Questions For Practices:

**1. String Questions:**

1. Reverse a String
2. Check if a String is a Palindrome
3. Count the Number of Vowels in a String
4. Find the Frequency of Characters in a String
5. Check if Two Strings are Anagrams
6. Remove Duplicate Characters from a String
7. Check if a String Contains Only Digits
8. Convert the First Letter of Each Word to Uppercase

**2. List Questions:**

1. Reverse a List Without Using Built-in Functions
2. Find the Largest and Smallest Elements in a List
3. Remove Duplicates from a List
4. Check if a List is Empty
5. Find the Second Largest Element in a List
6. Count the Frequency of Each Element in a List
7. Flatten a Nested List
8. Merge Two Lists and Remove Duplicates
9. Find the Intersection of Two Lists
10. Rotate a List by n Positions
11. Check if Two Lists are Identical
12. Split a List into Even and Odd Numbers
13. Find the Cumulative Sum of a List
14. Sort a List Without Using the sort() Method
15. Find All Pairs in a List That Sum Up to a Given Number

**3. Set Questions:**

1. Remove Duplicates from a List Using a Set
2. Find the Union of Two Sets
3. Find the Intersection of Two Sets
4. Find the Difference Between Two Sets
5. Check if a Set is a Subset of Another Set
6. Check if Two Sets are Disjoint
7. Remove an Element from a Set
8. Add an Element to a Set
9. Find the Symmetric Difference Between Two Sets
10. Check if a Set is Empty
11. Convert a List to a Set and Vice Versa
12. Check if Two Sets are Equal
13. Get All Unique Characters from a String Using a Set
14. Count the Number of Unique Elements in a List
15. Iterate Over a Set and Print Each Element

**4. Tuple Questions:**

1. Access Elements in a Tuple
2. Check if an Element Exists in a Tuple
3. Count the Occurrences of an Element in a Tuple
4. Find the Index of an Element in a Tuple
5. Convert a List to a Tuple and Vice Versa
6. Unpack a Tuple into Variables
7. Concatenate Two Tuples
8. Check if Two Tuples are Identical
9. Sort a Tuple
10. Find the Length of a Tuple
11. Create a Tuple with Single Element (and Explain the Syntax)
12. Reverse a Tuple
13. Convert a Tuple of Tuples to a Single Tuple
14. Iterate Over a Tuple and Print Each Element
15. Create a Tuple Without Using Parentheses (Tuple Packing)

**5. Dictionary Questions:**

1. Access the Value Associated with a Key
2. Check if a Key Exists in a Dictionary
3. Iterate Over a Dictionary and Print All Key-Value Pairs
4. Merge Two Dictionaries
5. Remove a Key from a Dictionary
6. Find the Maximum and Minimum Values in a Dictionary
7. Sort a Dictionary by Keys or Values
8. Convert Two Lists (Keys and Values) into a Dictionary
9. Get a List of All Keys and Values Separately
10. Count the Frequency of Each Character in a String Using a Dictionary
11. Update the Value of an Existing Key in a Dictionary
12. Get the Default Value for a Non-Existent Key Without Raising an Error
13. Reverse the Keys and Values in a Dictionary
14. Create a Dictionary Using Dictionary Comprehension
15. Remove All Entries from a Dictionary (Clear the Dictionary)

**If-Else Statement Questions:**

1. Check if a Number is Positive, Negative, or Zero
2. Determine if a Person is Eligible to Vote Based on Age
3. Check if a Year is a Leap Year
4. Find the Largest of Three Numbers
5. Check if a Character is a Vowel or Consonant
6. Determine if a Given Number is Even or Odd
7. Check if a String is Empty or Not
8. Determine the Grade Based on a Score (e.g., A, B, C, D, F)
9. Check if Two Numbers are Equal, Greater, or Lesser
10. Check if a Number is Divisible by Both 3 and 5
11. Implement a Simple Calculator Using if-elif-else Statements
12. Check if a Number is Within a Certain Range (e.g., between 1 and 100)
13. Determine if a String Starts with a Vowel
14. Check if a Given Year is a Century Year
15. Determine if a Person is a Child, Teen, or Adult Based on Age

**For Loop Questions:**

1. Print All Elements in a List Using a For Loop
2. Calculate the Sum of All Numbers in a List
3. Find the Factorial of a Given Number
4. Print the Multiplication Table of a Given Number
5. Print the Fibonacci Sequence Up to n Terms
6. Count the Number of Even and Odd Numbers in a List
7. Reverse a String Using a For Loop
8. Find the Maximum and Minimum Values in a List
9. Print All Prime Numbers Within a Given Range
10. Iterate Over a Dictionary and Print Each Key-Value Pair
11. Find the Length of Each Word in a List of Strings
12. Create a List of Squares for Numbers From 1 to 10
13. Filter Out Only Positive Numbers From a List
14. Print Each Character of a String Separately
15. Check if an Element Exists in a List Without Using the in Keyword

**While Loop Questions:**

1. Print Numbers From 1 to 10 Using a While Loop
2. Calculate the Sum of Digits of a Given Number
3. Reverse a Number Using a While Loop
4. Print a Countdown From 10 to 1
5. Find the Greatest Common Divisor (GCD) of Two Numbers
6. Keep Taking Input From the User Until They Enter 'exit'
7. Check if a Number is a Palindrome
8. Generate the Fibonacci Sequence Until a Specified Number
9. Calculate the Power of a Number Without Using the \*\* Operator
10. Print All Even Numbers Between 1 and 100
11. Sum of Natural Numbers Until a Given Number
12. Implement a Simple Menu-Driven Program Using While Loop
13. Simulate a Basic Password Check That Limits to 3 Attempts
14. Keep Multiplying a Number by 2 Until It Becomes Greater Than 1000
15. Print the Digits of a Number in Reverse Order

**for loop pattern questions for practice, ranging from simple to complex:**

\*\*Basic Patterns\*\*

1. \*\*Right-Angled Triangle (Stars):\*\*

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2. \*\*Inverted Right-Angled Triangle:\*\*

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3. \*\*Number Triangle:\*\*

1

12

123

1234

4. \*\*Same Number Row:\*\*

1

22

333

4444

55555

5. \*\*Reverse Number Triangle:\*\*

54321

5432

543

54

5

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### \*\*Intermediate Patterns\*\*

6. \*\*Pyramid:\*\*

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7. \*\*Inverted Pyramid:\*\*

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8. \*\*Diamond:\*\*

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9. \*\*Number Pyramid:\*\*

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1

121

12321

1234321

123454321

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10. \*\*Hollow Square:\*\*

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### \*\*Advanced Patterns\*\*

11. \*\*Floyd's Triangle:\*\*

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1

2 3

4 5 6

7 8 9 10

11 12 13 14 15

```

12. \*\*Pascal's Triangle:\*\*

```

1

1 1

1 2 1

1 3 3 1

1 4 6 4 1

```

13. \*\*Butterfly Pattern:\*\*

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14. \*\*Zig-Zag Pattern:\*\*

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15. \*\*Checkerboard Pattern:\*\*

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### \*\*Challenges\*\*

16. \*\*Hollow Diamond in a Square:\*\*

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17. \*\*Alphabet Pyramid:\*\*

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A

ABA

ABCBA

ABCDCBA

ABCDEDCBA

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18. \*\*Hourglass:\*\*

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19. Wave Pattern

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20. Binary Triangle:

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1

01

101

0101

10101

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