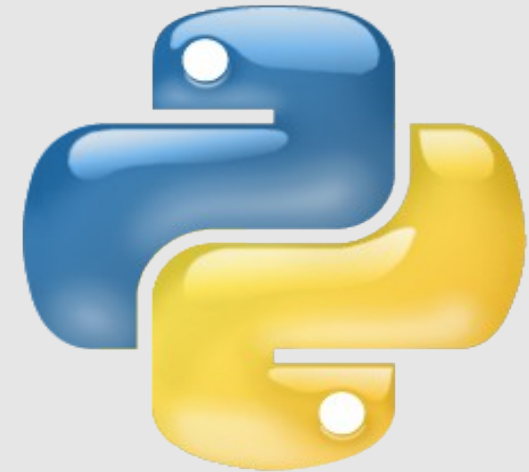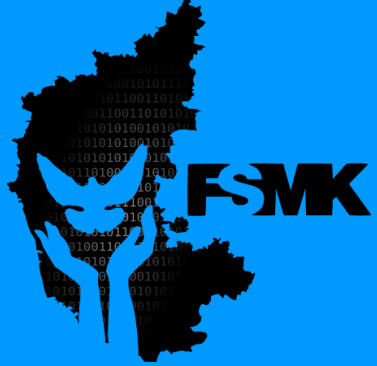# Introduction to Python

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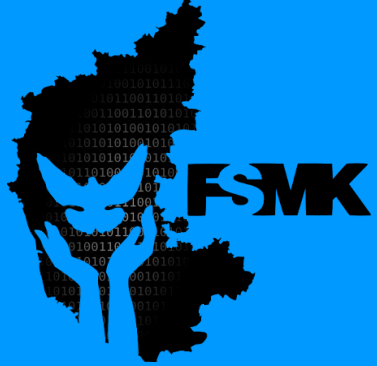
Introduction to Python

Agenda

➜Introduction to Python

➜Interactive Shells

➜Hello World

➜Variables & Types

➜Conditions

➜Loops
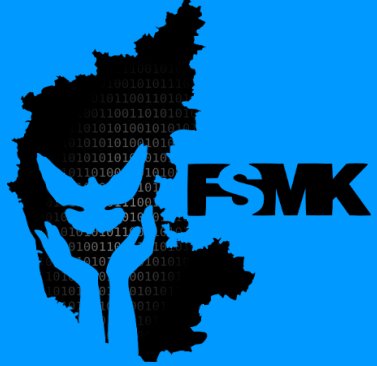
➜Functions

➜Lists & Dictionaries

➜pydev setup in eclipse

Introduction to Python

- Powerful High level Programming language

- Develop Web Applications, Games(http://pygame.org/), Web Frameworks, UI Frameworks, Scientific Applications, Search Engine, Automate Scripting

- Created by Guido van Rossum in 1991

- Named after the television show Monty Python's Flying Circus
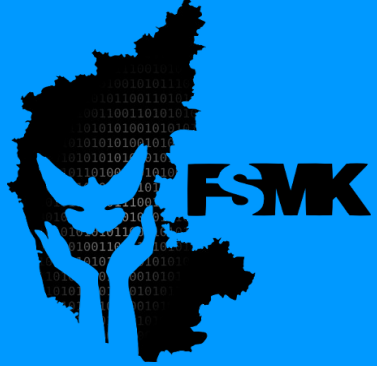
- Use as Scripting Language

Interactive Shell

- Interpreter for scripts that can run from the command line.

- Useful for debugging, quick hacking, and testing.

- Evaluate arbitrary Python expressions, including any basic arithmetic expression.

