**List Problems**

1. Create a list of integers from 1 to 6 and visualize this list.
2. Create a list of strings containing the days of the week and visualize this list.
3. Create a list of boolean values representing the results of coin flips and visualize this list.
4. Create an empty list and append the numbers 1, 2, and 3 to it and visualize this list.
5. Create a list of mixed data types: [1, "hello", True, 3.14] visualize this list.
6. Create and visualize a list of integers and find its length using the len() function.
7. Create and visualize a list of numbers and calculate the sum of its elements.
8. Create and visualize a list of names and sort them alphabetically using the sort() method and visualize this sorted list.
9. Create and visualize a list of integers and find the maximum value using the max() function.
10. Create and visualize a list of colors and count the occurrences of a specific color using the count() method.
11. Create a list and remove the first element using the pop() method and visualize this list.
12. Create a list of fruits and remove a specific fruit using the remove() method and visualize this list.
13. Create two lists and concatenate them using the extend() method and and visualize this list.
14. Create a list and insert an element at a specific position using the insert() method and visualize this list.
15. Create a list and reverse its order using the reverse() method and visualize this list.
16. Create a list of numbers and check if a specific number exists in it using the in keyword and and visualize this list.
17. Create a list and clear all its elements using the clear() method and visualize this list.
18. Create a list and copy its contents to a new list using slicing and visualize this list.
19. Create a list of names and join them into a single string using the join() method and visualize this list.
20. Create a list of words and split a string into a list of words using the split() method and visualize this list.
21. Create a list and convert it to a set using the set() constructor and visualize this list.
22. Create a list of integers and find the index of a specific number using the index() method and visualize this list.
23. Create a list of animals and count the number of unique animals using sets and visualize this list.
24. Create a list and find the first occurrence of an element using the index() method and visualize this list.
25. Create a list of numbers and remove duplicates by converting it to a set and visualize this list.
26. Create a list and use list comprehension to double each element and visualize this list.
27. Create a list of strings and find the longest string using a custom function and visualize this list.
28. Create a list of names and randomly shuffle the elements using the shuffle() method from the random module and visualize this list.
29. Create a list of even numbers using list comprehension and the range() function and visualize this list.
30. Create a list of integers and find the sum of all odd numbers using list comprehension and visualize this list.
31. Create a list of words and filter out words that contain a specific letter using list comprehension and visualize this list.
32. Create a list of numbers and square each element using list comprehension and visualize this list.
33. Create a list of names and capitalize the first letter of each name using list comprehension and visualize this list.
34. Create a list of words and find the longest word using list comprehension and visualize this list.
35. Create a list of names and sort them in reverse alphabetical order using the sorted() function and visualize this list.
36. Create a list of integers and sort it in descending order using the sort() method with the reverse argument and visualize this list.
37. Create a list of strings and find the shortest string using the min() function with a custom key function and visualize this list.
38. Create a list of numbers and calculate the product of all elements using a custom function and visualize this list.
39. Create a list of words and count the number of words with a specific length using list comprehension and visualize this list.
40. Create a list of numbers and find the second smallest number using a custom function and visualize this list.
41. Create a list of names and filter out names that start with a specific letter using list comprehension and visualize this list.
42. Create a list of integers and calculate the cumulative sum using list comprehension and visualize this list.
43. Create a list of words and find the words that are palindromes using a custom function and visualize this list.
44. Create a list of integers and find the average using a custom function and visualize this list.
45. Create a list of strings and find the strings that contain a specific substring using list comprehension and visualize this list.
46. Create a list of numbers and find the median using a custom function and visualize this list.
47. Create a list of names and check if a specific name exists using the any() function and visualize this list.
48. Create a list of integers and check if all elements are positive using the all() function and visualize this list.
49. Create a list of words and find the words that end with a specific letter using list comprehension and visualize this list.
50. Create a list of numbers and calculate the variance using a custom function and visualize this list.

