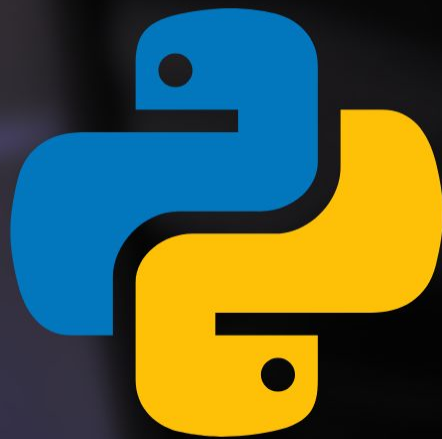


BEGINNER'S COURSE ON

PYTHON

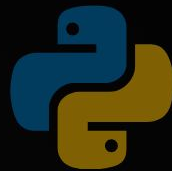
VIRTUAL SESSION (JUNE 20- JUNE 24)





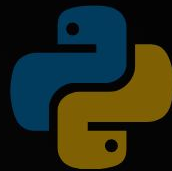
All resources in one place (Slides, Videos, Books, Scripts etc)
<https://github.com/akifislam/Beginners-Course-on-Python>

Akif Islam



Day 1

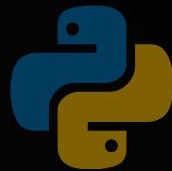
Presented on June 20, 2021



Akif Islam

Email : iamakifislam@gmail.com

facebook.com/AkifIslamOfficial



Ground Rules

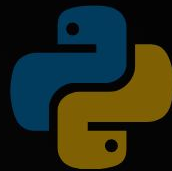
- Don't just watch, try yourself too 😊
- Don't let me sleep ! 😞
- Don't worry about **slides** and **recordings** 😇
- Make your **PYTHON** ready ! 😎



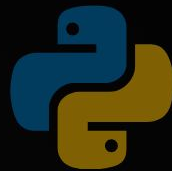
Choose your level of experience in Programming / Python :

(Write on chatbox)

- A. Didn't ever write a single line of code in Python
- B. Know a little bit about Python
- C. Good at Python
- D. Experienced in Python



Why
do
you
want to learn
programming?



**Why
we
have
chosen
Python
over C++ or Java?**



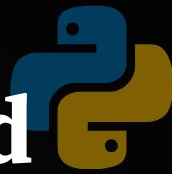
- **Simple programming syntax,**
- **Code readability**
- **English-like commands etc.**



Top advantages of Python

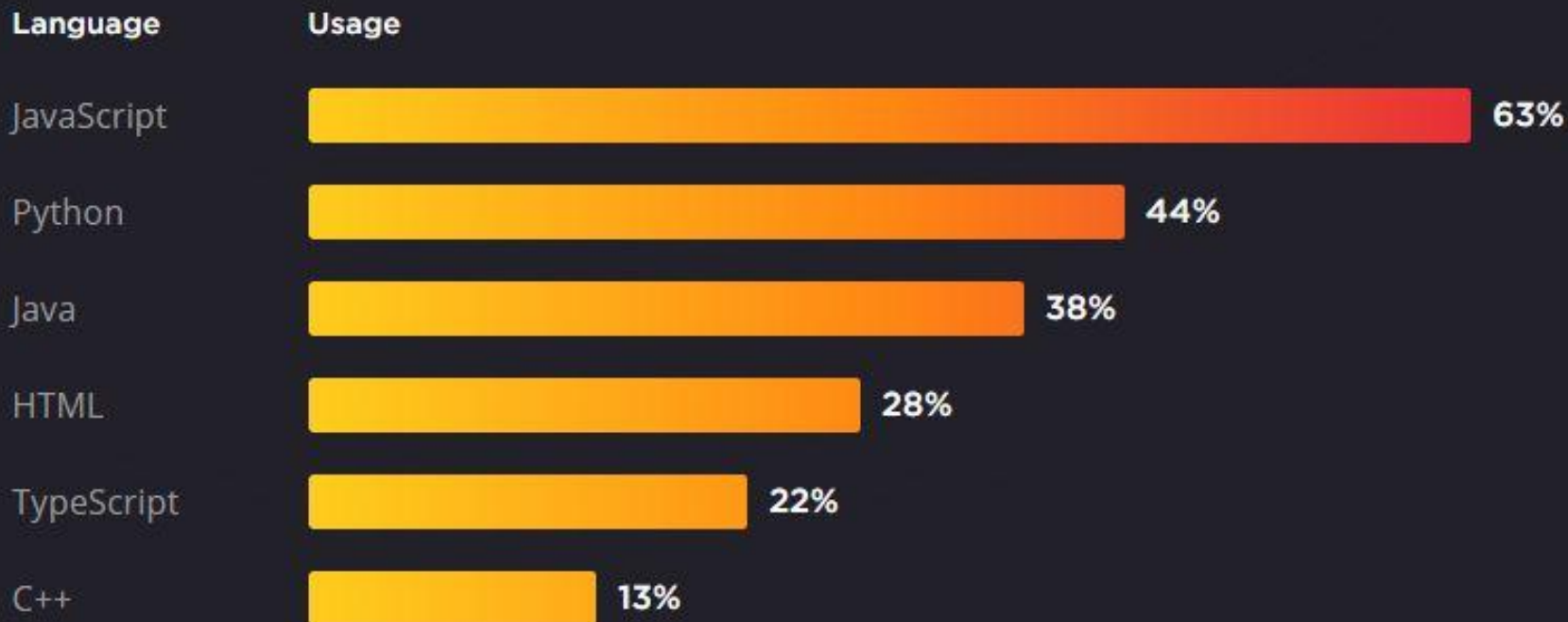
- **Large community**
 - Open-source
- **Robust and extensive library**
- **support availability**
 - User-friendly data structure
 - Supports Object-oriented programing paradigm

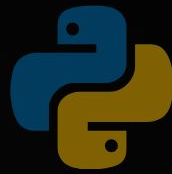
Many global brands around the world use python for backend development.



