

EXPERIMENT NO: 01

DATE: _____

AIM:

Print "HELLO PYTHON".

Code: *# this program prints Hello, world ! (python).*
print ('Hello Python!')

Output:

Hello Python!

Question & Answer/ Quiz 1:

1. Who developed the Python language?
 - a. Zim Den
 - b. Guido van Rossum
 - c. Niene Stom
 - d. Wick van Rossum

2. In which year was the Python language developed?
 - a. 1995
 - b. 1972
 - c. 1981
 - d. 1989



EXPERIMENT NO: 02

DATE: _____

AIM: To do arithmetical operations, to find the area of a triangle, to
Solve quadratic equation, to swap to variable

Code:

```
# area of a triangle :-  
a = int(input("Enter no ="))  
b = int(input("Enter no ="))  
c = int(input("Enter no ="))  
s = (a+b+c)/2  
area = (s*(s-a)*(s-b)*(s-c))  
      * 0.5
```

print ('the area of the
triangle is :. 0.2f "
. area).

quadratic equation

```
import cmath  
a = 1  
b = 5  
c = 6  
d = (b ** 2) - (a ** a * c)  
sol1 = (-b - cmath.sqrt(d)) / (2 * a)  
sol2 = (-b + cmath.sqrt(d)) / (2 * a)  
print ('The soultion are  
{0} and {1}'.format(sol1, sol2))
```

swap :-

```
x = 5  
y = 10  
temp = x  
x = y  
y = temp
```

```
print ('The value of  
x after swap => !'.format(x))  
print ('The value of  
y after swap => !'.format(y))
```

Output:

```
a = 5  
b = 6  
c = 7
```

The area of the
triangle is
14.70

The soultion are
(-3+0j) and (-2+0j)

3

The value of x
after swap => 10
The value of y
after swap => 5



DATE: _____

EXPERIMENT NO: 03

AIM: To generate a random number and to convert kilometres to miles

Code:

Kilometers = float (input ("Enter value in kilometers => "))

conv-fac = 0.621371

miles = kilometers * conv-fac

Point (" . . 0.2f kilometers is equal to %0.2f miles ") .
(kilometers, miles))

Output:

Enter value in kilometers =>



Question & Answer/ Quiz 1:

1. In Python, 'Hello', is the same as "Hello".
 - a. False
 - b. True
2. Which of the following operators is the correct option for power(a^b)?
 - a. a^b
 - b. $a^{**}b$
 - c. $a^{^b}$
 - d. $a^{*}b$
3. Which of the following precedence order is correct in Python?
 - a. Parentheses, Exponential, Multiplication, Division, Addition, Subtraction
 - b. Multiplication, Division, Addition, Subtraction, Parentheses, Exponential
 - c. Division, Multiplication, Addition, Subtraction, Parentheses, Exponential
 - d. Exponential, Parentheses, Multiplication, Division, Addition, Subtraction
4. Which one of the following has the highest precedence in the expression?
 - a. Division
 - b. Subtraction
 - c. Power
 - d. Parentheses
5. Study the following function:
 $\text{round}(7.576)$
What will be the output of this function?
 - a. 7
 - b. 57
 - c. 576
 - d. 8

Marks (out of 10)	
Signature with Date of Completion	

References:

1. Core Python Programming by Dr. R. Nageswara Rao, 2017 edition
2. Python Tutorial (Release 3.6.4) By Guido van Rossum and the Python development team
3. A Byte of Python By Swaroop C H
4. Python Cookbook, Recipes of Mastering Python 3 By David Beazley & Brian K. Jones.



EXPERIMENT NO: 04

DATE: _____

AIM: Program to display calendar.

Code: import calendar

year = int(input("Enter year => "))

month = int(input("Enter month => "))

print(calendar.month(year, month))

Output: Enter year => 2023
Enter month => 2

Mon	Tue	We	Th	Fr	Sa	Sun
		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					



Question & Answer/ Quiz 1:

1. Study the following program:

```
a = 1
while True:
    if a % 7 == 0:
        break
    print(a)
    a += 1
```

Which of the following is correct output of this program?

