- 🔽 150 Simple Python Problems 🔢 Numbers & Math (30) Add two numbers
 - 1. Subtract two numbers
 - 2. Multiply two numbers
 - 3. Divide two numbers
 - 4. Find remainder
 - 5. Power of a number
 - 6. Floor division
 - 7. Convert Celsius to Fahrenheit
 - 8. Convert kilometers to miles
 - 9. Area of a circle
 - 10. Area of a rectangle
 - 11. Area of a triangle
 - 12. Simple interest
 - 13. Compound interest
 - 14. Square root of a number
 - 15. Check even or odd
 - 16. Check positive/negative
 - 17. Find factorial
 - 18. Sum of first N numbers
 - 19. Sum of digits
 - 20. Product of digits
 - 21. Reverse a number
 - 22. Check Armstrong number
 - 23. Check palindrome number
 - 24. Print multiplication table
 - 25. Count digits in number
 - 26. Convert decimal to binary
 - 27. Convert binary to decimal
 - 28. Convert decimal to octal
 - 29. Convert decimal to hexadecimal
 - 30. Strings (30) Reverse a string
 - 31. Count vowels and consonants
 - 32. Check palindrome string
 - 33. Find string length
 - 34. Convert string to uppercase

- 35. Convert string to lowercase
- 36. Capitalize first letter
- 37. Replace substring
- 38. Remove spaces
- 39. Count words
- 40. Check anagram
- 41. Count character frequency
- 42. Print characters with ASCII
- 43. Swap case
- 44. Find substring index
- 45. Remove duplicate characters
- 46. Merge two strings
- 47. Check if all characters are digits
- 48. Split string into list
- 49. Join list into string
- 50. Find longest word
- 51. Find shortest word
- 52. Count uppercase and lowercase
- 53. Remove punctuation
- 54. Check if string starts with vowel
- 55. Encode a string by shifting letters
- 56. Remove vowels from string
- 57. Reverse words in string
- 58. Find common letters in two strings
- 59. Replace vowels with '*'
- 60. Conditionals (30) Print all even numbers up to N
- 61. Print all odd numbers up to N
- 62. Sum of all numbers in range
- 63. Sum of even numbers in range
- 64. Print numbers divisible by 5
- 65. Print Fibonacci sequence
- 66. Count down from N to 1
- 67. Print prime numbers in range
- 68. Check if number is prime
- 69. Print star pattern (triangle)
- 70. Print reverse triangle
- 71. Print pyramid
- 72. Print hollow square

- 73. Find GCD
- 74. Find LCM
- 75. Check leap year
- 76. Calculate age from birth year
- 77. Find largest of 3 numbers
- 78. Find smallest of 3 numbers
- 79. Create a calculator (if-else)
- 80. Print ASCII characters
- 81. Print table of N using loop
- 82. Find sum of N odd numbers
- 83. Find sum of N even numbers
- 84. Display digits of number
- 85. Convert minutes to hours
- 86. Calculate BMI
- 87. Print factorial series
- 88. Count positive & negative numbers
- 89. Find average of N numbers
- 90. 🚊 Lists & Tuples (30) Create list and print
- 91. Append element to list
- 92. Insert at specific index
- 93. Delete from list
- 94. Sort a list
- 95. Reverse a list
- 96. Find max and min in list
- 97. Count occurrences
- 98. Remove duplicates
- 99. Merge two lists
- 100. Find common elements
- 101. Sum of list
- 102. Product of list
- 103. Slice a list
- 104. Check element in list
- 105. Convert list to tuple
- 106. Convert tuple to list
- 107. Swap first and last element
- 108. Rotate list elements
- 109. Find second largest element
- 110. List of squares of numbers

- 111. List comprehension example
- 112. Filter even numbers from list
- 113. Filter odd numbers
- 114. Flatten nested list
- 115. Replace element in list
- 116. Check if list is empty
- 117. Index of an element
- 118. Find duplicates
- 119. All elements greater than N
- 120. El Dictionaries & Sets (30) Create dictionary
- 121. Add item to dictionary
- 122. Update dictionary value
- 123. Delete key from dictionary
- 124. Access dictionary values
- 125. Loop through dictionary
- 126. Count word frequency
- 127. Find max value in dictionary
- 128. Merge two dictionaries
- 129. Check if key exists
- 130. Sort dictionary by key
- 131. Sort dictionary by value
- 132. Convert list to dictionary
- 133. Create set and print
- 134. Add element to set
- 135. Remove element from set
- 136. Set union
- 137. Set intersection
- 138. Set difference
- 139. Check subset
- 140. Check superset
- 141. Remove duplicates from list using set
- 142. Check if two sets are disjoint
- 143. Find symmetric difference
- 144. Convert set to list
- 145. Convert list to set
- 146. Set comprehension
- 147. Frozen set example
- 148. Clear a set

149. Check if set is empty 150. 🌼 150 Intermediate Python Problems 🔍 Logic & Functions (30) Recursive factorial 151. Recursive Fibonacci 152. Recursive sum of digits 153. Prime number using function 154. Armstrong number function 155. Palindrome checker function 156. GCD using recursion 157. LCM using GCD 158. Calculator using functions 159. Decorator to time function 160. Lambda for sorting 161. Filter prime numbers 162. Map to square list 163. Reduce to sum list 164. Function with default parameters 165. Variable-length arguments 166. **Nested functions** 167. Closure example 168. Check strong number 169. Check perfect number 170. Decimal to any base converter 171. Count words using function 172. Generate password 173. Validate email format 174. Custom max function 175. Sum of digits using recursion 176. Find duplicate characters 177. Merge dictionaries with common keys Replace all vowels with 'x' 178. 179. Group anagrams 180. 👪 Algorithms (30) Linear search 181. Binary search

182.

