

Course: Programming, Data Structures and Algorithms using Python

Course Code: noc21-cs21

Session: 2020-21

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, lter, 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.	VED SHARMA
2.	Abhishek Goyal
3.	UMA AGARWAL

4.	Anshu Verma
5.	Arihant pokharna
6.	Ashwani Malav
7.	Ishita Vyas
8.	Bhomesh Razdan
9.	ayushi garg
10.	Chhavi Jangid
11.	Chirag Bhayana
12.	Ritik soni
13.	Divya Ramani
14.	EKLAVYA JOSHI
15.	Vishal Verma
16.	Harsh Vardhan Goel
17.	Ishita Vyas
18.	Yukti Yadav
19.	Rohan jain
20.	Jancy C Josha
21.	KRISHAN KUMAWAT
22.	Lalit kumawat
23.	nikhil agarwal
24.	Mansi Pareek
25.	Chirag Jain
26.	Nitin Chittoria
27.	Ayush Podar
28.	POOJA CHAUDHARY
29.	Kashish Sharma
30.	SUMIT SAINI
31.	Sanjay Singh
32.	Yogendra Singh
33.	Himanshu Shekhar
34.	Shobhit khandelwal
35.	Shruti Dubey
36.	Sabhyata Agarwal
37.	Suraj sharma
38.	Shubham Udsaria
39.	TANYA KHANDELWAL
40.	Ayush Singh tomar
41.	Harsh Goyal
42.	Yukti Yadav
43.	Rahul Chandnani
44.	Vinay vyas
45.	Vinit Kumar Shah
46.	Vishal
47.	Vishal Kumar Nama