- Instagram
- Netflix
- Facebook
- Reddit
- Google
- etc

Most Commonly Used Programming Languages by Software Engineers





**Why
Python
is called
programming
'language' ?**



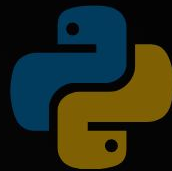
What is the difference between natural language and programming language?

- Natural languages are used for communication between people
- programming languages enable human to interact with machines.

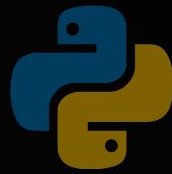
Programming languages need a high degree of expertise, completeness and precision because computer can not think outside the statement while in speaking, some minor errors are ignored.



Is
it important
to know a lot of
MATH
for programming?



Let's **TALK** With computers

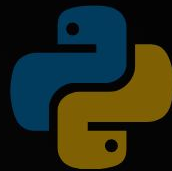


Let's get ready!

- Install Python
- Install **PyCharm**

Video Tutorial :

<https://youtu.be/j-IHogyAaK0>



How to write
“Hello World”
in different languages?

Binary Code



01001000 01100101 01101100 01101100 01101111
00100000 01010111 01101111 01110010 01101100
01100100 00100000 00100001

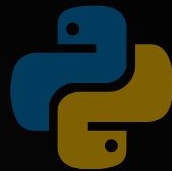
* This is the binary representation of "Hello World"

Java



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

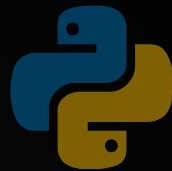

C++



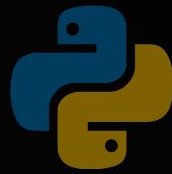
```
#include <iostream>
```

```
int main() {  
    std::cout << "Hello World!";  
    return 0;  
}
```

Python



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



Variables

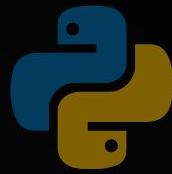
We use variables to *temporarily store data in computer's memory.*

```
price = 10
```

```
rating = 4.9
```

```
course_name = 'Beginner's Course on Python'
```

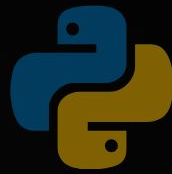
```
is_published = True
```



Variables

In the previous example,

- price is an **integer**
(a whole number without a decimal point)
- rating is a **float**
(a number with a decimal point)
- course_name is a **string**
(a sequence of characters)
- is_published is a **boolean**
(Boolean values can be True or False)



Class Task

Suppose,

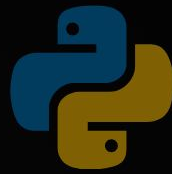
```
a = 50 ;
```

```
b = 150;
```

Now print the sum of this two number.

Output :

The addition of 50 and 150 is 200



Receiving Inputs

We can receive input from the user by calling the `input()` function.

```
birth_year = int(input('Birth year: '))
```

The `input()` function always returns data as a string. So, we're converting the result into an integer by calling the built-in `int()` function.



Strings

We can use formatted strings to dynamically insert values into our strings:

```
name = 'Akif Islam'
```

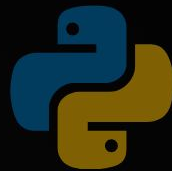
```
print( f"Hi, my name is {name}")
```

#Output : Hi, my name is Akif Islam



Home Work (Day 1)

1. Write a program that will print -
Elon Musk said - "Don't confuse schooling with education. I didn't go to Harvard but the people that work for me did."
2. Write a program that will take 2 integer input and output their sum.
Input : 2 9 Output : 11
Input : 5 21 Output : 26



Day 2

Presented on June 21, 2021

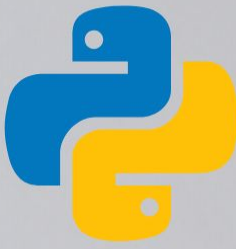
Important Links :

Online MakerSpace (Facebook Group)

Day 1 Lecture (Recorded)

Day 1 Slides

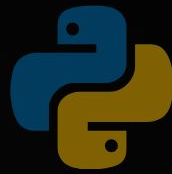
Arduino Community Bangladesh (Facebook Group)



I'm
The
"Cat"
(String)



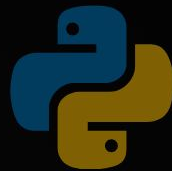
Akif Islam



Akif Islam

Email : iamakifislam@gmail.com

facebook.com/AkifIslamOfficial



Quick Recap



1. Printing Hello World
print("Hello World")



2. How Python code executed?

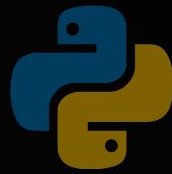
```
print('A')
```

```
print('B')
```

```
print('C')
```

