**📒 Streamlit Notes — Convert Python Scripts to Web Apps**

**1. Getting Started**

Before using Streamlit:

bash

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pip install streamlit

Run your app:

bash

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streamlit run app.py

**app.py** is your Python file.

**2. Basic App Structure**

Every Streamlit app starts with:

python

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import streamlit as st

* st is the shortcut to use Streamlit commands.

**3. Displaying Text**

**Title**

python

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st.title("My Web App")

* Displays a **big title** at the top.

**Header**

python

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st.header("Section Header")

* Slightly smaller than a title.

**Subheader**

python

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st.subheader("Sub-section")

* For dividing content inside a section.

**Markdown**

python

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st.markdown("\*\*Bold text\*\*, \*italic\*, `code`")

* Supports Markdown formatting for styling.

**Write**

python

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st.write("Any object here: text, numbers, DataFrames")

st.write(123)

st.write({"name": "Mounil"})

* Universal display function.

**Code Block**

python

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st.code("""

for i in range(5):

print(i)

""", language="python")

* Shows code with syntax highlighting.

**4. Showing Data**

**Dataframe/Table**

python

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import pandas as pd

df = pd.DataFrame({"Name": ["Alice", "Bob"], "Age": [25, 30]})

st.dataframe(df)

st.table(df)

* st.dataframe is interactive (scroll, sort).
* st.table is static.

**JSON**

python

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st.json({"name": "John", "age": 22})

* Displays a JSON object in a readable format.

**5. User Input Widgets**

**Text Input**

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name = st.text\_input("Enter your name")

st.write("Hello,", name)

* Returns the string entered.

**Number Input**

python

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age = st.number\_input("Enter your age", min\_value=0, max\_value=100, step=1)

* Returns an integer or float.

**Textarea**

python

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bio = st.text\_area("Enter bio")

* Multiline input.

**Slider**

python

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value = st.slider("Select a number", min\_value=0, max\_value=10, step=1)

**Selectbox (Dropdown)**

python

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option = st.selectbox("Choose one", ["Apple", "Banana", "Cherry"])

**Multiselect**

python

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options = st.multiselect("Choose fruits", ["Apple", "Banana", "Cherry"])

**Checkbox**

python

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if st.checkbox("Show details"):

st.write("Here are the details...")

**Radio Buttons**

python

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choice = st.radio("Select gender", ["Male", "Female", "Other"])

**File Upload**

python

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file = st.file\_uploader("Upload a file", type=["csv", "txt"])

if file is not None:

st.write(file.name)

**6. Media Elements**

**Image**

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from PIL import Image

img = Image.open("example.png")

st.image(img, caption="Sample Image", use\_column\_width=True)

**Audio**

python

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audio\_file = open("audio.mp3", "rb")

st.audio(audio\_file.read(), format="audio/mp3")

**Video**

python

CopyEdit

video\_file = open("video.mp4", "rb")

st.video(video\_file.read())

**7. Layout & Organization**

**Sidebar**

python

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st.sidebar.title("Menu")

page = st.sidebar.selectbox("Select page", ["Home", "About"])

* Everything with st.sidebar appears on the left.

**Columns**

python

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col1, col2 = st.columns(2)

col1.write("Left Column")

col2.write("Right Column")

**Tabs**

python

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tab1, tab2 = st.tabs(["Tab 1", "Tab 2"])

tab1.write("This is tab 1")

tab2.write("This is tab 2")

**Expanders**

python

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with st.expander("See details"):

st.write("Hidden content")

**8. Buttons & Actions**

python

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if st.button("Click me"):

st.write("Button clicked!")

**9. Progress & Status**

**Progress Bar**

python

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import time

progress = st.progress(0)

for i in range(100):

time.sleep(0.05)

progress.progress(i+1)

**Status Messages**

python

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st.success("Success!")

st.error("Error occurred!")

st.warning("This is a warning")

st.info("Just some info")

**10. Caching for Speed**

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@st.cache\_data

def load\_data():

return pd.read\_csv("data.csv")

* Stores function results to avoid recalculating.

**11. Session State (Store Variables Across Reruns)**

python

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if "count" not in st.session\_state:

st.session\_state.count = 0

if st.button("Increment"):

st.session\_state.count += 1

st.write("Count:", st.session\_state.count)

**12. Converting Normal Python Script → Streamlit**

Example: Simple Calculator

**Normal Python Script:**

python

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a = int(input("Enter first number: "))

b = int(input("Enter second number: "))

print("Sum is:", a + b)

**Streamlit Version:**

python

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import streamlit as st

st.title("Simple Calculator")

a = st.number\_input("Enter first number", step=1)

b = st.number\_input("Enter second number", step=1)

if st.button("Calculate Sum"):

st.success(f"Sum is: {a + b}")

**13. Running Apps with Multiple Pages**

arduino

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streamlit run Home.py

* Use sidebar selectbox to navigate or Streamlit’s multipage setup (folder structure).