

Head First Python

Experiment 1 - Google Docs

9
Basics, Input Output & control structure
THADOMAL SHAHANI ENGINEERING COLLEGE

List of Experiments

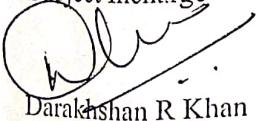
Subject: Open Source Technology Lab

Branch: Computer

Semester: IV

Experiment No 1.																					
1.	Write a Python program to print the following string in a specific format Twinkle, twinkle, little star, "How I wonder what you are!" Up above the world so high, Like a diamond in the sky. Twinkle, 'twinkle', little star, How I wonder what you are Using only one print() function.																				
2.	Program to show output formatting take two values and display them using single print function using • str.format() • % operator																				
3.	Program to find leap year using nested if																				
4.	Program to print all armstrong number in range 100 to 999.																				
5.	Program to find fibonacci series of n terms																				
6.	Program on pattern <table style="margin-left: auto; margin-right: auto;"> <tr> <td>A</td> <td>*****</td> <td>1</td> <td>*</td> </tr> <tr> <td>B B</td> <td>****</td> <td>121</td> <td>* *</td> </tr> <tr> <td>C C C</td> <td>***</td> <td>12321</td> <td>* * *</td> </tr> <tr> <td>D D D D</td> <td>**</td> <td>1234321</td> <td>* * * *</td> </tr> <tr> <td>E E E E E</td> <td>*</td> <td>123454321</td> <td>* * * * *</td> </tr> </table>	A	*****	1	*	B B	****	121	* *	C C C	***	12321	* * *	D D D D	**	1234321	* * * *	E E E E E	*	123454321	* * * * *
A	*****	1	*																		
B B	****	121	* *																		
C C C	***	12321	* * *																		
D D D D	**	1234321	* * * *																		
E E E E E	*	123454321	* * * * *																		

Subject Incharge



Darakhshan R Khan

$a = 10$
 $b = 5$
 $c = a \text{ and } b$
 $d = a \text{ or } b$
`print(c)`
`print(d)`

1::2 , 1::2
 1::2 , 1::2

Arrays & Matrices

Thadomal Shahani Engineering College

Subject: Open Source Technology Lab

Branch: Computer

Semester: IV

Experiment No 2.

1. Python program to

- Read an array and display
- Append a new item to the end of the array.
- To reverse the order of the items in the array (slice operator)
- Get the length in bytes of one array item
- To append items from another array
- Remove a specified item using the index from an array

One element
entire

array
attribute

using
array module

$$b = a[:: -1]$$

array

2. Python program to create a 8x8 matrix and fill it with a checkerboard pattern

(slice operator)

Checkerboard pattern:

```
[0 1 0 1 0 1 0 1]
 [1 0 1 0 1 0 1 0]
 [0 1 0 1 0 1 0 1]
 [1 0 1 0 1 0 1 0]
 [0 1 0 1 0 1 0 1]
 [1 0 1 0 1 0 1 0]
 [0 1 0 1 0 1 0 1]
 [1 0 1 0 1 0 1 0]]
```

3. Menu driven code for numpy array

- create using array() and arange()
- sum of array
- sort array
- compare two arrays

linspace zeros ones
logspace
srand

4. Python program

- To read a two matrices from user
- Perform matrix multiplication
- Display diagonal Elements
- Check whether its a square matrix

5. Python program to change all occurrences of a first character of a string to @ except for first occurrence.

Sample String : 'apple a day'

Expected Result : 'apple @ d@y'

With hello using slice.

Hello Hello

Hello @Hello

cont.

case sensitive

6. Python Program

- to sort group of strings into alphabetical order
- to check whether entered string is palindrome or not

Functions
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Experiment - 3

Subject: Open Source Technology Lab

Branch: Computer

Semester: IV

1.	Write a Python function to check whether a number is perfect or not. (Note : The first perfect number is 6, because 1, 2, and 3 are its proper positive divisors, and $1 + 2 + 3 = 6$. Equivalently, the number 6 is equal to half the sum of all its positive divisors: $(1 + 2 + 3 + 6) / 2 = 6$. The next perfect number is $28 = 1 + 2 + 4 + 7 + 14$. This is followed by the perfect numbers 496 and 8128.)
2.	Write a Python function to check whether a string is a pangram or not. (Note : Pangrams are words or sentences containing every letter of the alphabet at least once. For example : "The quick brown fox jumps over the lazy dog")
3.	Python menu driven program to develop simple calculator using variable length argument
4.	Program to calculate factorial of a number using recursion
5.	Python program to calculate square and cube of a number and use two decorators, one to increase result by 4 and another to multiply result by 2.
6.	Write menu driven python program that accept list of numbers and performs following operation on list written in another module: <ul style="list-style-type: none">• Summation of all elements• Product of all elements• Summation of elements at even indices• add elements in the list

