



# STREAMLIT TO BUILD & DEPLOY APPS LIKE A DATA SCIENTIST



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Hobbies include 🎵, ♟️, ⚽ and 😴!

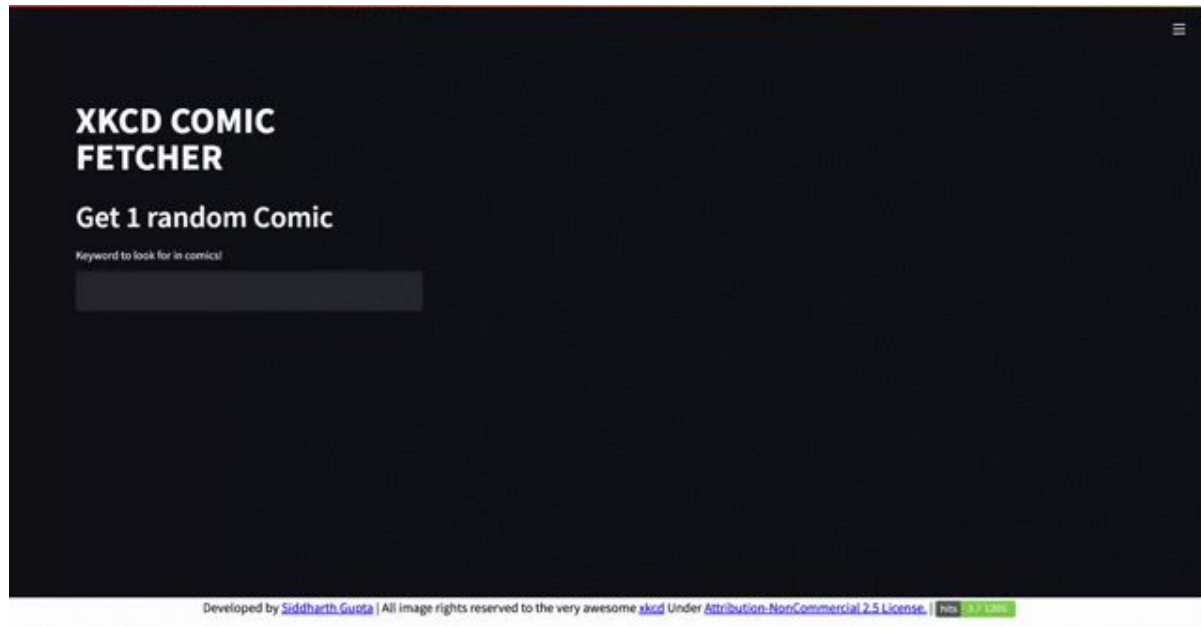


# CONTENTS!

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- Understanding different features of Streamlit
  - Installation and setting up!
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  - containers
  - columns (page division etc.)
  - text display types (markdown, text, title, header etc.)
  - chart elements (line\_chart, bar\_chart etc.)
  - input widgets (button, checkbox etc.)
  - Media elements (image, video)
- Building xkcd\_comic\_fetcher
- Examples of my other Streamlit websites
- Deployay!

# WHAT IS STREAMLIT?

- Open-source Python library
- Makes it easy to make and deploy beautiful web apps for ML and data science
- Build and share data-related apps in no time



Streamlit Eg: [xkcd-fetcher.herokuapp.com](https://xkcd-fetcher.herokuapp.com)  
code: [github.com/sidgupta234/xkcd-comic-fetcher](https://github.com/sidgupta234/xkcd-comic-fetcher)

# UNDERSTANDING DIFFERENT FEATURES OF STREAMLIT

## INSTALLATION AND SETTING UP!

- clone `xkcd_fetcher/repository`
- `conda create -n xkcd_fetcher`
- `conda activate xkcd_fetcher`
- `conda install pip`
- `pip install -r requirements.txt`
- requirements include just streamlit and pandas for our tutorial.

- create `app.py`

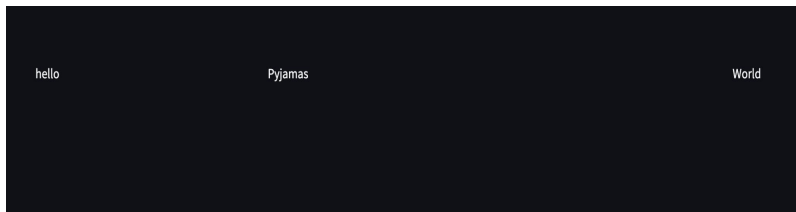
```
import streamlit as st
import pandas as pd
st.set_page_config(page_title='Comic Fetcher',
page_icon = "favicon.png",
layout = 'wide',
initial_sidebar_state = 'auto')
```

*Set config page (Code)*

# UNDERSTANDING DIFFERENT FEATURES OF STREAMLIT

## COLUMNS

Page can be divided into columns of different ratios!



