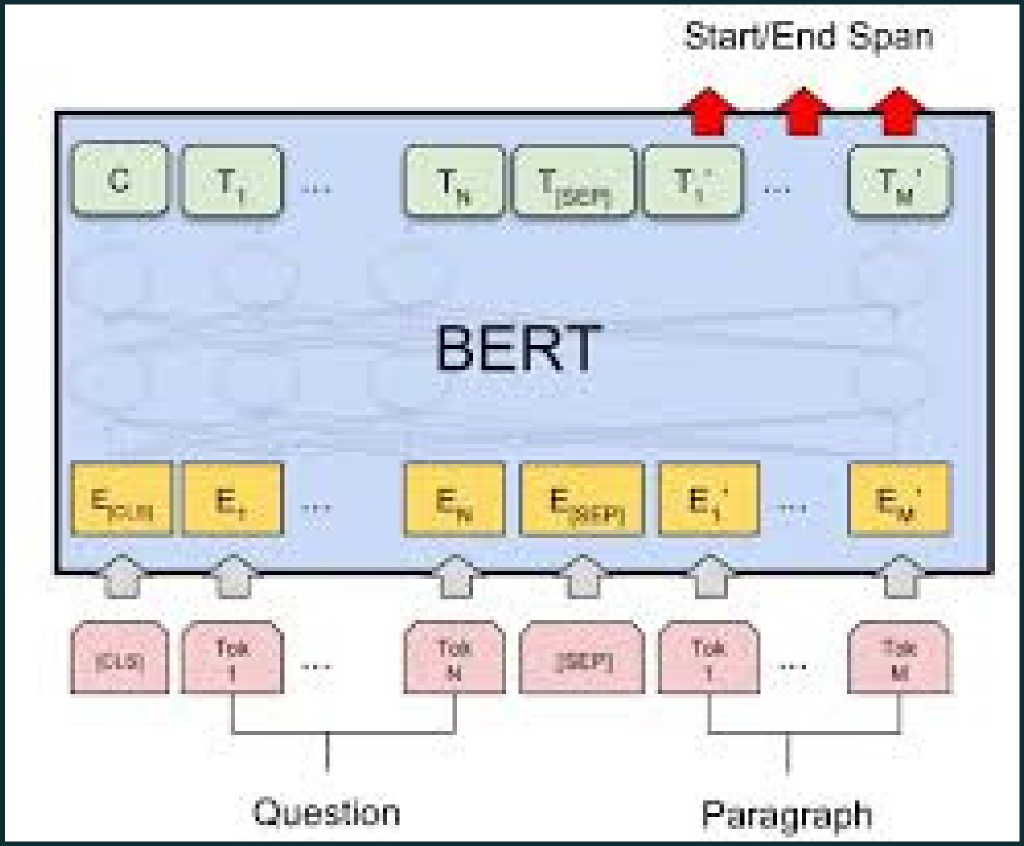
What We Need To Know About BERT!

BERT

BERT stands for Bidirectional Encoder Representations from Transformers. It's a deep learning model developed by Google that has revolutionized the way machines understand and process human language.



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Data Scientist & Kaggle Master

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How does BERT work?

BERT uses a technique called "transformer architecture" to analyze words in a sentence and understand their context by considering both the words before and after them. This bidirectional approach allows BERT to capture complex relationships and nuances within language, leading to remarkable accuracy in tasks like language translation, sentiment analysis, and question answering

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Applications of BERT

Machine Translation: BERT's contextual understanding helps improve translation accuracy, making it a game-changer for multilingual communication.

Sentiment Analysis: BERT's ability to comprehend context enables more accurate sentiment analysis, aiding businesses in understanding customer feedback and trends.

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Question Answering: BERT's contextual understanding allows it to answer questions based on given text, enhancing search engines and virtual assistants.

Fun Fact: BERT was trained on an astonishing amount of data, including a massive collection of books and a whole lot of web pages. Talk about a well-read AI!

