OXFORD COLLEGE,HUBLI

Bachelor Of Computer Application

Vishwashanti Foundation's

Oxford College, Hubli

Major Project Report

"HAND GESTURE RECOGNITION USING MACHINE"

By

VAISHNAVI SINNUR(20U10442)

Under the supervision of

Prof. Manjunath G.M

ASSOCIATE PROFESSOR, DEPARTMENT OF 'BCA'

DEPARTMENT OF BACHELOR OF COMPUTER APPLICATION(BCA)

OXFORD COLLEGE,HUBLI

OXFORD COLLEGE HUBLI

Vishwashanti Foundation's
Oxford College, Hubli

DEPARTMENT OF BACHELOR OF COMPUTER APPLICATION(BCA)
Keshwapur, Hubli - 580023
Karnataka, India

CERTIFICATE

This is to Certify That the project Report Entitled

"HAND GESTURE RECOGNITION USING MACHINE"

SUBMITTED TO THE PARTIAL FULFILLMENT FOR THE
AWARD OF THE DEGREE

BACHELOR OF COMPUTER APPLICATION
Is A Result of the Bonafide Work Carried by

MS. VAISHNAVI SINNUR
(20U10442)

During Academic Year 2022-2023

UNDER THE GUIDANCE OF

Prof. Manjunath G.M

ACKNOWLEDGE

" Gratitude makes sense of our past, brings peace for today and creates a vision for tomorrow".

So, we expressed our gratitude to all those people without whose support, encouragement, guidance and co-operation this project would not have been completed

We would like to take privilege to thank all those who have guided and inspired us in completion of the project.

Firstly, we would like to express my heartfelt thanks to our respected Principal prof. Manjunath Muttalgerisir for his keen interest and valuable inputs throughout the course of this work.

Secondly, we are thankful to our respected Teacher Prof. Manjunath Muttalgeri for giving us opportunity to carry out the project.

Last but not least I sincerely thank my beloved parents and family who were very cooperative and supported us morally during the course

ABSTRACT

“Anime tacker” helps us to keep the record the anime, manga, manhwa, manhua that we are watching/reading, completed or planning to watch/read in the future. Since it is very difficult to maintain a record of this information manually, we have created Anime Tracker. This helps us to maintain data easily. We have designed it with the help of E-R diagram, 5 tables. It consists of several steps to be followed.In Anime Tracker there is no prior data available about the anime, manga, manhua, manhwa. It just provides a way to organize the records in a beautiful manner. When we want to store a record of anime, we have to fill a form which includes entries such as anime name, number of episodes and the status (watching, completed, planning).Designing of this mini-project is done with the help of ER diagram and schema diagram. The aim is to automate the existing manual system with the help of fully fledged computer software, so that the information can be stored for a longer period of time and can easily be accessed. The required software and hardware are easily available and easy to work with.

TABLE OF CONTENTS

CHAPTER **PAGE No.**

REFERENCES

LIST OF FIGURES

Chapter 1

INTRODUCTION

1.1 Database

A database is an organized collection of data. A relational database, more restrictively, is a collection of schemas, tables, queries, reports, views, and other elements. Database designers typically organize the data to model aspects of reality in a way that supports processes requiring information, such as (for example) modelling the availability of rooms in hotels in a way that supports finding a hotel with vacancies. A database is not generally portable across different DBMSs, but different DBMSs can interoperate by using standards such as SQL and ODBC or JDBC to allow a single application to work with more than one DBMS. Computer scientists may classify database-management systems according to the database models that they support; the most popular database systems since the 1980s have all supported the relational model - generally associated with the SQL language. HB Sometimes a DBMS is loosely referred to as a "database".

1.2 Database Management System

A database-management system (DBMS) is a collection of interrelated data and a set of programs to access those data. This is a collection of related data with an implicit meaning and hence is a database. The collection of data, usually referred to as the database, contains information relevant to an enterprise. The primary goal of a DBMS is to provide a way to store and retrieve database information that is both convenient and efficient. By data, we mean known facts that can be recorded and that have implicit meaning. For example, consider the names, telephone numbers, and addresses of the people you know. You may have recorded this data in an indexed address book, or you may have stored it on a diskette, using a personal computer and software such as Microsoft ACCESS, or EXCEL. While information can be transported, stored or shared without many difficulties the same cannot be said about knowledge. Database systems are designed to manage large bodies of information. Management of data involves both defining structures for storage of information and providing mechanisms for Online Car Rental System Department of CSE, BTI,

Bangalore 2019-20 Page2 the manipulation of information. In addition, the database system must ensure the safety of the information stored,

despite system crashes or attempts at unauthorized access. If data are to be shared among several users, the system must avoid possible anomalous results. Because information isso important in most organizations, computer scientists have developed a large body of concepts and techniques for managing data.

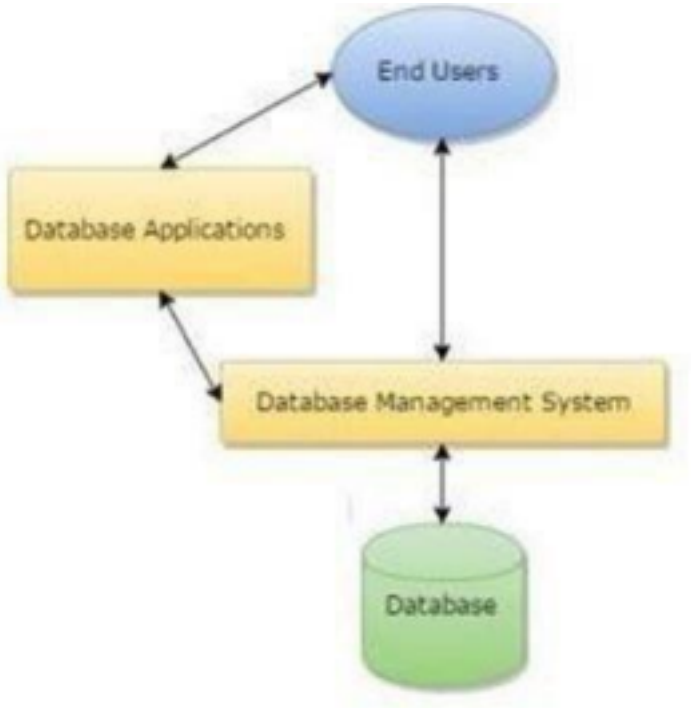


Fig 1.1: Components of a database management system

1.3 Application

Database are widely used. The some of the representative applications are:

1. Banking: For customer information, accounts and loans and banking transactions.
2. Universities: For student registrations and grades.
3. Online Shopping: Everyone wants to shop from home. Everyone new products are added and sold only with the help of DBMS. Purchase information, invoice bills and payment, all of these are done with the help of DBMS.
4. Airlines: For reservations and schedule information.

5. Credit card transactions: For purchases on credit cards and generation of monthly statements.

6. LibraryManagement System: Maintain all the information related to book issue dates, name of the book, author and availability of the book.

7. Telecommunications: For keeping records of call made, generating monthly bills, maintaining balances on prepaid calling cards.

8. Sales: For customer, product and purchase information.

9. Finance: For storing information about holdings, sales, and purchases of financial instruments such as stocks and bonds.

10. Human resource: For information about employees, salaries, payroll taxes and benefits.

1.4 Introduction to MySQL

MYSQL is a relational database management system (RDBMS) that runs as a server providing multi-user access to a number of databases. MYSQL is a popular choice of database for use in web applications and is an open source product. The process of setting up a MYSQL database varies from host to host, however we will end up with a database name, a user name and a password. Before using our database, we must create a table. A table is a section of the database for storing related information. In a table, we will set up the different fields which will be used in that table. Creating a table in phpmyadmin is simple, we just type the name, select the number of fields and click the „go" button. We will then be taken to a setup screen where you must create the fields for the database. Another way of creating databases and tables in phpmyadmin is by executing simple SQL statements.Weused this method in order to create our database and tables.

1.5 Oracle

The current version of oracle database is the result of 30 years of innovative development. Highlights in the evolution of oracle database include the following:

- Founding of oracle in 1997, Larry Ellison, bob miner, and Ed Oates started the consultancy software development laboratories, which became relational software, Inc. (RSI). In 1983, RSI became Oracle systems Corporation and then later Oracle corporation.

- First commercially available RMSDB in 1979, RSI introduced Oracle V2 (version 2) as the first commercially available SQL-based RDBMS, a landmark event in the history of relational databases.

- Portable version of Oracle Databases Oracle version 3, released in 1983, was the first relational databases to run on mainframes, minicomputers and PCs. The database was written in C, enabling the database to be ported to multiple platforms.

- Enhancements to concurrency control, data distribution, and scalability Version 4 introduced multi version read consistency version 5, released in 1985, supported client/server computing and distributed database systems version 6 brought enhancements to disk I/O, row locking, scalability and backup and recovery. Also, version 6 introduced the first version of the PL/SQL language, a proprietary procedural extension to SQL.

1.6 Introduction to Project

Database is an organized collection of data. The data is typically organized to model aspects of reality in a way that supports processes requiring information. A DBMS makes it possible for users to create, read, update and delete data in a database.The DBMS essentially serves as an interface between the database and users or application programs, ensuring that data is consistently organized and remains easily accessible.The main purpose of maintaining database for anime tracker is to reduce the task of manual recording through notebook and pen. Anime tracker is an anime social cataloguing project. The project provides its users with a list-like system to organize anime.The front end is made using the HTML. CSS, validation of user and anime details through HTML and JavaScript and the backend is made using the MySQL and PHP is used to connect the front end to the database.

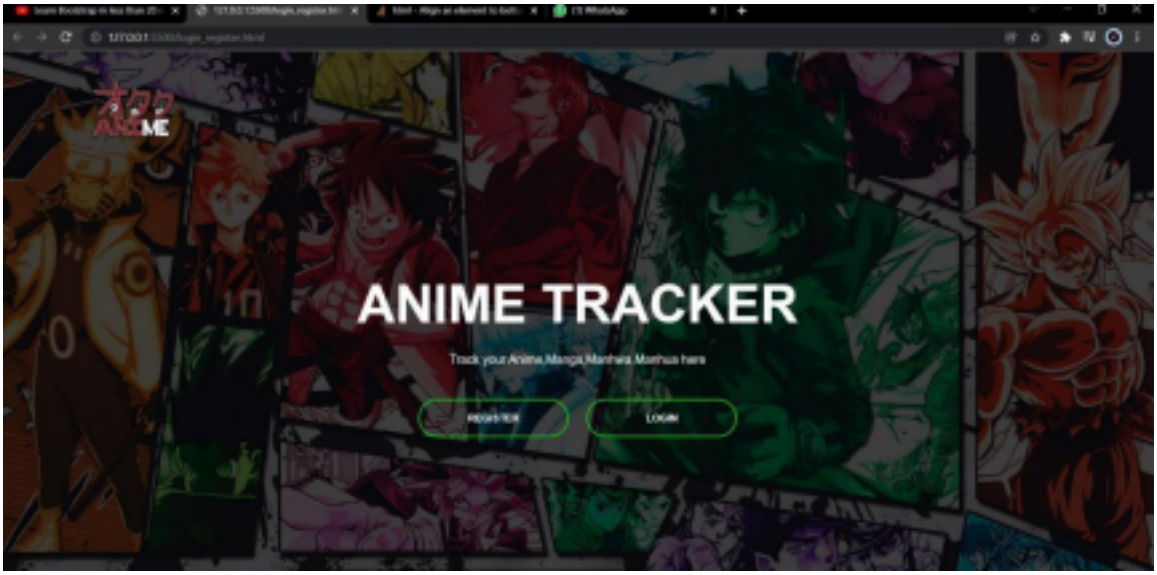


Fig:1.6.1: Anime Tracke

Chapter 2
LITERATURE SURVEY

2.1 Related Work

Anime is Japanese for 'animation'. In Japan, anime is the word used for all animation. Outside of Japan, the term anime refers to Japanese animation, which this article is about.

Some anime is drawn by hand, but anime can also be made with CGI computer animation. There are many types of anime; you can find anime about sports, magic, or romance. These are just some examples. Anime are shown on television, on DVD, VHS, and the Internet, and are used in video games. Also, some anime cartoons are just movies, but they have cartoon characters and animation instead of real people and places. Anime is often based on Japanese comics that are called manga and graphic novels. Sometimes live action (not animation) movies and television series are based on anime.

The history of anime begins around 1900, Very popular stories in anime and manga are often translated into other languages, and the words used in the anime or manga will be put into another language where they mean the same thing about manga manhwa and manhua.

In recent years, the international popularity of manga has led to an increased interest in manhwa and manhua. Manga, manhwa and manhua sound the same, and, generally speaking, are similar in artwork and layout, which can result in accidentally categorizing these comics as Japanese in origin is the general Korean term for comics and print cartoons. Outside Korea, the term usually refers to South Korean comics. Manhwa is a notable part of South Korean culture but has extended its reach to many other countries. These comics have branched outside of Korea by access of Webtoons and have created an impact that has resulted in many movie and television show adaptations.

Manhua refers to comics produced in the Greater China region. The term was first used in the early 1900s, with many of those early works being propaganda or relating to then-current

events. This began to change in the 1970s, when the popularity of Bruce Lee movies caused a wave of Kung Fu manhua to take center stage. Anime

tracker will take a look at all the anime you have watched and give you in-depth statistics about your choices. AL tracks everything from your favorite genre to your most watched voice actor, studio, etc.

Sort and search through your “watching,” “completed,” and “planning” lists with robust search features.Ability to track both anime and manga (as well as Manhua or Manhwa) .Save shows and volumes for reading or watching later .Shows the current status of the show or manga (whether it's finished, publishing or airing, on hiatus etc.) Tracks manga by both chapter and/or volum

2.2 Program Design

The objective of the ANIME TRACKER is that a user can use the web application from any device and manage all the record related to his/her watch list. It keeps tracks on your specified list. This way it becomes one of the most reliable system for any user. User has full access on the data without any third party interference. It is designed in a way that all the resources can be found at one platform.

2.3 Data Design

The entities participating in the ANIME TRACKER to store the watch list , follow a 1 to Many type of architecture. There is a data list followed by any ANIME TRACKER. We can modify our list according to our preferences. Similarly for Manga, Manhwa, Manhua..The data stored, will be accessed by BTI by establishing a connection with the MySQL database.

Chapter 3

PROBLEM STATEMENT

Development of a database application which enables the user to record and organize anime, manga, manhwa, manhua. It also allows user to edit and delete the information which they have recorded.

3.1 Existing Scenario

The main purpose of maintaining database for anime tracker is to reduce the task of manual recording through notebook and pen. Anime tracker is an anime social cataloging the project. The project provides its users with a list-like system to organize anime. The inconveniences of memorizing all the names of anime they have watched and using a notebook to store the details.

3.2 Proposed Solution

In this project Anime Tracker, the user has stored all the information about the Anime they have watched, are watching, and planning to watch in the future. This database is helpful for the applications which facilitate the user to store, update, and delete the information about the anime and their watching status from wherever they want. This avoids the inconveniences of memorizing all the names of anime they have watched and using a notebook to store the details. This project has only the most important requirements, many more features can be added to this project to obtain even more user friendly applications.

ADVANTAGES

1. It is user-friendly
2. It doesn't need any paper work
3. There will be more transparency between user and the system
4. Time consumption should be less.
5. All the required information are available in platform.

Chapter 4

REQUIREMENT SPECIFICATION

4.1 HARDWARE REQUIREMENTS

The physical components required are:

. **Operating System**: Windows 7 or later

Processor:Intel Pentium 4 or later

Memory: 2 GB minimum, 4 GB recommended

Screen resolution: 1280*1024 or larger

Application Window Size: 1024*680 or larger

Internet Connection: Not required

4.2 SOFTWARE REQUIREMENTS

The software being used are:

Client: Operating System(any)

Web Server: XAMPP

Database:MySql

Application: Microsoft Visual Studio Code

Language: HTML, MySQL, PHP,CSS, JavaScript

CHAPTER 5

SYSTEM DESIGN

5.1 STATE Diagram

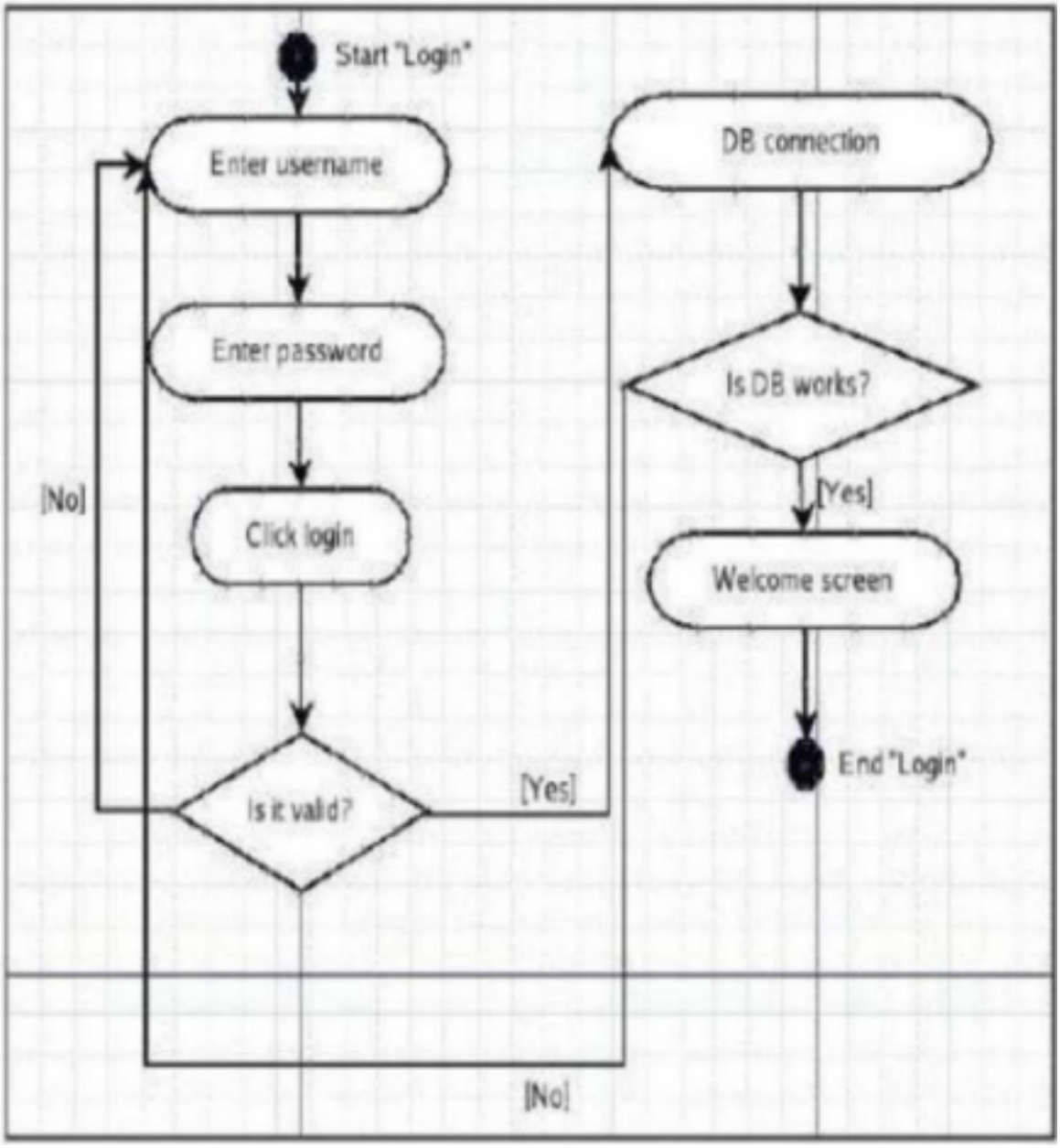


Fig5.1: State Diagram

5.2 DFD DIAGRAM

A data flow diagram (DFD) maps out the flow of information for any process or system. It uses defined symbols like rectangles, circles and arrows, plus short text labels, to show data. inputs, outputs, storage points and the routes between each destination.Data flowcharts

can range from simple, even hand-drawn process overviews, to in-depth, multi-level DFDs that dig progressively deeper into how the data is handled. We have classified our Data-flow diagram into 3 levels.

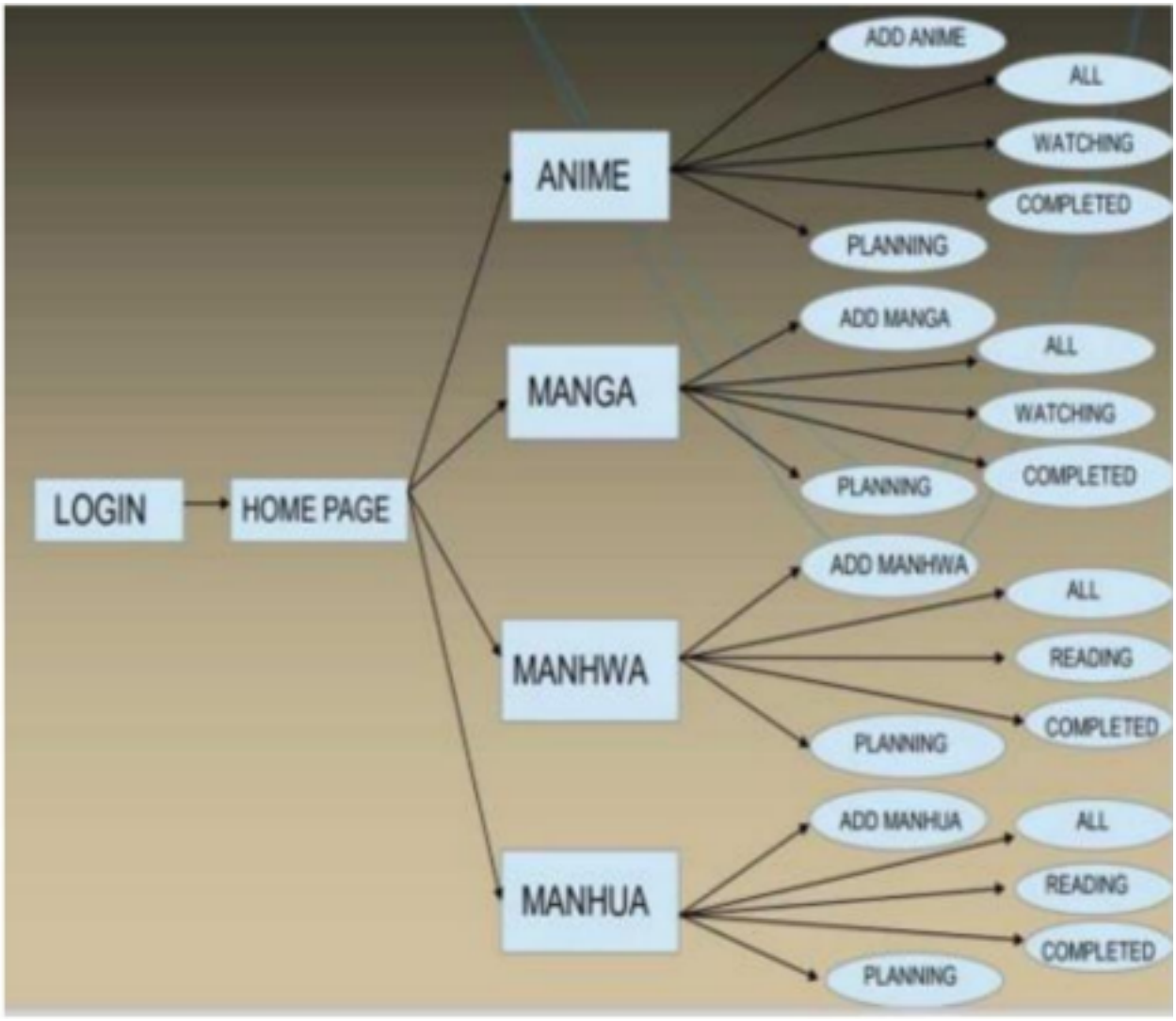


Fig 5.2: DFD Diagram

5.3 ER DIAGRAM

An entity–relationship model (or ER model) describes Inter related things of interest in specific domain of knowledge. A basic ER model is composed of entity types (which classify the things of interest) and specifies relationships that can exist between entities (instances of those entity types). The ER diagram of our project is given below.

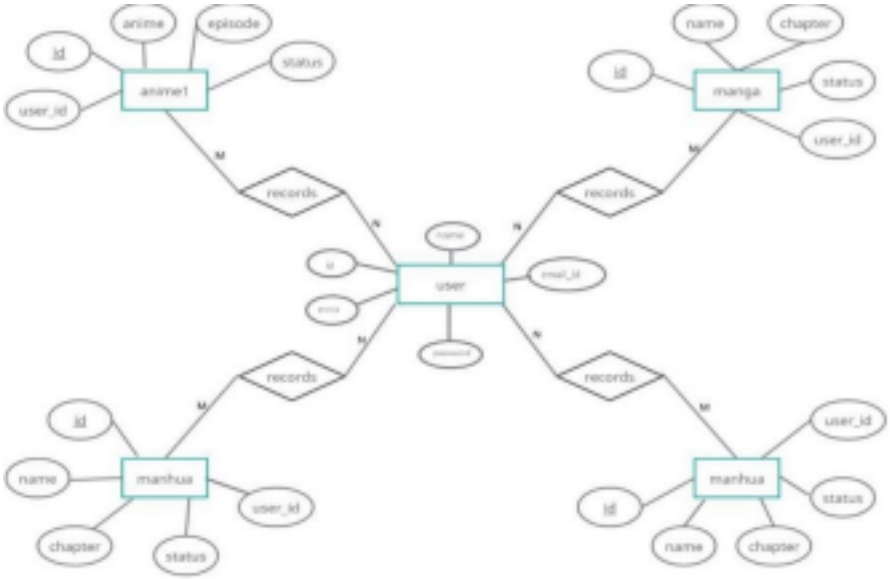


Fig 5.3: ER Diagram

5.4 SCHEMADiagram

A database Schema is a skeleton structure that represents the logical view of the entire database.