*Columns (Output)*

```
c1, c2, c3= st.columns((1, 2, 1))

with c1:
    st.write("hello")

with c2:
    st.write("Pyjamas")

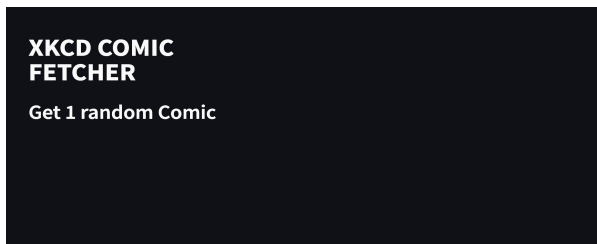
with c3:
    st.write("World")
```

*Columns (Code)*

# UNDERSTANDING DIFFERENT FEATURES OF STREAMLIT

## CONTAINERS

Inserts one invisible container into app, helps with modularizing.



*Containers (Output)*

```
c1, c2= st.columns((1, 2))

header = st.container()

with header and c1:
    st.title("XKCD COMIC FETCHER")
    st.header("Get 1 random Comic")
```

*Containers (Code)*

# UNDERSTANDING DIFFERENT FEATURES OF STREAMLIT

## TEXT DISPLAY TYPES

Text can be represented in various ways.



Text Display Types (Output)

```
c1, c2 = st.columns((1, 2))

with c1:
    st.markdown("<i>Markdown: We are having fun in Pyjamas</i>", unsafe_allow_html=True)
    st.title("Title: We are having fun in Pyjamas")
    st.header("Header: We are having fun in Pyjamas")
    st.subheader("Subheader: We are having fun in Pyjamas")
    st.caption("Caption: We are having fun in Pyjamas")
    st.code("Code: print(We are having fun in Pyjamas)")
    st.text("Text: We are having fun in Pyjamas")
    st.latex("Latex (x^2 + y^2 = z^2)")
```

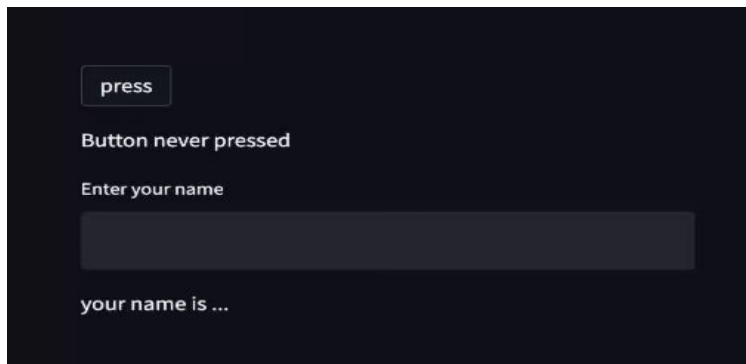
Text Display Types (Code)



# UNDERSTANDING DIFFERENT FEATURES OF STREAMLIT

## INPUT WIDGETS

Various input widgets for buttons, text input available.



*Input Widgets (Output)*

```
c1, c2 = st.columns((1, 2))

with c1:

    if st.button('press'):
        st.write('Button pressed')
    else:
        st.write('Button never pressed')

text_input = st.text_input("Enter your name")
st.write("your name is ...", text_input)
```

*Input Widget (Code)*

# UNDERSTANDING DIFFERENT FEATURES OF STREAMLIT

## CHART ELEMENTS

Various default chart elements are available. Matplotlib and plotly can be used as well.

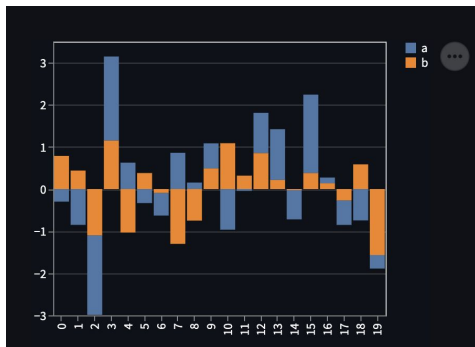


Chart Elements (Output)

```
c1, c2 = st.columns((1, 2))

with c1:

    chart_data = pd.DataFrame(
        np.random.randn(20, 2),
        columns=["a", "b"])

    st.bar_chart(chart_data)
```

Chart Elements (Code)

# UNDERSTANDING DIFFERENT FEATURES OF STREAMLIT

## MEDIA ELEMENTS

Media elements such as audio, video and image can be easily shown by streamlit



*Media Elements (Output)*

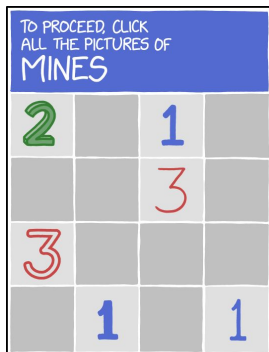
```
c1, c2 = st.columns((1, 2))  
  
with c1:  
    st.image("https://i.imgur.com/q5xmsD1.png")
```

*Media Elements (Code)*

# BUILDING XKCD COMIC FETCHER

## DATASET

Details of 2496 XKCD Comics.




