

# Python Basics - Assessment

## Strings

1. A social media platform wants to ensure that user passwords contain at least 8 characters. Write a Python function that checks if a given password meets this requirement and returns a boolean value.
2. An e-commerce website needs to generate unique order numbers for each purchase. How can Python's string manipulation be used to create a unique order number based on the customer's name and current date?
3. A text processing tool needs to count the number of occurrences of a specific word in a given text. Write a Python function that takes the text and the word as inputs and returns the count.
4. A company wants to create personalized email addresses for employees. How can you use Python to concatenate the first name and last name of an employee to generate their email address?
5. An online form validation requires users to enter a valid email address. Write a Python program that checks whether a given string is a valid email address.

## Integers

6. A banking application needs to calculate the compound interest for a savings account. Write a Python function that takes principal amount, interest rate, and time as inputs and returns the final amount.
7. A game developer wants to implement a scoring system where players earn points. How can Python be used to keep track of each player's score?
8. An inventory management system needs to calculate the total value of items in stock. Write a Python function that calculates the total value based on the price and quantity of each item.
9. A fitness app tracks the number of calories burned during a workout. How can Python be used to sum the calories burned in a week's worth of workouts?
10. A school wants to automate the grading process. Write a Python program that calculates the average score for a list of student scores.

## Variables

11. A weather application needs to store and display the current temperature. How can Python variables be used to store this information?
12. A restaurant wants to keep track of daily sales. How can Python variables be used to store the total sales for each day of the week?
13. A game developer needs to store the player's username and score. How can Python variables be used to store this information?

14. A travel agency wants to store and display information about various destinations. How can Python variables be used to store details like destination name, price, and availability?
15. A scientific experiment requires tracking the changing values of temperature over time. How can Python variables be used to store and analyze this data?

## Boolean

16. An online voting system needs to check if a user is eligible to vote. Write a Python function that uses boolean logic to determine if a user is of voting age.
17. A security system needs to determine if a user's password meets specific criteria, including a mix of uppercase and lowercase letters. How can Python boolean values help in this validation process?
18. A shipping company needs to determine if a package's weight exceeds the maximum allowed weight for a specific service. Write a Python function that returns True if the weight is within limits and False otherwise.
19. A subscription-based service wants to check if a user's subscription is still active. How can Python boolean values be used to track subscription status?
20. An online quiz application needs to evaluate whether a user's answers are correct. How can Python boolean values be used to check the correctness of answers?

## List

21. A grocery store wants to create a shopping list for customers. Write a Python program that allows users to add and remove items from their shopping list.
22. A sports team wants to keep track of player statistics. How can Python lists be used to store data such as player names, scores, and assists?
23. A movie rental service needs to display a list of available movies. How can Python lists be used to store movie titles and their availability status?
24. A school wants to store a list of students who made the honor roll. Write a Python program that allows teachers to add students to this list.
25. A travel agency wants to keep track of customer reviews for different destinations. How can Python lists be used to store reviews and calculate average ratings?

## Dictionary

26. An online dictionary wants to provide word definitions. How can Python dictionaries be used to store word-definition pairs?
27. A contact management app needs to store and retrieve contact information. How can Python dictionaries be used to store names and phone numbers?

28. A restaurant wants to create a menu that includes dish names and their prices. How can Python dictionaries be used to represent the menu items?
29. An event management system needs to track attendees and their ticket types (e.g., VIP, regular). How can Python dictionaries be used to store this information?
30. A car rental service needs to manage its fleet of vehicles, including vehicle details such as make, model, and availability. How can Python dictionaries be used to represent the fleet?

## Data Types

31. A scientific experiment records temperature readings at different times. What Python data type is suitable for storing these temperature values?
32. A financial application needs to store and perform calculations with currency amounts. What Python data type is appropriate for handling money?
33. An educational platform wants to store and manipulate student ages. Which Python data type is best suited for this purpose?
34. A GPS navigation app needs to represent geographical coordinates (latitude and longitude). Which Python data type should be used for storing these coordinates?
35. A social media platform wants to store the number of likes for each post. What Python data type is ideal for keeping track of these counts?

## Statements

36. A ticketing system needs to print different messages for different types of tickets (e.g., VIP, regular). How can Python if statements be used to achieve this?
37. An online store wants to apply discounts to products based on their category. How can Python if-else statements be used to calculate the discounted price?
38. A game developer wants to implement a game-over condition when a player's health reaches zero. How can Python if statements be used to check and handle this condition?
39. A classroom management system needs to assign grades to students based on their scores. How can Python if-elif-else statements be used to determine the grade?
40. A temperature monitoring system needs to send alerts when the temperature exceeds a certain threshold. How can Python if statements be used to trigger alerts?

## If Conditions

41. A user authentication system needs to grant access only to users with the correct username and password. How can Python if conditions be used for authentication?
42. A car rental service wants to offer discounts based on the rental duration (e.g., 3 days or more). How can Python if conditions be used to calculate the discounted price?

43. A student registration system needs to determine if a student is eligible for a particular course based on their prior qualifications. How can Python if conditions be used to check eligibility?

44. A traffic monitoring system needs to detect if a vehicle is speeding. How can Python if conditions be used to issue a speeding ticket when necessary?

45. A game developer wants to check if a player has reached a certain level to unlock new features. How can Python if conditions be used to control feature access?

## **For Loops**

46. A calendar application needs to print the days of the week. How can Python for loops be used to iterate through the days and print them?

47. A scientific experiment records data at regular intervals. How can Python for loops be used to iterate through the time intervals and collect data points at each interval? Write a Python code snippet that demonstrates how a for loop can be employed to automate the data collection process during the experiment.

## **While Loops**

48. An online game wants to keep running until the player decides to exit. How can Python while loops be used to repeatedly prompt the player if they want to continue playing, and exit the game when they choose to quit?

49. A program needs to continuously monitor a sensor and take action when a certain condition is met (e.g., temperature exceeding a threshold). How can Python while loops be used to achieve this real-time monitoring and control?

50. A user is asked to enter a series of numbers until they enter a negative number to signal the end of input. How can Python while loops be used to repeatedly read user input and stop when a negative number is entered?