CPSC 1301, Computer Science I Lab Assignment

Lab 02b

NOTE:

Python automatically creates an array named `argv`. It placed the command line arguments one by one into this array. The first command line argument is always the name of the program, that is, `argv[0]`. The first argument will be at `argv[1]`, the second at `argv[2]`, and so on. To use the command line arguments, you must first `import sys`. Then, you can access each one in turn by `sys.argv[1]`, and so on. This script illustrates the point.

```
# cmdargs.py

#import the module you need
import sys

#get the length of the argument array
# "length" means the number of elements in the array

length = len(sys.argv)

#print all command line arguments
nargs = 0
while nargs < length:
    print("Argument", nargs, "is", sys.argv[nargs])
    nargs = nargs + 1

print("\n\nThat's all, folks")
```

Run this script as follows:

- `PROMPT>> cmdargs.py`
- `PROMPT>> cmdargs.py first`
- `PROMPT>> cmdargs.py first second`
- `PROMPT>> cmdargs.py first second third`
- `PROMPT>> cmdargs.py first second third fourth`
- `PROMPT>> cmdargs.py first second third fourth fifth`
- . . . and so on

Problem 1

Write a Python program that prints "Hello World."

```
C:\Users\ccc31\cols-st\cpsc1301\tests>a11_helloworld.py
Hello, World
```

Problem 2

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

```
C:\Users\ccc31\cols-st\cpsc1301\tests>a12_useargument.py Student
Hi, Student. How are you?
```

Problem 3

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

```
C:\Users\ccc31\cols-st\cpsc1301\tests>a12_useargument_2.py CSU Computer Science student
There are 5 command line arguments.
```

Problem 4

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

```
C:\Users\ccc31\cols-st\cpsc1301\tests>a12_useargument_3.py CSU Computer Science student
There are 5 arguments from the command line.
*        C:\Users\ccc31\cols-st\cpsc1301\tests\a12_useargument_3.py
*        CSU
*        Computer
*        Science
*        student
```

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, ...

```
C:\Users\ccc31\cols-st\cpsc1301\tests>a21_ruler.py
16
16 8 16
16 8 16 4 16 8 16
16 8 16 4 16 8 16 2 16 8 16 4 16 8 16
```

Problem 6

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

- addition
- subtraction
- multiplication

- integer division
- modulus
- square (exponentiation)

```
C:\Users\ccc31\cols-st\cpsc1301\tests>a22_intops.py 23 41
23 +  41 = 64
23 -  41 = -18
23 *  41 = 943
23 / 41 = 0
23 // 41 = 0
23 %  41 = 23
23 ** 41 = 67739389260745218861137988047774370539553852007909099223
```