- a. 1 2 3 4 5
- b. 1 2 3 4 5 6
- c. 1 2 3 4 5 6 7
- d. Invalid syntax

2. Study the following program:

```
i = 0
while i < 5:
    print(i)
    i += 1
    if i == 3:
        break
else:
    print(0)
```

What will be the output of this statement?

- a. 1 2 3
- b. 0 1 2 3
- c. 0 1 2
- d. 3 2 1

3. Study the following program:

```
i = 0
while i < 3:
    print(i)
    i += 1
else:
    print(0)
```

What will be the output of this statement?

- a. 0 1
- b. 0 1 2
- c. 0 1 2 0
- d. 0 1 2 3



EXPERIMENT NO: 05

DATE: _____

AIM: Program to check if a number is positive, negative or zero.

Code:

```
Num = int (input ( "Enter no => " ))  
if num > 0 :  
    print ("positive number")  
elif num == 0 :  
    print ("zero")  
else :  
    print ("Negative number")
```

Output:

```
Enter no => 3  
Positive number
```



Question & Answer/ Quiz 1:

1. Which operator is used to multiply numbers?
a. X
b. *
c. %
d. #
2. Which operator can be used to compare two values?
a. =
b. <>
c. ==
d. ><
3. How do you start writing an if statement in Python?
a. if (x > y)
b. if x>y then:
c. if x>y:
4. How do you start writing a while loop in Python?
a. x > y while {
b. while x > y:
c. while (x > y)
d. while x > y {

Marks (out of 10)	
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EXPERIMENT NO: 06

DATE: _____

AIM: Program to display the multiplication table and check Fibonacci sequence.

Code:

Fibonacci series:-

```
n=int(input("Enter term=>"))
n1=0 count=0
n2=1
if n<=0:
    print("Please Enter a positive integer")
elif n==1:
    print("Fibonacci Sequence upto ",n,"=>")
else:
    print(n1)
    print("Fibonacci sequence :")
    while count < n:
        print(n1)
        n1=n2
        n2=n1+n2
        count+=1
```

multiplication table:-

```
num = int(input("Enter no"))
for i in range(1,11):
    print(num,'x',i,'=', num * i)
```

Output:

Enter term=> 7

Fibonacci Sequence:

0
1
1
2
3
5
8

13

Enter no => 12

$12 \times 1 = 12$
$12 \times 2 = 24$
$12 \times 3 = 36$
$12 \times 4 = 48$
$12 \times 5 = 60$
$12 \times 6 = 72$
$12 \times 7 = 84$
$12 \times 8 = 96$
$12 \times 9 = 108$
$12 \times 10 = 120$

Question & Answer/ Quiz 1:

1. Define while loop with example.

Ans: While loop we can execute a set of statements as long as a condition is true.

* EXAMPLE : ~ $i = 1$

```
while i < 6 :
    print(i)
    i += 1
```

output : -

1
2
3
4
5

2. Define for loop with example.

Ans: A for loop is used for iterating over a sequence.

* EXAMPLE : ~ $i = [1, 2, 3, 4, 5, 6]$

output

1
2
3
4
5
6

3. Define switch case using example.

Ans: The 'switch case' is like the 'if...else' statement

but a cleaner and quicker way than 'if.. else'.
 \Rightarrow when we need to run only a specific code block, and if the other code blocks do not satisfy the condition, they will be skipped.