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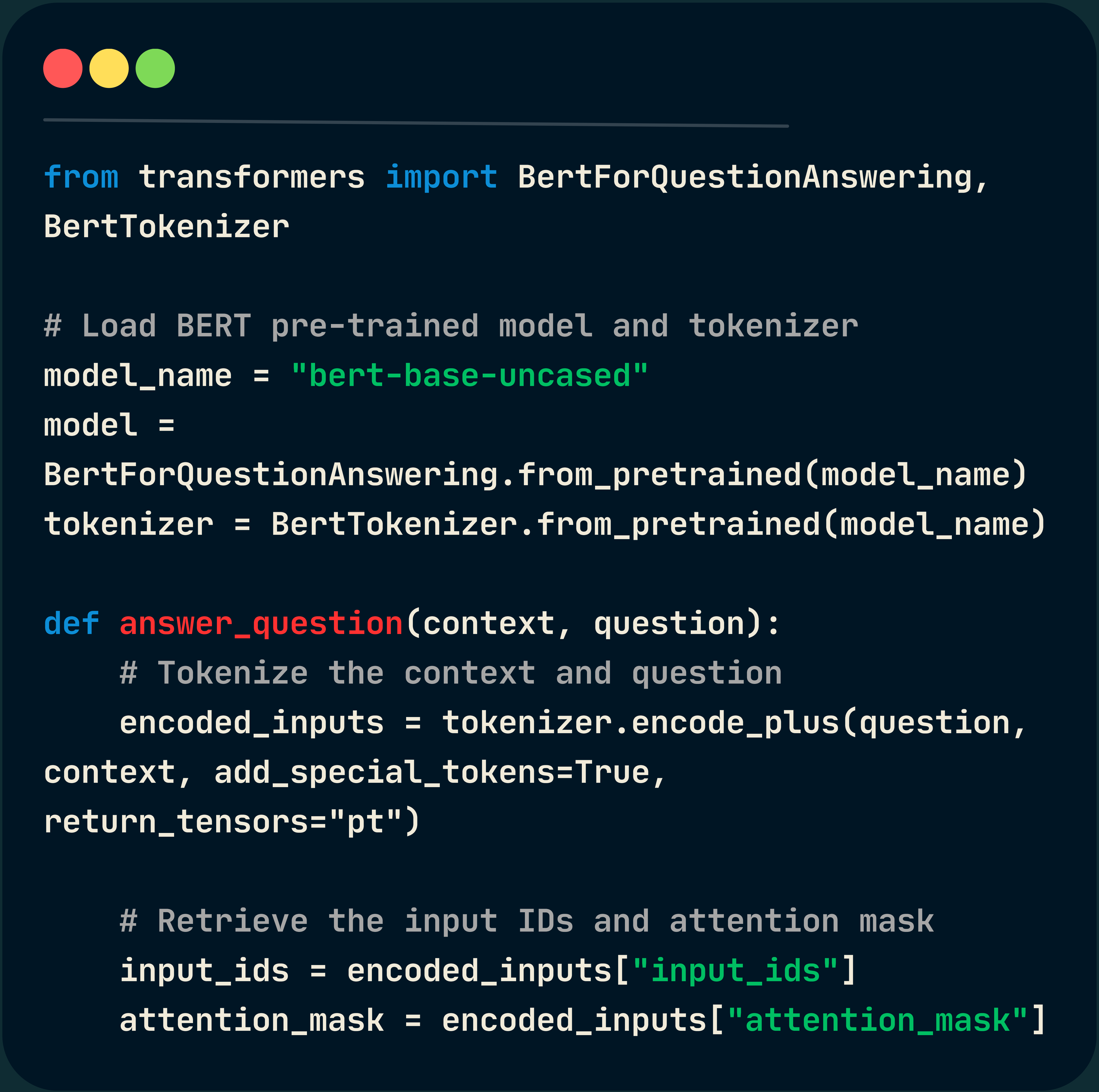
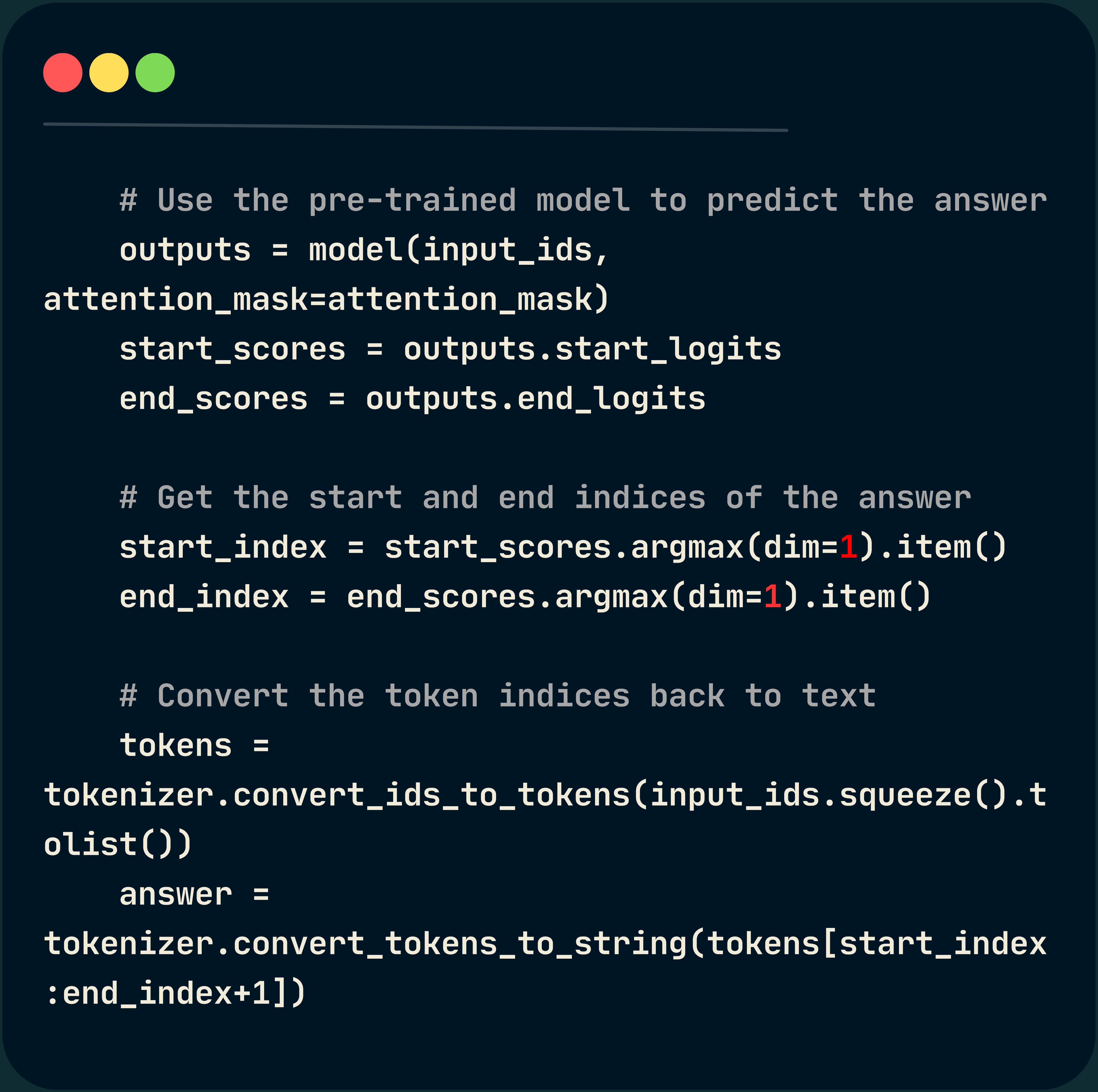
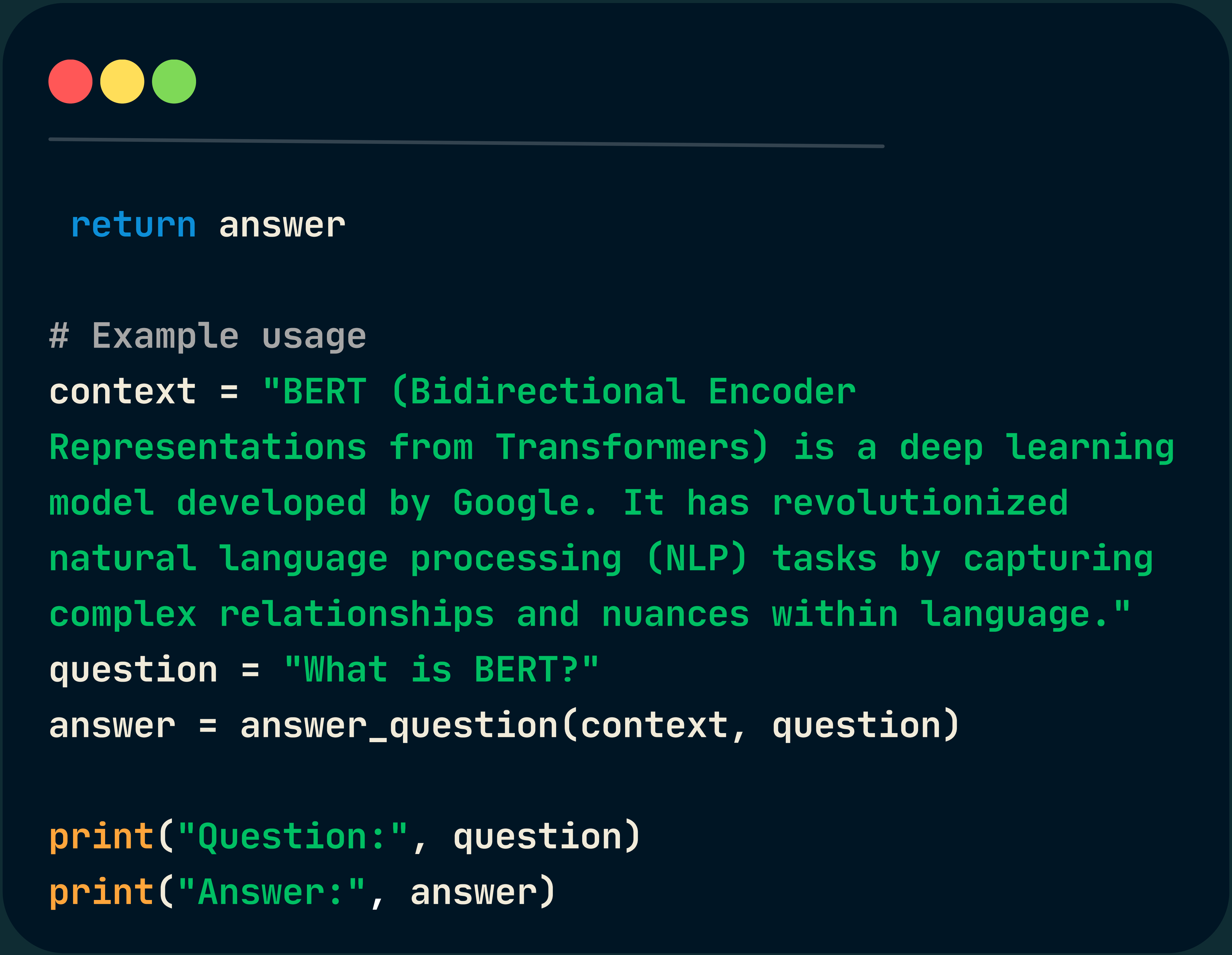


```
from transformers import BertForQuestionAnswering,
BertTokenizer

# Load BERT pre-trained model and tokenizer
model_name = "bert-base-uncased"
model =
BertForQuestionAnswering.from_pretrained(model_name)
tokenizer = BertTokenizer.from_pretrained(model_name)

def answer_question(context, question):
    # Tokenize the context and question
    encoded_inputs = tokenizer.encode_plus(question,
context, add_special_tokens=True,
return_tensors="pt")

    # Retrieve the input IDs and attention mask
    input_ids = encoded_inputs["input_ids"]
    attention_mask = encoded_inputs["attention_mask"]
```



```
    # Use the pre-trained model to predict the answer
    outputs = model(input_ids, attention_mask=attention_mask)
    start_scores = outputs.start_logits
    end_scores = outputs.end_logits

    # Get the start and end indices of the answer
    start_index = start_scores.argmax(dim=1).item()
    end_index = end_scores.argmax(dim=1).item()

    # Convert the token indices back to text
    tokens = tokenizer.convert_ids_to_tokens(input_ids.squeeze().tolist())
    answer = tokenizer.convert_tokens_to_string(tokens[start_index:end_index+1])
```



```
 return answer

# Example usage
context = "BERT (Bidirectional Encoder
Representations from Transformers) is a deep learning
model developed by Google. It has revolutionized
natural language processing (NLP) tasks by capturing
complex relationships and nuances within language."
question = "What is BERT?"
answer = answer_question(context, question)

print("Question:", question)
print("Answer:", answer)
```

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