

```
import huggingface_hub

from google.colab import userdata
token = userdata.get('HF_TOKEN')

from huggingface_hub import login
login(token)
print('Successful login')

Successful login

!pip install bitsandbytes

Collecting bitsandbytes
  Downloading bitsandbytes-0.44.1-py3-none-manylinux_2_24_x86_64.whl.metadata (3.5 kB)
Requirement already satisfied: torch in
/usr/local/lib/python3.10/dist-packages (from bitsandbytes)
(2.5.1+cu121)
Requirement already satisfied: numpy in
/usr/local/lib/python3.10/dist-packages (from bitsandbytes) (1.26.4)
Requirement already satisfied: filelock in
/usr/local/lib/python3.10/dist-packages (from torch->bitsandbytes)
(3.16.1)
Requirement already satisfied: typing-extensions>=4.8.0 in
/usr/local/lib/python3.10/dist-packages (from torch->bitsandbytes)
(4.12.2)
Requirement already satisfied: networkx in
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(3.4.2)
Requirement already satisfied: jinja2 in
/usr/local/lib/python3.10/dist-packages (from torch->bitsandbytes)
(3.1.4)
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(2024.10.0)
Requirement already satisfied: sympy==1.13.1 in
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(1.13.1)
Requirement already satisfied: mpmath<1.4,>=1.1.0 in
/usr/local/lib/python3.10/dist-packages (from sympy==1.13.1->torch-
>bitsandbytes) (1.3.0)
Requirement already satisfied: MarkupSafe>=2.0 in
/usr/local/lib/python3.10/dist-packages (from jinja2->torch-
>bitsandbytes) (3.0.2)
Downloading bitsandbytes-0.44.1-py3-none-manylinux_2_24_x86_64.whl
(122.4 MB)
122.4/122.4 MB 7.5 MB/s eta
0:00:00
```

```

from transformers import AutoModelForCausalLM, AutoTokenizer,
BitsAndBytesConfig
import torch

# Define quantization configuration for 4-bit quantization
quantization_config = BitsAndBytesConfig(
    load_in_4bit=True, # Use 4-bit quantization
)

# Load your model with the quantization config (replace with your
model)
base_model_id = "rujool/mistral_lora_finetuned_clean"

tokenizer = AutoTokenizer.from_pretrained(
    base_model_id,
    trust_remote_code=True,
    padding_side="left"
)

# Set the padding token (important for left padding)
if tokenizer.pad_token is None:
    tokenizer.pad_token = tokenizer.eos_token

quantization_config = BitsAndBytesConfig(
    load_in_4bit=True, # Use 4-bit quantization
)

model = AutoModelForCausalLM.from_pretrained(
    base_model_id,
    quantization_config=quantization_config,
    torch_dtype=torch.float16,
    device_map="auto",
)

{"model_id": "1782fe12f4294ed9a69cc0cec60ff28e", "version_major": 2, "version_minor": 0}

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```

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def generate_answer(query, model, tokenizer, max_length=512,
temperature=0.8):
    # Use a more explicit template for the prompt
    prompt = f"You should give a response for the following query:
{query}"

    # Tokenize the input with the modified prompt
    inputs = tokenizer(prompt, return_tensors="pt",
padding=True).to(model.device)

    # Generate output from the model
    outputs = model.generate(
        **inputs,
        max_new_tokens=max_length,
        do_sample=True,
        temperature=temperature,
        top_p=0.9,
        pad_token_id=tokenizer.eos_token_id,
        #early_stopping=True # Stops when the model generates a
complete answer
    )

    # Decode the output to get the generated answer
    answer = tokenizer.decode(outputs[0], skip_special_tokens=True)

    # Remove the prompt part (we only want the answer)
    answer = answer[len(prompt):].strip() # Strip whitespace if

```

necessary

```
return answer
```

```
import textwrap
```

```
query = "explain the concepts of criminal law"  
answer = generate_answer(query, model, tokenizer)
```

```
wrapped_answer = textwrap.fill(answer, width=60)  
print(wrapped_answer)
```

```
/usr/local/lib/python3.10/dist-packages/bitsandbytes/nn/  
modules.py:452: UserWarning: Input type into Linear4bit is  
torch.float16, but bnb_4bit_compute_dtype=torch.float32 (default).  
This will lead to slow inference or training speed.  
warnings.warn(
```