* EXAMPLE : ~ age = 120

```
if age > 90:
    point ("you are too old to party, granny.")
```

```
elif age < 0:
    point ("you're yet to be born")
```

```
elif age >= 18:
    point ("you are allowed to party")
```

```
else:
    "you're too young to party"
```

output
you are too old
to party, granny



4. Write a python programme to print below pattern.

1
1 2
1 2 3
1 2 3 4
1 2 3 4 5

Ans: rows = 5
for i in range (rows):
 for j in range (i+1)
 print (j+1, end = " ")
 print ("\\n")

Marks (out of 10)	
Signature with Date of Completion	

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4. Write a python programme to print below pattern.

1
1 2
1 2 3
1 2 3 4
1 2 3 4 5

Ans: rows = 5

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

Marks (out of 10)	
Signature with Date of Completion	

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DATE: _____

EXPERIMENT NO: 07

AIM: Program to display calendar Python program to convert Decimal to Binary, Octal and Hexadecimal.

Code: # Python program to convert decimal into other number system

```
dec = 344
print ("The decimal value of ", dec, " is : ")
print (bin(dec), " in binary . ")
print (oct(dec), " in octal . ")
print (hex(dec), " in hexadecimal . ")
```

Output: The decimal value of 344 is :

ob101011000 in binary .

00530 in octal .

0x158 in hexadecimal .

Question & Answer/ Quiz 1:

1. What is the main difference between lists and tuples in Python ?
 - a. Lists are mutable whereas Tuples are not.
 - b. Tuples are mutable whereas Lists are not.
 - c. Tuples store homogeneous data whereas Lists store heterogeneous data.
 - d. Lists store homogeneous data whereas Tuples store heterogeneous data.
 2. How to instantiate an empty list in Python?
 - a. list() and []
 - b. list() and ()
 - c. list() and {}
 - d. None of the above
 3. What is the other name of Explicit Type Conversion?
 - a. Broadening Type Conversion.
 - b. Automatic Type Conversion.
 - c. Dynamic Type Conversion.
 - d. Narrowing Type Conversion.
 4. Define type casting with example.
Ans: TYPE casting is a method used to change the variable value declared in a certain data type like ; int(), string(), float(), etc.
- ==> Type of casting Main two type conversion :
- (1) implicit Type casting
 - (2) Explicit Type casting.
- * EXAMPLE # Implicit type conversion.
- ```
creating addition() fun., to add two numbers.
def addition(a,b):
 print("Type of first number(a):", a, type(a))
 print("Type of second number(b):", b, type(b))
 c = a+b
 print("Type of resulting variable (c):", c, type(c))
 addition(21,23) # both integers
 print('\n')
 addition(21, 23.0) # second being float
 print('\n')
 addition(21.0, 23) # first being float
 print('\n')
 addition(21.0, 23.0) # both float
```

## EXPERIMENT NO: 08

DATE: \_\_\_\_\_

AIM: Python program to find ASCII value of a character and make simple calculator :-

Code:  
# program to find the character and ASCII value.

# getting ASCII value from user

```
num = int(input("Enter ASCII value:"))
print(char(num))
```

# ASCII value is given

```
num2 = 70
```

```
print(cho(num2))
```

```
elif choice == '2':
```

```
print(num1, "-", num2, "=", subenum1, num2))
```

```
elif choice == '3':
```

```
print(num1, "*", num2, "=", multenum1, num2))
```

```
elif choice == '4':
```

```
print(num1, "/", num2, "=", divide(num1, num2)))
```

next\_calculation = input("Let's do net calculation? (yes/no): ")

```
if next_calculation == "no":
```

```
else: break
```

```
print("Invalid Input")
```

Output:

```
Enter ASCII value: 66
```

B

F

1 Add

2 Subtract

3 Multiply

4 Divide

Enter choice (1/2/3/4): 1

Enter first number: 15

Enter second number: 14

$$15 + 14 = 29$$

let's do net calculation? (yes/no): no

```
def add(x, y):
 return x + y
```

```
def subtract(x, y):
 return x - y
```

```
def multiply(x, y):
 return x * y
```

```
def divide(x, y):
 return x / y
```

print("Select operation . . .")

print("1. Add")

print("2. Subtract")

print("3. Multiply")

print("4. Divide")

while True:

choice = input("Enter choice (1/2/3/4): ")

if choice in ('1', '2', '3', '4'):

try: num1 = float(input("Enter first no:"))

num2 = float(input("Enter sec no:"))

except ValueError:

print("Invalid input. Please enter a number.")

continue

if choice == '1':

print(num1, "+", num2, "=", add(num1, num2))

Select operation.