- Can use python as Calculator

Hello World

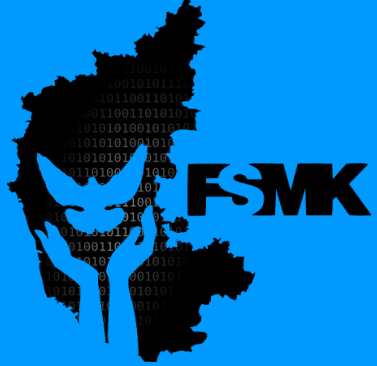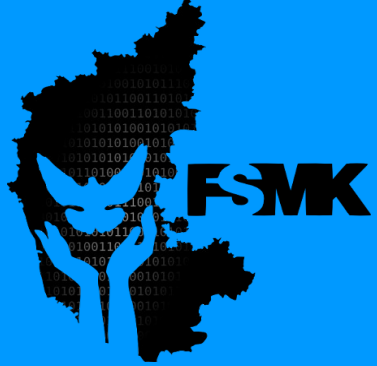>>> print "Hello World"

Output
Hello World

Variables & Types

- Its statically typed language.

- No need to declare type, Every variable is object.

Types
- Numbers
- Boolean
- Strings

Numbers

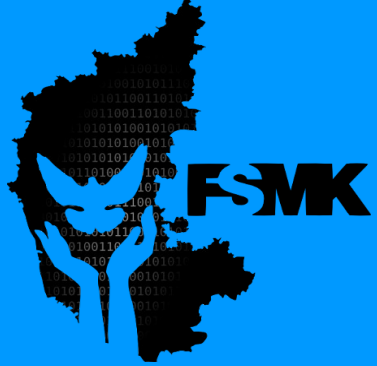- Supports 2 types of nos

- Integer & float

Example

```
firstNo = 7
weight=17.2
weight=float(17) => 17.0
```
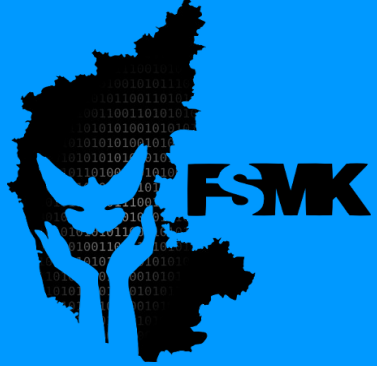
Boolean

- Stores True/False.

Example
a = True
b = False

Introduction to Python

Strings

- Collection of Characters.

- Given within single/quotes.

-   Easy to include apostrophes within the string when use double quotes otherwise need to use Escape Characters.

Example
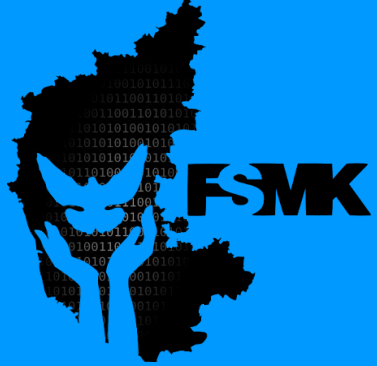strSession='Python Session by FSMK'
strSession="Python Session by FSMK"

String Methods

- len()
- lower()
- upper()
- Str()

Operators

- Arithmetic Operator
- Comparators
- Boolean Operator
- 'in' Operator
- 'is' Operator

Conditional Statement
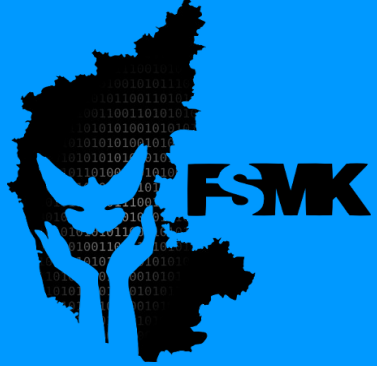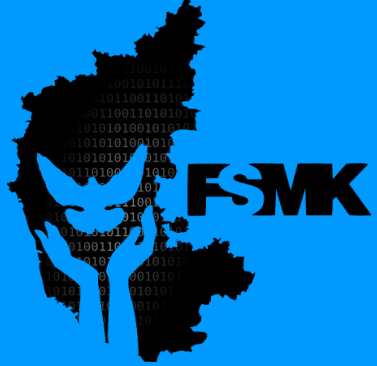
- if
- if/else
- if/elif/else

Lists

- Similar to Array.
- Used to store a collection of different pieces of information as a sequence under a single variable name.
- Contain any Type of Variable.
- Contain as many variables as user wish
- Lists are "mutable"

Syntax
list_name = [1, 2]

Display List Items

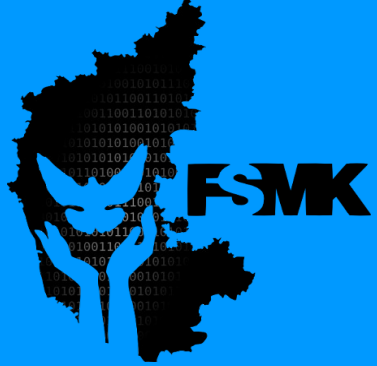| Display all items	Access list item using index
>>> print list_name Output [1, 2]	>>> print list_name[1] Output 2

Find List Length

>>> print "Total no of items in the list "+str(len(list_name))

Output
Total no of items in the list 2

Add Item into List

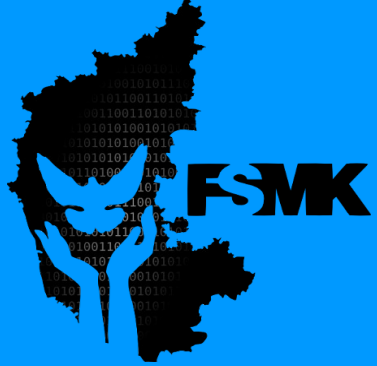| append	insert
By default inserts the item in the last index Syntax list_name.append(item)	→ The given item can be inserted in the given index → Item next to the given index will be pushed to next index Syntax list_name.insert(index,item)

Remove an item

- Use remove to delete given item from list.

Syntax
list_name.remove(item)

Slice

- Alows user to access a portion of list.
  Syntax
  newList=myList[start:end]

  Example
nos = [1, 2, 3, 4, 5, 6]
first = nos[0:2] #First two items
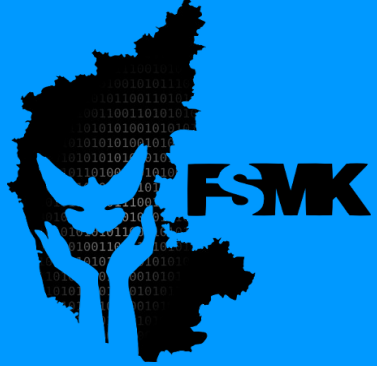second = nos[2:4] #Third and fourth items
print first
Output
[1, 2]
[3, 4]

Dictionary

- Similar to list but access values by using key.
- Key can be string or number.
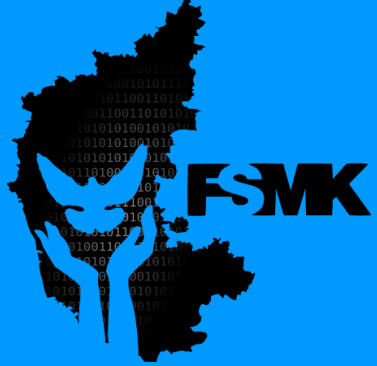- Dictionaries are "mutable" can change after its created.

Syntax
myDict={'key1' : 1, 'key2' : 2, 'key3' : 3}

key1 points to the value 1
key2 points to the value 2

Example
glugs={'GEC': 'GEC Hassan', 'BMSIT': 'BMSIT', 'Toggle': 'Oxford', 'mandya': 'PESCE', 'plugin': 'PESIT'}

Add a New Key-Value Pair

- Since dictionary is mutable we can add new pair after its created.
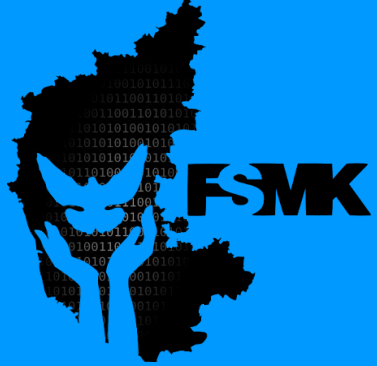- Need to mention both Key and Value.

Syntax

dict_name[key_name]=new_value.