183.184.

185.

Bubble sort
Selection sort

Insertion sort

Merge sort

186.	Quick sort
187.	Count sort
188.	Kadane's algorithm
189.	Sliding window max sum
190.	Two sum
191.	Product of array except self
192.	First non-repeating character
193.	Majority element
194.	Missing number
195.	Find duplicates
196.	Longest common prefix
197.	Move zeros to end
198.	Rotate array
199.	Sum of diagonals in matrix
200.	Transpose matrix
201.	Spiral matrix print
202.	Matrix multiplication
203.	Matrix boundary elements
204.	Valid parentheses
205.	Balanced brackets checker
206.	Check Sudoku validity
207.	Pascal's triangle
208.	Longest increasing subsequence
209.	Subset generator
210.	File & Exception Handling (30) Read file
211.	Write to file
212.	Append to file
213.	Count lines in file
214.	Count words in file
215.	Count characters in file
216.	Copy file content
217.	Remove punctuation from file
218.	Replace words in file
219.	Read CSV file
220.	Write CSV file
221.	JSON read/write
222.	Handle FileNotFoundError

Try-except block

223.

224. Multiple exception handling 225. Finally block 226. Raise custom exception 227. Create custom exception class 228. List files in directory 229. Read file line by line 230. Check if file exists 231. Merge multiple text files 232. Rename file 233. Delete file 234. Zip file extractor 235. Count frequency of letters from file 236. Read file in reverse 237. Get file extension File metadata reader 238. 239. Save data to JSON 240. X OOP (30) Class and object 241. Constructor method 242. Instance vs class variables 243. Class with method 244. Inheritance 245. Multilevel inheritance 246. Multiple inheritance 247. Method overriding 248. Class method 249. Static method 250. Encapsulation 251. Polymorphism 252. Create bank account class 253. Student class with marks 254. Employee salary calculator 255. Book library management 256. Vehicle class with hierarchy 257. Operator overloading 258. **Dunder methods** 259. Abstract class 260. Interface example 261. Super() method

- 262. Access modifiers
- 263. Object comparison
- 264. Object cloning
- 265. Class diagram (UML style)
- 266. Ticket booking system
- 267. Basic inventory system
- 268. Shape class hierarchy
- 269. Data model for school
- 270. Real-world Use Cases (30) Simple to-do app (console)
- 271. Currency converter
- 272. BMI calculator with GUI
- 273. Unit converter
- 274. Quiz application
- 275. Dice rolling simulator
- 276. Rock-paper-scissors game
- 277. Number guessing game
- 278. Stopwatch
- 279. Countdown timer
- 280. Expense tracker
- 281. Flashcard app
- 282. Weather fetcher (dummy)
- 283. Password strength checker
- 284. Text-based chatbot
- 285. Text file cleaner
- 286. Contact book (console)
- 287. Flashcard learning system
- 288. Music player (basic shell)
- 289. PDF page counter
- 290. Screenshot capture
- 291. Alarm clock
- 292. Random password generator
- 293. Link shortener
- 294. Morse code translator
- 295. Image resizer using Pillow
- 296. QR code generator
- 297. ASCII art generator
- 298. Face detection (OpenCV basics)
- 299. Web scraper (basic with requests + BeautifulSoup)

300. 100 NumPy Problems \ Basics (20) Create a 1D array of numbers from 0 to 301. Create a 3×3 matrix with all True values 302. Create a 3×3 identity matrix 303. Create an array of 10 zeros 304. Create an array of 10 ones Create an array of 10 fives 305. 306. Create an array of integers from 10 to 50 307. Create an array of even integers from 10 to 50 Create a 3×3 matrix with values ranging from 0 to 8 308. 309. Reverse a 1D array 310. Reshape a 1D array to 2D 311. Get the shape of an array Get the data type of an array 312. 313. Get the size of an array Change data type of array elements 314. 315. Create an array filled with a specific value 316. Create an array of random floats Create an array of random integers 317. Generate an array using arange() 318. Generate linearly spaced values using linspace() 319. Array Operations (20) Add two arrays 320. 321. Subtract two arrays 322. Multiply two arrays Divide two arrays 323. 324. Matrix multiplication Dot product of vectors 325. 326. Element-wise square Element-wise cube 327. 328. Get the sum of all elements 329. Get the mean of elements 330. Get the standard deviation 331. Get the variance 332. Find min and max 333. Get indices of max element 334. Get indices of min element 335. Sort an array Clip values in array 336. 337. Round values 338. Floor and ceil of array 339. Find unique values 340. Indexing & Slicing (20) Access element by index 341. Access sub-array 342. Slice a 1D array Slice a 2D array 343.

