

## IN-CLASS WORK: PYTHON — ARITHMETIC &amp; DECISIONS

1. **Arithmetic:** Read §2.2.4. in Newman's book. While you read the text, test the following commands

```
2+3
2*3
2/3
2**3
12//5
-11//5
12%5
3+2*5
(3+2)*5
3*2**2
```

```
x=0
print(x)
x = x**2 - 2
print(x)
```

```
print(x)
x += 1
print(x)
```

```
x,y = 1, 2.5
print(x,y)
```

## 2. Arithmetic Example

Write a program (or set of commands in jupyter) that reads in two float variables  $a$  and  $b$  and one integer  $c$  and prints  $(a^3 + b)\%c$ .

## 3. Packages

(The following is a slight variation on §2.2.5. )

Try

```
exp(2.0)
```

You end up with an error message. Please get me when you get here, I will say some explanatory words. Then try the following commands:

```
import scipy as sp
print(sp.pi, sp.pi**2)
print(sp.log(2.5))
print(sp.exp(2.0))
print(sp.cos(0.0))
```

#### 4. Sample Programs You find a whole set of sample python scripts in

`~kvollmay/share.dir/pythonsamples.dir/`

There is no need to understand them all now, but you might want to have a look at the beginning of `sample_inout.py`.

#### 5. Decisions

Read §2.3.1 and as you read try the commands on page 39

```
x=int(input("Enter a whole number no greater than ten: "))
if x > 10:
    print("You entered a number great than ten.")
    print("Let me fix that for you.")
    x=10
print("Your number is",x)
```

and the commands at the bottom of page 41

```
x=int(input("Enter a whole number no greater than ten: "))
if x>10:
    print("your number is great than ten.")
elif x>9:
    print("Your number is OK, but you're cutting it close.")
else:
    print("Your number is fine. Move along.")
```

Continue reading §2.3.2 and type in the commands

```
x=int(input("Enter a whole number no greater than ten: "))
while x>10:
    print("This is greater than ten. Please try again.")
    x=int(input("Enter a whole number no greater than ten: "))
print("Your number is",x)
```

Continue reading §2.3.3 and type in the commands on top of the page 46

```
f1,f2=1,1
while f1<=1000:
    print(f1)
    f1,f2=f2,f1+f2
```

and google "Fibonacci Nature" to find some beautiful examples and explanations for the occurrence of fibonacci sequence in nature.