*Sample Comic View*

```
"root" : 143 items
└─ [ 100 items
    └─ 0 : { 11 items
        "month" : string "7"
        "num" : int 2496
        "link" : string ""
        "year" : string "2021"
        "news" : string ""
        "safe_title" : string "Mine Captcha"
        "transcript" : string ""
        "alt" :
            string "This data is actually going into improving our self-driving car project, so hurry up--it's almost at the minefield."
        "img" : string "https://imgs.xkcd.com/comics/mine_captcha.png"
        "title" : string "Mine Captcha"
        "day" : string "30"
    }
```

*Sample Comic Data*

**Off to Code now ....**

### Song Analytics & Playlist Generator!



Ticket to Ride - Remastered 2009

Select Artist

- The Beatles

Select Song by your Artist

- Ticket To Ride

Playlist of songs like this!

### Lyrics for Ticket To Ride by The Beatles

I think I'm going to be sad, I think it's today, yeah  
The girl that's driving me mad is going away

She's got a ticket to ride  
She's got a ticket to ride  
She's got a ticket to ride but she don't care

She said that living with me is bringing her down, yeah  
She would never be free when I was around

Oh, she's got a ticket to ride  
She's got a ticket to ride  
She's got a ticket to ride but she don't care

I don't know why she's riding so high  
She ought to think twice, she ought to do right by me  
Before she gets to saying goodbye

I think I'm going to be sad, I think it's today, yeah  
The girl that's driving me mad is going away, yeah

Oh, she's got a ticket to ride  
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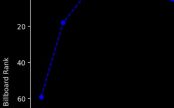
She said that living with me is bringing her down, yeah  
She would never be free when I was around

Oh, she's got a ticket to ride  
She's got a ticket to ride  
She's got a ticket to ride but she don't care

My baby don't care  
My baby don't care  
My baby don't care  
My baby don't care  
My baby don't care  
My baby don't care  
My baby don't care  
My baby don't care


My baby don't care  
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### Billboard Ranking Vs Time



Timeframe	Ranking
1965-05-01	60
1965-05-15	30
1965-05-29	20
1965-06-12	25
1965-06-26	30
1965-07-10	40
1965-07-24	50
1965-08-07	60

### Audio properties of song



# How good are your Vocabulary and Conventions?

Writing is a foundational skill. Sadly, it's one few students are able to hone, often because writing tasks are infrequently assigned in school. A rapidly growing student population, students learning English as a second language, known as English Language Learners (ELLs), are especially affected by the lack of practice. While automated feedback tools make it easier for teachers to assign more writing tasks, they are not designed with ELLs in mind.

This project is aimed to build a submission for the Kaggle contest (<https://www.kaggle.com/competitions/feedback-prize-english-language-learning>)

Essays on this website will be rated from a scale of 1-5 on the basis of Vocabulary and Conventions.

Enter your Essay to get it rated

Hello World

Vocabulary score is 1.5

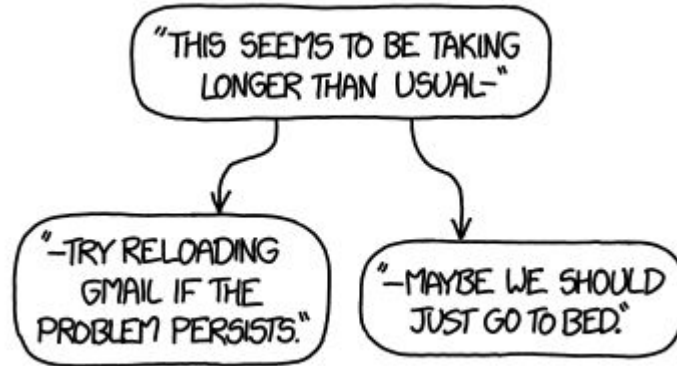
Conventions score is 2.0




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# DEPLOYMENT!

- Need to have at least 3 files beside **app.py**
  - Setup.sh -> Configures environment, eg. what theme we want for streamlit?
  - Procfile -> List of commands to be executed
  - requirements.txt -> libraries needed to be installed
- Create app on Heroku.
  - Brew tap heroku/brew
  - login heroku
  - commit all changes
  - git push heroku master (from app folder)



# THANK YOU!

Audience!

Pyjamas <3

Streamlit and their documentation

XKCD Comics

