

Basic while Loop Questions

1. Counting to Ten

Write a program that uses a while loop to print numbers from 1 to 10.

2. Sum of Natural Numbers

Create a program that asks the user to input a positive integer, then uses a while loop to calculate the sum of all natural numbers up to that integer (inclusive).

3. Multiplication Table

Write a program that takes an integer input from the user and prints its multiplication table (up to 10) using a while loop.

4. Odd or Even Counting

Using a while loop, print all even numbers from 1 to 50. Then modify the program to print all odd numbers from 1 to 50.

Intermediate while Loop Questions

5. Password Checker

Write a program that keeps asking the user to enter a password until they enter the correct one. If the correct password is entered, print "Access granted!" and end the loop.

6. Number Guessing Game

Write a number guessing game where the computer selects a random number between 1 and 100, and the user has to guess it. The program should keep prompting the user to guess until they get it right, and tell them if their guess was too high or too low.

7. Factorial Calculation

Write a program that takes a positive integer as input and calculates its factorial using a while loop.

8. Countdown Timer

Create a countdown timer that starts at a user-specified number and counts down to zero, printing each number. When it reaches zero, print "Time's up!"

Advanced while Loop Questions

9. Collatz Conjecture

Write a program that takes a positive integer as input and applies the Collatz conjecture rules:

- If the number is even, divide it by 2.
- If the number is odd, multiply it by 3 and add 1.

Continue the process until the number becomes 1, printing each step.

10. Prime Number Generator

Write a program that generates prime numbers up to a user-specified limit using a while loop.

11. ATM Simulator

Create a simple ATM simulator. The program should start with a balance of 1000. The user can choose to deposit, withdraw, or check balance. The program should continue running until the user chooses to exit.

12. Fibonacci Sequence

Write a program that generates the Fibonacci sequence up to a specified number of terms using a while loop.