3. Casting, Operators, Sequence

PYTHON COURSE

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What is casting?

1. Casting is <u>conversion</u> between data types.

2. Casting allows the programmer to utilize the advantage of multiple data types for a single variable/purpose.

Metal Casting?

3. Casting also allows variables to be formatted in the correct data types.

Magic Casting?

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Casting in Python is very simple

Casting	Function
Anything to String	str(x)
Anything to Integer	int(x)
Anything to floating number	float(x)
Any sequence to list	list(x)
Any sequence to tuple	tuple(x)

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Code example of casting

```
 2   X=1234 #this is an integer
 3
 4   X_float=float(X)
 5
 6   X_str=str(X)
 7
 8   Y_list=[1,2,3,4,5,1,1,1]# this is a list
 9
10   Y_tuple=tuple(Y_list)
11
12   Y_set=set(Y_list)
```
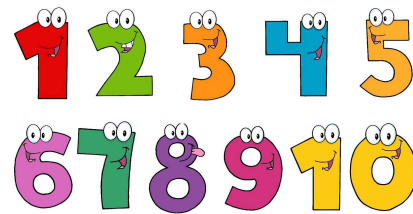
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Challenge 1: Number manipulation

Supposed you are given an input number, X with 10 digits and 4 decimal places.

For example, X=1234567890.1234

Find the 5th digit using python (Note that X can change).

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Arithmetic Operators

You have not learnt

Operator	Add	Minus	Multiply	Divide	Power	Mod	Floor division
Code	+	-	*	/	**	%	//

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Mod (Modolo Operation) and floor division

1. Mod gets the <u>remainder</u> of division.
2. Floor division <u>removes the decimal</u> after division.

```
1    X1=10%2
2    X2=10%3
3    X3=10/3
4    X4=10//3
```
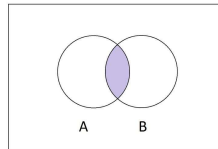
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Comparator operators

1. Comparator returns a Boolean (True or False)

2. Commonly used together with statements as conditions

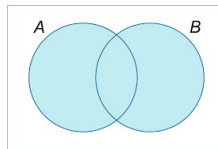| Operator	Equal	Not Equal	Greater than	Lesser than	Greater or equal	Lesser or equal
Code	==	!=	>	<	>=	<=

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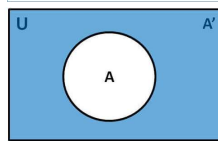## Logical operator

1. and

2. or

3. not

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Challenge 2: Logic and comparator

Given a float input, X.

If the <u>last digit before decimal</u> is between 1 and 6 (include 1 and 6), print "True". However, if the digit is an even number, print "False".

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Membership operator (related to sequence)

1. in

2. not in

```
1  X_list=[1,3,5,7,9]
2
3  X=3
4
5  condition1=X in X_list
6
7  condition2=X not in X_list
```

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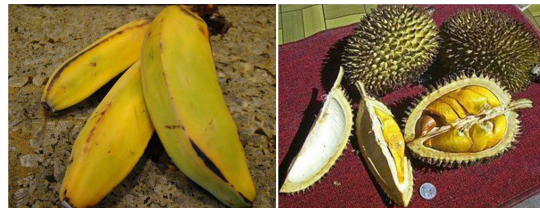## Useful function with sequences

Data type	Function
List	append, clear, copy, count, extend, index, insert, pop, remove, reverse, sort
Tuple	count, index
Set	difference, intersection, issubset, issuperset, pop, remove, union

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Challenge 3: Sequence manipulation

You have a list of fruits: ["orange", "apple", "banan**i**", "pineapple", "pear"]

Correct the misspelt "banani" to "banana", then add "durian" to the list. Arrange the list by alphabetical order and then find the position of "durian" in the list.

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Homework: Complex logic

Student Name	Average Marks	Age
Mark	95	60
Lee	10	15
Rac	32	3
Qi	33	70
Alan	80	13
Dog	60	1
Pikachu	30	0.5

In a professional examination, only the top 80% of student passes. Find the person (student A) who passed with the worst average marks.

Next, if student A is aged between 1 and 15 (including 1 and 5) While the next failing student is older than him, Student A get a "Genius Award".

Did student A get the award? Print "True" if yes.

Hint:
```
d1=dict(zip(name,mark))
d2=dict(zip(age,mark))
name.sort(key=d1.get)
age.sort(key=d2.get)
```

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Conclusion

1. Casting
2. Data type and casting
3. Usefulness of casting and manipulation
4. Arithmetic operator
5. Mod and floor division
6. Comparator operator
7. Logical operator
8. Membership operator
9. Useful function with sequences
10. Sequence manipulation

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