Python Dictionary

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Python Basics

Output

```
print("Hello")
```

Line breaks

```
>>> print("What is green and fluffy?\nA seasick kitten")
What is green and fluffy?
A seasick kitten
```

Combining outputs

```
print("11 divided by 4 =",11//4," remainder:", 11%4)
```

Variables

```
answer = 3/5
print (answer)
```

Inputting strings (text)

```
colour = input("What is your favourite colour? ")
```

Inputting numbers

```
num1 = int(input("Enter a number: "))
```


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Changing the Case of Text

Change to upper case

```
upper = name.upper()
```

Change to lower case

```
lower = name.lower()
```

Change to capitalise the first letter

```
capital = name.capitalize()
```

Change to capitalise each word

```
title = name.title()
```

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Loops (Iteration)

While loop

```
number = 1
while number <5:
    print(number)
    number = number + 1
```

For loop

```
for counter in range(5):
    print("Hello World")
```

For loop with alternative range counter

```
for counter in range(3,20,2):
    print(counter)
```

Comparison Operators

Operator	Description
<	Less than
>	Greater than
<=	Less than or equal to
>=	Greater than or equal to
==	Equal to
!=	Not equal to

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If Statements

Basic if statement

```
num = int(input("Please enter a number: "))

if num > 10:
    print("Too High")
else:
    print ("Thank you")
```

Complex if statement

```
if num > 10:
    print("Too High")
elif num < 0:
    print ("Too Low")
else:
    print("Thank you")
```

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Maths in Python

Addition

```
3+5
```

Subtraction

```
2-1
```

Multiplication

```
10*4
```

Division

```
30/3
```

Whole number division

```
>>> 16//3
5
```

Finding the remainder

```
>>> 16%3
1
```

Using Pi (π)

```
import math

circle = math.pi

print(circle)
```


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Random Library

Importing the random library

```
import random
```

Generate a random whole number

```
number = random.randint(1,100)
```

Generate a random decimal number

```
decimal = random.uniform(1, 10)
```

Generate a random even number

```
even = random.randrange(0, 101, 2)
```

Generate a random choice from string list

```
choice = random.choice(["Chicken", "Sheep", "Cow", "Goat"])
```

Shuffle a list

```
random.shuffle(list)
```

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Time Library

Import the time library

```
import time
```

Show current time (unformatted)

```
starttime = time.time()
```

Show current time (formatted)

```
now = time.strftime("%H:%M")
```

Show current date (formatted)

```
date = time.strftime("%d/%m/%y")
```

Creating a pause in the running of the program

```
time.sleep(1)
```

Calculating with time

```
diff = endtime-starttime
```


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Calendar Library

Import the calendar library

```
import calendar
```

Print the calendar for the whole year

```
calendar.prcal(2014)
```

Print the calendar for a single month

```
calendar.prmonth(2015,6)
```

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Functions

Creating a basic function

```
def count(number):
    n = 1
    while n <= number:
        print (n)
        n = n + 1
```

Running a function with an argument

```
>>> count(10)
```

Running a function without an argument

```
>>> hello()
```

Linking functions together

```
def get_firstname():
    firstname = input("Please enter your first name: ")
    return firstname

def get_surname():
    surname = input("Please enter your surname: ")
    return surname

if __name__=="__main__":
    firstname = get_firstname()
    surname = get_surname()
    print("Hello", firstname, surname)
```


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Lists

Creating a list

```
fruit = ["Apple","Banana","Strawberry"]
```

Display the whole list

```
print(fruit)
```

Display a single item from the list

```
print(fruit[2])
```

Adding to the end of the list

```
fruit.append(newFruit)
```

Remove an item from a list

```
fruit.remove("Banana")
```

Inserting an item into a list

```
fruit.insert(1, AnotherFruit)
```

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Reading and Writing to a Text File

Appending data to the end of a text file

```
fo = open("Python Test.txt", "a+")
fo.write("Python is a great language.\n")
fo.close()
```

Writing several lines to a text file

```
fo = open("Python Test.txt", "a+")

again = "Y"

while again == "Y":
    name=input("Please type in a name: ")
    fo.write(name+"\n")
    again=input("Do you want to enter another name (Y/N)? ")
    again=again.upper()

fo.close()
```

Displaying data (on screen) from a text file

```
fo = open("Python Test.txt", "r")

script= fo.read()

print(script)

fo.close()
```


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Reading and Writing Data to a .csv File

Importing the .csv library

```
import csv
```

Reading from a .csv file

```
myfile  = open("students.csv", "rb")
reader = csv.reader(myfile)
for row in myfile:
    print(row)

myfile.close()
```

Writing to a .csv file

```
myfile  = open("students.csv", "a+")

student_num = input("Enter the student number: ")
name = input("Enter student's name: ")
tutor_group = input("Enter the tutor group: ")
gender = input("Enter M or F: ")

new_record =student_num+","+name+","+tutor_group+","+gender

myfile.write(str(new_record))
myfile.write("\n")

myfile.close()
```

Searching for data in a .csv file

```
myfile  = open("students.csv", "rb")

search_data = input("Please enter the data you are looking for: ")

reader=csv.reader(myfile)

for row in myfile:
   if search_data in str(row):
        print(row)
```

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