344.

Get a specific row

- 345. Get a specific column
- 346. Boolean indexing
- 347. Filter even numbers
- 348. Filter odd numbers
- 349. Replace negative values with zero
- 350. Replace all elements greater than 10
- 351. Get elements divisible by 3
- 352. Get indices where condition is met
- 353. Use where() function
- 354. Fancy indexing example
- 355. Set diagonal to zero
- 356. Flip array vertically
- 357. Flip array horizontally
- 358. Rotate array by 90 degrees
- 359. Reshape 3D array to 2D
- 360. Einear Algebra (20) Find matrix transpose
- 361. Compute inverse of a matrix
- 362. Compute determinant
- 363. Compute eigenvalues
- 364. Compute eigenvectors
- 365. Compute rank of matrix
- 366. Solve linear equations
- 367. Compute matrix trace
- 368. Create diagonal matrix
- 369. Extract diagonal from matrix
- Norm of a vector
- 371. Normalize a vector
- 372. Compute outer product
- 373. Compute inner product
- 374. Matrix multiplication with @
- 375. QR decomposition
- 376. LU decomposition
- 377. SVD decomposition
- 378. Check if matrix is symmetric
- 379. Check if matrix is orthogonal
- 380. Advanced Tasks (20) Create a checkerboard pattern
- 381. Create a border filled with 1s
- 382. Convert array to list
- 383. Convert list to array
- 384. Convert array to string
- 385. Stack arrays vertically
- 386. Stack arrays horizontally
- 387. Split array into chunks
- 388. Split array into equal parts
- 389. Convert 1D to column vector
- 390. Convert 1D to row vector

391.	Create structured array
392.	Create a record array
393.	Replace nan with 0
394.	Check for nan values
395.	Check for infinite values
396.	Convert float array to int
397.	Find common elements in arrays
398.	Compare two arrays
399.	Save and load arrays to .npy file
400.	
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401.	Create a Series from dictionary
402.	Create a DataFrame from list of lists
403.	Create a DataFrame from dictionary
404.	Convert Series to DataFrame
405.	Change column names
406.	Change index of DataFrame
407.	Rename columns
408.	Add new column to DataFrame
409.	Delete column from DataFrame
410.	Insert column at specific position
411.	Drop rows by index
412.	Select specific columns
413.	Select specific rows using loc
414.	Select rows using iloc
415.	Filter rows based on condition
416.	Get shape of DataFrame
417.	Get summary with .info()
418.	Describe numerical columns
419.	Get column data types
420.	Indexing, Selection & Filtering (20) Access first 5 rows
421.	Access last 5 rows
422.	Check for null values
423.	Fill missing values with mean
424.	Drop rows with nulls
425.	Filter rows with multiple conditions
426.	Select rows with specific values
427.	Select rows with isin()
428.	Use query() to filter
429.	Use between() on columns
430.	Apply custom function to column
431.	Apply lambda function
432.	Replace values in column
433.	Replace multiple values
434.	Remove duplicate rows
435.	Sort DataFrame by column
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436. Sort by multiple columns 437. Sort index 438. Reset index 439. Set new index 440. Aggregations & Grouping (20) Get max in column 441. Get min in column 442. Get average of column 443. Count rows 444. Count unique values 445. Group by single column 446. Group by multiple columns 447. Aggregate multiple functions 448. Value counts of column Frequency distribution 449. 450. Pivot table 451. Crosstab 452. Calculate cumulative sum 453. Calculate rolling mean 454. Normalize column values Convert column to category 455. 456. Rank values Count missing values per column 457. 458. Group by with fillna 459. Filter groups based on size 460. ✓ Data Cleaning & Transformation (20) Strip whitespace in strings 461. Convert string to datetime 462. Extract year from datetime 463. Extract month from datetime 464. Convert column to numeric 465. Change column data types 466. Parse date column 467. Drop rows with missing dates 468. Drop columns with all nulls 469. Interpolate missing values 470. Replace zeroes with NaN 471. Standardize column values 472. Remove outliers 473. Create new column from existing ones 474. Bin values using cut() 475. Bin values using qcut() 476. Filter based on date 477. Filter outliers using IQR 478. Convert boolean to int 479. Split string column into multiple columns 480. Merging, Joining, Concatenation (20) Concatenate DataFrames 481. Merge two DataFrames on common key

482.	Merge with different column names
483.	Left join
484.	Right join
485.	Outer join
486.	Inner join
487.	Join on index
488.	Merge with multiple keys
489.	Combine two DataFrames with different schemas
490.	Stack and unstack DataFrames
491.	Melt DataFrame
492.	Pivot a melted DataFrame
493.	Append rows
494.	Compare two DataFrames
495.	Replace values from another DataFrame
496.	Remove duplicates after merge
497.	Join with suffixes
498.	Combine columns conditionally
499.	Save merged DataFrame to CSV