

Python

Introduction to Programming Languages and Python

1. **Which of the following is a high-level programming language?**

- a) Assembly Language
- b) Machine Language
- c) Python
- d) Binary

Answer: c) Python

2. **Who developed Python?**

- a) Dennis Ritchie
- b) Guido van Rossum
- c) James Gosling
- d) Bjarne Stroustrup

Answer: b) Guido van Rossum

Installing Anaconda and Jupyter Notebook

3. **Which command is used to launch Jupyter Notebook from Anaconda?**

- a) jupyter lab
- b) jupyter notebook
- c) jupyter run
- d) python notebook

Answer: b) jupyter notebook

4. **What is the main advantage of using Anaconda?**

- a) Game Development
- b) Data Science and Machine Learning environment
- c) Video Editing
- d) Graphics Design

Answer: b) Data Science and Machine Learning environment

Basic Python Syntax and Data Types

5. Which of the following is not a valid Python variable name?

- a) my_var
- b) _temp
- c) 2cool
- d) var_name

Answer: c) 2cool

6. What is the output of type(3.14)?

- a) int
- b) float
- c) str
- d) complex

Answer: b) float

Data Structures - String

7. What does my_string[::-1] do?

- a) Reverses the string
- b) Converts string to uppercase
- c) Replaces spaces with underscores
- d) None of the above

Answer: a) Reverses the string

8. Which method converts a string to lowercase?

- a) lower()
- b) capitalize()
- c) upper()
- d) isupper()

Answer: a) lower()

Tuple and Tuple Methods

9. Which of the following is a mutable data structure?

- a) Tuple
- b) List
- c) String

d) All of the above

Answer: b) List

10. What does the count() method do in tuples?

a) Counts total elements

b) Counts the occurrences of an element

c) Adds elements

d) Deletes elements

Answer: b) Counts the occurrences of an element

List and List Methods

11. What is the output of len([1, 2, 3, 4])?

a) 3

b) 4

c) 2

d) None

Answer: b) 4

12. Which method is used to remove an item from a list?

a) pop()

b) delete()

c) remove_item()

d) None of the above

Answer: a) pop()

Dictionary and Set

13. Which method adds a new key-value pair to a dictionary?

a) append()

b) add()

c) update()

d) extend()

Answer: c) update()

14. Which of the following does not allow duplicate elements?

a) List

- b) Tuple
 - c) Set
 - d) Dictionary
- Answer:** c) Set
-

Conditional and Control Statements

15. What is the output of if 5 > 2: print("Yes")?

- a) Error
- b) No output
- c) Yes
- d) 5 > 2

Answer: c) Yes

16. Which statement is used to terminate a loop prematurely?

- a) continue
- b) break
- c) return
- d) exit

Answer: b) break

Functions

17. Which keyword is used to define a function in Python?

- a) func
- b) define
- c) function
- d) def

Answer: d) def

18. What is a function that does not return a value called?

- a) Anonymous function
- b) Void function
- c) Recursive function
- d) Higher-order function

Answer: b) Void function

File Handling

19. Which method is used to write to a file in Python?

- a) write()
- b) print()
- c) output()
- d) append()

Answer: a) write()

20. What does with open("file.txt", "r") do?

- a) Opens file in read mode
- b) Creates a new file
- c) Deletes the file
- d) None of the above

Answer: a) Opens file in read mode

Exception Handling

21. Which keyword is used for exception handling in Python?

- a) try
- b) catch
- c) throw
- d) except

Answer: a) try

22. Which block is always executed in exception handling?

- a) try
- b) except
- c) else
- d) finally

Answer: d) finally

OOP Concepts

23. Which of the following is not an OOP concept?

- a) Inheritance
- b) Encapsulation
- c) Compilation

d) Polymorphism

Answer: c) Compilation

24. What is the purpose of `__init__` in Python?

a) Initialize variables

b) Define methods

c) Create objects

d) None of the above

Answer: a) Initialize variables

NumPy and Pandas

25. What is the default axis of operations in NumPy?

a) 0

b) 1

c) None

d) Both

Answer: a) 0

26. Which method in Pandas gives basic statistical details of a DataFrame?

a) `info()`

b) `describe()`

c) `details()`

d) `statistics()`

Answer: b) `describe()`

Data Visualization

27. Which library is used to create plots in Python?

a) NumPy

b) Seaborn

c) Matplotlib

d) Pandas

Answer: c) Matplotlib

28. What does `sns.heatmap()` do?

a) Displays a bar chart

- b) Displays a correlation matrix as a heatmap
- c) Creates line plots
- d) None of the above