Delete an Key-Value Pair

- Use command del to delete a key-value pair using key
Syntax
del dict_name[key_name]

Length of a Dictionary

- Use len to find no of key-value pair.
  Syntax
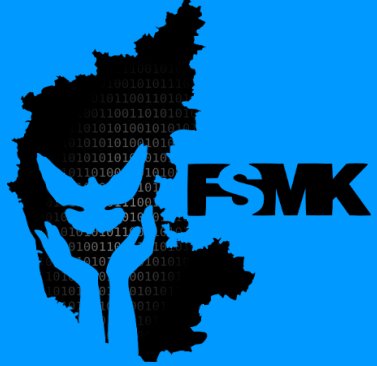 len(dict)

  Example
  >>> print "No of GLUGs associated with FSMK "+str(len(glugs))
  Output
No of GLUGs associated with FSMK 5
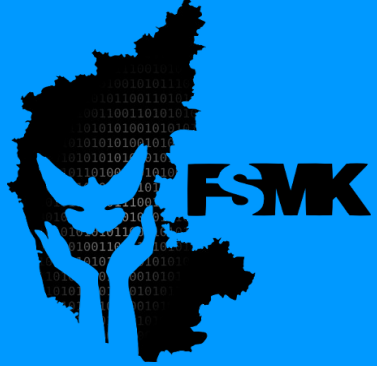
Loops

- while
- while/else
- for
- for/else

While loop

- Loop will continue to execute as long as the condition is true
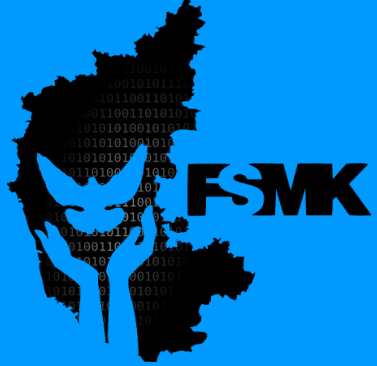
Syntax
initial
while condition:
    statement
    increment

While/else

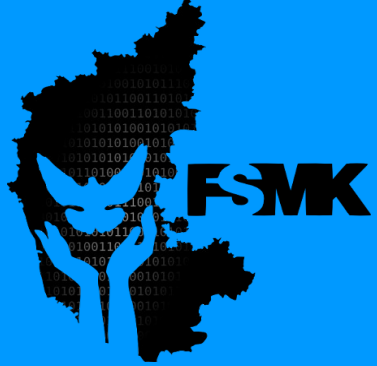- Similar to if/else.
- Else block will execute anytime the loop

```
  Syntax
while Condition:
   Statements
else:
   Else Statement
```
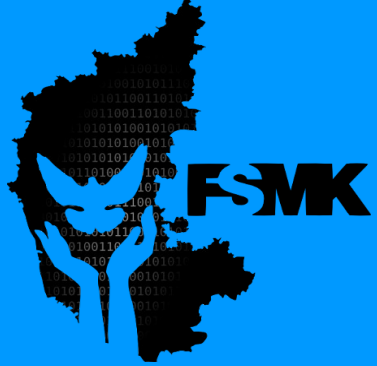
for loop

- Similar to for loop in other language.
- Used to add values into list
- String can be iterated

Syntax
for item in list/dictionary/range:
    Statements

Example
for i in range(10):
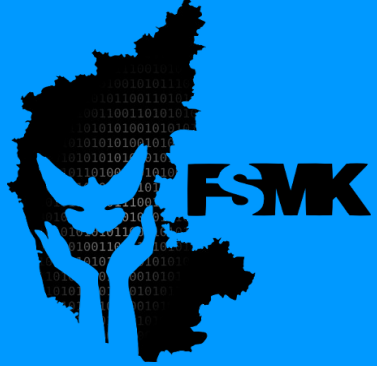   print i

Iterate String

```
thing = "spam!"
for c in thing:
    print c
```

Iterate List

```
numbers  = [1, 2, 3, 4, 5]
for num in numbers:
    print num ,
```

Iterate Dictionary

```
d = {'x': 9, 'y': 10, 'z': 20}
for key in d:
    print key+" =>",
    print d[key]
```

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