

Important Questions for

MSDS Sem I – Problem Solving and Python Programming

Unit I – Introduction to Computing & Python Basics

1. What is an Algorithm? Explain Characteristics of an algorithm?
 2. What are the fundamentals of computing and how do they relate to problem-solving?
 3. Define Variable and mention rules for choosing names of variables.
 4. Explain the steps to identify and solve a computational problem using algorithms.
 5. What is a flowchart? Draw a flowchart to find the largest of three numbers.
 6. What are local variables and global variables.
 7. Describe Python's interactive mode and script mode.
 8. Explain the different data types and type conversions in Python with examples.
 9. Explain briefly about different types of loops in python?
 10. What is a Tuple and list in python. Write the differences between them
 11. Explain about conditional statements.
 12. What is dictionary? Explain the methods available in dictionary. Differentiate between the tuple and sets in python?
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Unit II – Functions and Strings

1. What are built-in functions in Python? Give examples.
 2. Define functions and write syntax, with a Suitable example
 3. Discuss about function arguments in python.
 4. Differentiate between *args and **kwargs with code examples.
 5. Define a user-defined function and explain default and keyword arguments.
 6. Write a program to find the factorial of a number using a function.
 7. Explain any five string methods with examples.
 8. What is slice operation?
 9. Write a program to count vowels in a given string.
 10. List all escape characters in python with examples?
 11. Write a short note on the format operator?
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Unit III – Lists, Tuples, Dictionaries & Files

1. What is list aliasing and how does it affect list operations?
2. Explain list slicing and list comprehension with examples.
3. Explain how to create a tuple. Differentiate between tuple and list with suitable code.
4. Briefly explain the slice operation on tuple with example.
5. Write a program to sort a list using insertion sort.

6. Define dictionaries and its creation? Explain the advantages and disadvantages over the list.
 7. Write a Python program to read content from a text file and count word frequency.
 8. Explain files and different types of files
 9. Illustrate with example how to read and write CSV File/
 10. Describe about modules and its methods of implementation
 11. Explain the concept of Exception handling in Python with suitable examples
 12. How will you create a package & import its Explain with an example
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Unit IV – Object-Oriented & Functional Programming

1. Define a class and object in Python. With examples
2. How to create a list of object in python class?
3. Explain the difference between Data attributes and class attributes.
4. What is inheritance? Write a Python program to demonstrate single inheritance.
5. What is polymorphism in Python? Explain with an example.
6. Write a program using lambda and map to calculate the square of numbers in a list.
7. Explain generators and iterators with examples.
8. Illustrate method overloading and operator overloading with an example.
9. Briefly explain encapsulation with an example?
10. Demonstrate the use of super() function with an example
11. Describe the need for `__init__()` constructor method.