

Numerical Data Types (1–25)

1. Create an integer variable with value 10 and print its type.
2. Create a float variable with value 3.14 and print its type.
3. Create a complex number $2 + 3j$ and print its real and imaginary parts.
4. Write code to represent 6×10^8 using scientific notation and print it.
5. Represent 0.00000006 using scientific notation and print it.
6. Calculate $0.1 + 0.2$ and check if it equals 0.3.
7. Use the Decimal module to calculate $19.99 + 7\%$ tax and print the total.
8. Create fractions $\frac{3}{4}$ and $\frac{5}{6}$ and print their sum, difference, product, and quotient.
9. Convert the fraction $\frac{3}{4}$ into a float and print it.
10. Write Python code to check whether 5 is an integer and whether 5.0 is a float.
11. Calculate the area of a circle with radius 5.5 using math.pi.
12. Perform $10 + 3.5 * 2$ and print the result.
13. Convert the binary string '1010' to decimal.
14. Convert the octal string '12' to decimal.
15. Convert the hexadecimal string 'A' to decimal.
16. Create binary, octal, and hexadecimal literals for the decimal number 10 and print them.
17. Perform addition and multiplication of complex numbers $2+3j$ and $1-2j$.
18. Create a fraction from float 0.75 and print it.
19. Create a fraction from string "0.6" and print it.
20. Check if 5.0 is a whole number using is_integer().
21. Round the float 3.14159265359 to 2 decimal places.
22. Round the float 3.14159265359 to 4 decimal places.
23. Calculate the absolute value of -3.14 and $2+3j$.
24. Compute $2 ** 3$ and math.sqrt(16) in Python.
25. Calculate integer division $10 // 3$ and modulo $10 \% 3$.

Strings and Basics (26–50)

26. Create a string "Hello" using single quotes and "World" using double quotes.
27. Create a multi-line string with triple quotes and print it.
28. Print a string with escaped quotes: He said "Hello".
29. Print a string with an apostrophe: It's raining.
30. Print a string containing a new line using \n.
31. Print a raw string for the path "C:\Users\Name\Desktop".
32. Access the first and last character of the string "Python".
33. Access the third character using negative indexing.
34. Slice the string "Python" to get "Py".
35. Slice the string "Python" to get "tho".
36. Slice "Python" to get "hon".
37. Reverse the string "Python" using slicing.
38. Use slicing with step 2 on "Python".
39. Concatenate "Hello" and "World" with a space.
40. Repeat the string "Hi " three times.
41. Check if "Python" contains "Py" using in.
42. Check if "Python" does not contain "Java" using not in.
43. Attempt to change the first character of "Python" to "A" and fix it.
44. Delete the entire string "Hello" using del.
45. Convert the integer 123 into a string.
46. Convert the float 3.14 into a string.
47. Convert the boolean True into a string.
48. Write a docstring for a function add(a, b) that returns their sum.
49. Print the ASCII value of 'A' and 'a' using ord().

50. Convert ASCII 65 and 97 back to characters using `chr()`.

String Methods and Manipulation (51–75)

51. Convert "python" to uppercase.
52. Convert "PyThOn" to lowercase.
53. Count how many times "a" appears in "banana".
54. Find the first occurrence of "l" in "hello".
55. Replace "world" with "Python" in "hello world".
56. Split "one two three" into a list.
57. Join ["a", "b", "c"] with "-" to form "a-b-c".
58. Check if "abc123" is alphanumeric.
59. Check if "12345" is numeric.
60. Check if "age1" is a valid identifier.
61. Check if "Hello World" is title cased.
62. Capitalize "python".
63. Swap case of "PyThOn".
64. Strip leading and trailing spaces from " hello ".
65. Split "I could eat bananas all day" at "bananas" using `partition()`.
66. Check if "hello" starts with "he".
67. Check if "hello" ends with "lo".
68. Check if " " contains only whitespace.
69. Check if "Hello\nWorld!" is printable.
70. Check if "%2" is numeric.
71. Create an f-string to print "My name is Ali and I am 30 years old.".
72. Print "Hello\nWorld" to show new line.
73. Print "Name:\tMajid" to show tab spacing.

74. Print "He said \"Python is easy!\" with quotes.

75. Print "This is a backslash: \\".

Advanced String Operations (76–100)

76. Use a raw string to print the path "C:\\Users\\Majid\\Desktop".

77. Continue a long line using a backslash for total = 10 + 20 + 30 + 40 + 50.

78. Extract every second character from "Python" using slicing.

79. Reverse the string "Python" using slicing.

80. Access characters of "Python" using a loop with enumerate().

81. Create a string "Hello World" and check if "World" is in it.

82. Concatenate "Data" and "Science" using +.

83. Repeat "Ha" five times.

84. Slice "Python Programming" to get "Programming".

85. Slice "Python Programming" to get "Python".

86. Slice "Python Programming" to get "on Pro".

87. Replace "Python" with "Java" in "Python Programming".

88. Convert the number 42 to a string and concatenate it with " is the answer".

89. Count how many times "o" appears in "Hello World".

90. Use split() to convert "apple,banana,orange" into a list.

91. Join the list ["apple", "banana", "orange"] with ", ".

92. Strip the string " Hello World " and print.

93. Swap the case of "PyThOn" and print.

94. Check if "Hello123" is alphanumeric.

95. Check if "123" is numeric using isdigit().

96. Create an f-string with variables name and age.

97. Use backslash \\ to print a string on two lines.

98. Use tab \t to align "Name: Majid".

99. Print "C:\Users\Majid" as a raw string.

100. Create a multi-line docstring for a function that returns the square of a number.