Set

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LIST, TUPLE, SET & DICTIONARY
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Experiment 4

Subject: Open Source Technology Lab

Branch: Computer

Semester: IV

1.	Write a menu driven program to demonstrate use of list in python <ul style="list-style-type: none">• Put even and odd elements in two different list• Merge and sort two list• Update the first element with a value X• Print middle element of list
2.	Write a menu driven program to demonstrate use of tuple in python <ul style="list-style-type: none">• Add and show details i.e roll no, name and marks of three subjects of N students in a list of tuple• Display details of a student whose name is X
3.	Write a menu driven program to demonstrate use of set in python <ul style="list-style-type: none">• Read two sets A and B from user and display set A and B• Perform intersection $A \cap B$ of two sets A and B• Perform union $A \cup B$ of two sets A and B• Perform set difference $A - B$ of two sets A and B• Perform symmetric difference $A \Delta B$ of two sets A and B
4.	Write a program to demonstrate use of dictionary in python <ul style="list-style-type: none">• Read a dictionary from user and display.• To sort a dictionary by key• Concatenate two Python dictionaries into a new one

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CLASSES, OBJECTS, INHERITANCE, INTERFACES.

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Experiment 5

Subject: Open Source Technology Lab

Branch: Computer

Semester: IV

1.	<p>Python program to create and list of employees using Employee class. Program should also print total number of employees. Employee class should have</p> <ul style="list-style-type: none"> • <code>empcount</code> (class variable) • <code>id</code> and <code>name</code> (instance variable) • constructor to set <code>id</code>, • <code>set_name()</code>, <code>get_name()</code>, <code>get_id()</code> methods (instance method) • <code>set_emp_count()</code> (class method)
2.	<p>Python program to demonstrate Multiple Inheritance</p> <pre> classDiagram class Employee { •__init__(id) •setname(name) •getname() •getid() } class Student { •__init__(college) •getcollege() } class Intern { •__init__(id, college, period) •setdetails(name) •getdetails() } Employee < -- Intern Student < -- Intern </pre>
3.	<p>Python program to overload greater than (>) operator to make it act on user defined class objects</p>
4.	<p>Python program to demonstrate concept of Interfaces. Program contains Printer interface and its subclasses to send text to any printer.</p> <pre> classDiagram class Printer { printit(self, text) disconnect (self) } class IBM { printit(self, text) disconnect (self) } class HP { printit(self, text) disconnect (self) } Printer < -- IBM Printer < -- HP </pre>

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EXCEPTION HANDLING, FILES, DIRECTORIES -
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Experiment 6

Subject: Open Source Technology Lab

Branch: Computer

Semester: IV

1.	Python program <ul style="list-style-type: none"> To create class <i>Student</i> with <i>rno, name, marks</i> as instance variable and <i>constructor</i> to initialize these instance variables. Instantiate <i>n</i> instances of classes and save details in list. Create an user defined exception class <i>Fail</i> to raise an exception if marks is less than 40. Display details of students and also raise exceptions for marks less than 40.
2.	Python program to <ul style="list-style-type: none"> create a file count no. of lines , words and characters in a file. write content of a file in a new file and read that new file.
3.	Python program to <ul style="list-style-type: none"> create a class <i>Customer</i> with <i>id, name, mobile number</i> as instance variable and <i>constructor</i> to initialize these instance variables. Instantiate <i>n</i> instances of classes Save details of all customer in a <i>file</i> and read back from that file.
4.	Python program to <ul style="list-style-type: none"> create directories using <i>mkdir()</i> and <i>makedirs()</i> remove directories using <i>rmdir()</i> and <i>removedirs()</i> change current directory



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PACKAGES & REGULAR EXPRESSION

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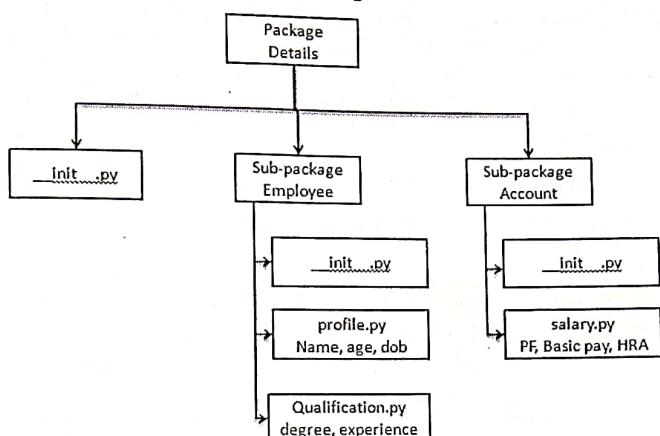
Experiment 7

Subject: Open Source Technology Lab

Branch: Computer

Semester: IV

1. Python program to demonstrate use of packages.



Create a file to import all the packages , calculate the salary and display all the details of the Employee
 $\text{Salary} = \text{Basic} + \text{H.R.A} - \text{P.F.}$

2. Python program to demonstrate use of regular expression

- Create string with name of cities in india separated by spaces.
- Find all cities ending with "ai"
- Find all cities starting with "Mu" or "Ma"
- print name of cities with 'u' as second letter and 'a' as second last letter

3. Python program to demonstrate use of regular expression

- Create a phone list using file (surname name number)
- Find all the entries of phone book with surname as "Rao" and first name starting with 'J' or 'K'


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GUI , DATABASE CONN, DJANGO .

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Subject: Open Source Technology Lab

Branch: Computer

Semester: IV

Experiment 8

1. Python program to demonstrate use of Tkinter interface module.
Create a GUI based application using widgets Entry, Label, Text, Button, RadioButton, CheckButton, ListBox, Menu, Spinbox (any five).

Save the details in a file and read back from file on python prompt.

Experiment 9

1. Python program to demonstrate MYSQL database connectivity with python.
Create a GUI based application using widgets Entry, Label, Text, Button, RadioButton, CheckButton, ListBox, Menu, Spinbox (any five).

Save the details in a database and read back from file on python prompt.

Experiment 10

1. Creating web application using Django web framework
 - Installing Django
 - Creating project
 - Creating App and Views
 - Creating and activating model
 - Admin interface - Modify database from admin interface



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PFR L CONTROL STRUCTURE
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Subject: Open Source Technology Lab
Branch: Computer Semester: IV

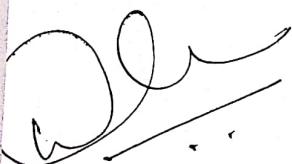
Experiment 11

1.	PERL program to show whether entered number is even or not using if...else or unless....else.
2.	PERL program to check whether entered string is palindrome or not.
3.	PERL program to implement calculator using given statement.

DATA STRUCTURE

Experiment 12

1.	PERL program to implement Stack data structure using array
2.	PERL program to implement Queue data structure using array
3.	PERL program to create a hash while adding values from users , delete and modify an entry in hash .



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Assignment 1 - Data Structures

Subject: Open Source Technology Lab

Branch: Computer

Semester: IV

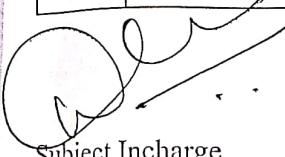
1.	Python program to implement operations of linked list 1. Display list 2. Insert at beginning 3. Insert at End 4. Insert at specified position 5. Delete from beginning 6. Delete from end 7. Delete at specified position 8. Delete a particular element 9. Search an element 10. Replace element at specified index 11. Forward traversal 12. Reverse traversal 13. Insert after an element
2.	Python program to implement Stack data structure create class Stack with following functions. <ul style="list-style-type: none">• Push an element• Pop an element• Top of Stack• Search an element• Display stack create instance and perform all operations.
3.	Python program to implement Queue data structure create class Queue with following functions. <ul style="list-style-type: none">• Insert an element• Remove an element• Search an element• Display queue
4.	Python program to use deque class from collections with following functions. <ul style="list-style-type: none">• Add element at Front• Remove element from Front• Add element at Rear• Remove element from Rear• Search for an element

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THADOMAL SHAHANI ENGINEERING COLLEGE**Assignment 2 - Sub-Routine in PERL****Subject: Open Source Technology Lab****Branch: Computer****Semester: IV**

1.	Perl Subroutine to calculate Factorial of an entered number.
2.	Perl Subroutine to Count Total Number of Vowels, Digits and Consonants in a String.
3.	Perl Subroutine to Check whether entered number is Disarium or Not. A number is called Disarium if sum of its digits powered with their respective positions is equal to the number itself.

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