Python

Important features

Features	Benefit
no compiling or linking	rapid development cycle
no type declarations	simpler, shorter, more flexible
automatic memory management	garbage collection
high-level data types and	
operations	fast development
object-oriented programming	code structuring and reuse, C++
embedding and extending in C	mixed language systems
classes, modules, exceptions	"programming-in-the-large" support
dynamic loading of C modules	simplified extensions, smaller binaries
dynamic reloading of C modules	programs can be modified without stopping

Many languages require you to compile (translate) your program into a form that the machine understands. Python is instead directly interpreted into machine instructions.

Math commands

> Some built-in commands to perform scientific calculations:
>
> > To use many of these commands, you must write the following at the top of your Python program:
> > **from math import***

Command Name	Description
abs(value)	absolute value
ceil(value)	rounds up
cos(value)	cosine, in radians
floor(value)	rounds down
log(value)	logarithm, base e
max(value1, value2)	larger of two values
min(value1, value2)	smaller of two values
round(value)	nearest whole number

Command Name	Description
sqrt(value)	square root

print:

Produces text output on the console.

Example:

```
print ("Hello, world!”)
age = 25
print ("You have", 65 - age, "years until retirement”)
```

input:

Reads a number from user input.

```
age = input("How old are you? ")
print ("Your age is", age)
print ("You have", 65 – int(age), "years until retirement”)
```

output:

```
How old are you? 25
Your age is 25
You have 40 years until retirement
```

range:

> The range functions specifies a range of integers
>
> > range(start, stop) -The integers between start(inclusive) and stop(exclusive)
> > It can also accept a third value specifying the change between values. range(start, stop, step) - the integers between start (inclusive) and stop (exclusive) by step

Example:

```
for x in range(5, 0, -1):
   print (x)
print ("Blastoff!”)
```

Pay attention to the "indent" used in for loop!!!!

for loop:

> The range functions specifies a range of integers
>
> > Syntax:
> > for *variableName* in *groupOfValues:*
> >
> > > We indent the statements to be repeated with tabs or spaces.
> > > *variableName* gives a name to each value, so you can refer to it in the statements.
> > > *groupOfValues* can be a range of integers, specified with *range* function.

Example:

```
for x in range(1, 6):
   print (x, "squared is", x * x)
```

output:

```
1 squared is 1
2 squared is 4
3 squared is 9
4 squared is 16
5 squared is 25
```