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1. What is Streamlit and what are its main features?

- Streamlit is an open-source Python library used to create web applications for machine learning and data science projects.
- **Main Features:**
 - Quick and easy to build interactive apps.
 - Supports widgets for user input.
 - Auto-updates on code change.
 - Integrates with popular Python libraries (e.g., Pandas, NumPy, Matplotlib).

2. How does Streamlit differ from other web application frameworks like Flask or Django?

- **Streamlit:**
 - Focused on data science and machine learning.
 - Declarative programming style.
 - Minimal boilerplate code.
- **Flask:**
 - General-purpose web framework.
 - Micro-framework with more manual configuration.
- **Django:**
 - Full-fledged web framework.
 - Includes ORM, admin panel, and authentication.

3. What are some typical use cases for Streamlit?

- Data exploration and visualization.
- Prototyping machine learning models.
- Building interactive dashboards.
- Sharing data analysis results with non-technical stakeholders.

4. How do you create a simple Streamlit app?

```
import streamlit as st

st.title("Hello, Streamlit!")
st.write("This is a simple Streamlit app.")
```

5. Can you explain the basic structure of a Streamlit script?

- Import Streamlit.
- Define the app's layout and elements using Streamlit functions.
- Example:

```
import streamlit as st

st.title("App Title")
st.sidebar.header("Sidebar")
st.write("Main content here.")
```

6. How do you add widgets like sliders, buttons, and text inputs to a Streamlit app?

- **Sliders:** `st.slider("Label", min_value, max_value)`
- **Buttons:** `st.button("Label")`
- **Text Inputs:** `st.text_input("Label")`
- Example:

```
import streamlit as st

slider_val = st.slider("Select a number", 0, 100)
button_clicked = st.button("Click me")
text = st.text_input("Enter text")
```

7. How does Streamlit handle user interaction and state management?

- Streamlit reruns the script on each interaction.
- Use `st.session_state` to maintain state across interactions.
- Example:

```
import streamlit as st

if "counter" not in st.session_state:
    st.session_state.counter = 0
```

```
if st.button("Increment"):
    st.session_state.counter += 1

st.write(f"Counter: {st.session_state.counter}")
```

8. What are some best practices for organizing and structuring a Streamlit project?

- Modularize code into functions and classes.
- Use configuration files for parameters.
- Organize files into directories (e.g., src, data, models).
- Include a requirements.txt for dependencies.

9. How would you deploy a Streamlit app locally?

- Run the app using ‘streamlit run your_script.py’.
- Access the app locally via ‘http://localhost:8501’.

10. Can you describe the steps to deploy a Streamlit app?

- Create requirements.txt with dependencies.
- Use a platform like Streamlit Cloud, Heroku, or Docker.
- For Streamlit Cloud:
 1. Push code to a GitHub repository.
 2. Connect the repo to Streamlit Cloud.
 3. Deploy the app.

11. What is the purpose of the requirements.txt file in the context of Streamlit deployment?

- Lists all the dependencies required to run the Streamlit app.
- Ensures consistent environment setup across different deployment platforms.
- Example content:

```
streamlit
pandas
numpy
```