TITLE

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PROGRAM – BTECH

COURSE – CSE(AI)

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TOPIC - AI-Based Number Guessing Game

Introduction

The AI-based number guessing game is a simple yet fascinating application of artificial intelligence. This game demonstrates how AI can efficiently guess a number chosen by a user using a binary search strategy. The game is designed to engage users while showcasing the power of AI in solving problems through iterative feedback. This report outlines the methodology, code implementation, and results of the AI-based number guessing game.

Methodology

The AI-based number guessing game employs a binary search algorithm to guess the user's number. Here's a step-by-step overview of the methodology:

Initialization: The user is prompted to think of a number between 1 and 100.

Binary Search: The AI calculates the middle number of the current range and makes a guess.

User Feedback: After each guess, the user provides feedback by indicating if the number is higher or lower than the guess.

Range Adjustment: Based on the feedback, the AI adjusts the range of possible numbers by moving the lower or upper boundary.

Game End: The game ends when the AI correctly guesses the number.

Code Implementation

The game is implemented using Python. Below is the code snippet for the AI-based number guessing game:

python

# Function to handle the AI's number guessing game

def ai\_guess\_number():

# Prompt the user to think of a number between 1 and 100

print("Think of a number between 1 and 100.")

print("After each guess, tell me if your number is higher or lower than my guess.")

# Initialize the range of possible numbers

low = 1 # Lower boundary of the range

high = 100 # Upper boundary of the range

# Continue guessing until the correct number is found

while True:

# Calculate the middle number of the current range

# This is the AI's next guess

guess = (low + high) // 2

# Display the AI's guess to the user

print(f"\nMy guess is: {guess}")

# Ask the user for feedback on the guess

response = input("Is your number (h)igher, (l)ower, or is my guess (c)orrect? ")

# Adjust the range based on user feedback

if response.lower() == 'h':

# If the number is higher, move the lower boundary up

low = guess + 1

elif response.lower() == 'l':

# If the number is lower, move the upper boundary down

high = guess - 1

elif response.lower() == 'c':

# If the guess is correct, end the game

print(f"\nI'm glad I was able to guess your number: {guess}!")

break

else:

# Handle invalid user input

print("Invalid input. Please enter h, l, or c.")

# Main entry point of the program

if \_name\_ == "\_main\_":

# Start the AI's number guessing game

ai\_guess\_number()

Screenshots and Results

Initial Prompt:

