

Basic Interview Questions – Machine Learning

1. Define Machine Learning
2. What is a ML model
3. How to create a model
4. List all ML algorithms
5. What is Bias and Variance?
6. What is overfitting and underfitting?
7. What is regularization in ML?
8. What are hyper parameters for a ML, DL model
9. List the hyper parameters for a ML DL model
10. What is an activation function?
11. List different activation functions.
12. Which activation function is used for classification?
13. List types of Neural Networks
14. What is Hypothesis?
15. What is Gradient Descent?
16. List different types of Gradients
17. What is a cost/loss function?
18. What are the different methods of model validation?
19. What is cross-validation?
20. Give an example of k-fold validation.
21. What are different categories of ML algorithms? (Supervised, un-supervised, semi-supervised, Reinforce learning)
22. What are the different performance evaluation benchmarks for a ML model?
23. What is a confusion matrix?
24. What is Recall?
25. What is Precision?
26. What is Accuracy?
27. What is Ensemble Learning?
28. List and explain different ensemble learning techniques.
29. List different Supervised learning algorithms

30. List different Unsupervised learning algorithms
31. Explain K-means clustering algorithm
32. Explain K-medoid clustering algorithm
33. Explain Hierarchical clustering algorithm
34. Explain Density based clustering algorithm
35. Explain Random Forest.
36. What is a Decision Tree?
37. What are common problems with trees?
38. List different decision tree algorithms.
39. Explain the working of ID3 algorithm.
40. Explain the working of CART algorithm.
41. What is Naïve Bayes classifier?
42. What is regression? What are its types?
43. What is clustering in ML?
44. What is classification in ML?
45. What is Regularization? What are its types?
46. Explain L1 and L2 Regularization in detail.

Basic Interview Questions – Deep Learning

1. Define deep learning and neural networks.
2. Explain perceptron with an example.
3. What is Artificial Neural Network?
4. What is Deep Neural Network?
5. What is the importance of data normalization in deep learning?
6. What is a multi-layer perceptron (MLP)?
7. Define hyperparameters and discuss some common ones.
8. Explain cost function and gradient descent.
9. What is vanishing gradient?

10. What is Stochastic Gradient?
11. Define a feedforward neural network and a recurrent neural network with examples.
12. Explain the importance of activation functions in neural networks.
13. Define deep learning and neural networks.
14. What is the importance of data normalization in deep learning?
15. What is a multi-layer perceptron (MLP)?
16. Define hyperparameters and discuss some common ones.
17. Explain cost function and gradient descent.
18. Define a feedforward neural network and a recurrent neural network with examples.
19. Explain the importance of activation functions in neural networks.
20. List the applications of DL.
21. What is learning rate?
22. What is Entropy?
23. What is Early Stopping?
24. Explain the impact of small and large learning rate.
25. What is back-propagation?
26. What is feed-forward?
27. What is CNN?
28. List different CNNs.
29. Explain with an example the convolution operation.
30. List and explain the different types of Pooling's used in CNN.
31. What is LSTM Model? How it works?
32. What is RNN? How it works?
33. What GAN? How it works?
34. What are Encoders and Decoders? How it works?
35. What is the concept of dropout?
36. What is early stopping?

Basic Interview Questions – Data Structures

1. List different Data Structures
2. List different Linear DS
3. List different non-linear DS
4. What is a Stack and how it operates?
5. List and explain the different operation on stack.
6. What is a Queue and how it operates?
7. List and explain the different operation on Queue.
8. Differentiate between Stack and Queue
9. What is an array? What are its types?
10. What is a linked list? What are its types? How they operate?
11. List and explain different operation on linked list.
12. Difference between array and linked list.
13. What is a tree?
14. What is a AVL Tree?
15. What is a B Tree?
16. What is a B+ Tree?
17. What are different tree traversal techniques.
18. What is Inorder Traversal?
19. What is Preorder Traversal?
20. What is Postorder Traversal?
21. What is Breadth First Search (BFS)?
22. What is Depth First Search (DFS)?
23. What is the difference between the Breadth First Search (BFS) and Depth First Search (DFS)?
24. What is a sorting algorithm?
25. What are the different types of sorting algorithms?
26. Explain what is ideal Sorting Algorithm?
27. Explain Bubble sort with an example.
28. Explain Selection sort with an example.
29. Explain Insertion sort with an example.
30. Explain Merge sort with an example.

31. Explain Quick sort with an example.
32. Explain Heap sort with an example.
33. What is the difference between comparison-based and non-comparison-based sorting algorithms?
34. Explain radix sort with an example.
35. Explain Counting sort with an example.
36. Why is Merge sort preferred over Quick Sort for sorting linked lists?
37. Which is the best sorting algorithm for large datasets?
38. List the best case, average case, and worst-case complexity of all the sorting algorithms mentioned in above questionnaire.
39. What is a searching algorithm?
40. What are the different types of searching algorithms?
41. Explain Linear Search with an example.
42. Explain Binary Search with an example.
43. Explain DFS Search with an example.
44. Explain BFS Search with an example.
45. List the best case, average case, and worst-case complexity of all the searching algorithms mentioned in above questionnaire.
46. How does Hashing work in searching?

Basic Interview Questions – Computer Algorithms

1. Define a Computer Algorithm?
2. What is Time complexity and space complexity of an algorithm.
3. How can we compare between two algorithms written for the same problem?
4. What do you understand by the best case, worst case and average case scenario of an algorithm?
5. List Asymptotic Notations.
6. What do you understand by the Asymptotic Notations?
7. Explain the Divide and Conquer Algorithm.
8. List some of the algorithms which use the Divide and Conquer Algorithmic paradigm.
9. Explain Greedy Algorithm approach.
10. List the algorithms that use Greedy Approach.

11. Explain with an example Linear Search algorithm.
12. Explain with an example Binary Search algorithm.
13. Explain Dynamic Programming Algorithm approach
14. Explain DFS Algorithm approach
15. Explain BFS Algorithm approach
16. Explain Dijkstra's Algorithm
17. Explain Bubble sort Algorithm
18. Explain Quick sort Algorithm
19. What is Tower of Hanoi?
20. What is a recursive function?
21. What is a Fibonacci Series?
22. What is minimum spanning tree (MSP)?

Basic Interview Questions – Object Oriented Programming

1. What is meant by the term OOPs?
2. What is the need for OOPs?
3. What are some major Object Oriented Programming languages?
4. What are the main features of OOPs?
5. What are some advantages of using OOPs?
6. How many keywords are there in C++, Java?
7. List the keywords in C++, Java?
8. What is a Class?
9. What is an object?
10. What is encapsulation?
11. What is Polymorphism?
12. What are different types of Polymorphism?
13. What is Compile time Polymorphism and how is it different from Runtime Polymorphism?
14. What is meant by Inheritance?
15. What is Abstraction?

16. How much memory does a class occupy?
17. What is a constructor?
18. What are the various types of constructors in C++?
19. What is a copy constructor?
20. What is a destructor?
21. Can we overload the constructor in a class?
22. Can we overload the destructor in a class?
23. What is call by value and call by reference?
24. What are pointers in C++?
25. Are class and structure the same? If not, what's the difference between a class and a structure?
26. Explain Inheritance with an example?
27. What are the various types of inheritance?
28. What is a super class and sub class? OR What is Base class and Derived class?
29. What is an interface?
30. What is meant by static and Dynamic polymorphism?
31. What is the difference between overloading and overriding in Java?
32. What is an abstract class?
33. How is data abstraction accomplished?
34. How is an abstract class different from an interface?
35. What are access specifiers and what is their significance?
36. What is an exception?
37. What is meant by exception handling?
38. What is meant by Garbage Collection in OOP
39. Can we run a Java application without implementing the OOPs concept?
40. Difference between Procedural and Object-Oriented Programming.
41. What is the virtual function?

Basic Interview Questions – Python Programming

1. What is Python? What are the benefits of using Python
2. What is a dynamically typed language?
3. What is an Interpreted language?
4. What is Scope in Python?
5. What are lists and tuples?
6. What is the key difference between the two?
7. What are the common built-in data types in Python?
8. What is pass in Python?
9. What are modules and packages in Python?
10. How many packages are there in Python?
11. How many modules are there in Python?
12. Differentiate between a package and a module in python.
13. What are some of the most commonly used built-in modules in Python?
14. What are global, protected and private attributes in Python?
15. What is the use of self in Python?
16. What is __init__?
17. What is break, continue and pass in Python?
18. What is docstring in Python?
19. What is slicing in Python?
20. What is the difference between Python Arrays and lists?
21. How is memory managed in Python?
22. What is a dictionary in Python?
23. What is lambda in Python? Why is it used?
24. What is the difference between xrange and range in Python?
25. What is deep copy and shallow copy in python?
26. What is PYTHONPATH in Python?
27. What is the difference between .py and .pyc files?
28. What are iterators in Python?
29. Explain how to delete a file in Python?
30. Explain split() and join() functions in Python?

