Data Types

Name**	Description	Examples
int	**Integer** number -- no decimal points -- can be positive or negative	5 6000 -256
float	**Floating point** number -- real number -- uses decimal points (or exponential notation) -- can be positive or negative	5.0 -65.234 3.14
str	**String** -- character string -- stored as ASCII or Unicode -- uses quotes	”Joe Smith” ’131234567’ ”’ She’s “smart”! ”’ ”””” love quotes! ””””

** Conveniently, these are also the names of the type conversion functions!

Arithmetic Operators

Assume a =10, b =20

Operator	Description	Example
+	Addition - Adds values on either side of the operator	c = a + b c = 10 + 20 = 30
-	Subtraction - Subtracts right hand operand from left hand operand	c = a - b c = 10 – 20 = -10

e.g. pay =2500

tax = 56

net_pay = pay - tax

Arithmetic Operators

Assume
a =10, b = 15

Operator	Description	Example
*	Multiplication - Multiplies values on either side of the operator	c = a * b c = 10 * 15 = 150
/ NEVER divide by zero	Division - Divides left hand operand by right hand operand and gives the result as a floating point number -- result is always floating point	c = b / a c = 15 / 10 = 1.5
**	Exponent - Performs exponential (power) calculation on operators	c = a**b c = 10^{15} =1000000000000000

Program Development Cycle

1. Design the program
    1. read the specifications
    2. understand the problem
    3. decide how to approach the solution
    4. write the sequence of steps to solve the problem -> the *algorithm*
2. Write the code
3. Correct syntax errors
4. Test the program
5. Correct logic errors

Repeat.....

Program Design

Distance travelled calculator

Given the speed of a car in km/hour and the number of hours travelled, calculate the distance travelled.

What is the input? *What is the output?*

Tax calculator

Given a pay rate per hour and the number of hours worked, calculate the pay, the tax withheld, and the net pay. Assume a tax rate of 10%.

What is the input? *What is the output?*