Recap: Python Basics

Recalling Python Basics

Variables, Data Types and Operators

Loops

Decisions (if - elif - else)

Functions

Data Structures

Python libraries for Data Science

Analytics Vidhya

Recalling Python Basics

Variables, Data Types and Operators

Loops

Decisions (if - elif - else)

Functions

Data Structures

Python libraries for Data Science

Analytics Vidhya

Variables

Ramesh	-1M
Suresh	-1.5M
Krishna	-0.9M
Rahul	-1.6M
Swati	-1.8M
Sam	-2M

What are Variables?

Variables naming rules in Python

- **Python is case-sensitive**

`A=5` is different from `a=5`

Variables naming rules in Python

- **Python is case-sensitive**

`A=5` is different from `a=5`

- **Variable name cannot start with special character except underscore (_)**

`_sam=5` is valid

`@sam=5` is invalid

Variables naming rules in Python

- **Python is case-sensitive**

`A=5` is different from `a=5`

- **Variable name cannot start with special character except underscore (_)**

`_sam=5` is valid

`@sam=5` is invalid

- **Variable name cannot start with a number**

`9sam =5` is invalid `sa9m =5` is valid

Data types in Python

int – Integer numbers,
Eg:- 4, -5 etc.

bool – Boolean values,
Eg:- True and False

float – Decimal numbers,
Eg:- 4.5, -6.7 etc.

str – Strings,
Eg:- “Python”

Python Operators

Arithmetic Operators

- Addition +
- Subtraction –
- Multiplication *
- Division /
- Modulo %
- Floor division //
- Exponent **

Comparison Operators

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

Logical Operators

- and
- or
- not

Analytics Vidhya

Recalling Python Basics

Variables, Data Types and Operators

Loops

Decisions (if - elif - else)

Functions

Data Structures

Python libraries for Data Science

Analytics Vidhya

Loops

For Loop

While Loop

Analytics Vidhya

For Loops

- **The ‘for’ loop in python**

‘When number of iterations are known’

Pseudo-Code:

print “Python is awesome” (repeat 1000 times)

Code:

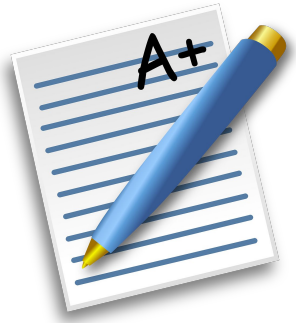
```
for i in range(1000):
    print(“Python is awesome”)
```

“TAB””indentation”

While Loops

While loop in Python

- Secure at least an **A grade** in Math to pass.
- When do you stop?
- Keep trying until you succeed!



‘When number of iterations are unknown’

comparison (“stopping criteria”)

Code:

```
while grade != ‘A’:
    # Keep repeating until
    # comparison gives a
False
```

Recalling Python Basics

Variables, Data Types and Operators

Loops

Decisions (if - elif - else)