## Question & Answer/ Quiz 1:

1. We use \_\_\_\_\_ operators in association with the if statements in Python for decision making.

- a. Assignment
- b. Membership
- c. Logical
- d. Both b and c

2. Which among the following is a Python membership operator?

- a. in
- b. not in
- c. Or
- d. And
- e. Both a and b

3. When within one block of conditional statement, there is another block of conditional statement then that is known as \_\_\_\_\_ conditional statement.

- a. Break
- b. Continue
- c. Asset
- d. Pass

4. The \_\_\_\_\_ statement is used between if and else statements to add multiple conditions if needed.

- a. else if
- b. iff
- c. elif
- d. and

|                                   |  |
|-----------------------------------|--|
| Marks (out of 10)                 |  |
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EXPERIMENT NO: 09

DATE: \_\_\_\_\_

AIM: Program to display Fibonacci sequence using recursion and Find Factorial of number using Recursion.

### # Fibonacci sequence Recursion

Code:

```
def recur_fibonacci(n):
 if n <= 1:
 return n
 else:
 return (recur_fibonacci(n-1) +
 recur_fibonacci(n-2))

nterms = 10

if nterms <= 0:
 print("Please enter a positive integer")
else:
 print("Fibonacci sequence:")
 for i in range(nterms):
 print(recur_fibonacci(i))
```

Output:

Fibonacci Sequence :

0  
1  
1  
2  
3  
5  
8  
13  
21  
34

Recursion  
# Factorial of a number using Recursion

```
def recur_factorial(n):
 if n == 1:
 return n
 else:
 return n * recur_factorial(n-1)

num = 7

check if the number is negative
if num < 0:
 print("Sorry, factorial does not exist for negative numbers")
elif num == 0:
 print("The factorial of 0 is 1")
else:
 print("The factorial of ", num,
 " is ", recur_factorial(num))
```

The factorial of 7 is

5040

### Question & Answer/ Quiz 1:

1. What is the correct way to create a function in Python?
  - create myFunction():
  - def myFunction():
  - function myfunction():
2. Which of the following functions is a built-in function in python language?
  - val()
  - print()
  - printf()
  - None of these
3. Study the following function:  

$$\text{round}(4.576)$$

What will be the output of this function?

  - 4
  - 5
  - 576
  - 5
4.  $\text{print}(\text{type}(\text{int}))$ ?
  - type 'int'
  - type 'type'
  - error
  - 0

|                                   |  |
|-----------------------------------|--|
| Marks (out of 10)                 |  |
| Signature with Date of Completion |  |

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## EXPERIMENT NO: 10

DATE: \_\_\_\_\_

**AIM:** Program to check if given number is disarium number and print all disarium numbers between 1 to 100.

**Code:** `def length_calculation (my_val):`

`len_val = 0`

`while (my_val != 0):`

`len_val = len_val + 1`

`my_val = my_val // 10`

`return len_val`

`def digit_sum (my_num):`

`remaining = sum_val = 0`

`len_fun = length_calculation (my_num)`

`remaining = my_num % 10`

`sum_val = sum_val + (remaining * len_fun)`

`my_num = my_num // 10`

`len_fun = len_fun - 1`

`ini_result = 0`

`print ("The disarium between 1 and 100 are : ")`

**Output:**

The disarium numbers between 1 and 100 are :