Output : A B C

Top to Bottom

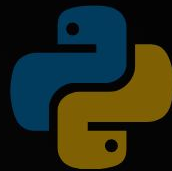


3. Print the value of a variable

Formatted String

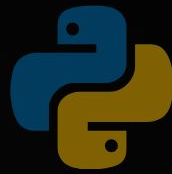
```
myname = "Akif"
```

```
print(f"Your name is {myname}")
```



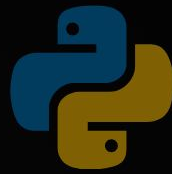
4. Pycharm and Terminal are same !

```
akifislam — python3 — python3 — Python — 80x24
Last login: Sun Jun 20 19:53:43 on ttys000
➔ ~ python3
Python 3.9.1 (default, Jan  6 2021, 06:04:49)
[Clang 12.0.0 (clang-1200.0.32.28)] on darwin
Type "help", "copyright", "credits" or "license" for more information.
[>>> myname = "Akif"
[>>> print(f"Your name is {myname}")
Your name is Akif
>>> █
```



5. Taking Input from User

```
myname = input("What's your name?")  
print(f"Hi {myname} ")
```



6. Taking Input from User

```
myname = input("What's your name?")  
fav_colour = input("What's your favourite colour?")  
print(f"{myname}'s favourite colour is {fav_colour}")
```




7. Different Data Types

int means 'Integer' # 1,2, 3, 4

float means 'floating point value' # 1.23, 42.12

boolean can only be **True** or **False**

String means **any sequence of characters** # "Cat", "Akif"



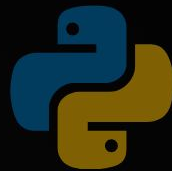
8. Type Conversion

`a = "2021"` # it is a string

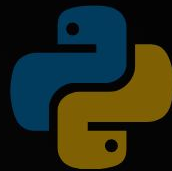
But `int(a)` is an integer

`'2021' + 5 = ?` # Error

`int('2021') + 5 = 2026`

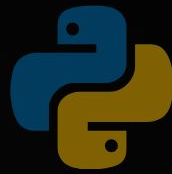


Strings Functions



Strings

```
course = 'Beginner's Course on Python'  
course[0]    # returns the first character  
course[1]    # returns the second character  
course[-1]   # returns the first character from the end  
course[-2]   # returns the second character from the end
```



Strings

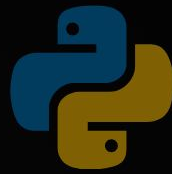
`message.upper()` # to convert to uppercase

`message.lower()` # to convert to lowercase

`message.title()` # to capitalize the first letter of every word

`message.find('p')` # returns the index of the first occurrence of p (or -1 if not found)

`message.replace('p', 'q')` #replace character p with q



Class Task

Write a program that takes a string as input. Then it will change all occurrence of its first character to '*'

Suppose

- **AAABBBCCCD ---> ***BBCCCD**
- **ABBA ---> *BB***



Arithmetic Operations

Arithmetic Operations

- +
-
- *
- / # returns a float
- // # returns an int
- % # returns the remainder of division
- ** #exponentiation- $x^{**}y = x$ to the power of y



Day 3

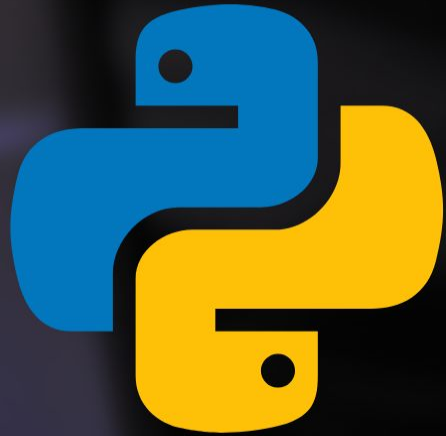
Presented on June 23, 2021

Akif Islam

BEGINNER'S COURSE ON

PYTHON

VIRTUAL SESSION (JUNE 20- JUNE 24)





Quick Recap

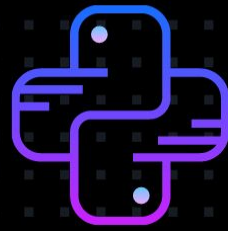
Akif Islam



alphabets = “**ABCDEFGHIJKL**”

```
print(alphabets [0] )    #A
print(alphabets [0:5] )  #ABCDE
print(alphabets [-1] )   #L
print(alphabets[3:6])    #DEF
```

course = “**coUrse oN PyThon**”



```
print(course.upper() )    #COURSE ON PYTHON
print(course.lower() )    #course on python
print(course.title() )    #Course On Python
print(course.find('Y'))    # -1
print(course.count('o'))   # 3
print(course.replace("oN", "of")) # coUrse of PyThon
```




```
A = 10
```

```
B = 55
```

```
print(B/A) # 5.5
```

```
print(B//A) # 5
```

```
print(B**A) # 253295162119140625
```

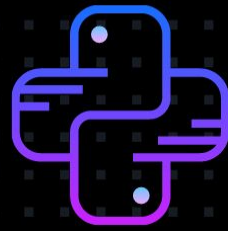
```
print(B*A) #550
```

```
print(B%A) #5
```



Quiz

Steps to Join



For PC:

Go to this link (Kahoot): <https://kahoot.it/>

For Mobile:

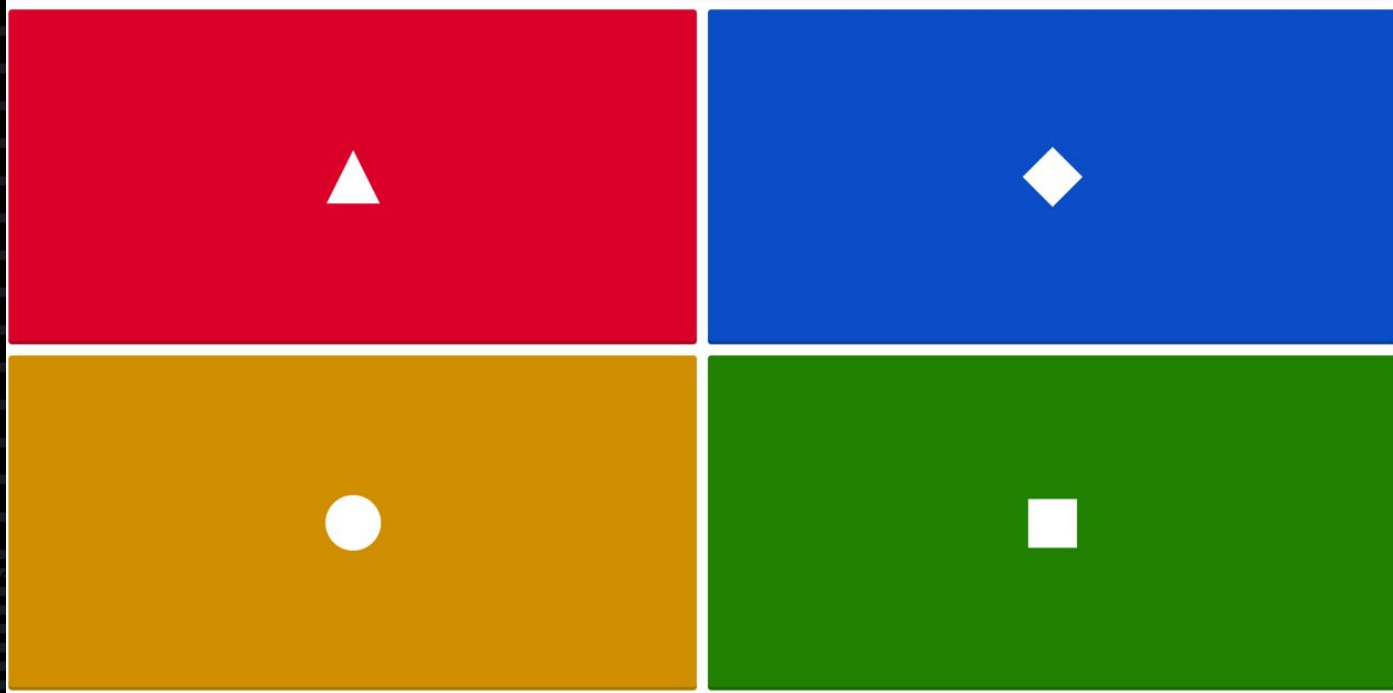
Install 'Kahoot!' app from Playstore

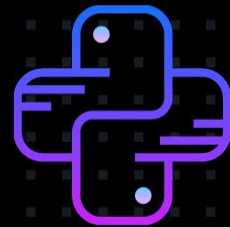
Kahoot!

Game PIN

Enter

Questions will be shown on **Zoom**
You just have to choose the right answer





Disclaimers & Prizes

Akif Islam



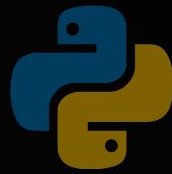
Let's Start

Akif Islam

Exploring Math Module in Python



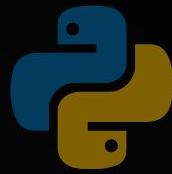
```
import math
```



Exploring Math Module in Python

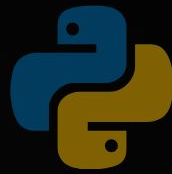
fabs ()
ceil ()
round ()
factorial ()
gcd()

Full Documentation : <https://docs.python.org/3/library/math.html>



Operator Precedence

1. parenthesis
2. exponentiation
3. multiplication / division
4. addition / subtraction



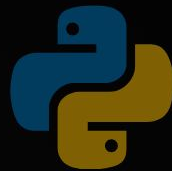
Assigning from Right to Left

```
A = 50
```

```
B = 10
```

```
A = A + A + B
```

```
print(A) #110
```



How to use **If - Else** in Python ?



If Statements

A = 50, B = 30

if A > B:

print("A is greater")

elif A < B:

print("B is greater")

else:

print("A and B are equal")



Comparison Operators

$a > b$

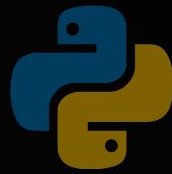
$a \geq b$ (greater than or equal to)

$a < b$

$a \leq b$

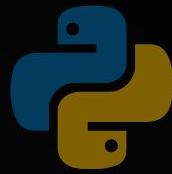
$a == b$ (equals)

$a != b$ (not equals)



Logical Operators

```
if has_high_income and has_good_credit: ...  
if has_high_income or has_good_credit: ...  
is_day = True is_night = not is_day
```



Class Task

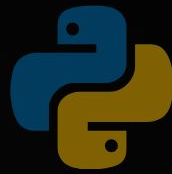
Create a currency-converter program which will convert **Bangladeshi Taka to US Dollar** and vice versa.

Input : 10 \$

Output : 800 TK

Input : 80 TK

Output : 1 \$



Home Work

Make a calculator app which will work on the terminal.

