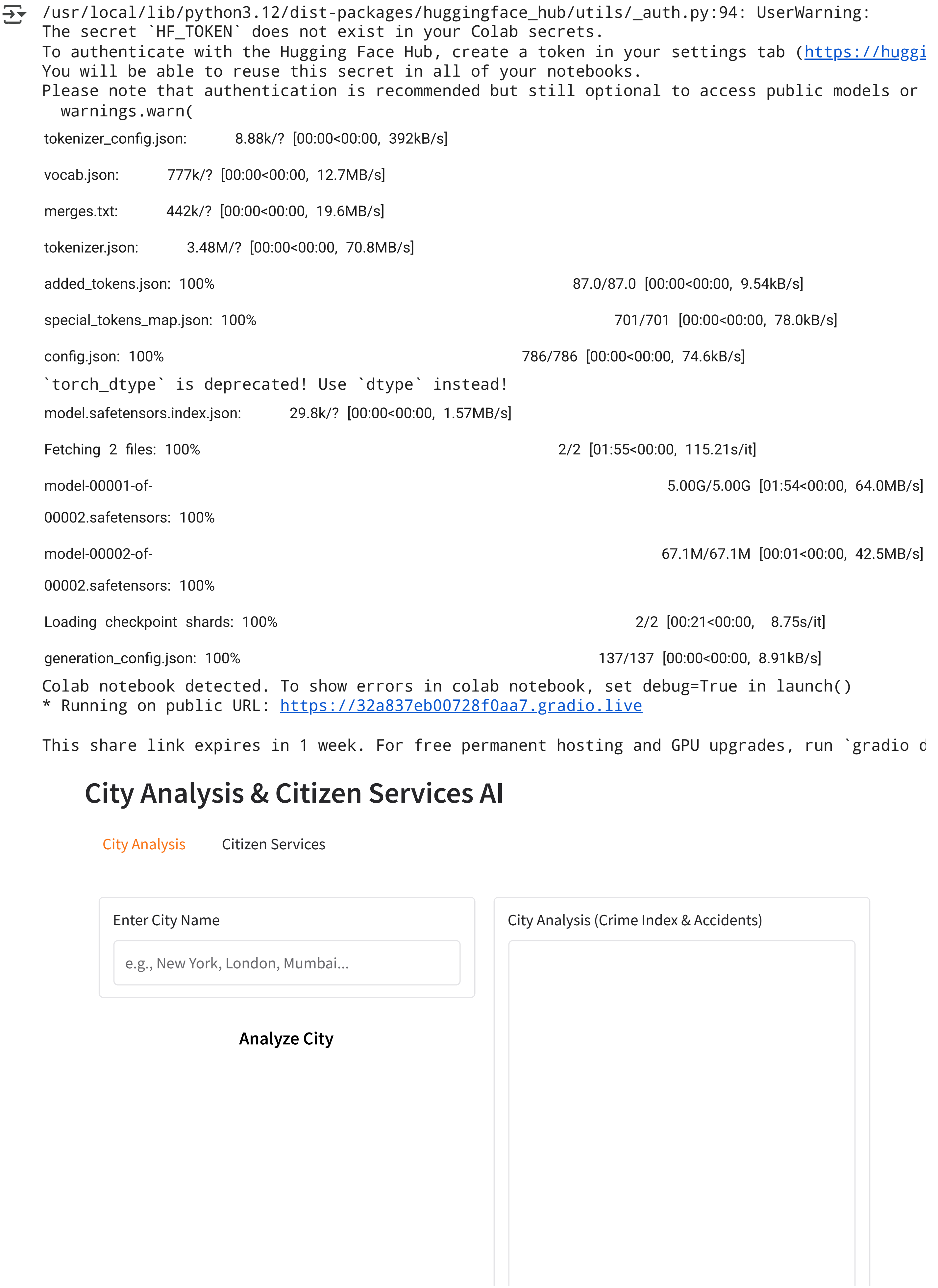
```
# run this project file in google collab by changing run type to T4 GPU

!pip install transformers torch gradio -q

import gradio as gr
import torch
from transformers import AutoTokenizer, AutoModelForCausalLM

# Load model and tokenizer
model_name = "ibm-granite/granite-3.2-2b-instruct"
tokenizer = AutoTokenizer.from_pretrained(model_name)
model = AutoModelForCausalLM.from_pretrained(
    model_name,
    torch_dtype=torch.float16 if torch.cuda.is_available() else torch.float32,
    device_map="auto" if torch.cuda.is_available() else None
)

if tokenizer.pad_token is None:
    tokenizer.pad_token = tokenizer.eos_token

def generate_response(prompt, max_length=1024):
    inputs = tokenizer(prompt, return_tensors="pt", truncation=True, max_length=512)

    if torch.cuda.is_available():
        inputs = {k: v.to(model.device) for k, v in inputs.items()}

    with torch.no_grad():
        outputs = model.generate(
            **inputs,
            max_length=max_length,
            temperature=0.7,
            do_sample=True,
            pad_token_id=tokenizer.eos_token_id
        )

    response = tokenizer.decode(outputs[0], skip_special_tokens=True)
    response = response.replace(prompt, "").strip()
    return response

def city_analysis(city_name):
    prompt = f"Provide a detailed analysis of {city_name} including:\n1. Crime Index and safety sta
    return generate_response(prompt, max_length=1000)

def citizen_interaction(query):
    prompt = f"As a government assistant, provide accurate and helpful information about the follow
    return generate_response(prompt, max_length=1000)

# Create Gradio interface
with gr.Blocks() as app:
    gr.Markdown("# City Analysis & Citizen Services AI")

    with gr.Tabs():
        with gr.TabItem("City Analysis"):
            with gr.Row():
                with gr.Column():
                    city_input = gr.Textbox(
                        label="Enter City Name",
                        placeholder="e.g., New York, London, Mumbai...",
                        lines=1
                        lines=4
                    )
                    analyze_btn = gr.Button("Analyze City")

                with gr.Column():
                    city_output = gr.Textbox(label="City Analysis (Crime Index & Accidents)", lines=

            analyze_btn.click(city_analysis, inputs=city_input, outputs=city_output)

        with gr.TabItem("Citizen Services"):
            with gr.Row():
                with gr.Column():
