CHEATSHEET PYTHON 2: LOOPS

Function	Description	Example
`dir()`	shows all methods you can use with a variable	`dir(stringvariablename)` would show string methods
`range()`	makes a list of a certain range of numbers	`range(0,20)` makes a list from 0 to 19, 20 numbers where the first is inclusive and the last is exclusive `range(0,20,2)` makes the same list but counts by 2
`input()`	asks the user for input, stores as variable	`x=input("Enter a phrase: ")` saves what user inputs as variable x

Module	Description	Example
`random`	random number generator	`random.random()` picks a value between 0 and 1 `random.randint(0,10)` randomly picks a value between 0 and 10
`time`	anything to do with timing	`time.asctime( time.localtime(time.time()) )` prints current date and time

FOR is for iterating over values in a list, string, file, range, etc

```
for item in thing:
    do this command #return to for statement and
                    #move to next item
```

Example: print 20 numbers (actually prints 0 to 19)
```
for i in range(20):
    print i
```

IF is the basic decision making tool

```
if logical condition == True:
    do this command
```

```
sequence='AGGGTGTGTCCTGA'
if 'AGG' in sequence:
    print 'I found your sequence'
```

IF ELSE is used for decision making in an either or context

```
if logical condition == True:
    do this command
else:
    do this command
```

```
seqs=['AUUGACAUCGAUCGA','AGACTGATCGATCTAG']
for seq in seqs:
    if 'U' in seq:
        print '%s is RNA' %seq
    else:
        print '%s is DNA' %seq
```

IF ELIF is useful when you have more than one condition to check before deciding

```
if logical condition == True:
    do this command
elif other logical condition == True:
    do this command
else:
    do this command
```

```
seqs=['AUUGACGAUCGA','AGACTGAATCTAG','JIEONONE']
for seq in seqs:
    if 'U' in seq:
        print '%s is RNA' %seq
    elif 'T' in seq:
        print '%s is DNA' %seq
    else:
        print '%s might be a protein' %seq
```

WHILE is useful for checking input types, and when your value in the conditional might change within the loop

```
while condition == True:
    do this command
```

```
x=int(input("Type a number from 1 to 10: "))
while x not in range(0,11):
    print "That's not a number between 1 and 10"
    x=int(input("Type a number from 1 to 10: "))
print "Thanks!"
```

COMPREHENSIONS are faster than for loops and good to use when you're sifting through a long list or range

```
list1=[] #make empty list
for item in thing:
    list1.append(item)
```

```
list1 = [item for item in thing]
numbers=range(1000)
l=[x**3 for x in numbers]
```

FOR LOOP IN BASH

```
for x in list; do command to variable x; done
```

```
for i in *.fasta; cat $i >> newseqs.fasta; done
```