First it will take 2 numbers. Then user will choose to addition(1) /subtraction(2) / multiplication(3) / division (4)

Input :

5 2

1

Output :

7



Day 4

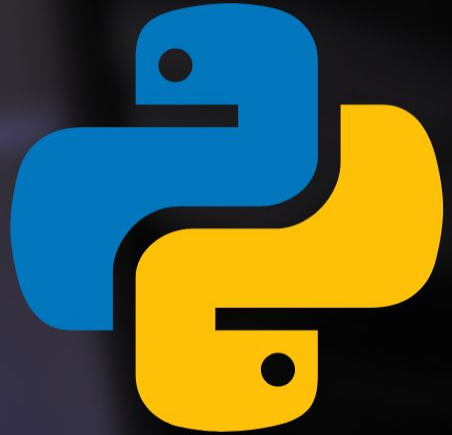
Presented on June 23, 2021

Akif Islam

BEGINNER'S COURSE ON

PYTHON

VIRTUAL SESSION (JUNE 20- JUNE 24)

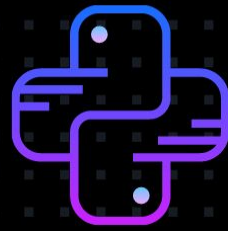




Quick Recap

Akif Islam

import math



math.ceil(2.5) # 3

math.floor(7.9) # 7

math.gcd(12,16) # 4

math.factorial(5) # 120

round(4.45) # 4

round (4.9) # 5

Akif Islam



How values are assigned?

C = 15

A = 10

B = A + 10

A = B + 20

C = A + B + C + 5

Now, A = ? , B = ? , C = ?



How values are assigned?

C = 15

A = 10

B = A + 10 # B : 20

A = B + 20 # A : 40

C = A + B + C + 5 # C : 80

Now, A = 40 , B = 20, C = 80

If-Else



A = 75

```
if ( A>50 ) :  
    print("Greater than 50")  
else :  
    print("Less than 50")
```

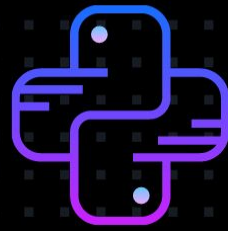

If-Else



```
Name = input("What's your name?")
```

```
if ( Name == "Rahim") :  
    print("Abul")  
elif (Name == "Karim") :  
    print("Kabul")  
else :  
    print("I don't know you ")
```

If-Else



```
Password = input("Enter Password \n")
```

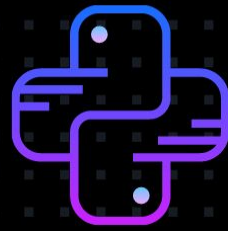
```
Length_of_password = len( Password)
```

```
if( Length_of_password < 3 ) :  
    print('Your Password is too short ' )
```

```
else if (Length_of_password > 20):  
    print('Your password is too long')
```

```
else :  
    print("Okay !")
```

If-Else



```
amount = input("Enter amount to convert : ") #100$
```

```
if amount.endswith("$"):  
    value = amount.replace("$", " ")  
    value = int(value)  
    print(f"{value*80} TK")
```

```
else:  
    value = amount.replace("TK", " ")  
    value = int(value.strip())  
    print(f"{value/80} $")
```



strip ()

strip() is an inbuilt function in Python programming language that returns a copy of the string with both leading and trailing characters removed (based on the string argument passed).



How to print all numbers from

1 to 10?



How to print all numbers from

1 to 100?



How to print 'Hello World'

100 times?



While Loop

```
while ( condition is True ) :  
    #Run these commands  
    #.....  
    #.....
```



While Loop

```
i = 0
while (i < 5):
    i = i + 1
    print("Hi")
```

Note: remember to increment i, or else the loop will continue forever.

#Output

```
Hi (i = 0)
Hi (i = 1)
Hi (i = 2)
Hi (i = 3)
Hi (i = 4)
```



How to print all
odd numbers?



How to print all
even numbers?



break and **continue**



break & continue

```
while i < 5 :  
    print(i)  
    break
```

```
while i < 5:  
    If (i == 2)  
        continue  
    print(i)
```



`import random`

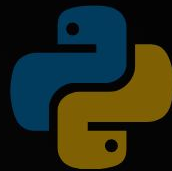
The random module is a built-in module to generate the pseudo-random variables. It can be used perform some action randomly such as to get a random number, selecting a random elements from a list, shuffle elements randomly, etc.



$x = x + 10$

$x += 10$

(Both are same)



Let's
Make
a

Guessing Game

Using
Relational Operators,
While Loop
&
if-else

For Loops in Python



A **for loop** is used for iterating over a sequence



```
words = "banana"
```

```
for i in words :  
    print(i, end = " ")
```

Output : b a n a n a



```
for i in range (6):  
    print(i)
```

Output : 0 1 2 3 4 5



```
for x in range(2, 6):  
    print(x)
```

Output : 2 3 4 5



```
for x in range(1,10,2):  
    print(x)
```

Output : 1 3 5 7 9



```
for x in range(10,1,-2):  
    print(x)
```

Output : 10 8 6 4 2



Nested For Loop

```
for i in range(1, 5):  
    for j in range (10,15):  
        print(j)
```

- range(5): generates 0,1,2,3,4
- range(1,5): generates 1,2,3,4
- range(1,5,2): generates 1,3



Class Task

What will be the output of this program?

```
for i in range(1,5, 1):  
    for j in range (1,5,1):  
        print(j)
```



Class Task

Correct Answer :