Question: What are the main sources of criminal law in the United States?\\ \\ \\ Main sources of criminal law in the United States include:\\ \\ \\ 1. Common Law: This is the body of law that is based on judicial decisions. It is the law that has been developed by the courts in the United States since the founding of the country. Common law is the source of many of the criminal laws in the United States.\\ \\ \\ 2. Statutes: These are laws passed by the legislature that are specific to a particular crime or set of crimes. Statutes are the primary source of criminal law in the United States. They are enacted by the legislature and are binding on the courts.\\ \\ \\ 3. Constitutional Law: This is the law that is based on the United States Constitution. It includes the Bill of Rights, which sets out the rights of the individual. Constitutional law is a source of criminal law in the United States because it sets out the limits on government power and the rights of individuals.\\ \\ \\ 4. Case Law: This is the law that is developed through judicial decisions. It is based on the interpretation and application of the statutes and the common law by the courts. Case law is a source of criminal law in the United States because it provides guidance on how the law should be applied in specific cases.

```
query = "explain the role of IPC 100"  
answer = generate_answer(query, model, tokenizer)
```

```
wrapped_answer = textwrap.fill(answer, width=50)  
print(wrapped_answer)
```

Question: Explain the role of IPC 100. Answer:
IPC 100 defines the offence of 'Causing death due to negligence.' It states that if a person causes the death of another person due to negligence, he

may be punished with imprisonment for a term which may extend to two years, or with fine, or with both. This section is applicable in cases where the death is caused due to the negligence of the accused, and not due to his intentional act. This means that if a person causes the death of another person by negligence, he may be held liable under this section.

```
query = "distinguish between a partnership firm and a company"  
answer = generate_answer(query, model, tokenizer)
```

```
wrapped_answer = textwrap.fill(answer, width=50)  
print(wrapped_answer)
```

Question: How would you distinguish between a partnership firm and a company? Answer: A partnership firm is a business owned by two or more persons who have agreed to carry on business with a common purpose. The partners have unlimited liability, and the firm has no legal existence separate from the partners. A company, on the other hand, is a separate legal entity from its shareholders. It is owned by the shareholders, who have limited liability. The company has perpetual succession, meaning it can continue to exist even if some of the shareholders leave or die.

```
query = "explain jurisprudence"  
answer = generate_answer(query, model, tokenizer)
```

```
wrapped_answer = textwrap.fill(answer, width=50)  
print(wrapped_answer)
```

Question: Explain Jurisprudence. Jurisprudence is the study of law. It is the science of law and the principles that guide the interpretation and application of the law. Jurisprudence is concerned with the nature, sources, and limits of law, as well as the legal systems, institutions, and procedures that govern the legal system. It includes the study of legal theory, legal philosophy, and legal methodology. Jurisprudence is an important field of study for lawyers, judges, legal scholars, and anyone interested in understanding the law and its role in society.

```
query = "what is the role of CBI"  
answer = generate_answer(query, model, tokenizer)
```

```
wrapped_answer = textwrap.fill(answer, width=50)
print(wrapped_answer)
```

Q : What is the role of the CBI in India?A: The role of the Central Bureau of Investigation (CBI) in India is to investigate cases of corruption, white-collar crime, and other serious offenses at the national level. It is a premier investigative agency that works under the control of the Ministry of Personnel, Public Grievances & Pensions. The CBI is responsible for investigating various crimes such as fraud, forgery, embezzlement, money laundering, economic offenses, and other offenses against the State. It is also responsible for conducting enquiries into cases involving high-profile individuals and organizations. The CBI works in close coordination with State Governments and other investigative agencies to ensure that crimes are investigated thoroughly and the perpetrators are brought to justice.

```
query = "how do you file an FIR"
answer = generate_answer(query, model, tokenizer)
```

```
wrapped_answer = textwrap.fill(answer, width=50)
print(wrapped_answer)
```