1

2

3

4

5

6

7

8

9

89

```
for i in range (1, 101):
 ini_result = digit_sum(i)
 if (ini_result == i):
 print (i)
```

## Question & Answer/ Quiz 1:

1. 

```
L = list('123456')
L[0] = L[5] = 0
L[3] = L[-2]
print(L)
```

  - a. [0, '2', '3', '4', '5', 0]
  - b. ['6', '2', '3', '5', '5', '6']
  - c. ['0', '2', '3', '5', '5', '0']
  - d. [0, '2', '3', '5', '5', 0]
2. Study the following program:  

```
d = {0: 'a', 1: 'b', 2: 'c'}
for i in d:
 print(i)
```

What will be the output of this statement?
  - a. a b c
  - b. 0 1 2
  - c. 0 a 1 b 2 c
  - d. None of these above
3. Which of the following option is not a core data type in the python language?
  - a. Dictionary
  - b. Lists
  - c. Class
  - d. All of the above
4. Which of the following keywords is used for function declaration in Python language?
  - a. def
  - b. function\_name
  - c. define
  - d. None of the these
5. Which of the following objects are present in the function header in python?
  - a. Function name and Parameters
  - b. Only function name
  - c. Only parameters
  - d. None of the these



DATE: \_\_\_\_\_

## EXPERIMENT NO: 11

AIM: Program to print the elements of an array present on odd position.

Code: # initialize array

```
arr = [1, 2, 3, 4, 5];
```

```
print ("Elements of given array present on even position :");
```

```
loop through the array by incrementing the value of i
```

```
by 2
```

```
Here, i will start from 1 as first even positioned element
```

```
is present at position 1.
```

```
for i in range (1, len(arr), 2):
```

```
 print (arr[i]);
```

Output: Elements of given array present on even position:

2

4.

## Question & Answer/ Quiz 1:

1. What is the following function reverses objects of list in place?

- a. `list.reverse()`
- b. `list.sort([func])`
- c. `list.pop(obj=list[-1])`
- d. `list.remove(obj)`

2. In the Python Programming Language, syntax error is detected by \_\_\_\_\_ at \_\_\_\_\_.

- a. Interpreter / Compile time
- b. Run time / Interpreter
- c. Interpreter / Run time
- d. Compile time / Run time

3. Which of the following function returns a random item from a list, tuple, or string?

- a. `choice(seq)`
- b. `randrange ([start,] stop [,step])`
- c. `random()`
- d. `seed([x])`

4. Which one of the following is the right way to call a function?

- a. `call function_name()`
- b. `function function_name()`
- c. `function_name()`
- d. None of the these

|                                   |  |
|-----------------------------------|--|
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EXPERIMENT NO: 12

DATE: \_\_\_\_\_

AIM: Program to add and multiply matrices and perform transpose.

# Code:  
# multiply two matrices using nested loops  
 $x = [[12, 7, 3], [4, 5, 6], [7, 8, 9]]$   
# 3x3 matrix  
 $y = [[5, 8, 1, 2], [6, 7, 3, 0], [4, 5, 9, 1]]$   
# result is 3x4  
 $result = [[0, 0, 0, 0], [0, 0, 0, 0], [0, 0, 0, 0]]$   
for i in range(len(x)):  
 for j in range(len(y[0])):  
 for k in range(len(y)):  
 result[i][j] += x[i][k] \* y[k][j]  
for r in result:  
 print(r)

# program to transpose a matrix using a nested loop.  
 $x = [[12, 7], [4, 5], [3, 8]]$   
 $result = [[0, 0, 0], [0, 0, 0]]$   
# iterate through rows  
for i in range(len(x)):  
 # iterate through columns  
 for j in range(len(x[0])):  
 result[j][i] = x[i][j]  
for r in result:  
 print(r)

Output:  
[114, 160, 60, 27]  
[74, 97, 73, 24]  
[179, 257, 112, 23]

[12, 4, 3]  
[7, 5, 8]