Answer: b) Displays a correlation matrix as a heatmap

Here's a continuation of the MCQs with answers, covering more topics:

Data Structures - String Methods

29. Which method is used to split a string into a list?

- a) split()
- b) slice()
- c) join()
- d) partition()

Answer: a) split()

30. What does the find() method return if the substring is not found?

- a) None
- b) -1
- c) 0
- d) An exception

Answer: b) -1

Tuple Methods

31. Which of the following methods is not available for tuples?

- a) count()
- b) index()
- c) append()
- d) len()

Answer: c) append()

32. Which operator is used to concatenate tuples?

- a) +
- b) *

c) &

d) //

Answer: a) +

List Methods

33. Which method adds an element to the end of a list?

a) append()

b) insert()

c) extend()

d) add()

Answer: a) append()

34. How can you reverse a list in Python?

a) list.reverse()

b) list[::-1]

c) Both a and b

d) None of the above

Answer: c) Both a and b

Dictionary Methods

35. Which method is used to get a list of all keys in a dictionary?

a) values()

b) keys()

c) items()

d) get()

Answer: b) keys()

36. What is the result of {'a': 1, 'b': 2}.get('c')?

a) None

b) KeyError

c) 0

d) 'c'

Answer: a) None

Set Methods

37. Which of the following methods removes all elements from a set?

- a) clear()
- b) delete()
- c) remove()
- d) discard()

Answer: a) clear()

38. Which operation returns the union of two sets?

- a) |
- b) &
- c) -
- d) ^

Answer: a) |

Operators

39. What is the output of 5 % 2?

- a) 0
- b) 1
- c) 2
- d) 5

Answer: b) 1

40. Which operator is used for exponentiation in Python?

- a) ^
- b) **
- c) %
- d) &

Answer: b) **

Control Statements

41. What is the output of the following code?

```
for i in range(3):  
    if i == 1:  
        break
```

`print(i)`

- a) 0
- b) 0 1
- c) 0 1 2
- d) Error

Answer: a) 0

42. What is the purpose of the continue statement?

- a) Exit a loop
- b) Skip the current iteration and continue with the next iteration
- c) Restart the loop
- d) None of the above

Answer: b) Skip the current iteration and continue with the next iteration

Functions

43. What is the default return value of a function that does not explicitly return anything?

- a) None
- b) 0
- c) False
- d) Error

Answer: a) None

44. Which of the following is not a type of function argument in Python?

- a) Positional arguments
- b) Keyword arguments
- c) Optional arguments
- d) Mandatory arguments

Answer: d) Mandatory arguments

File Handling

45. What does the readline() method do?

- a) Reads the entire file
- b) Reads a single line from a file
- c) Writes a single line to a file

d) None of the above

Answer: b) Reads a single line from a file

46. Which mode is used to open a file for both reading and writing?

a) r+

b) rw

c) w+

d) a+

Answer: a) r+

Exception Handling

47. What is the purpose of the else block in exception handling?

a) Execute code if no exception occurs

b) Execute code if an exception occurs

c) Execute code in all cases

d) None of the above

Answer: a) Execute code if no exception occurs

48. What is the output of the following code?

```
try:
```

```
    x = 1 / 0
```

```
except ZeroDivisionError:
```

```
    print("Error!")
```

```
finally:
```

```
    print("Done")
```

a) Error! Done

b) Done

c) Error!

d) None

Answer: a) Error! Done

OOP Properties

49. What is encapsulation?

- a) Wrapping data and methods into a single unit
- b) Reusing existing code
- c) Defining multiple functions with the same name
- d) None of the above

Answer: a) Wrapping data and methods into a single unit

50. What does @staticmethod in Python do?

- a) Defines a method that doesn't access class or instance data
- b) Creates a private method
- c) Defines a method that accesses only class variables
- d) None of the above

Answer: a) Defines a method that doesn't access class or instance data

NumPy - Arrays and Operations

51. What is the default data type of a NumPy array?

- a) float64
- b) int64
- c) object
- d) str

Answer: a) float64

52. Which method is used to create an array of evenly spaced numbers in NumPy?

- a) linspace()
- b) arange()
- c) zeros()
- d) ones()

Answer: b) arange()

53. What does the reshape() method do in NumPy?

- a) Changes the shape of the array without modifying its data
- b) Creates a new array with random numbers
- c) Deletes elements from an array
- d) None of the above

Answer: a) Changes the shape of the array without modifying its data

54. What is the output of np.zeros((2, 3))?

- a) An array of shape (3, 2) filled with ones
- b) An array of shape (2, 3) filled with zeros
- c) A single-dimensional array filled with zeros
- d) None of the above