**Tuples:**

1. Create an empty tuple and visualize this tuple.
2. Create a tuple of integers from 1 to 6 and visualize this tuple.
3. Create a tuple of strings containing the days of the week and visualize this tuple.
4. Create a tuple of boolean values representing the results of coin flips and visualize this tuple.
5. Create an empty tuple and convert it to a list, then append elements to it and visualize this tuple.
6. Create a tuple of mixed data types: (1, "hello", True, 3.14) and visualize this tuple.
7. Create and visualize a tuple of integers and find its length using the len() function.
8. Create and visualize a tuple of numbers and calculate the sum of its elements.
9. Create a tuple of names and sort them alphabetically using the sorted() function and visualize this tuple.
10. Create and visualize a tuple of integers and find the maximum value using the max() function.
11. Create and visualize a tuple of colors and count the occurrences of a specific color using the count() method.
12. Create and visualize a tuple and access its elements by index.
13. Create and visualize two tuples and concatenate them using the + operator.
14. Create a tuple and insert an element at a specific position using slicing and visualize this tuple.
15. Create a tuple and reverse its order using slicing and visualize this tuple.
16. Create and visualize a tuple of numbers and check if a specific number exists in it using the in keyword.
17. Create and visualize a tuple and convert it to a list using the list() constructor and visualize this list.
18. Create a tuple of names and join them into a single string using the join() method and visualize this tuple.
19. Create a tuple of words and split a string into a tuple of words using the split() method and visualize this tuple.
20. Create and visualize a tuple and convert it to a set using the set() constructor and visualize this set.
21. Create a tuple of integers and find the index of a specific number using a custom function and visualize this tuple.
22. Create and visualize a tuple of animals and count the number of unique animals using sets.
23. Create a tuple and find the first occurrence of an element using a custom function and visualize this tuple.
24. Create and visualize a tuple of numbers and remove duplicates by converting it to a set and visualize this set.
25. Create a tuple and use tuple comprehension to double each element and visualize this tuple.
26. Create a tuple of strings and find the longest string using a custom function and visualize this tuple.
27. Create a tuple of names and randomly shuffle the elements and visualize this tuple
28. (Note: Tuples are immutable, so you can convert to a list, shuffle, and convert back to a tuple).
29. Create a tuple of even numbers using a generator expression and the range() function and visualize this tuple.
30. Create a tuple of integers and find the sum of all odd numbers using a custom function and visualize this tuple.
31. Create a tuple of words and filter out words that contain a specific letter using a generator expression and visualize this tuple.
32. Create a tuple of numbers and square each element using a generator expression and visualize this tuple.
33. Create a tuple of names and capitalize the first letter of each name using a generator expression and visualize this tuple.
34. Create a tuple of words and find the longest word using a custom function and visualize this tuple.
35. Create a tuple of names and sort them in reverse alphabetical order using the sorted() function with the reverse argument and visualize this tuple.
36. Create a tuple of integers and sort it in descending order using a custom function and visualize this tuple.
37. Create a tuple of strings and find the shortest string using the min() function with a custom key function and visualize this tuple.
38. Create a tuple of numbers and calculate the product of all elements using a custom function and visualize this tuple.
39. Create a tuple of words and count the number of words with a specific length using a generator expression and visualize this tuple.
40. Create a tuple of integers and find the second smallest number using a custom function and visualize this tuple.
41. Create a tuple of names and filter out names that start with a specific letter using a generator expression and visualize this tuple.
42. Create a tuple of integers and calculate the cumulative sum using a generator expression and visualize this tuple.
43. Create a tuple of words and find the words that are palindromes using a custom function and visualize this tuple.
44. Create a tuple of integers and find the average using a custom function and visualize this tuple.
45. Create a tuple of strings and find the strings that contain a specific substring using a generator expression and visualize this tuple.
46. Create a tuple of numbers and calculate the median using a custom function and visualize this tuple.
47. Create a tuple of names and check if a specific name exists using the any() function and visualize this tuple.
48. Create a tuple of integers and check if all elements are positive using the all() function and visualize this tuple.
49. Create a tuple of words and find the words that end with a specific letter using a generator expression and visualize this tuple.
50. Create a tuple of numbers and calculate the variance using a custom function and visualize this tuple.
51. Create a tuple and unpack its elements into individual variables and visualize this tuple.

**Sets:**

1. Create an empty set a and visualize this set.
2. Create a set of integers from 1 to 6 and visualize this set.
3. Create a set of strings containing the days of the week and visualize this set.
4. Create a set of boolean values representing the results of coin flips and visualize this set..
5. Create an empty set and add elements (numbers, strings, or booleans) to it using the add() method and visualize this set..
6. Create a set of mixed data types: {1, "hello", True, 3.14} and visualize this set.
7. Create a set of integers and find its length using the len() function and visualize this set.
8. Create two sets and perform set union (|) on them and visualize this set.
9. Create two sets and perform set intersection (&) on them and visualize this set.
10. Create two sets and perform set difference (-) on them and visualize this set.
11. Create two sets and check if one set is a subset of the other using the issubset() method and visualize this set..
12. Create a set and remove an element using the remove() method and visualize this set..
13. Create a set and discard an element using the discard() method and visualize this set..
14. Create two sets and check if they have any common elements using the isdisjoint() method and visualize this set.
15. Create a set and clear all its elements using the clear() method and visualize this set.
16. Create two sets and check if one set is a superset of the other using the issuperset() method and visualize this set.
17. Create a set and copy its contents to a new set using the copy() method and visualize this set.
18. Create a set and convert it to a frozenset using the frozenset() constructor and visualize this set.
19. Create two sets and find the symmetric difference (^) between them and visualize this set.
20. Create a set of names and check if a specific name exists in the set using the in keyword and visualize this set.
21. Create a set and use set comprehension to double each element and visualize this set. (Note: Set comprehension doesn't exist in Python, but you can achieve it with a generator expression and set() constructor)
22. Create a set of strings and find the longest string using a custom function and visualize this set..
23. Create a set of names and randomly shuffle the elements and visualize this set.
24. (Note: Sets are unordered, so you can't shuffle them directly).
25. Create a set of even numbers using set comprehension and the range() function and visualize this set.
26. Create a set of integers and find the sum of all odd numbers using a custom function and visualize this set.
27. Create a set of words and filter out words that contain a specific letter using set comprehension and visualize this set.
28. Create a set of numbers and square each element using set comprehension and visualize this set.
29. Create a set of names and capitalize the first letter of each name using set comprehension and visualize this set.
30. Create a set of words and find the longest word using a custom function and visualize this set.
31. Create a set of names and sort them in alphabetical order using the sorted() function and visualize this set.
32. Create a set of integers and find the maximum value using the max() function and visualize this set.
33. Create a set of colors and count the occurrences of a specific color using a custom function and visualize this set.
34. Create a set and remove an element using the pop() method and visualize this set.
35. Create two sets and find their Cartesian product using a custom function and visualize this set.
36. Create a set of words and split them into letters using set comprehension and visualize this set.
37. Create a set of numbers and check if they are all positive using the all() function and visualize this set.
38. Create a set of words and check if any of them are palindromes using a custom function and visualize this set.
39. Create a set of integers and find the average using a custom function and visualize this set.
40. Create a set of strings and find the strings that contain a specific substring using set comprehension and visualize this set.
41. Create a set of numbers and calculate the median using a custom function and visualize this set.
42. Create a set of names and check if a specific name exists using the any() function and visualize this set.
43. Create a set and use set comprehension to remove duplicates from a list of values and visualize this set.
44. Create a set of integers and check if they are all even using the all() function and visualize this set.
45. Create a set of words and check if they all start with a specific letter using the all() function and visualize this set.
46. Create a set of numbers and check if any of them are negative using the any() function and visualize this set.
47. Create a set of names and find the common letters in their names using set comprehension and visualize this set.
48. Create a set of integers and check if they are all divisible by a specific number using the all() function and visualize this set.
49. Create a set of words and check if any of them have a length greater than a specific value using the any() function and visualize this set.
50. Create a set of numbers and calculate the product of all elements using a custom function and visualize this set.
51. Create a set and use set comprehension to find the vowels in a given sentence and visualize this set.

**Dictionaries:**

1. Create an empty dictionary and visualize this dictionary.
2. Create a dictionary with key-value pairs representing items and their prices and visualize this dictionary.
3. Create a dictionary with key-value pairs representing student names and their ages and visualize this dictionary.
4. Create a dictionary with key-value pairs representing city names and their populations and visualize this dictionary.
5. Create a dictionary with key-value pairs representing book titles and their authors and visualize this dictionary.
6. Create a dictionary with key-value pairs representing programming languages and their creators and visualize this dictionary.
7. Create a dictionary with key-value pairs representing country names and their capitals and visualize this dictionary.
8. Create a dictionary with key-value pairs representing movie titles and their release years and visualize this dictionary.
9. Create a dictionary with key-value pairs representing fruit names and their colors and visualize this dictionary.
10. Create a dictionary with key-value pairs representing car brands and their models and visualize this dictionary.
11. Create a dictionary with key-value pairs representing animal names and their habitats and visualize this dictionary.
12. Create a dictionary with key-value pairs representing employee names and their salaries and visualize this dictionary.
13. Create a dictionary with key-value pairs representing food items and their calorie counts and visualize this dictionary.
14. Create a dictionary with key-value pairs representing song titles and their artists and visualize this dictionary.
15. Create a dictionary with key-value pairs representing country names and their official languages and visualize this dictionary.
16. Dictionary Operations:

**Access a value in a dictionary using its key.**

1. Add a new key-value pair to a dictionary and visualize this dictionary.
2. Update the value of an existing key in a dictionary and visualize this dictionary.
3. Remove a key-value pair from a dictionary using the pop() method and visualize this dictionary.
4. Remove a key-value pair from a dictionary using the del statement and visualize this dictionary.
5. Check if a key exists in a dictionary using the in keyword and visualize this dictionary.
6. Get a list of all keys in a dictionary using the keys() method and visualize this dictionary.
7. Get a list of all values in a dictionary using the values() method and visualize this dictionary.
8. Get a list of all key-value pairs (tuples) in a dictionary using the items() method and visualize this dictionary.
9. Copy a dictionary using the copy() method and visualize this dictionary.
10. Create a dictionary from two lists, one for keys and another for values and visualize this dictionary.
11. Merge two dictionaries into one using the update() method and visualize this dictionary.
12. Clear all key-value pairs from a dictionary using the clear() method and visualize this dictionary.
13. Check if a value exists in a dictionary using the values() method and the in keyword and visualize this dictionary.
14. Iterate through all keys in a dictionary using a for loop and visualize this dictionary.
15. Iterate through all values in a dictionary using a for loop and visualize this dictionary.
16. Iterate through all key-value pairs in a dictionary using a for loop and visualize this dictionary.
17. Create a new dictionary by filtering key-value pairs based on a condition using dictionary comprehension and visualize this dictionary.
18. Find the length (number of key-value pairs) of a dictionary using the len() function and visualize this dictionary.
19. Get the value for a specific key or provide a default value if the key doesn't exist using the get() method and visualize this dictionary.
20. Check if a dictionary is empty and visualize this dictionary.
21. Get a list of keys sorted in alphabetical order using the sorted() function and visualize this dictionary.
22. Get the key with the maximum value in a dictionary using the max() function with a custom key function and visualize this dictionary.
23. Get the key with the minimum value in a dictionary using the min() function with a custom key function and visualize this dictionary.
24. Find the sum of all values in a dictionary using the sum() function and visualize this dictionary.
25. Create a new dictionary by swapping keys and values in an existing dictionary and visualize this dictionary.
26. Create a dictionary from a list of tuples containing key-value pairs and visualize this dictionary.
27. Find the key with the maximum length in a dictionary and visualize this dictionary.
28. Find the key with the minimum length in a dictionary and visualize this dictionary.
29. Check if all keys in a dictionary satisfy a specific condition using the all() function and visualize this dictionary.
30. Check if any keys in a dictionary satisfy a specific condition using the any() function and visualize this dictionary.
31. Find the key associated with a specific value in a dictionary and visualize this dictionary.
32. Find the values associated with multiple keys in a dictionary using a list comprehension and visualize this dictionary.
33. Find the average value of all values in a dictionary and visualize this dictionary.
34. Create a new dictionary containing only the keys and values that meet a specific condition using dictionary comprehension and visualize this dictionary.

**String:**

1. Create a string containing your full name and visualize this string.
2. Create a string containing your email address and visualize this string.
3. Create a string containing a sentence and print its length using the len() function and visualize this string.
4. Concatenate two strings to create a full name and visualize this strings.
5. Split a string containing multiple words into a list of words and visualize this string and list.
6. Replace a specific word in a string with another word and visualize this string.
7. Check if a string contains a specific substring using the in keyword and visualize this string.
8. Convert a string to lowercase and visualize this string.
9. Convert a string to uppercase and visualize this string.
10. Remove leading and trailing whitespace from a string using the strip() method and visualize this string.
11. Capitalize the first letter of each word in a string and visualize this string.
12. Count the number of occurrences of a specific letter in a string and visualize this string.
13. Check if a string is alphanumeric using the isalnum() method and visualize this string.
14. Check if a string is numeric using the isnumeric() method and visualize this string.
15. Check if a string is in title case using the istitle() method and visualize this string.
16. Check if a string starts with a specific prefix using the startswith() method and visualize this string.
17. Check if a string ends with a specific suffix using the endswith() method and visualize this string.
18. Find the index of the first occurrence of a specific character in a string using the index() method and visualize this string.
19. Reverse a string using string slicing and visualize this string.
20. Join a list of words into a single string using the join() method and visualize this string.
21. Remove all whitespace from a string using the replace() method and visualize this string.
22. Check if a string is empty and visualize this string.
23. Check if a string consists only of whitespace characters and visualize this string.
24. Check if a string contains only alphabetical characters using the isalpha() method and visualize this string.
25. Check if a string contains only digits using the isdigit() method and visualize this string.
26. Count the number of words in a string and visualize this string.
27. Remove all punctuation from a string and visualize this string.
28. Check if a string is a palindrome (reads the same forwards and backwards) and visualize this string.
29. Find the longest word in a string and visualize this string.
30. Find the shortest word in a string and visualize this string.
31. Count the number of vowels (a, e, i, o, u) in a string and visualize this string.
32. Count the number of consonants in a string and visualize this string.
33. Remove duplicate characters from a string while preserving the order and visualize this string.
34. Split a string into a list of characters and visualize this string.
35. Replace all occurrences of a specific character in a string with another character and visualize this string.
36. Check if a string contains only printable characters and visualize this string.
37. Check if a string contains only lowercase letters and visualize this string.
38. Check if a string contains only uppercase letters and visualize this string.
39. Count the number of lines in a multi-line string and visualize this string.
40. Extract all email addresses from a given text and visualize this string.
41. Extract all URLs from a given text and visualize this string.
42. Replace all URLs in a text with a placeholder and visualize this string.
43. Encode a string to base64 and visualize this string.
44. Decode a base64-encoded string and visualize this string.
45. Find the frequency of each character in a string and store the results in a dictionary and visualize this string.
46. Remove all non-alphanumeric characters from a string and visualize this string.
47. Remove all digits from a string and visualize this string.
48. Check if a string contains only whitespace characters or is empty and visualize this string.
49. Replace all whitespace characters in a string with underscores and visualize this string.
50. Count the number of words with a specific length in a string and visualize this string.

