**Python**

1. What is python, what are different data types in python?
2. Differentiate between list and tuple?
3. Uses and properties of set?
4. Uses and properties of dictionary?
5. Is it possible to sort/order the elements and store it in python dictionary, Justify your answer?
6. Provided a python-dictionary with value {k1: v1, k2: v2}. How to change the k1 to k3 in the same dictionary?
7. What are different types of copy methods in python?
8. What are python mixins and python closures?
9. Does python support inheritance and if yes, name few supported type of inheritance
10. What is diamond problem and how python handles it?
11. What is \*args and \*\*kwargs in python?
12. What is the difference between range() and xrange() in python2. Which is the function available in python3 and explain your opinion on that?
13. What is an iterator, explain its application?
14. What is a generator, explain its application?

**Django**

1. What is Django?
2. Explain the request to response cycle of Django?
3. What is a middleware and explain its significance?
4. Write a middleware to count the no of hits coming to your current project?
5. What are model managers and what are its advantages?
6. When is a model manager used over a property and viz.?
7. If there are 3 tables A, B, C and A has a ForiegnKey relationship with B and B has a ForiegnKey relationship with C, write a query to get all the elements linked to an element of A from C using Django ORM?
8. What is Django migration and what is its significance. What is the good practice done on migrations when it comes to production environment w.r.t Django?

**Coding**

1. If a word and a letter is given as input, write a program to find the first occurrence (index) of the letter(input) in the word(input)? E.g.: - word = “Python Django”, letter = “o” then output = 4.
2. If a random list of numbers is given as input, write a program to find the second largest/smallest in the list without using any inbuilt python functions?
3. Write a Python code to print the optimal number of moves taken to segregate a list of natural numbers to even and odd within the same list. Eg: [1,2,3,4,5]🡪[2,4,1,3,5]. The rules are given below; Discuss the time complexity of the program in terms of Big-O notation.

* The order of numbers doesn’t matter
* Changing one number from its position to other is considered as one move
* However, a swap is considered as only one move.
* Only in-list swapping or changing is allowed.

1. Given a list of n numbers, and an integer ‘a’, create a new list grouping the list of n elements with ‘a’ items in each group? E.g.: - given list = [1,2,3,4,5,6,7], a=2, then output list = [[1, 2], [3, 4], [5, 6], [7]]
2. Write a program to find out the missing number from a list of consecutive number without using any loop (imagine only one number is missing and the list always starts from 1)? (e.g. for lists [1,2,3,4,5,6,8,9], [1,3,4,5,6,7,8,9], [1,2,3,4,6,7,8])