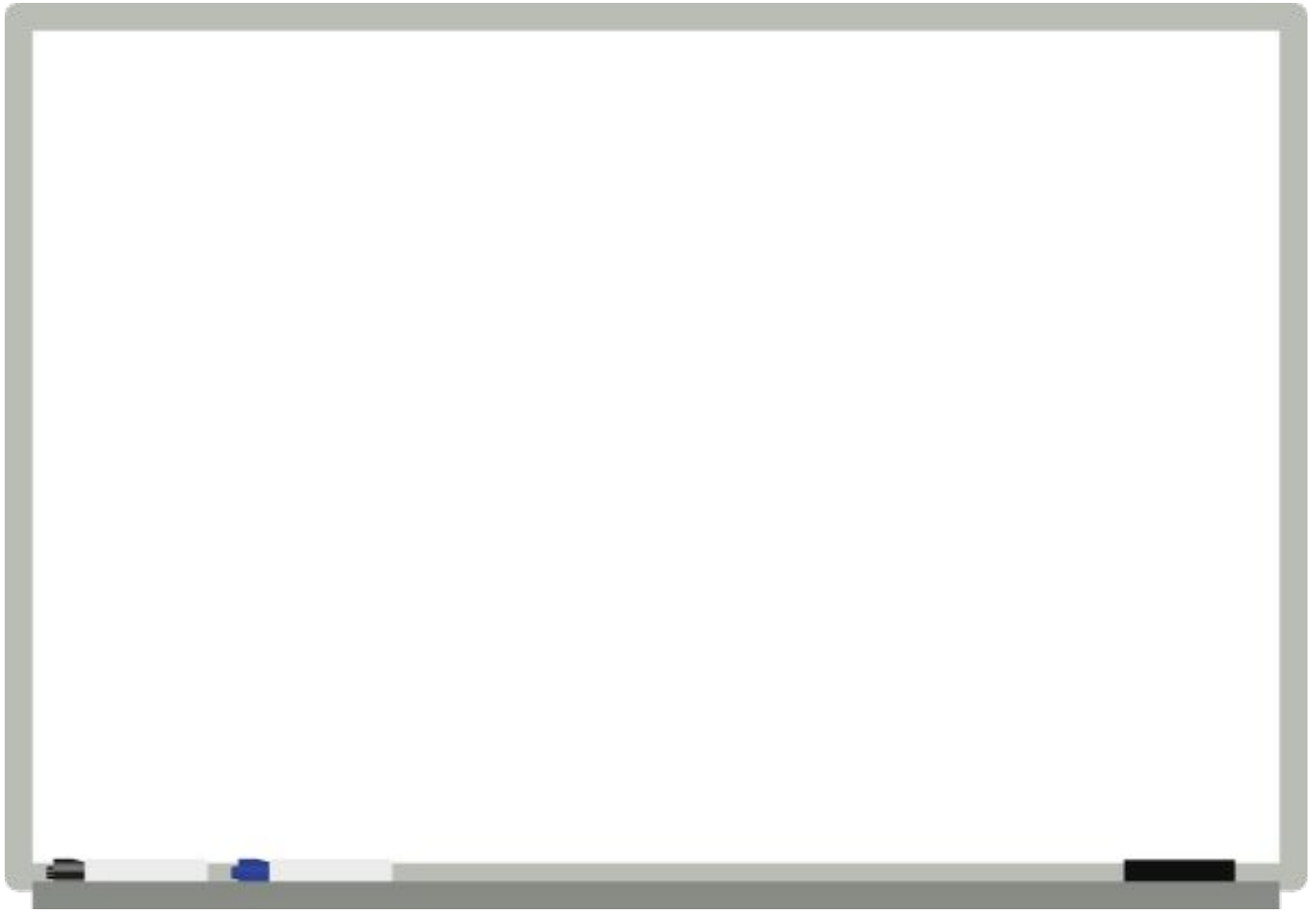
Python Basics

Marehan Waly



Topics

- What is Python
- Who uses Python
- “Hello World”
- Keywords
- Comments
- Variables
- Operators
- Boolean Expressions
- If/Else Statements
- Understanding code

What is Python

- A programming language that is:
  - ➢ Multi-purpose (GUI, Scripting, Web, etc.)
  - ➢ High level
  - ➢ Interpreted
  - ➢ Object Oriented
  - ➢ Focused on readability and productivity

Who Uses Python

- Google
- PBS
- NASA
- Library of Congress
- Battlefield 2
- Walt Disney Feature Animation
- NWS
- AlphaGene, Inc.