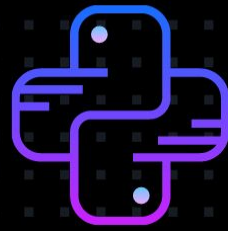
1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4



**How can we write
our own reusable
function?**

Akif Islam

Functions / Methods



```
def sum ( a , b ) :  
    print(a + b )
```

```
def my_function(country = "Norway"):  
    print("I am from " + country)
```



Day 5

Presented on June 24, 2021

Akif Islam



All resources in one place (Slides, Videos, Books, Scripts etc)
<https://github.com/akifislam/Beginners-Course-on-Python>

Akif Islam



Quick Recap



strip ()

strip() is an inbuilt function in Python programming language that returns a copy of the string with both leading and trailing characters removed (based on the string argument passed).



strip ()

```
letters = "aaaWWWaaa"  
name = " Akif "
```

```
print(name.strip()) #Akif (Space removed from both side)  
print(letters.strip('a')) #WWW  
print(letters.lstrip('a')) #WWWaaa  
print(letters.rstrip('a')) #aaaWWW
```




While ()

.....



While Loop

```
i = 0
while (i < 5):
    i = i + 1
    print("Hi")
```

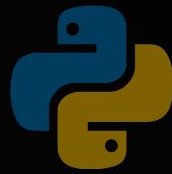
Note: remember to increment i, or else the loop will continue forever.

#Output

```
Hi (i = 0)
Hi (i = 1)
Hi (i = 2)
Hi (i = 3)
Hi (i = 4)
```



break and **continue**



break & continue

```
while i < 5 :  
    print(i)  
    break
```

```
while i < 5:  
    If (i == 2)  
        continue  
    print(i)
```



$x = x + 10$

$x += 10$

(Both are same)



```
words = “banana”
```

```
for i in words :  
    print(i, end =“ ”)
```

Output : b a n a n a



for ()

.....



```
for i in range (6):  
    print(i)
```

Output : 0 1 2 3 4 5



```
for x in range(2, 6):  
    print(x)
```

Output : 2 3 4 5



```
for x in range(1,10,2):  
    print(x)
```

Output : 1 3 5 7 9



`import random`

The random module is a built-in module to generate the pseudo-random variables. It can be used perform some action randomly such as to get a random number, selecting a random elements from a list, shuffle elements randomly, etc.



```
import random
```

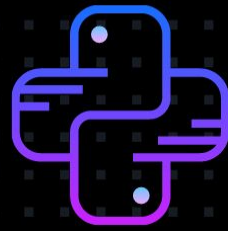
```
random.randInt( 1, 1000) # ?
```



**How can we write
our own reusable
function?**

Akif Islam

Functions / Methods



```
def sum ( a , b ) :  
    print(a + b )
```

```
def my_function(country = "Norway"):  
    print("I am from " + country)
```



Quiz

June 22, 2021

Md Aminul
Islam

2

7488
8 out of 10

Saniah
Safat

1

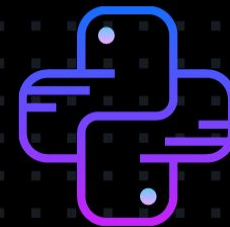
7810
8 out of 10

Rakib
Rahat

3

7006
9 out of 10

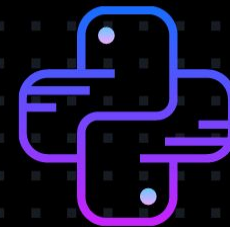
Day 3 Winners



Name	Score	Rank
Saniah Safat	7.810	1
Md Aminul Islam	7.488	2
Rakib Rahat	7.006	3
Alvee	6.854	4
Azmine Amin	6.841	5

Akif Islam

Day 3 (Rank 6th to 10th)



Name	Score	Rank
Rakib Islam	6.594	6
Aminur	6.523	7
Afridi	6.468	8
Mehedi	6.207	9
Fahad Al Islam	5.924	10

