EXP 6 : Development of Python Code Compatible with Multiple AI Tools

Experiment:
Write and implement Python code that integrates with multiple AI tools to automate the task of interacting with APIs, comparing outputs, and generating actionable insights.

Aim:

To compare the responses of two open-source language models, **GPT-Neo** and **GPT-2**, to a given question, and analyze how different models generate text and handle natural language queries.

Procedure:

1. **Install Required Libraries**:

Use the command below to install the necessary Python libraries:
bash
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```
pip install transformers torch
```

2. **Load Models**:
    - Load two pre-trained language models from Hugging Face:
        - **GPT-Neo** (`EleutherAI/gpt-neo-1.3B`).
        - **GPT-2** (`gpt2`).
3. **Define Functions**:
    - Define two functions to generate text from both models.
        - **GPT-Neo Function**: Generates text from the GPT-Neo model.
        - **GPT-2 Function**: Generates text from the GPT-2 model.
4. **Generate Answers**:
    - Input the question “What are the benefits of renewable energy?” to both models and generate their responses.
5. **Compare Answers**:
    - Compare the generated answers from both models to see if they match or differ.
    - Print the responses and a summary indicating whether the answers are the same or different.
6. **Execute the Code**:
    - Run the code to generate and compare answers.

Deliverables:

1. **Python Script**: A script to compare answers from two models.

2. **Comparison Output**: The answers generated by both models and a summary of whether the answers are similar or different.

Sample Code:

```
from transformers import pipeline

# Load GPT-Neo and GPT-2 models
generator_neo = pipeline('text-generation',
model='EleutherAI/gpt-neo-1.3B')
generator_gpt2 = pipeline('text-generation', model='gpt2')

# Function to get answer from GPT-Neo
def get_gpt_neo_answer(question):
    generated_text = generator_neo(question, max_length=100,
num_return_sequences=1)
    return generated_text[0]['generated_text']

# Function to get answer from GPT-2
def get_gpt2_answer(question):
    generated_text = generator_gpt2(question, max_length=100,
num_return_sequences=1)
    return generated_text[0]['generated_text']

# Function to compare answers from both models
def compare_answers(question):
    answer_gpt_neo = get_gpt_neo_answer(question)
    answer_gpt2 = get_gpt2_answer(question)

    print("GPT-Neo Answer:", answer_gpt_neo)
    print("GPT-2 Answer:", answer_gpt2)

    if answer_gpt_neo == answer_gpt2:
        summary = "Both models provided the same answer."
    else:
        summary = "The answers are different."

    print("Summary:", summary)

    return {
```

```
        "question": question,
        "gpt_neo_answer": answer_gpt_neo,
        "gpt2_answer": answer_gpt2,
        "summary": summary
    }

# Run the comparison with a sample question
question = "****ANY QUESTION FOR RESPONSE COMPARISON *******"
result = compare_answers(question)
print("Comparison Result:", result)
```

Result:
Sample Output:

GPT-Neo Answer: The capital of France is Paris. It is a major European city known for its art, fashion, and culture.
GPT-2 Answer: The capital of France is Paris, which is the largest city in the country. It is known for its landmarks such as the Eiffel Tower.

Summary: The answers are different.

Comparison Result: {'question': 'What is the capital of France?', 'gpt_neo_answer': 'The capital of France is Paris. It is a major European city known for its art, fashion, and culture.', 'gpt2_answer': 'The capital of France is Paris, which is the largest city in the country. It is known for its landmarks such as the Eiffel Tower.', 'summary': 'The answers are different.'}

Conclusion:

In this experiment, we compared the responses of two different language models, **GPT-Neo** and **GPT-2**, to the same input question. The results showed that the models provided different answers, which indicates that each model has its unique way of generating text based on its training data and architecture.

- ***** WRITE YOUR SUMMARY & CONCLUSION ******