

Course: Programming, Data Structures and Algorithms using Python

Course Code: noc19-cs08

Session: 2018-19

Duration: 8 Weeks

Assessment procedures: Weekly Assignment (25%) + proctored certification Exam (75%)

Curriculum of the Course:

Week 1:

- Informal introduction to programming, algorithms and data structures via gcd, Downloading and installing Python, gcd in Python: variables, operations, control flow - assignments, conditionals, loops, functions.

Week 2:

- Python: types, expressions, strings, lists, tuples, Python memory model: names, mutable and immutable values, List operations: slices etc., Binary search, Inductive function definitions: numerical and structural induction, Elementary inductive sorting: selection and insertion sort, In-place sorting

Week 3:

- Input-Output Handling in Java
- Basic algorithmic analysis: input size, asymptotic, complexity, $O()$ notation, Arrays vs lists, Merge sort, Quicksort, Stable sorting

Week 4:

- Dictionaries, More on Python functions: optional arguments, default values, Passing functions as arguments, Higher order functions on lists: map, iter, list comprehension

Week 5:

- Exception handling, Basic input/output, Handling files, String processing.

Week 6:

- Backtracking: N Queens, recording all solutions, Scope in Python: local, global, nonlocal names, Nested functions, Data structures: stack, queue, Heaps

Week 7:

- Abstract datatypes, Classes and objects in Python, "Linked" lists: find, insert, delete, Binary search trees: find, insert, delete, Height-balanced binary search trees.

Week 8:

- Efficient evaluation of recursive definitions: memorization, Dynamic programming: examples, Other programming languages: C and manual memory management, Other programming paradigms: functional programming.

List of students enrolled

S. No.	Name of Student
1.	Aditi Sharma
2.	Abhay Jain
3.	ADITYA CHOUDHARY

4.	RAGHAV AGRAWAL
5.	Ananya Tiwari
6.	Ankit Pareek
7.	Ankit Kumar Jangir
8.	Arpit Gupta
9.	ASHISH KUMAR OJHA
10.	Ashita Gupta
11.	Avish Dhirawat
12.	Ayush Kothari
13.	Cherrisha Sharma
14.	Chirag Mogra
15.	sunita choudhary
16.	dikshita samdani
17.	Divya Sharma
18.	Radhika Agarwal
19.	eshaan chauhan
20.	Gaurav Vaishnav
21.	mansi gupta
22.	rajat gagar
23.	Harshdeep walia
24.	JATIN HAZRATI
25.	Kanak Agrawal
26.	kavya Prasannan
27.	RAHUL KUMAR
28.	Keshav kishore chhipa
29.	Koustoobh Pareek
30.	Kuhuk Rastogi
31.	yash laddha
32.	Yashaswi Mathur
33.	Mihir Jain
34.	Mohit Agarwal
35.	Nikhil Vaswani
36.	NISHANT JAIN
37.	CHETAN PRAJAPAT
38.	Sharad Kumar Pareek
39.	parmanand sarawat
40.	pratik bansal
41.	Priyal Goyal
42.	priyansh ajmera
43.	Pulkit
44.	Puneet Mathur
45.	RAJAT SAINI
46.	Akshay Rathi
47.	Ritik Agarwal

48.	Joshi Ritwick
49.	Roopal Singh
50.	Ritesh Porwal
51.	Shaiphali Maheshwari
52.	Manish khandelwal
53.	shashank mathur
54.	shorya upadhayay
55.	shrayansh
56.	Shubham bhardwaj
57.	jeevan deep singh
58.	SINGH POURNIMA YOGENDRA
59.	SURYANSH GAHLOT
60.	Sushobhit nigam
61.	Tushar Verma
62.	vanisha arora
63.	Devang Vashistha
64.	VISHNU JANGID
65.	Vishal Tulsani
66.	Yashwant tejwani