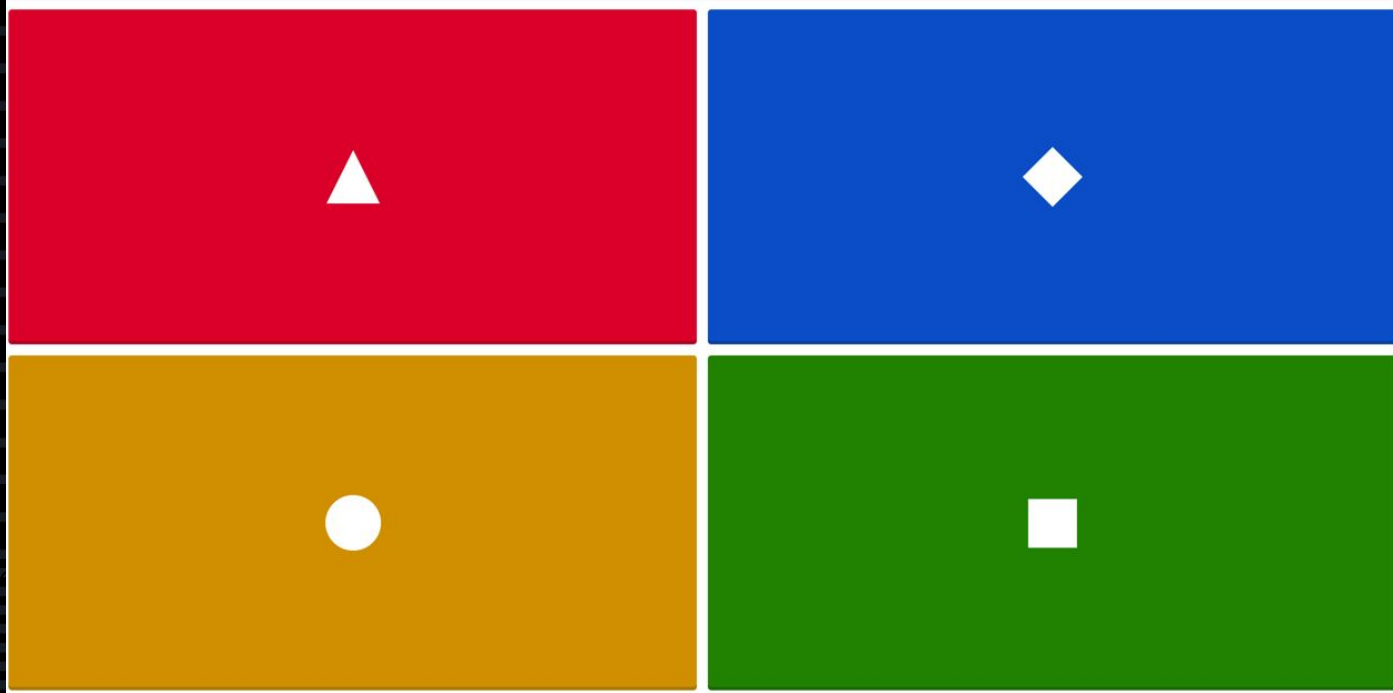
Akif Islam

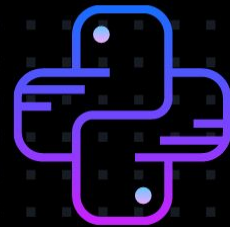
Kahoot!

Game PIN

Enter

Questions will be shown on **Zoom**
You just have to choose the right answer

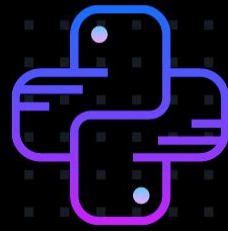




Disclaimers & Prizes

Akif Islam

Return Value from Function



```
def sum (a, b):  
    return a+b
```

```
def sayHi (name = "Akif"):  
    return f"Hi {name}"
```

```
print(sayHi("Rahim")) # Hi Rahim  
print(sayHi()) #Hi Akif
```

try - except - finally



The **try** block lets you test a block of code for errors.

The **except** block lets you handle the error.

The **finally** block lets you execute code, regardless of the result of the try- and except blocks.



try - except - finally

A = 50

B = 0

try :

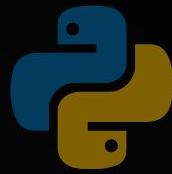
print(A/B)

except:

print("Cannot divide by zero")

finally :

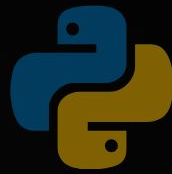
print("End")



Nested For Loop

```
for i in range(1, 5):  
    for j in range (10,15):  
        print(j)
```

- range(5): generates 0,1,2,3,4
- range(1,5):generates 1,2,3,4
- range(1,5,2): generates 1,3



Class Task

What will be the output of this program?

```
for i in range(1,5, 1):  
    for j in range (1,5,1):  
        print(j)
```




Class Task

Correct Answer :

1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4



Printing Star Pyramid with for loop

```
n = int(input("Size of Star : \n"))
```

```
for i in range(0, n):  
    for j in range(0, i + 1):  
        print("*", end=" ")  
    print()
```

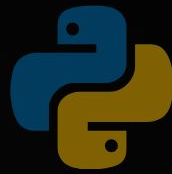
```
for i in range(n-2, -1,-1):  
    for j in range(0, i + 1):  
        print("*", end=" ")  
    print()
```



Akif Islam



Akif Islam



What is Data Structure ?

(Example : list, set, dictionaries etc)



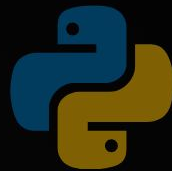
What is **Algorithm ?**

(Example : Reverse Guessing Game)

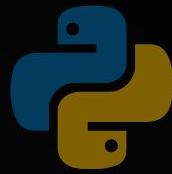


Data Structure :
organisation of data

Algorithm :
a procedure or formula for solving a problem

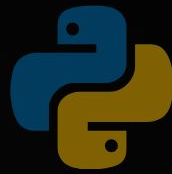


**How
will
you
Save
5 & 10
in computer memory?**



**How
will
you
Save**

1, 2 , 5, 8 , 10, 12, 25
in computer memory?



How will you save

**0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
16 17 18 19 20 21 22 23 24 25 26 27
28 29 30 31 32 33 34 35 36 37 38 39
40 41 42 43 44 45 46 47 48 49 50 51
52 53 54 55 56 57 58 59 60**

in computer memory?

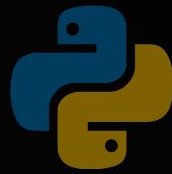


How to use **Lists** in Python ?



Lists

A list is a **data structure** in Python that is a mutable, or changeable, ordered sequence of elements. Each element or value that is inside of a list is called an item. ... They enable you to keep data together that belongs together, condense your code, and perform the same methods and operations on multiple values at once.