Answer: b) An array of shape (2, 3) filled with zeros

55. What does the np.mean() function compute?

- a) Median of the array elements
- b) Average of the array elements
- c) Mode of the array elements
- d) None of the above

Answer: b) Average of the array elements

Pandas - Series and DataFrame

56. What is a Series in Pandas?

- a) A 1D labeled array capable of holding any data type
- b) A 2D labeled data structure
- c) A 3D labeled data structure
- d) None of the above

Answer: a) A 1D labeled array capable of holding any data type

57. Which method is used to read a CSV file in Pandas?

- a) read()
- b) read_csv()
- c) readfile()
- d) csv()

Answer: b) read_csv()

58. What does the head() method in Pandas return?

- a) The last five rows of a DataFrame
- b) The first five rows of a DataFrame
- c) The column names of a DataFrame
- d) None of the above

Answer: b) The first five rows of a DataFrame

59. How do you access a column in a Pandas DataFrame?

- a) Using square brackets []

- b) Using iloc
- c) Using dot notation
- d) Both a and c

Answer: d) Both a and c

60. What does the isnull() method return?

- a) Rows with null values
- b) Boolean values indicating if values are null
- c) Columns with null values
- d) None of the above

Answer: b) Boolean values indicating if values are null

Data Exploration and Manipulation

61. Which function gives the number of rows and columns in a DataFrame?

- a) info()
- b) shape
- c) columns
- d) describe()

Answer: b) shape

62. How can you drop rows with missing values in Pandas?

- a) dropna()
- b) fillna()
- c) replace()
- d) drop()

Answer: a) dropna()

63. What does groupby() do in Pandas?

- a) Aggregates data based on a column or index
- b) Merges multiple DataFrames
- c) Splits data into separate files
- d) None of the above

Answer: a) Aggregates data based on a column or index

64. Which function is used to combine two DataFrames along rows?

- a) concat()
- b) merge()

- c) join()
- d) groupby()

Answer: a) concat()

65. What does value_counts() return in Pandas?

- a) The count of unique values in a column
- b) The sum of values in a column
- c) The average of values in a column
- d) None of the above

Answer: a) The count of unique values in a column

Data Visualization - Matplotlib

66. Which function is used to create a line plot in Matplotlib?

- a) plot()
- b) scatter()
- c) bar()
- d) hist()

Answer: a) plot()

67. What is the purpose of plt.xlabel() in Matplotlib?

- a) Set the title of the plot
- b) Set the x-axis label
- c) Set the y-axis label
- d) Set the legend of the plot

Answer: b) Set the x-axis label

68. Which parameter is used to specify color in a Matplotlib plot?

- a) color
- b) c
- c) col
- d) Both a and b

Answer: d) Both a and b

69. What does plt.show() do?

- a) Displays the plot
- b) Saves the plot to a file
- c) Closes the plot window

d) None of the above

Answer: a) Displays the plot

70. Which function creates a histogram in Matplotlib?

a) hist()

b) bar()

c) plot()

d) pie()

Answer: a) hist()

Data Visualization - Seaborn

71. What is the default dataset in Seaborn?

a) tips

b) iris

c) flights

d) None of the above

Answer: a) tips

72. Which function creates a count plot in Seaborn?

a) sns.countplot()

b) sns.barplot()

c) sns.histplot()

d) sns.scatterplot()

Answer: a) sns.countplot()

73. What does the sns.heatmap() function display?

a) Line plot

b) Correlation matrix

c) Scatter plot

d) None of the above

Answer: b) Correlation matrix

74. Which Seaborn function is used for pairwise visualization of relationships?

a) pairplot()

b) relplot()

c) catplot()

d) distplot()

Answer: a) pairplot()

75. What does sns.violinplot() display?

a) Distribution of data across categories

b) Relationships between two variables

c) A summary of data using bars

d) None of the above

Answer: a) Distribution of data across categories

Miscellaneous

76. Which keyword is used to import a library in Python?

a) library

b) import

c) include

d) define

Answer: b) import

77. What is pip used for?

a) Package installation

b) Python execution

c) Debugging

d) None of the above

Answer: a) Package installation

78. What does the len() function return?

a) Length of an object

b) Sum of elements

c) Maximum value in an object

d) None of the above

Answer: a) Length of an object

79. Which method is used to convert data types in Python?

a) cast()

b) type()

c) str()

d) int()

Answer: d) int()

80. What does the id() function return?

- a) The memory address of an object
- b) The object type
- c) The object's name
- d) None of the above

Answer: a) The memory address of an object
