

Course: Programming, Data Structures and Algorithms using Python

Course Code: noc19-cs40

Session: 2019-20

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.	Abhay Jain
2.	abhishek gupta
3.	Abhijeet sharma

4.	Akshit Saxena
5.	Akshat Jain
6.	Anand Samantnani
7.	ANKIT KUMAR
8.	Ankit Saini
9.	Ansh Arora
10.	Anubhav Jain
11.	Anuj Sharma
12.	Prince Jain
13.	astha khandelwal
14.	Atul Sharma
15.	Anshuman Vashishtha
16.	Cherrisha Sharma
17.	chetan sharma
18.	Chhavi Jangid
19.	Gaurav Malani
20.	faisal khan
21.	ANISH GUPTA
22.	Harsh Modi
23.	Harsh Vardhan Goel
24.	Himanshu Bairwa
25.	himanshu somani
26.	Pushpendra
27.	ANKIT AGRAWAL
28.	Kalpana Modi
29.	Kanak Agrawal
30.	Harsh Khandelwal
31.	Yash Khandelwal
32.	Kratika agrawal
33.	Yashaswi Mathur
34.	mayank agrawal
35.	mohit batra
36.	Nikhil Vaswani
37.	Ansh Pancholi
38.	parmanand saraswat
39.	Ayush Podar
40.	radhika sodhani
41.	Rahul Singh
42.	Rishabh Garg
43.	Ritik Agarwal
44.	Acchint kaur
45.	Saransh Sharma
46.	shubham Menroy
47.	Sabhyata Agarwal
48.	vishal soni

49.	swarali sharma
50.	Saurabh Sharma
51.	suhani maheshwari
52.	Sumitra Janwar
53.	Swapnil Agrawal
54.	tanya agrawal
55.	Hitesh Joshi
56.	vaishnavi sharma
57.	Vinay vyas
58.	Vishal prajapat
59.	Parikshit Sharma
60.	YASH VARDHAN SHARMA
61.	YASH SONI