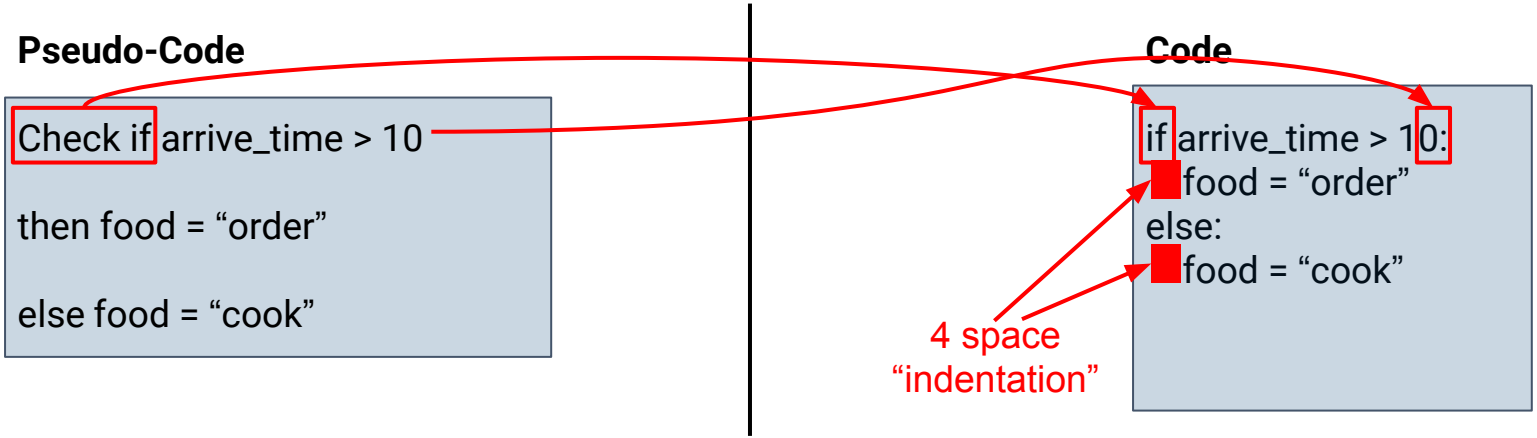
Functions

Data Structures

Python libraries for Data Science

Analytics Vidhya

Conditional Statements



Recalling Python Basics

Variables, Data Types and Operators

Loops

Decisions (if - elif - else)

Functions

Data Structures

Python libraries for Data Science

Analytics Vidhya

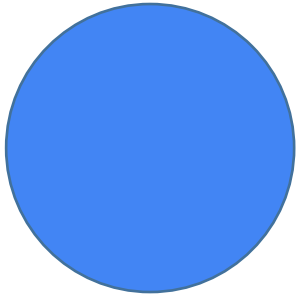
Functions

Radius = 1 cm

Pseudo-Code:

Area of Circle:
- Task 1. Take radius 1
- Task 2. Calculate 1*1
- Task 3. Multiply 3.14 by 1*1

Multiple Circles of different Radius!!?



Radius = 3 cm

Pseudo-Code:

Area of Circle:
- Task 1. Take radius 3
- Task 2. Calculate 3*3
- Task 3. Multiply 3.14 by 3*3

What are Functions?

What are functions?

- Reusable piece of code
- Created for solving specific problem

Code:

```
def area_circle(r):
    area = 3.14 * r * r
    return area
```

Function: Syntax

Code:

```
def area_circle(r):
    area = 3.14 * r * r
    return area
```

Pseudo-Code:

```
Area of Circle:
    Task 1. Take radius r
    Task 2. Calculate r*r
    Task 3. Multiply 3.14 by r*r
    Task 4. You get the area
```

Function: Syntax

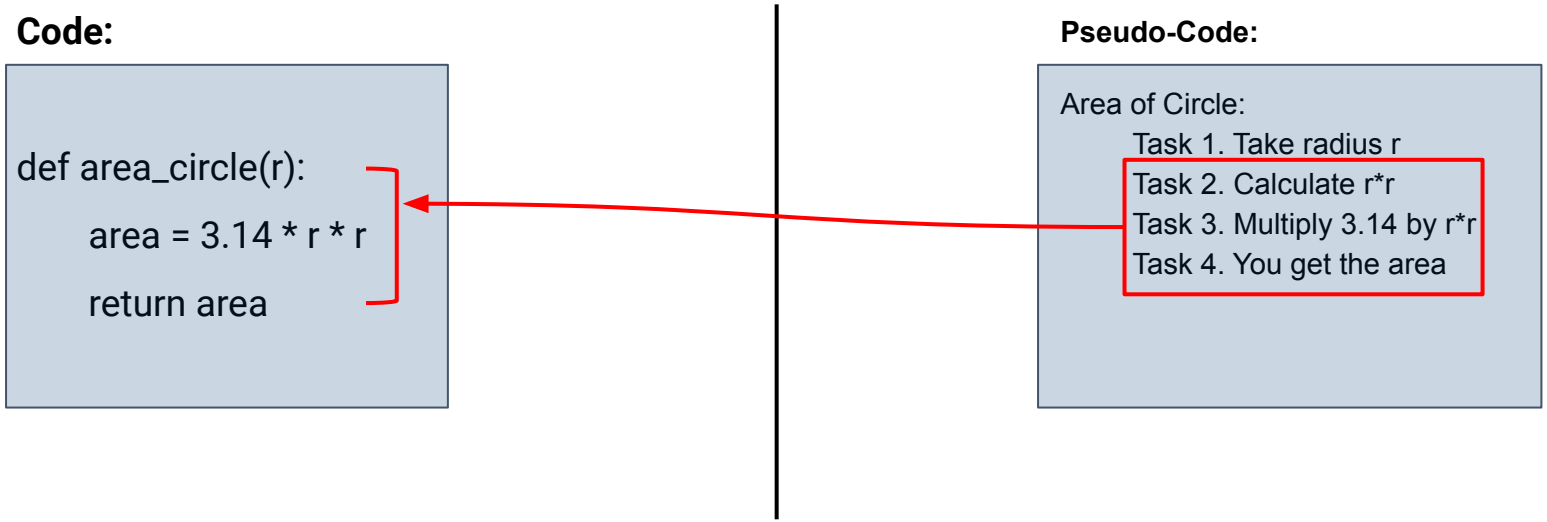
Code:

```
def area_circle(r):
    area = 3.14 * r * r
    return area
```