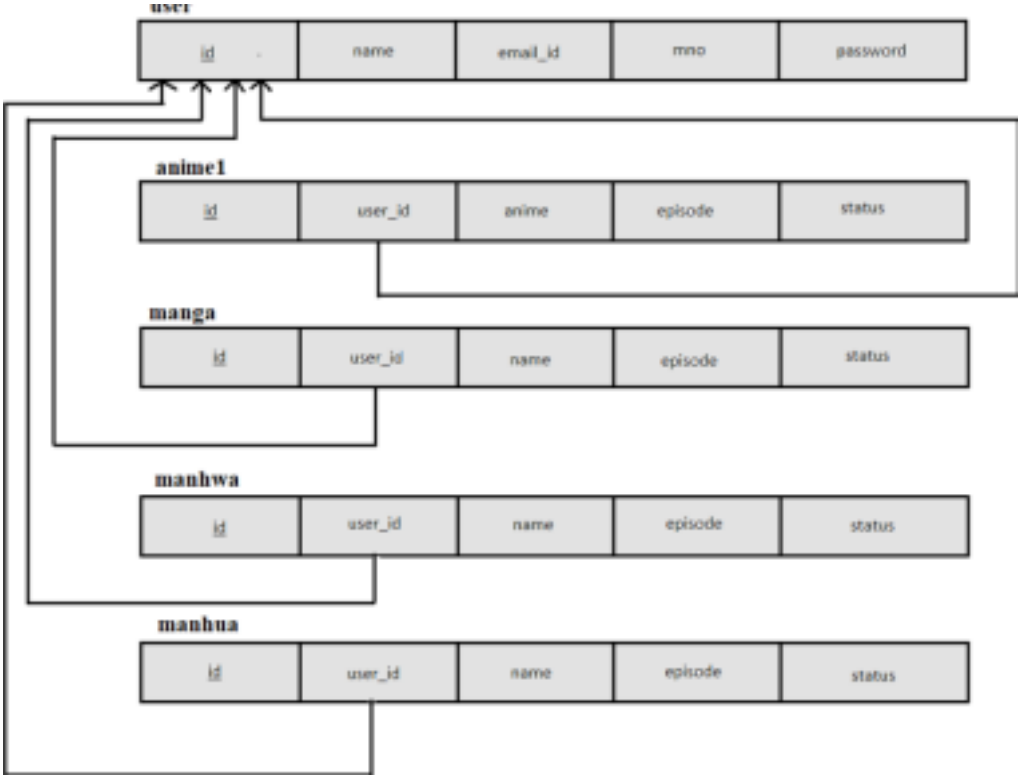


Fig 5.4 Schema Diagram

CHAPTER 6

IMPLEMENTATION

The implementation consists of the five different modules which have been described below.

6.1 DataGathering

The primary focus of the machine learning model is splitting of data into train, test and validation scheme. Around 80% of data is used for the machine training and 10% of data for test and rest for validation of the data which will helps to get the correct predicted values against the true value.

6.2 Data Splitting

Data splitting is an important process that involves dividing the data into different subsets for various purposes such as testing, training, and validation. This can be done using various techniques such as random sampling, stratified sampling, and k-fold cross-validation. The goal of data splitting is to ensure that the data is representative of the entire population and that the model can be effectively trained and evaluated.

6.3 Data Preprocessing and Standardization

The goal of this step is to make data ready for the Machine Learning model to make it easier to analyze and process computationally, as it is with images. It will help them to feed them to the Machine Learning model (or neural network), they need to be standardized and cleaned up. Thus, data are preprocessed, converted same pixel range and finally are standardized .

6.4 Data Augmentation

The data collected through various sources need to be increased so that model training becomes efficient and such that no overfitting occurs. The various operations such as width- shift range, height-shift range, shear, rotation had been performed keeping target size as 224* 224.

6.5 Model Compiling and Training

The transfer learning approach or pretrained model such as MobileNetV2, Resnet50 had been downloaded and weights of ImageNet data set is used such that no extra training is done. During Compile stage, optimizer adam, loss function Categorical cross entropy and metrics as accuracy is used. The model is trained with, batch size is kept as 64 and epochs is kept as 50 and, with the technique called early stopping which enables the stopping of training when it reaches the patience value.

Chapter 7

CONCLUSION

In this project Anime Tracker, the user has stored all the information about the Anime they have watched, are watching, and planning to watch in the future. This database is helpful for the applications which facilitate the user to store, update, and delete the information about the anime and their watching status from wherever they want. This avoids the inconveniences of memorizing all the names of anime they have watched and using a notebook to store the details. This project has only the most important requirements, many more features can be added to this project to obtain even more userfriendly applications.

Future Enhancement:

1. The option to print the records in future.

2. The system can be developed in such a way that its existing features can be modified to better versions.

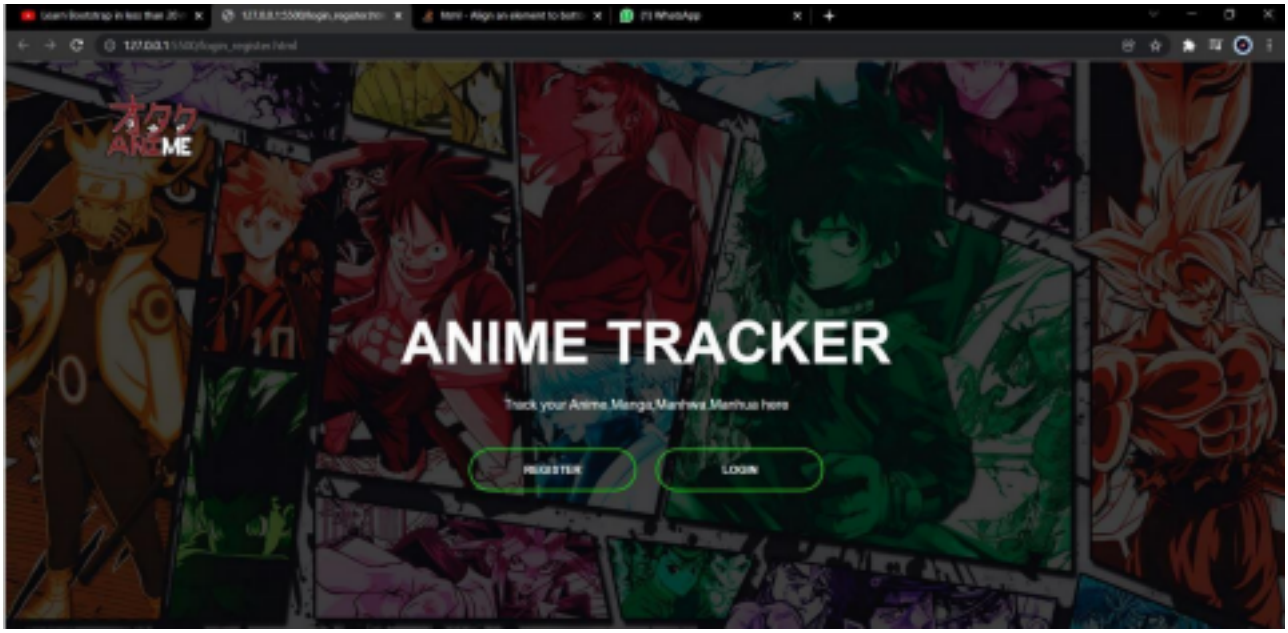
REFERENCES

During this project reference to the following materials were made

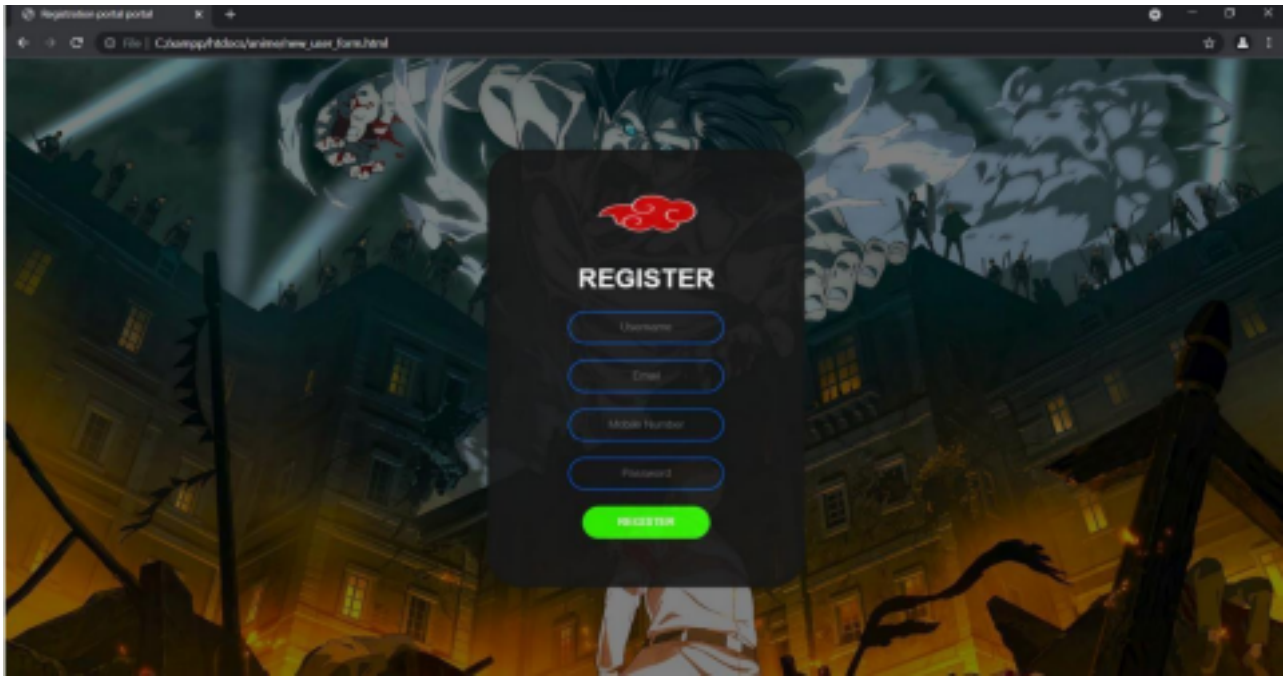
- https://www.w3schools.com/php
- https://www.w3schools.com/css
- https://www.w3schools.com/html
- DBMS Textbook Elmasari Navathe 7thED
- https://www.w3schools.com/MySQL
- https://www.youtube.com/c/CodeWithHarry

APPENDIX: SNAPSHOTS

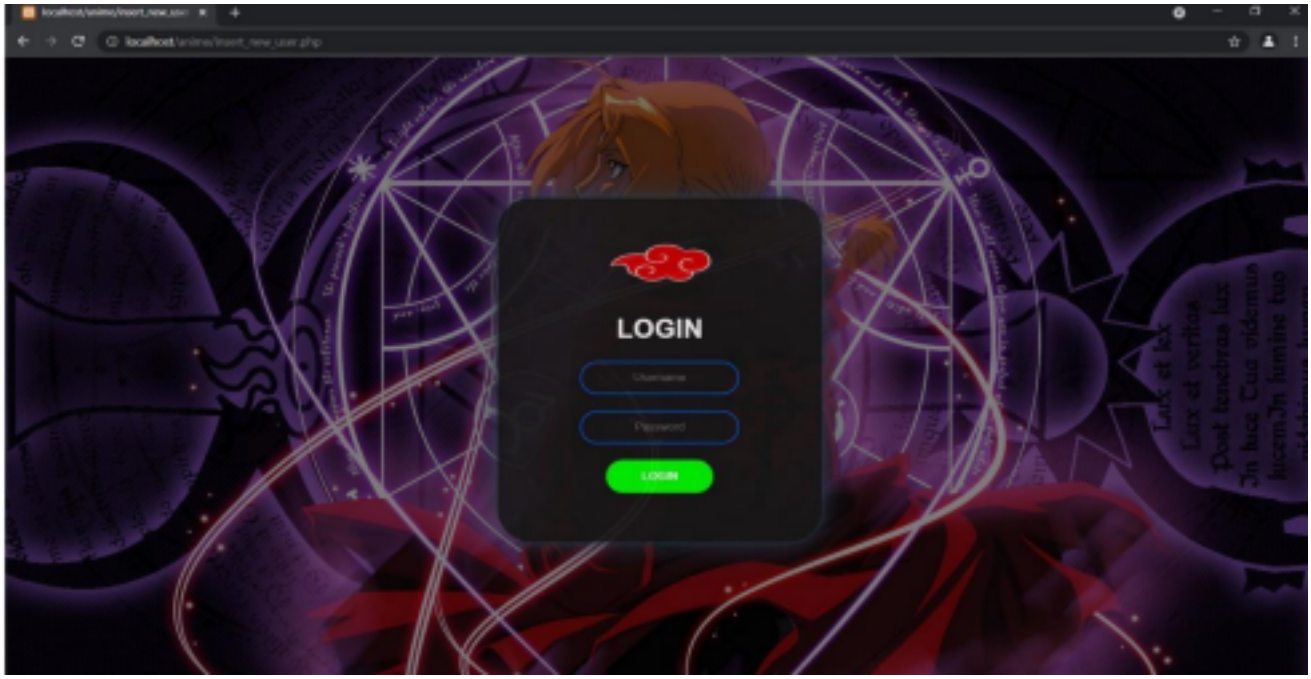
LOGIN/REGISTER PAGE



REGISTER PAGE

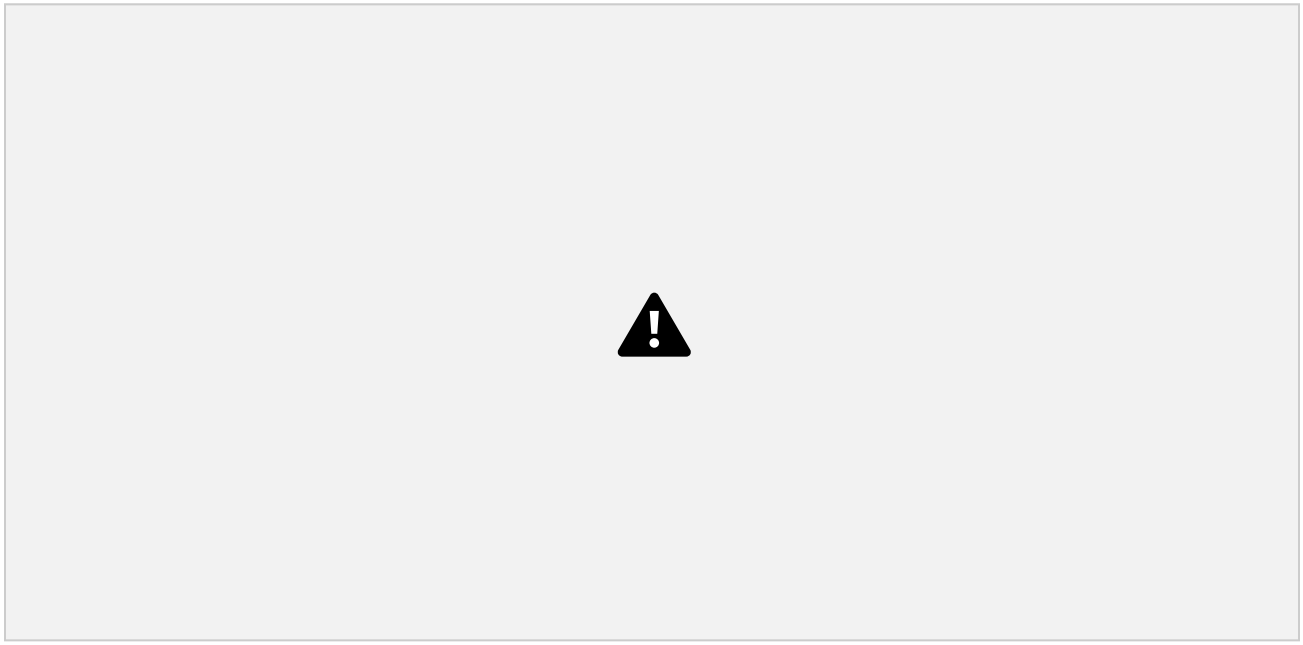


LOGIN PAGE

