

Exploring AI in Programming

Part 1: Research and Reflection

1. What is AI, and how does it differ from traditional programming?
 - AI (Artificial Intelligence) refers to a system that mimics human intelligence to perform tasks and can improve themselves based on the data they receive.
 - In traditional programming, developers write instructions for a computer to follow. Meanwhile, AI creates systems that learn from data and make decisions without being explicitly programmed for every scenario.
2. Ways AI is used in everyday life:
 - Virtual assistants (Siri, Alexa, Gemini, ect)
 - Recommendation systems (Netflix, YouTube, Amazon)
 - Navigation apps (Google maps, Apple maps, ect)
 - Social media algorithms (content creation, targeted ads)
 - Chatbots for customer service
3. How AI can help programmers:
 - Automating repetitive coding tasks
 - Debugging and error detection
 - Providing tutorials and explanations for complex concepts
 - Suggesting solutions for specific problems

Part 2: Exploring an AI Tool

Example Interaction with ChatGPT:

Question: “Write a Python program to calculate the sum of two numbers.”

AI Response:

python

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```
# Python program to calculate the sum of two numbers
```

```
num1 = float(input("Enter the first number: "))
```

```
num2 = float(input("Enter the second number: "))
```

```
result = num1 + num2
```

```
print("The sum of the two numbers is:", result)
```

- Observation:
 - The answer is clear, functional, and easy to understand
 - It includes user input, making the program interactive
- Follow-up Question: “Can you explain the code for adding two numbers in Python step by step?”

AI Response:

 - The program starts by asking the user to input two numbers
 - It converts these inputs to numbers for mathematical operations
 - It calculates the sum of the two numbers and stores the result in a variable
 - Finally, it prints the result
- Reflection on AI Response:
 - The explanation is concise and helpful.
 - It could include more about potential errors (ex. what happens if a user inputs non-numeric data).

Part 3: Reflection and Summary

1. What did you learn about AI today?
 - AI can understand and respond to complex questions. It simplifies programming by providing instant examples and explanations.
2. How can AI make programming easier or more efficient?
 - By reducing the time spent on repetitive tasks like debugging or writing code
 - By acting as a tutor for learning new programming concepts
3. Potential challenges or limitations of using AI for coding help:
 - AI might sometimes provide incorrect or incomplete solutions
 - It may lack context about specific project requirements
 - Overreliance on AI can affect a programmer’s ability to solve problems independently