31. What does *args and **kwargs mean?
32. What are negative indexes and why are they used?
33. Can you easily check if all characters in the given string is alphanumeric?
34. Define PIP. Why it is used?

Python - OOP

35. How do you create a class in Python? Give an example.
36. How does inheritance work in python?
37. Explain it with an example single inheritance in Python.
38. Explain it with an example multi-level inheritance in Python.
39. Explain it with an example Multiple inheritance in Python.
40. Explain it with an example Hierarchical inheritance in Python.
41. How do you access parent members in the child class?
42. Are access specifiers used in python?
43. Is it possible to call parent class without its instance creation?
44. How is an empty class created in python? Give an Example.
45. Why is finalize used?
46. What is init method in python?
47. How will you check if a class is a child of another class?

Python - Pandas

48. What is Pandas? Why it is used?
49. Mention the different types of Data Structures in Pandas?
50. What are the significant features of the pandas Library?
51. Define Series in Pandas?
52. What are the different ways in which a series can be created?
53. Define pandas dataframe. Give an Example.
54. What are the different ways in which a dataframe can be created?
55. How will you combine different pandas dataframes?
56. Can you create a series from the dictionary object in pandas?
57. How can we create a copy of the series in Pandas?
58. List Pandas Methods to deal with finding missing values.
59. List Pandas Methods to deal with handle missing values.

60. What do you understand by reindexing in pandas?
61. How will you delete indices, rows and columns from a dataframe?
62. Can you get items of series A that are not available in another series B?
63. How will you get the items that are not common to both the given series A and B?
64. How can we convert Series to DataFrame?
65. How can we convert DataFrame to Numpy Array?
66. How can we convert DataFrame to an excel file?
67. While importing data from different sources, can the pandas library recognize dates?
68. How would you iterate over rows in a DataFrame in Pandas?
69. List some statistical functions in Python Pandas?
70. How to Read Text Files(.csv,.excel) with Pandas?
71. How are `iloc()` and `loc()` different? Give an example.
72. How will you sort a DataFrame?
73. How would you convert continuous values into discrete values in Pandas?
74. What is `merge()` in Pandas?
75. What is `concat()` in Pandas?
76. What is the difference between `join()` and `merge()` in Pandas?
77. What is the difference(s) between `merge()` and `concat()` in Pandas?
78. What's the difference between `interpolate()` and `fillna()` in Pandas?
79. How to set Index to a Pandas DataFrame?
80. How to add a row to a Pandas DataFrame?
81. How to add new column to pandas dataframe?
82. How will you compute the percentile of a numerical series in Pandas?
83. How to create Timedelta objects in Pandas?
84. How do you split a DataFrame according to a boolean criterion?
85. How to delete a row, column in Pandas DataFrame?
86. Explain the GroupBy function in Pandas
87. Describe a few data operations in Pandas.

[`lower()`,`upper()`,`strip()`,`islower()`,`isupper()`,`split()`,`cat()`,`contains()`,`replace()`,`startswith()`,`endwith()`,`find()`,`findall()`,`swapcase`,`isnull()`,`notnull()`,`dropna()`,`fillna()`,`replace()`,`interpolate()`,`map()`,`applymap()`,`apply()`,`groupby()`,`pivot_table()`,`concat()`,`merge()`,`describe()`]

Python - Numpy

88. What do you understand by NumPy?
89. How are NumPy arrays advantageous over python lists?
90. What are ndarrays in NumPy?
91. How do you find the data type of the elements stored in the NumPy arrays?
92. What are the steps to create 1D, 2D and 3D arrays?
93. How will you efficiently load data from a text file?
94. Which text formats are supported by loadtxt() method?
95. How will you read CSV data into an array in NumPy?
96. How will you sort the array based on the Nth column?
97. How will you find the nearest value in a given numpy array?
98. How will you reverse the numpy array using one line of code?
99. How will you find the shape of any given NumPy array?
100. How is np.mean() different from np.average() in NumPy?
101. How do you concatenate 2 NumPy arrays?
102. How do you convert Pandas DataFrame to a NumPy array?
103. What do you understand by Vectorization in NumPy?
104. How is vstack() different from hstack() in NumPy?

Basic Interview Questions – Java

1. Is Java Platform Independent if then how?
2. List features of Java
3. What is JVM?
4. What is JIT?
5. What is a classloader?
6. Difference between JVM, JRE, and JDK.
7. Explain public static void main(String args[]) in Java.
8. What will happen if we declare don't declare the main as static?
9. What are Packages in Java?

10. How many keywords are there in Java?
11. How many types of packages are there in Java?
12. What are the advantages of Packages in Java?
13. Explain different data types in Java.
14. When a byte datatype is used?
15. Can we declare Pointer in Java?
16. What is the default value of float and double datatype in Java?
17. What is the Wrapper class in Java?
18. Differentiate between instance and local variables.
19. What are the default values assigned to variables and instances in Java?
20. What is a Class Variable?
21. Explain the difference between instance variable and a class variable.
22. What is a static variable?
23. What is the difference between System.out, System.err, and System.in?
24. What do you understand by an IO stream?
25. What is the difference between the Reader/Writer class hierarchy and the InputStream/OutputStream class hierarchy?
26. What are the FileInputStream and FileOutputStream?
27. What is the purpose of using BufferedInputStream and BufferedOutputStream classes?
28. What is an I/O filter?
29. How many ways you can take input from the console?
30. Difference in the use of print, println, and printf.
31. What are operators?
32. How many types of operators are available in Java?
33. Explain the difference between >> and >>> operators.
34. Which Java operator is right associative?
35. What is dot operator? Why it is used?
36. What's the difference between the methods sleep() and wait()?
37. What are the differences between String and StringBuffer?
38. What is an array in Java?
39. On which memory arrays are created in Java?

40. What are the types of an array?
41. Why does the Java array index start with 0?
42. What is the difference between `int array[]` and `int[] array`?
43. How to copy an array in Java? List and explain various methods.
44. What do you understand by the jagged array?
45. What are classes in Java?
46. What is the difference between static (class) method and instance method?
47. What is this keyword in Java?
48. What are different access specifiers in Java?
49. What will be the initial value of an object reference which is defined as an instance variable?
50. What is an Object?
51. What are the different ways to create objects in Java?
52. What is the constructor?
53. What happens if you don't provide a constructor in a class?
54. How many types of constructors are used in Java?
55. What is the purpose of a default constructor?
56. What do you understand by copy constructor in Java?
57. Where and how can you use a private constructor?
58. What are the differences between the constructors and methods?
59. What is an Interface?
60. What are the differences between abstract class and interface?
61. What do you mean by data encapsulation in Java?
62. What is the 'IS-A' relationship in OOPs Java?
63. Define Inheritance.
64. What are the different types of inheritance in Java?
65. What is multiple inheritance? Is it supported by Java?
66. How is inheritance in C++ different from Java?
67. Is there any limitation to using Inheritance?
68. What is an association?
69. What do you mean by aggregation?
70. What is the composition of Java?

71. Can the constructor be inherited?
72. What is Polymorphism?
73. What is runtime polymorphism or dynamic method dispatch?
74. What is method overriding?
75. What is method overloading?
76. Can we override the static method?
77. Can we override the overloaded method?
78. Can we overload the main() method?
79. What are method overloading and method overriding?
80. Can we override the private methods?
81. Can we change the scope of the overridden method in the subclass?
82. Can we modify the throws clause of the superclass method while overriding it in the subclass?
83. Can you have virtual functions in Java?
84. What is Abstraction?
85. What is Abstract class?
86. How can you avoid serialization in the child class if the base class is implementing the Serializable interface?
87. What is Collection Framework in Java?
88. Explain various interfaces used in the Collection framework.
89. Why can't we create a generic array?
90. How does the size of ArrayList grow dynamically?
91. What is a Vector in Java?
92. How to make Java ArrayList Read-Only?
93. What is a priority queue in Java?
94. Explain the LinkedList class.
95. What is the Stack class in Java and what are the various methods provided by it?
96. What is EnumSet?
97. What is an enumeration?
98. What is the difference between Collection and Collections?
99. Difference between ArrayList and LinkedList.
100. What is iterator?