Pseudo-Code:

Area of Circle:
- Task 1. Take radius r
- Task 2. Calculate r*r
- Task 3. Multiply 3.14 by r*r
- Task 4. You get the area

Function: Syntax



Recalling Python Basics

Variables, Data Types and Operators

Loops

Decisions (if - elif - else)

Functions

Data Structures

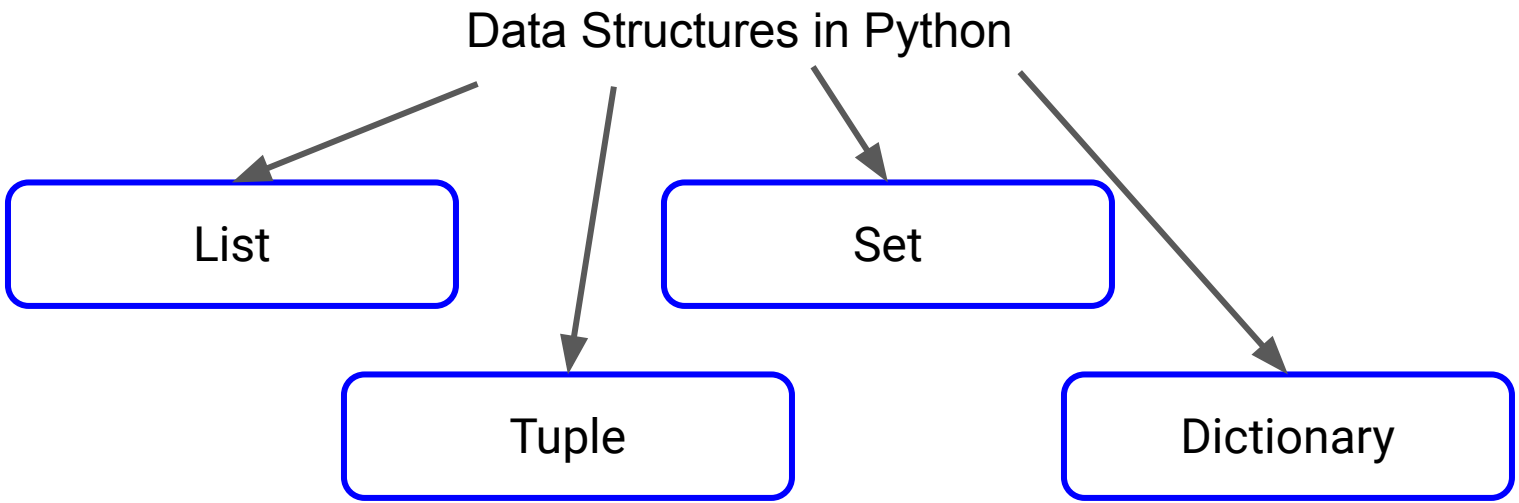
Python libraries for Data Science

Analytics Vidhya

What is a Data Structure?