**Problems for Primitive Data Types:**

**Integers:**

1. Create and visualize an integer variable with a value of 42.
2. Add and visualize two integers and store the result in a variable and visualize.
3. Subtract two integers and store the result in a variable and visualize integers and the result.
4. Multiply two integers and store the result in a variable and visualize integers and the result.
5. Divide two integers and store the result in a variable and visualize integers and the result.
6. Calculate the remainder of division between two integers visualize integers and the result.
7. Increment an integer variable by 1 and visualize integer and the result.
8. Decrement an integer variable by 1and visualize integer and the result.
9. Calculate the square of an integerand visualize integer.
10. Calculate the cube of an integer and visualize integer.
11. Convert an integer to a string and visualize integer.
12. Check if an integer is even and visualize integer.
13. Check if an integer is odd and visualize integer.
14. Find the maximum of two integers visualize integers.
15. Find the minimum of two integers visualize integers .
16. Generate a random integer between a specified range and visualize integer.
17. Calculate the absolute value of an integer ans visualize integer.
18. Calculate the sum of all integers from 1 to a given integer and visualize integer.
19. Calculate the factorial of an integer and visualize integer.
20. Check if an integer is a prime number and visualize integer.
21. Calculate the average of a list of integers and visualize integers.
22. Convert a binary string to an integer and visualize integer.
23. Convert an octal string to an integer and visualize integer.
24. Convert a hexadecimal string to an integer and visualize integer.
25. Calculate the square root of an integer and visualize integer.

**Floats:**

1. **Create a float variable with a value of 3.14** and visualize**.**
2. Add two floats and store the result in a variable and visualize.
3. Subtract two floats and store the result in a variable and visualize.
4. Multiply two floats and store the result in a variable and visualize.
5. Divide two floats and store the result in a variable and visualize.
6. Calculate the remainder of division between two floats and visualize.
7. Calculate the square of a float and visualize.
8. Calculate the cube of a float and visualize.
9. Convert a float to an integer and visualize.
10. Round a float to a specified number of decimal places and visualize.
11. Calculate the absolute value of a float and visualize.
12. Calculate the sum of all floats in a list and visualize.
13. Check if a float is NaN (Not-a-Number) and visualize.
14. Check if a float is positive infinity and visualize.
15. Check if a float is negative infinity and visualize.
16. Calculate the exponential of a float and visualize.
17. Calculate the logarithm of a float and visualize.
18. Calculate the natural logarithm of a float and visualize.

**Booleans:**

1. **Create a boolean variable with a value of True** and visualize**.**
2. Create a boolean variable with a value of False and visualize.
3. Check if two booleans are equal and visualize.
4. Check if two booleans are not equal and visualize.
5. Perform logical AND operation on two Booleans and visualize.
6. Perform logical OR operation on two Booleans and visualize.
7. Perform logical NOT operation on a Boolean and visualize.

**None:**

1. **Create a variable with the None type** and visualize**.**
2. Check if a variable is of None type and visualize.
3. Use the is operator to compare a variable to None and visualize.
4. Assign a value to a variable only if it is None and visualize.
5. Use the None keyword as a placeholder in a function or code block and visualize.