101. What is Exception Handling?
102. How many types of exceptions can occur in a Java program?
103. Difference between an Error and an Exception.
104. Explain Runtime Exceptions.
105. What is NullPointerException?
106. What will happen if you put System.exit(0) on the try or catch block? Will finally block execute?
107. What is the use of the final, finally, finalize keywords?
108. What is a thread?
109. What do you mean by a Multithreaded program?
110. What are the two ways in which Thread can be created?
111. Differentiate between process and thread?
112. Describe the life cycle of the thread?
113. What is JDBC?
114. What is JDBC Driver?
115. What are the steps to connect to the database in Java?
116. What is JDBC Connection interface?
117. What does the JDBC ResultSet interface?
118. What is the JDBC Rowset?
119. What is the role of the JDBC DriverManager class?

Basic Interview Questions – Database

1. What is a Database?
2. Explain different languages present in DBMS.
3. What is meant by ACID properties in DBMS?
4. Are NULL values in a database the same as that of blank space or zero?
5. What is Data Warehousing?
6. Explain different levels of data abstraction in a DBMS.
7. What is meant by an entity-relationship (E-R) model? Explain the terms Entity, Entity Type, and

Entity Set in DBMS.

8. Explain different types of relationships amongst tables in a DBMS.
9. Explain the difference between intension and extension in a database.
10. Explain the difference between the DELETE and TRUNCATE command in a DBMS.
11. What is a lock. Explain the major difference between a shared lock and an exclusive lock during a transaction in a database.
12. What is meant by normalization and denormalization?
13. Explain different types of Normalization forms in a DBMS.
14. Explain different types of keys in a database.
15. Explain the difference between a 2-tier and 3-tier architecture in a DBMS.
16. What does ODBC in a database stand for?
17. Explain the concept of a database schema.
18. What is SQL, and what are its main components?
19. Give an Example of a SQL Query to select all records from a table.
20. Give an Example of a SQL Query to select records from a table based on a criterion.
21. Give an example of a SQL Query to insert a value in a table.
22. Give an example of a SQL Query to insert a value in a table.
23. Give an example of a SQL Query to update an existing value in a table.
24. What is a join in SQL, and what are the different types of joins?
25. Explain the use of indexes in a database.
26. Describe the difference between the HAVING and WHERE clause.
27. What are stored procedures, and what are their advantages?
28. What is a database transaction?
29. What is concurrency control, and why is it important?
30. What are deadlocks, and how can they be avoided?
31. What is a two-phase commit protocol?
32. Describe the role of a transaction log in a DBMS.
33. What are savepoints in a transaction?
34. What is rollback for transactions?
35. What is a distributed database, and what are its advantages?
36. Explain the concept of database replication.

37. Explain the role of caching in database systems.
38. What are the common security threats to a database?
39. What is a database backup, and why is it important?
40. How do you restore a database from a backup?
41. What is Serializability?
42. What are – validation based, timestamp based, granularity-based protocols?

Basic Interview Questions – Computer Networks

1. List different medium for communication.
2. Explain the working of basic networking devices – Hub, Switch, Router, Repeater, NIC, Firewall, Bridge.
3. What is DTE and DCE in networking?
4. List and explain the pros and cons of different networking topologies.
5. List and explain the different types of networks.
6. List different types of cables used for communication.
7. Explain different modes of communication.
8. What is a Networking model?
9. Explain the working of ISO - OSI reference model.
10. Explain the working of TCP/IP Implementation model.
11. How many layers are there in OSI reference model?
12. How many layers are there in TCP/IP Implementation model?
13. What is IP address?
14. What is MAC address?
15. What is Port address?
16. What is the length of IP, MAC, and Port address?
17. What is Subnet mask? Why it is used?