Question: How do you file an FIR in India? In India, an FIR (First Information Report) is a document that initiates a criminal case. It can be filed by the victim, a witness, or a relative of the victim. Here are the steps to file an FIR: 1. Approach the police station: The complaint should be made at the jurisdictional police station where the crime occurred or where the effects of the crime are found. 2. Submit the complaint: The complainant should submit a written or oral complaint to the police officer in-charge of the police station. The police officer will record the complaint in a register. 3. Get an FIR copy: The police officer will issue an FIR copy to the complainant after the complaint is recorded. The FIR should contain the details of the crime, the name and address of the complainant, and the details of the accused. 4. Provide evidence: If available, the complainant should provide any evidence, such as photos, videos, or documents, to support the complaint. 5. FIR registration: The police officer will register the FIR and

investigate the case. The police officer may also take the complainant's statement and any other witness statements. 6. Follow-up: The complainant can follow up with the police station for updates on the case's progress. The police officer will update the complainant as per the law.

```
query = "explain IPC 300"  
answer = generate_answer(query, model, tokenizer)  
  
wrapped_answer = textwrap.fill(answer, width=50)  
print(wrapped_answer)
```

Question: What is the IPC 300? Explain the offences under this section. \\ IPC 300: Murder \\ Murder is defined under section 300 of the Indian Penal Code (IPC). It is a non-bailable offence and is punishable with life imprisonment or death. Murder is the unlawful killing of a human being with malice aforethought. It is the most serious and heinous crime under the IPC. \\ There are three main elements of murder: \\ 1. Unlawful act: The act of killing a person must be unlawful. This means that the act must be done without any legal justification or excuse. For example, killing in self-defence or in the course of duty by a police officer is not murder. \\ 2. Malice aforethought: The act of killing must be done with the intention of causing death or with the knowledge that it will cause death. This means that the accused must have intentionally and knowingly caused the death of the person. For example, if a person kills a person

```
query = "explain Minto-Morley reforms"  
answer = generate_answer(query, model, tokenizer, temperature=0.1)  
  
wrapped_answer = textwrap.fill(answer, width=50)  
print(wrapped_answer)
```

Question: Explain the Minto-Morley reforms.
Answer: The Minto-Morley reforms were a series of political reforms introduced in British India in 1909. These reforms were named after Lord Minto, the Viceroy of India, and Lord Morley, the Secretary of State for India. The reforms were aimed at increasing the representation of Indians in the Indian Councils and at giving them a greater role in the administration of the country. The main features of the Minto-Morley reforms

were: 1. The number of members in the Indian Councils was increased. 2. The number of nominated members was reduced and the number of elected members was increased. 3. The franchise was extended to a larger number of people, including women. 4. The Indian Councils were given more powers to discuss and debate issues of national importance. 5. The Indian Councils were given the power to introduce bills and to vote on them. 6. The Indian Councils were given the power to question the Viceroy and his ministers. 7. The Indian Councils were given the power to appoint committees to investigate and report on various issues. 8. The Indian Councils were given the power to appoint Indian members to the Viceroy's Executive Council. 9. The Indian Councils were given the power to appoint Indian members to the Legislative Council. 10. The Indian Councils were given the power to appoint Indian members to the Executive Council of the Governor of a Province.

```
query = "explain the duties of a trust"
answer = generate_answer(query, model, tokenizer, temperature=0.2)
```

```
wrapped_answer = textwrap.fill(answer, width=50)
print(wrapped_answer)
```

Question: Explain the duties of a trustee.
Answer: A trustee is a person or an entity appointed to hold and manage property or assets for the benefit of another person or persons. The duties of a trustee are as follows: 1. Duty of Loyalty: The trustee must act in the best interests of the beneficiaries and not for his own benefit. 2. Duty of Care: The trustee must exercise reasonable care, skill, and diligence in managing the trust property. 3. Duty of Prudence: The trustee must invest the trust property in a manner that is prudent and reasonable, considering the nature of the trust and the interests of the beneficiaries. 4. Duty of Diligence: The trustee must keep accurate records of all transactions related to the trust and provide them to the beneficiaries upon request. 5. Duty of Accountability: The trustee must provide a full and accurate account of all transactions related to the trust to the beneficiaries. 6. Duty of Disclosure: The trustee must disclose all relevant information to the beneficiaries, including the terms of the trust, the trust property, and the

income generated from the trust. 7. Duty of Maintenance: The trustee must maintain the trust property in good condition and take all necessary steps to preserve and protect it. 8. Duty of Maintenance: The trustee must maintain the trust property in good condition and take all necessary steps to preserve and protect it.