Resources for Beginners

- https://www.codecademy.com/learn/python
  - Recommended you go through lessons 1 - 8 if you are a beginner

"Hello, World"

- C

```
#include <stdio.h>

int main(int argc, char ** argv)
{
   printf("Hello, World!\n");
}
```

- Java

```
public class Hello
{
   public static void main(String argv[])
   {
      System.out.println("Hello, World!");
   }
}
```

- now in Python

```
print "Hello, World!"
```


https://www.quora.com/Between-Java-and-Python-which-one-is-better-to-learn-first-and-why

Keywords

```
False      elif       lambda
None       else       nonlocal
True       except     not
and        finally    or
as         for        pass
assert     from       raise
break      global     return
class      if         try
continue   import     while
def        in         with
del        is         yield
```

https://www.programiz.com/python-programming/keyword-list

Comments

```
# This is a traditional one line comment

"This is also a single line comment"

"""
Python is fun and easy. Python is used everywhere. This is an
example of a multi-line comment.
"""
```

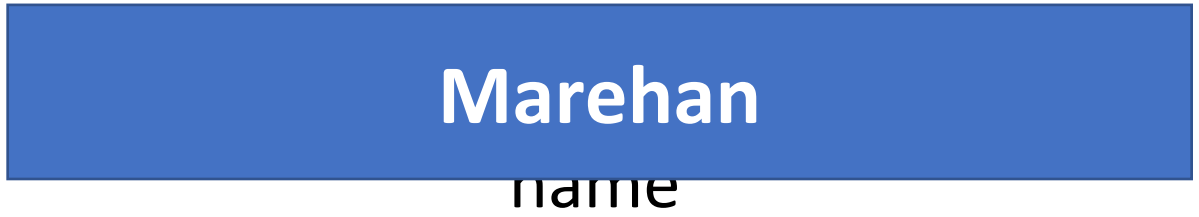
Variables

- String
- Numbers
- Boolean

Strings

- #This is a string

name = “Marehan”



- #This can be a string also

address = ‘San Diego, CA’

- #Strings can be more than a line in length

club = ’’’Welcome to the San Diego Mesa College Honors Club. Our club is dedicated to providing the best workshops. ’’’

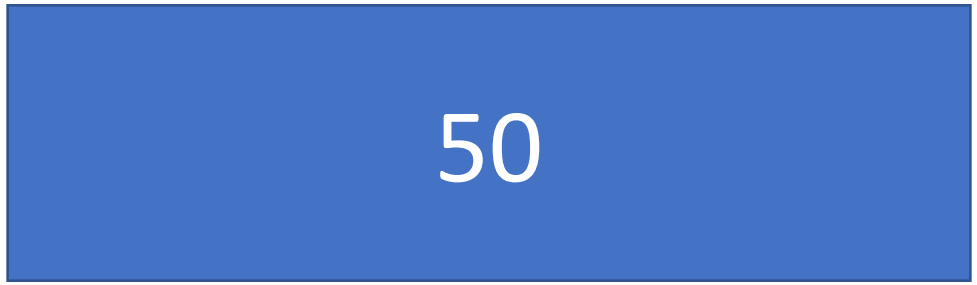
Numbers

- #Integer

members = 50

- #Float

pi = 3.1459265



Indentation Matters

- A block of code in Python is defined by indentation!

```
im_a_parent:
    im_a_child:
        im_a_grand_child
    im_another_child:
        im_another_grand_child
```

Exercise

```
a = 10

c = a + 5

a = c

print a
```

Booleans

```
# A boolean is either True or False
happy = True

# Anything in Python can be cast to boolean
python = bool (“any object”)
```

Operators

Parenthesis	**( )**
Addition	**+**
Subtraction	**-**
Multiplication	*****
Division	**/**
Modulus	**%**
Exponent	******

Boolean Expressions

Equality test	==
or	or
and	and
not	not
Less than	<
Greater than	>
Less than or equal to	<= Math operator then =
Greater than	>=

Truth Tables – *and*

0	0	False
0	1	False
1	0	False
1	1	True

Truth Tables – *or*

0	0	False
0	1	True
1	0	True
1	1	True

Conditional Statements

Basic Format:

```
if expression1:
    statement(s)
elif expression2:
    statement(s)
else:
    statement(s)
```

again, indentation matters!

Understanding Code

```
number = 100
if (number !=99):
    print(“This number is not 100”)
else:
    print(“The value of number is 100!”)
```

Understanding Code

```
variable1 = 33

variable2 = 34


if variable2<variable1:
  print(“Blue”)

elif (variable1 + variable2)<variable1:
  print(“Green”)

else:
  print(“Yellow”)
```

Understanding Code

```
ageOne = 5
ageTwo = 15
if ageTwo == ageOne:
    print("They are the same age!")
else:
    print("One person is:"+ str(ageOne))
print("Another person is age:"+ str(ageTwo))
```

Understanding Code

```
varA = 2
varB = 0
if varA>6:
    varA = varA + 1
    print (varA)
elif varA<= 6 and varB<5:
    varB = varB + 1
    varA = 7
    print (varA)
    print (varB)
else:
    print("Last statement")
```