18. List different classes of IP addresses. Also give their range.
19. List and explain the working of different flow control algorithms.
20. List and explain the working of different error control algorithms.
21. What is Line coding and Block coding?
22. What is routing?
23. List and explain the working of different routing algorithms.
24. What is CIDR?
25. Explain the use of these networking commands – netstat, ipconfig, ifconfig, getmac, ping, arp, nslookup, traceroute, netstat, hostname.
26. Explain the working of following protocols – DHCP, DNS, SMTP, POP3, SNMP, ICMP, HTTP, FTP, Telnet.
27. What is the port number for following services – DHCP, DNS, HTTP, HTTPS, Telnet, POP3, IMAP,
28. What is the IEEE standard number for – WiFi, Bluetooth, Ethernet.

Basic Interview Questions – Cloud

1. What are the different types of cloud services?
2. What are the different versions of the cloud?
3. What is Virtualization in cloud?
4. What is hypervisor in cloud architecture?
5. What is migration of virtual server in cloud environment?
6. What is interoperability for clouds?
7. What is Docker in cloud?
8. What is container in cloud?
9. What is EC2?
10. What do you understand by VPC?
11. What are the Storage Classes available in Amazon S3?
12. What is CloudWatch?
13. DNS and Load Balancer Services come under which type of Cloud Service?

14. Explain what S3 is?
15. Explain what Amazon Route 53 is?
16. What is AMI in amazon cloud?

Basic Interview Questions – Operating System

1. What are different types of OS?
2. What is the meaning of a process and thread in OS?
3. What is a state transition diagram for a process?
4. Explain the different events that force a process to make a transition from one state to another.
5. What is a PCB?
6. What is multithreading in OS?
7. What is a System call?
8. List different system calls.
9. What is a scheduler?
10. What are the CPU scheduling criterias?
11. List the types of schedulers and their functions in OS.
12. List and explain different scheduling algorithms.
13. Explain why do we need scheduling.

14. What is the meaning of Process Synchronization?
15. What is a Semaphore? How it works?
16. What are the types of Semaphores? How they work?
17. What is a monitor?
18. Explain what is critical section problem?
19. What is a race condition?
20. Explain Peterson's solution for process synchronization.
21. What are the requirements for the critical section problem?
22. Explain the Producer and Consumer Problem.
23. Explain the Reader-Writer Problem.
24. Explain the Dining Philosopher Problem.
25. List and explain the hardware synchronization algorithms.
26. What is deadlock?
27. What are the conditions that simultaneously if held true leads to a deadlock?
28. What is a Wait for graph?
29. What is Banker's algorithm?
30. Explain the ways in which deadlock can be prevented.
31. Explain the ways in which deadlock can be avoided.
32. Explain the ways in which deadlock can be handled.
33. What are different memory allocation strategies?
34. What is Virtual Memory?
35. What is TLB?
36. Explain the paging and segmentation techniques for memory management.
37. List and explain the different page replacement algorithms.
38. What is a page fault? How to handle the same.

Basic Interview Questions – Javascript

1. What are the differences between Java and JavaScript?
2. What are the different data types present in javascript?
3. Which symbol is used for comments in JavaScript?
4. Difference between "==" and "===" operators.
5. Difference between var and let keyword in javascript.

6. Explain Implicit Type Coercion in javascript.
7. Is javascript a statically typed or a dynamically typed language?
8. What is NaN property in JavaScript?
9. Explain passed by value and passed by reference.
10. What is an Immediately Invoked Function in JavaScript?
11. What is negative infinity?
12. Is it possible to break JavaScript Code into several lines?
13. What do you mean by NULL in JavaScript?
14. What is the 'this' keyword in JavaScript?
15. What is the difference between ViewState and SessionState?
16. What is the difference between call() and apply() methods ?

Basic Interview Questions – Additional

1. List different AWS services.
2. List different prominent cloud platforms available.
3. List different Web Servers
4. List different front-end technologies for web development.
5. List different back-end technologies for web development.
6. List different front-end technologies for android development.
7. List different back-end technologies for android development.
8. List different types of Operating Systems.
9. What is full stack development?
10. What is IANA, ICANN? What purpose do they serve?
11. List different libraries used for ML and DL projects.
12. What is MVC in software development?
13. List different MVC frameworks.
14. List different Software Testing Tools.

15. What is a Software Development Life cycle?
16. List different types of software process models.
17. What is the difference between framework and library?
18. What is CERT, CERN in computer security?
19. List OWASP top 10 vulnerabilities.
20. Explain the working of tier two Client Server Architecture.
21. Explain the working of multi-tier Client Server Architecture