Lists

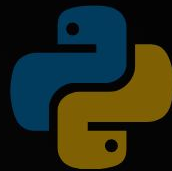
Numbers = [1, 2, 3, 4, 5]

Numbers[0] //returns first item

Numbers[1] //returns second item

Numbers[-1] //returns last item

Numbers[-2] //returns second item from end



Functions of List

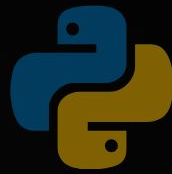
numbers.append(6)

numbers.insert(0, 6)

numbers.remove(6)

numbers.pop()

numbers.clear()



Functions of List

numbers.index(8)

numbers.sort()

numbers.reverse()

numbers.copy()

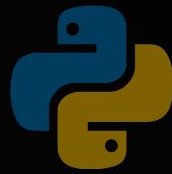
Shakespeare - Hamlet.txt

Though yet of Hamlet our dear brother's death
The memory be green, and that it us befitted
To bear our hearts in grief and our whole kingdom
To be contracted in one brow of woe,
Yet so far hath discretion fought with nature
That we with wisest sorrow think on him,
Together with remembrance of ourselves.
Therefore our sometime sister, now our queen,
The imperial jointress to this warlike state,
Have we, as 'twere with a defeated joy,--
With an auspicious and a dropping eye,
With mirth in funeral and with dirge in marriage,
In equal scale weighing delight and dole,--
Taken to wife: nor have we herein barr'd
Your better wisdoms, which have freely gone
With this affair along. For all, our thanks.
Now follows, that you know, young Fortinbras,
Holding a weak supposal of our worth,
Or thinking by our late dear brother's death
Our state to be disjoint and out of frame,
Collegued with the dream of his advantage,
He hath not fail'd to pester us with message,
Importing the surrender of those lands
Lost by his father, with all bonds of law,
To our most valiant brother. So much for him.
Now for ourself and for this time of meeting:
Thus much the business is: we have here writ
To Norway, uncle of young Fortinbras,--
Who, impotent and bed-rid, scarcely hears
Of this his nephew's purpose,--to suppress
His further gait herein; in that the levies,
The lists and full proportions, are all made
Out of his subject: and we here dispatch
You, good Cornelius, and you, Voltimand,
For bearers of this greeting to old Norway;
Giving to you no further personal power
To business with the king, more than the scope
Of these delated articles allow.
Farewell, and let your haste commend your duty.

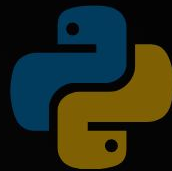


FILE I/O



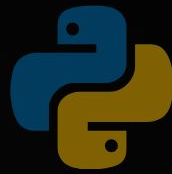


Project Showcasing



Automate **Messenger** With **PyAutoGUI**

Explore Documentation : <https://pyautogui.readthedocs.io/en/latest/>



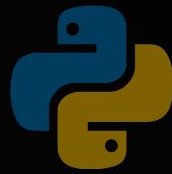
Corona Virus Newsletter (Bulk Email Sender)



Rokomari Booklist Scrapper

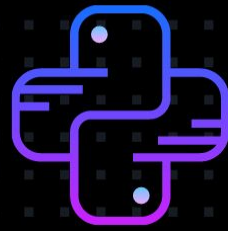


Codeforces AutoTracker (Spy)



Bank App Simulation

Reliable Source for code snippets



- **StackOverFlow**
- **Geek for Geeks**
- **Programiz**
- **TutorialPoints**
- **w3School**

How to make an app?



Suppose,

An Bulk Email Sending App



Search on Google (StackOverflow, GeekforGeeks etc)
How to control Gmail using Python?



Search on Google

Test the code snippet which works



Try to send 1 email from your email to yourself



Try to send same email with cc, bcc



**Try to connect your script with Excel / GoogleSpreadSheet to
get email list**



Try to give a proper command-line interface to run the program



Try to add attachments with the email



Try to add rich text email (by adding HTML,CSS)



Run the program in different test cases and find bugs



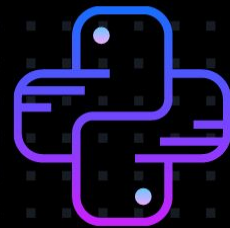
Fix them and improve if you find any major issues



Your bulk-email app is ready !

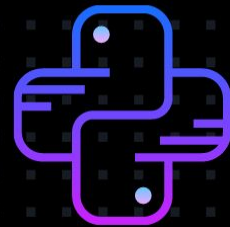


Web Development



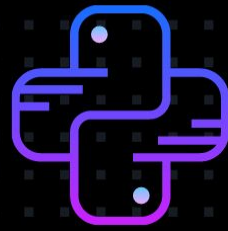
- **Flask**
- **Django (Back end)**

Web Scrapping



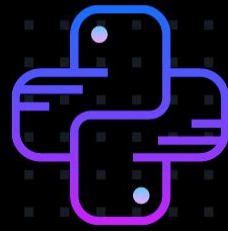
- BeautifulSoup
- Selenium
- Scrapy

Machine Learning



- **Numpy**
- **Pandas**
- **Matplotlibs**

GUI APPS (Graphical User Interface)



- **ElectronJS**
- **Tkinter (Python Module)**
- **PyQT5**

Books & Resources



- **CS 50 (English, Highly Recommended)**
- **Programming with Mosh (English)**
- **Zulkarnine Mahmud (Bengali)**
- **Jhankar Mahbub (Bengali)**



What to learn next?

Akif Islam



Online Judges



Thank you

Akif Islam



All resources in one place (Slides, Videos, Books, Scripts etc)
<https://github.com/akifislam/Beginners-Course-on-Python>

Akif Islam