## Question & Answer/ Quiz 1:

1. What is the output of print str[2:] if str = 'Hello World!'?
  - a. llo World!
  - b. H
  - c. Llo
  - d. None of the above.
2. Which of the following function convert an integer to hexadecimal string in python?
  - a. unichr(x)
  - b. ord(x)
  - c. hex(x)
  - d. oct(x)
3. Which of the following function changes case for all letters in string?
  - a. replace(old, new [, max])
  - b. strip([chars])
  - c. swapcase()
  - d. title()

|                                   |  |
|-----------------------------------|--|
| Marks (out of 10)                 |  |
| Signature with Date of Completion |  |

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EXPERIMENT NO: 13

DATE: \_\_\_\_\_

AIM: Program to convert list to dictionary and create dictionary.

Code:

# program to convert a list to dictionary .

```
def convert(lst):
 res-det = {lst[i]: lst[i+1] for
 i in range(0, len(lst), 2)}
 return res-det
```

# Driver code

```
lst = ['a', 1, 'b', 2, 'c', 3]
print(convert(lst))
```

```
create dictionary
capital-city = {"Nepal": "Kathmandu",
 "Italy": "Rome", "England":
 "London"}

print(capital-city)
```

Output:

```
{'a': 1, 'b': 2, 'c': 3}
```

```
{"Nepal": "Kathmandu", "Italy":
 "Rome", "England": "London"}
```



### Question & Answer/ Quiz 1:

1. Which method is used to sets the position of a file pointer
  - a. ftell()
  - b. fseek()
  - c. tell()
  - d. seek()
2. Select the correct access mode to open a file only for exclusive creation
  - a. t
  - b. w
  - c. x
  - d. A
3. Select the incorrect file access mode
  - a. r
  - b. ab+
  - c. rw+
  - d. wb+
4. To open a file c:\scores.txt for writing, we use \_\_\_\_\_
  - a. outfile = open("c:\scores.txt", "w")
  - b. outfile = open("c:\\scores.txt", "w")
  - c. outfile = open(file = "c:\scores.txt", "w")
  - d. outfile = open(file = "c:\\scores.txt", "w")

|                                   |  |
|-----------------------------------|--|
| Marks (out of 10)                 |  |
| Signature with Date of Completion |  |

### References:

1. Core Python Programming by Dr. R. Nageswara Rao, 2017 edition
2. Python Tutorial (Release 3.6.4) By Guido van Rossum and the Python development team
3. A Byte of Python By Swaroop C H
4. Python Cookbook, Recipes of Mastering Python 3 By David Beazley & Brian K. Jones.



### EXPERIMENT NO: 1

Aim: Understand the basics of Cyber Security.

Description:

1. Elaborate Cyber security objectives and policies (Any 5).
2. Differentiate between Information Security & Cyber security in brief.
3. Enlist the Cyber security Principles.
4. Discuss Classifications of Cybercrimes in brief.

Q.1. Objectives of cyber security:-

⇒ Confidentiality :- No telling to unauthorized parties.

⇒ Integrity :- completeness & accuracy of data.

⇒ Availability :- when needed, data is available.

⇒ Non-repudiation :- I should accept I sent you the message & you showed me what you received.

⇒ Authenticity :- when needed, data is available

\* Cyber Security Policies :-

① Intrusion Prevention Policy

② Live Update Policy

③ Application & Device Control

④ Exception Policy

⑤ Host Integrity Policy

Q.2. Cyber Security

○ Cyber security deals with protecting your data & information.

Information Security

○ Information security deal with safe guarding your information assets.

○ Applied to digital information.

○ Applied to physical and digital information.

○ focus on protecting data from any type of illegal access.

○ focus on protecting data from unauthorized data access.

○ Protects information from unauthorized access, disclosure, use, modification.

○ Protects information from cyber-crimes, cyber frauds & law enforcement.