                    citizen_query = gr.Textbox(
                        label="Your Query",
                        placeholder="Ask about public services, government policies, civic issues..
                        lines=4
                    )
                    query_btn = gr.Button("Get Information")

                with gr.Column():
                    citizen_output = gr.Textbox(label="Government Response", lines=15)

            query_btn.click(citizen_interaction, inputs=citizen_query, outputs=citizen_output)

app.launch(share=True)
```



```
/usr/local/lib/python3.12/dist-packages/huggingface_hub/utils/_auth.py:94: UserWarning:
The secret `HF_TOKEN` does not exist in your Colab secrets.
To authenticate with the Hugging Face Hub, create a token in your settings tab (https://huggi
You will be able to reuse this secret in all of your notebooks.
Please note that authentication is recommended but still optional to access public models or
  warnings.warn(
tokenizer_config.json:     8.88k/? [00:00<00:00, 392kB/s]
vocab.json:     777k/? [00:00<00:00, 12.7MB/s]
merges.txt:     442k/? [00:00<00:00, 19.6MB/s]
tokenizer.json:     3.48M/? [00:00<00:00, 70.8MB/s]
added_tokens.json: 100%                                   87.0/87.0 [00:00<00:00, 9.54kB/s]
special_tokens_map.json: 100%                                  701/701 [00:00<00:00, 78.0kB/s]
config.json: 100%                                   786/786 [00:00<00:00, 74.6kB/s]
`torch_dtype` is deprecated! Use `dtype` instead!
model.safetensors.index.json:     29.8k/? [00:00<00:00, 1.57MB/s]
Fetching 2 files: 100%                                   2/2 [01:55<00:00, 115.21s/it]
model-00001-of-                                          5.00G/5.00G [01:54<00:00, 64.0MB/s]
00002.safetensors: 100%
model-00002-of-                                          67.1M/67.1M [00:01<00:00, 42.5MB/s]
00002.safetensors: 100%
Loading checkpoint shards: 100%                                   2/2 [00:21<00:00, 8.75s/it]
generation_config.json: 100%                                   137/137 [00:00<00:00, 8.91kB/s]
Colab notebook detected. To show errors in colab notebook, set debug=True in launch()
* Running on public URL: https://32a837eb00728f0aa7.gradio.live

This share link expires in 1 week. For free permanent hosting and GPU upgrades, run `gradio d
```

## City Analysis & Citizen Services AI

City Analysis
Citizen Services
Enter City Name
e.g., New York, London, Mumbai...
Analyze City
City Analysis (Crime Index & Accidents)