INTRO TO PYTHON PROGRAMMING CHEATSHEET

Hello world

```
print("Hello world!")
```

Using variable

```
msg = "Hello world!"
print(msg)
```

Math opearators in Python

```
x + y          Sum of x and y
x - y          Difference of x and y
-x             Changed sign of x
x * y          Product of x and y
x / y          Quotient of x and y
x // y         Quotient floor division of x and y
x % y          Remainder of x / y
x ** y         x to the power of y
```

Operators precedence

```
1       ()      Parentheses
2       **      Exponent
3       *       Multiplication
4       /       Division
5       +       Addition
6       -       Subtraction
```

Increase the value of a number by 1

```
number = 5
number += 1
```

Compound assignment

```
y += 2          Add then assign value
y -= 2          Subtract then assign value
y *= 2          Multiply then assign value
y /= 2          Divide then assign value
y //= 2         Floor divide then assign value
y **= 2         Increase to the power then assign value
y %= 2          Return remainder then assign value
```

Boolean: True & False

```
a = 6 ; b = 7 ; c = 42

a == 6                          True
a == 7                          False
a == 6 and b == 7               True
a == 7 and b == 7               False
not a == 7 and b == 7           True
a == 7 or b == 7                True
a == 7 or b == 6                False
not (a == 7 and b == 6)         True
not a == 7 and b == 6           False
a == b                          False
```

Boolean 'and' operator

```
True and True          True
True and False         False
False and True         False
False and False        False
```

Boolean 'not' operator

```
not True               False
not False              True
```

Boolean 'or' operator

```
True or True           True
True or False          True
False or True          True
False or False         False
```

String concatenation

```
first_name = "John"
last_name = "Doe"
full_name = first_name + " " + last_name
full_name = f"My full name is {first_name}
{last_name}"
print(full_name)
```

List (mutable)

```
cars = ['honda', 'toyota', 'benz']
```

Get first item in the list

```
first = cars[0]
```

Get second item in the list

```
second = cars[1]
```

Get last item in the list

```
last = cars[-1]
```

Changing an element in the list

```
cars[0] = 'suzuki'
print(cars)
```

Adding item to the end of the list

```
cars = []
cars.append('honda')
cars.append('toyota')
cars.append('benz')
```

Adding item to a specific position of the list

```
cars.insert(3,'lambo')
```

Remove an item based on index position

```
del cars[2]
```

Remove an item based on its value

```
cars.remove('honda')
```

Find the length of the list

```
len(cars)
```

Sort a list permanently

```
random_numbers = [7,2,4,25,3,18]
random_numbers.sort()
```

Sort a list permanently in reverse order

```
random_numbers.sort(reverse = True)
```

Sort a list temporarily

```
print(sorted(random_numbers))
```

Sort a list temporarily in reverse order

```
print(sorted(random_numbers, reverse=True))
```

Reversing the order of the list

```
random_numbers.reverse()
```

Make a list of 1 to 10

```
numbers = list(range(1,11))
```

Create a list of cubic values of 1 to 10

```
cubes = []
for x in range(1,11):
    cubes.append(x**3)
```

List comprehensions

```
cubes = [x**3 for x in rand(1,11)]
```

Slicing a list
```
students = ['sidik', 'sofia', 'ha', 'gabriel']
first_two = students[:2]
last_three = students[1:]
entire_list = students[:]
```

Copying a list
```
students_copy = students
```

Looping through a list
```
for car in cars:
    print(car)
```

Print the numbers 0 to 1000
```
for number in range(1001):
    print(number)
```

Print the numbers 500 to 1000
```
for number in range(500,1001):
    print(number)
```

Find min value of a list
```
ages = [93, 99, 66, 17, 85, 1, 35, 82, 2, 77]
youngest = min(ages)
```

Find max value of a list
```
ages = [93, 99, 66, 17, 85, 1, 35, 82, 2, 77]
oldest = max(ages)
```

Find sum of all values in a list
```
ages = [93, 99, 66, 17, 85, 1, 35, 82, 2, 77]
total_years = sum(ages)
```

Tuples (immutable)
```
dimensions = (1280,800)
```

Looping through a tuple
```
for dimension in dimensions:
    print(dimension)
```

Conditionals operators
```
equals                  x == 18
not equal               x != 18
greater than            x > 18
greater or equal to     x >= 18
less than               x < 18
less than or equal to   x <= 18
```

Check for value in list
```
"sidik" in students          True
"happyfeet" in students      False
```

'if' statements
```
if age >= 18:
    print("Let's go drinking!")
```

'if-elif-else' statements
```
if age < 4:
    price = 0
elif age > 21:
    price = 45
else:
    price = 30
```

Dictionaries
```
profile = {'name': 'long', 'age':21, 'school':'sis'}
```

Accessing dictionaries value using key
```
print(profile['name'])
print(profile['school'])
print('My age is ' + profile['age'])
```

Adding a new key-value pair
```
profile = {'name':'long', 'age':18, 'school':'sis'}
profile['major'] = 'analytics'
print(profile)
```

Adding key-value pair to empty dictionaries
```
profile = {}
profile['name'] = 'long'
profile['age'] = 21
profile['school'] = 'sis'
profile['major'] = 'analytics'
```

Deleting key-value pair
```
del profile['major']
```

Looping through key-value of the dictionaries
```
favourite_numbers ={'long':21,'sidik':19,'sofia':65}

for name, number in favourite_numbers.items():
    print(f"{name}'s favourite number is {number}")
```

Looping through keys of dictionaries
```
for name in favourite_numbers.keys():
    print(name + " is a key")
```

Looping through values of dictionaries
```
for number in favourite_numbers.values():
    print(str(number) + " is a fav number")
```

'while' loop
```
current_value = 1
while current_value <= 5:
    print(current_value)
    current_value += 1
```

Infinite loop
```
while True:
   print("I love programming!")
```

Break out of infinite loop if count > 5
```
count = 0
while True:
    print("I love programming!")
    count += 1
    if count > 5:
        break
```

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