- Efficient storage for large data
- Manipulations/Operations on data
- Underlying Relationships of data

Different Data Structures in Python



Recalling Python Basics

Variables, Data Types and Operators

Loops

Decisions (if - elif - else)

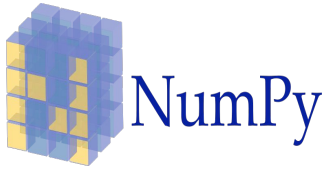
Functions

Data Structures

Python libraries for Data Science

Analytics Vidhya

Python Libraries for Data Science



Thank You

Recap: Python for Data Science

Analytics Vidhya

Recap: Python for Data Science

Python libraries for Data Science

Numpy, Scipy, Pandas etc.

Visualizing Trends and Pattern in Data

Matplotlib, Seaborn etc.

Reading data files

CSV, Excel, JSON etc.

Subsetting, Modifying data

Position, Label, Value, loc, iloc etc.

Preprocessing, Aggregating data

Sorting, Groupby, Time series etc.

Visualizing Trends and Pattern in Data

seaborn

Analytics Vidhya
Learn everything about analytics

What is a List?

A list is an **ordered** data structure with elements separated by comma and enclosed within square brackets.

Some examples of List -

```
list1=[2,3,4,5,6]
```

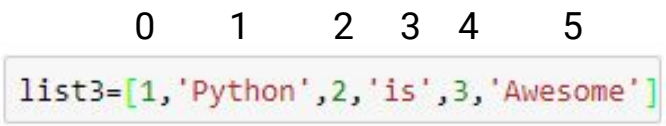
```
list2=['Python','is','Awesome']
```

Single Data type

```
list3=[1,'Python',2,'is',3,'Awesome']
```

Mixed Data type

Extracting values from a List



To extract a single element

```
list3[1]
```

```
'Python'
```

start index

To extract a sequence of elements

```
list3[1:4]
```

end index

```
['Python', 2, 'is']
```

For Loops

- **The ‘for’ loop in python**

Pseudo-Code:

print “Python is awesome” (repeat 1000 times)

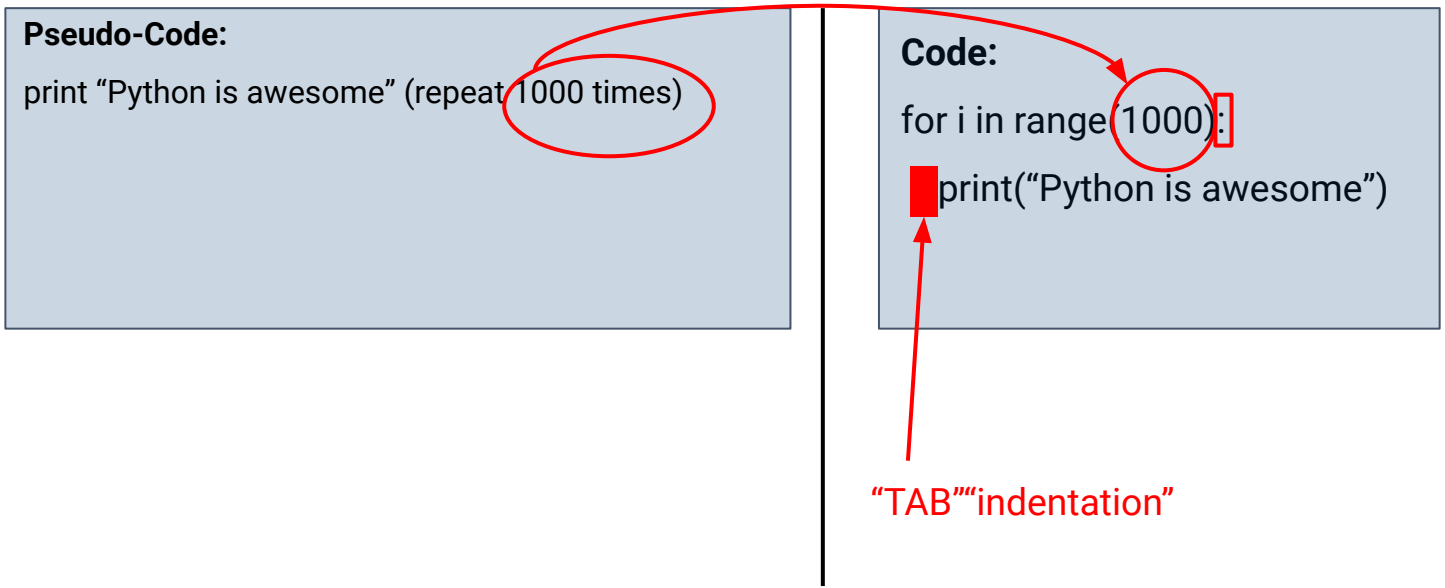
Code:

```
for i in range(1000):
    print(“Python is awesome”)
```

