DEPARTMENT OF CSEAI AND AIML

INTRODUCTION TO AI

REPORT

Project Title: AI Number Guessing Game

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Introduction

The AI Number Guessing Game is a simple Python program that demonstrates the binary search algorithm in an interactive manner. The user selects a number between 1 and 100, and the AI attempts to guess it based on user feedback. The AI adjusts its guesses according to whether the selected number is higher or lower than the previous guess. This project showcases the efficiency of binary search and user interaction within a console-based application.

Methodology

- The AI starts with a predefined range of numbers (1 to 100).
- It makes an initial guess by selecting the middle number of the current range.
- The user provides feedback on whether the guess is too high, too low, or correct.
- Based on the feedback:
- - If the guess is too high, the AI narrows the range to lower numbers.
- - If the guess is too low, the AI focuses on higher numbers.
- - If the guess is correct, the game ends.
- The process repeats until the AI correctly identifies the number.
- The game offers an option for the user to play again or exit.

Code

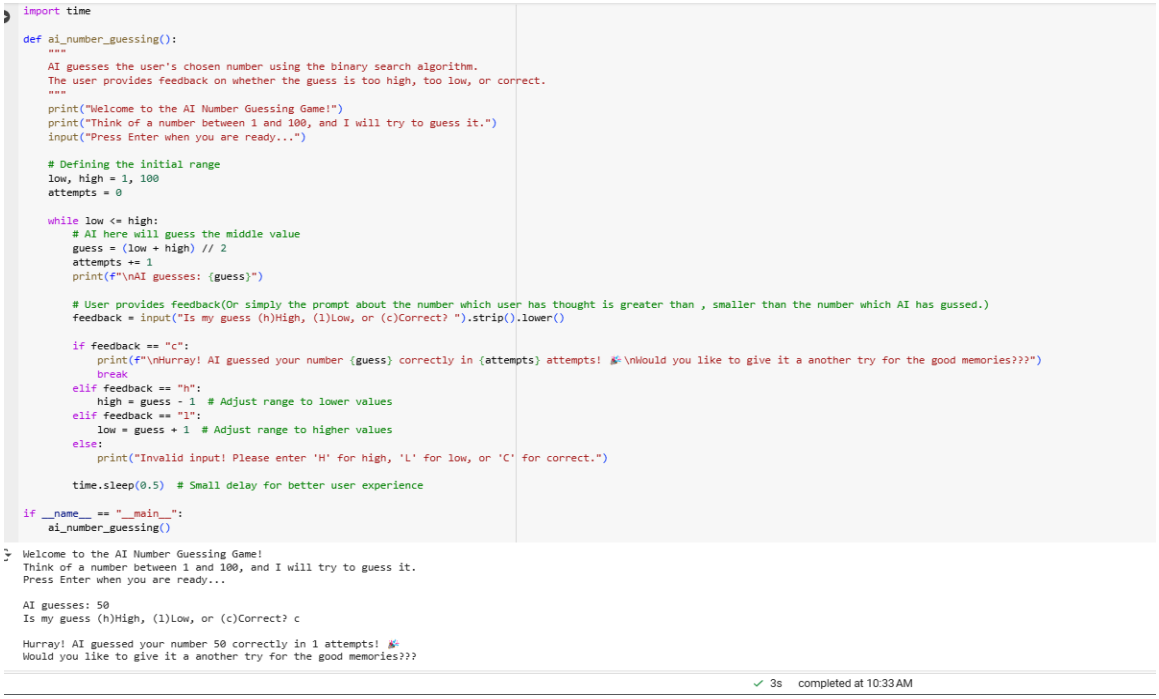
```
import time

def ai_number_guessing():
    print("Welcome to the AI Number Guessing Game!")
    print("Think of a number between 1 and 100, and I will try to guess it.")
    input("Press Enter when you are ready...")
```

```
    while True:
        low, high = 1, 100
        attempts = 0

        while low <= high:
            guess = (low + high) // 2
            attempts += 1
            print(f"\nAI guesses: {guess}")

            feedback = input("Is my guess (H)igh, (L)ow, or (C)orrect?
").strip().lower()

            if feedback == "c":
                print(f"\n Hurray! AI guessed your number {guess} correctly
in {attempts} attempts!")
                break
            elif feedback == "h":
                high = guess - 1
            elif feedback == "l":
                low = guess + 1
            else:
                print("Invalid input! Please enter 'H' for high, 'L' for low, or 'C'
for correct.")
                continue

            time.sleep(0.5)

        play_again = input("\nWould you like to play again? (Y/N):
").strip().lower()
        if play_again != 'y':
            print("Thanks for playing! Goodbye. ")
            break
```

```
if __name__ == "__main__":
    ai_number_guessing()
```

Output/Result

The following screenshot displays the execution and result of the AI Number Guessing Game:



```
import time

def ai_number_guessing():
    """
    AI guesses the user's chosen number using the binary search algorithm.
    The user provides feedback on whether the guess is too high, too low, or correct.
    """
    print("Welcome to the AI Number Guessing Game!")
    print("Think of a number between 1 and 100, and I will try to guess it.")
    input("Press Enter when you are ready...")

    # Defining the initial range
    low, high = 1, 100
    attempts = 0

    while low <= high:
        # AI here will guess the middle value
        guess = (low + high) // 2
        attempts += 1
        print(f"\nAI guesses: {guess}")

        # User provides feedback(Or simply the prompt about the number which user has thought is greater than , smaller than the number which AI has gussed.)
        feedback = input("Is my guess (h)High, (l)Low, or (c)Correct? ").strip().lower()

        if feedback == "c":
            print(f"\nHurray! AI guessed your number {guess} correctly in {attempts} attempts! 🎉\nWould you like to give it a another try for the good memories???")
            break
        elif feedback == "h":
            high = guess - 1  # Adjust range to lower values
        elif feedback == "l":
            low = guess + 1  # Adjust range to higher values
        else:
            print("Invalid input! Please enter 'H' for high, 'L' for low, or 'C' for correct.")

        time.sleep(0.5)  # Small delay for better user experience

if __name__ == "__main__":
    ai_number_guessing()
```

```
Welcome to the AI Number Guessing Game!
Think of a number between 1 and 100, and I will try to guess it.
Press Enter when you are ready...

AI guesses: 50
Is my guess (h)High, (l)Low, or (c)Correct? c

Hurray! AI guessed your number 50 correctly in 1 attempts! 🎉
Would you like to give it a another try for the good memories???
```

✓ 3s completed at 10:33 AM

References/Credits

- Binary Search Algorithm: https://en.wikipedia.org/wiki/Binary_search_algorithm
- Python Official Documentation: https://www.python.org/doc/