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MINI PROJECT
(Number Guessing Game)

Analysis of problem:

We need to determine the optimal strategy for guessing the secret number within the given range.
Since the range is known, we can use a binary search approach to minimize the number of attempts.
Binary search divides the range in half with each guess, narrowing down the possibilities efficiently.

Algorithm:

1.Import the random module.

2.Set the range for the secret number (from X to Y) and the maximum number of attempts.

3.Generate a random secret number within the specified range.

4.Prompt the user to guess the number.

5.Provide hints (too high, too low, or correct) after each guess.

6.Repeat until the user guesses the secret number or runs out of attempts.

Pseudo code:

1. Import random module
2. Set lower_num= X
3. Set upper_num = Y
4. Set max_attempts = 10
5. Generate secret_number = random.randint(lower_num, upper_num)
6. Repeat:
   a. Get user's guess using get_guess() function
   b. If guess == secret_number:
      - Output "Congratulations! You guessed it!"

- Exit loop

c. Else if guess > secret_number:
- Output "Too high! Try again."

d. Else:
- Output "Too low! Try again."

e. Decrement max_attempts

f. If max_attempts == 0:
- Output "Out of attempts. The secret number was {secret_number}."
- Exit loop

Python code Implementation

mini pro.py > get_guess

```python
import random
def get_guess():
    while True:
        try:
            guess = int(input(f"Guess a number between {lower_num} and {upper_num}: "))
            if lower_num <= guess <= upper_num:
                return guess
            else:
                print("Invalid input. Please enter a number within the specified range.")
        except ValueError:
            print("Invalid input. Please enter a valid number.")
lower_num = 1
upper_num = 100
max = 10
secret_num = random.randint(lower_num, upper_num)
print("Welcome to the Number Guessing Game!")
print(f"You have {max} attempts to guess the secret number between {lower_num} and {upper_num}.")
while max > 0:
    user_guess = get_guess()
    if user_guess == secret_num:
        print(f"Congratulations! You guessed it. The secret number was {secret_num}.")
        break
    elif user_guess > secret_num:
        print("Too high! Try again.")
    else:
        print("Too low! Try again.")
    max -= 1
if max == 0:
    print(f"Out of attempts. The secret number was {secret_num}.")

```

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OUTPUT: