(quot))
29  print(str(a) + ' % ' + str(b) + ' = ' + str(rem))
30  print(str(a) + ' ** ' + str(b) + ' = ' + str(exp))
```