Analytics Vidhya

For Loops

- **The ‘for’ loop in python**

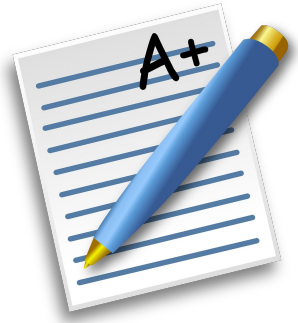


Analytics Vidhya

While Loops

While loop in Python

- Secure at least an **A grade** in Math to pass.
- When do you stop?
- Keep trying until you succeed!



comparison (“stopping criteria”)

Code:

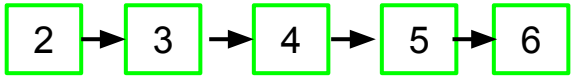
```
while grade != ‘A’:
    # Keep repeating until
    # comparison gives a
False
```

What is a List?

A list is an **ordered** data structure with elements separated by comma and enclosed within square brackets.

What is a List?

A list is an **ordered** data structure with elements separated by comma and enclosed within square brackets.

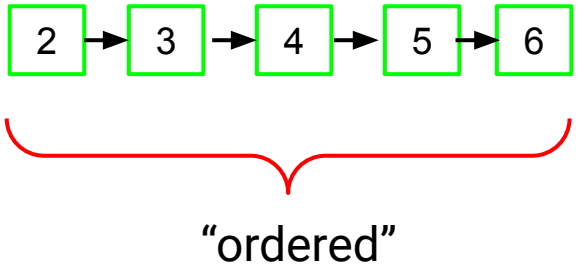



```
list1=[2,3,4,5,6]
```

What is a List?

A list is an **ordered** data structure with elements separated by comma and enclosed within square brackets.

```
list1=[2,3,4,5,6]
```



What is a Dictionary?

- A dictionary is an **unordered** data structure.
- Elements are separated by a comma and stored as key : value pair.
- A dictionary is enclosed within curly brackets.

Some examples of Dictionary -

```
dict1={'Ramesh': 150, 'Suresh': 146, 'Sudesh': 160}
```

← key : value, where value is a number

```
dict2={'Ramesh':[150,46],'Suresh':[146,58],'Sudesh':[160,50]}
```

← key : value, where value is a List

Accessing elements of a Dictionary

Elements are accessed by **keys** rather than index.

```
dict2={'Ramesh':[150,46],'Suresh':[146,58],'Sudesh':[160,50]}
```

Dictionary accessed by index →

```
dict2[1]
```

```
---------------------------------------------------------------------
-------------
KeyError                                  Traceback (most rece
nt call last)
<ipython-input-6-dcfc8a4cd039> in <module>()
----> 1 dict2[1]

KeyError: 1
```

Accessing elements of a Dictionary

Elements are accessed by keys rather than index.

```
dict2={'Ramesh':[150,46],'Suresh':[146,58],'Sudesh':[160,50]}
```

Dictionary accessed by key →

```
dict2['Suresh']
```

```
[146, 58]
```