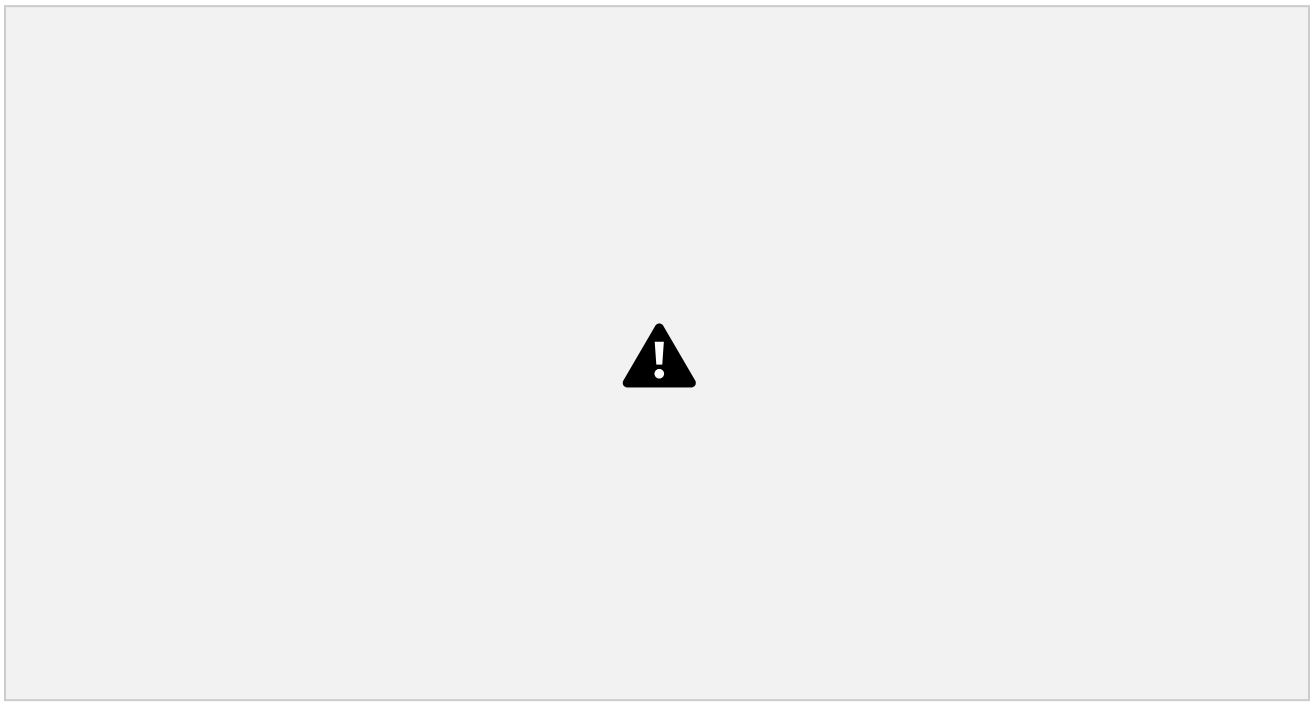


WELCOME PAGE

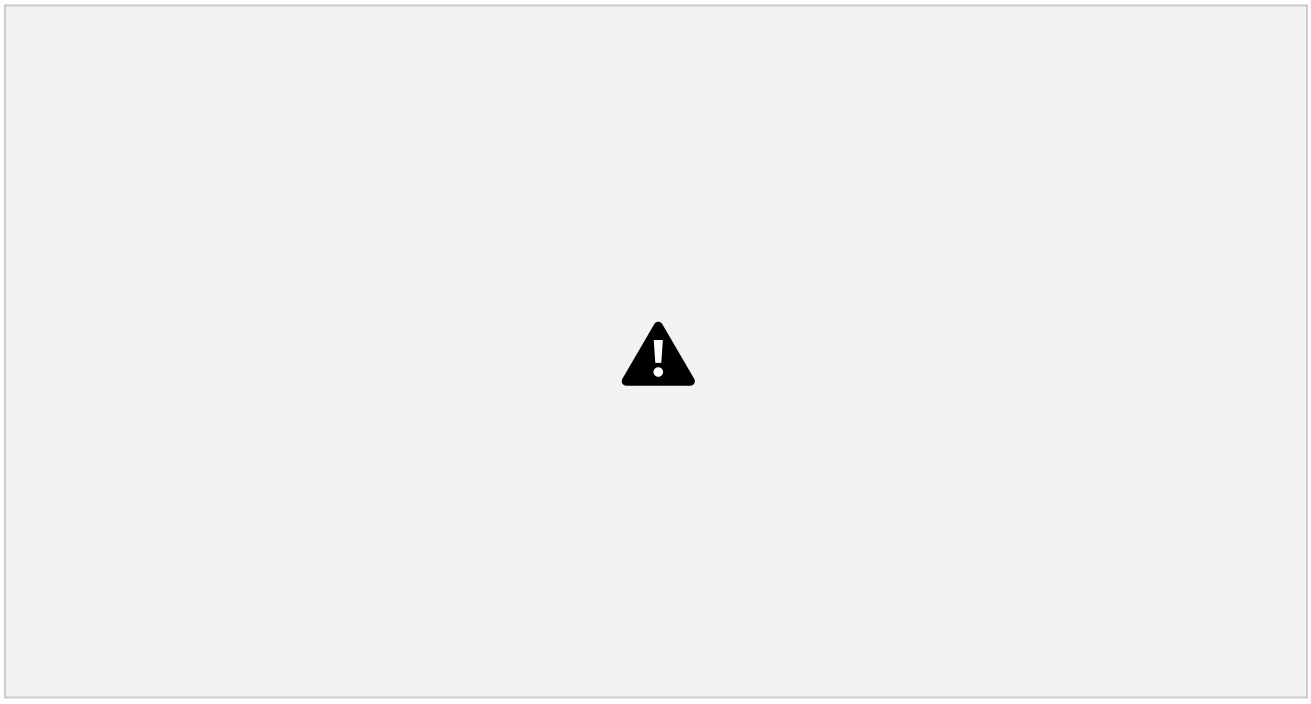
HOME PAGE



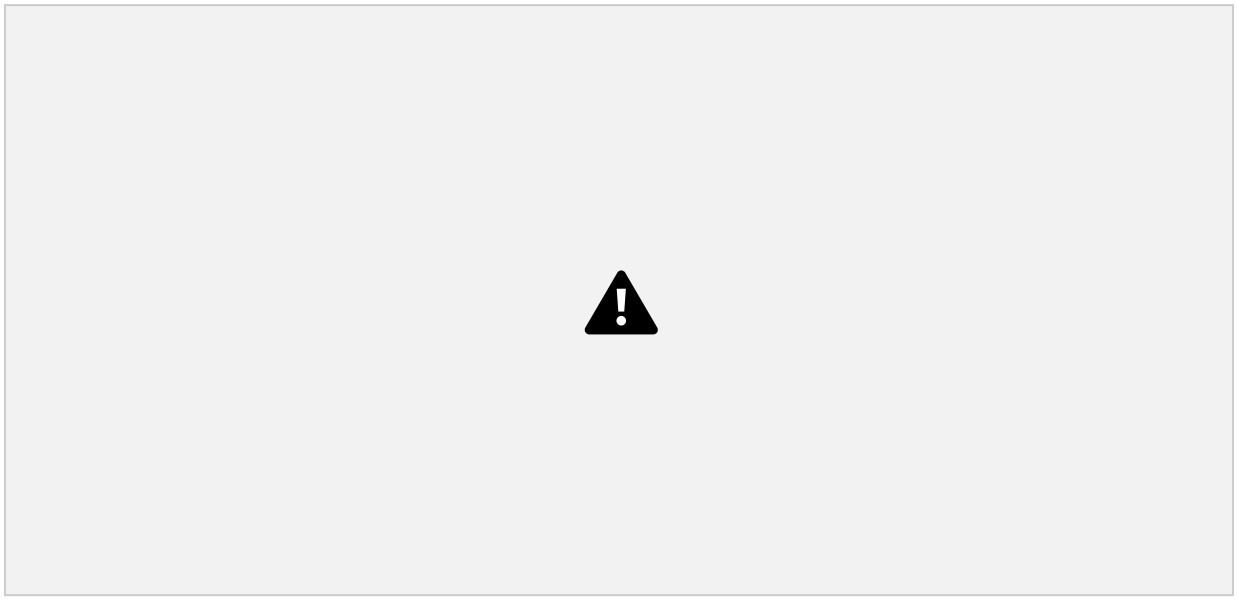
ANIME PAGE



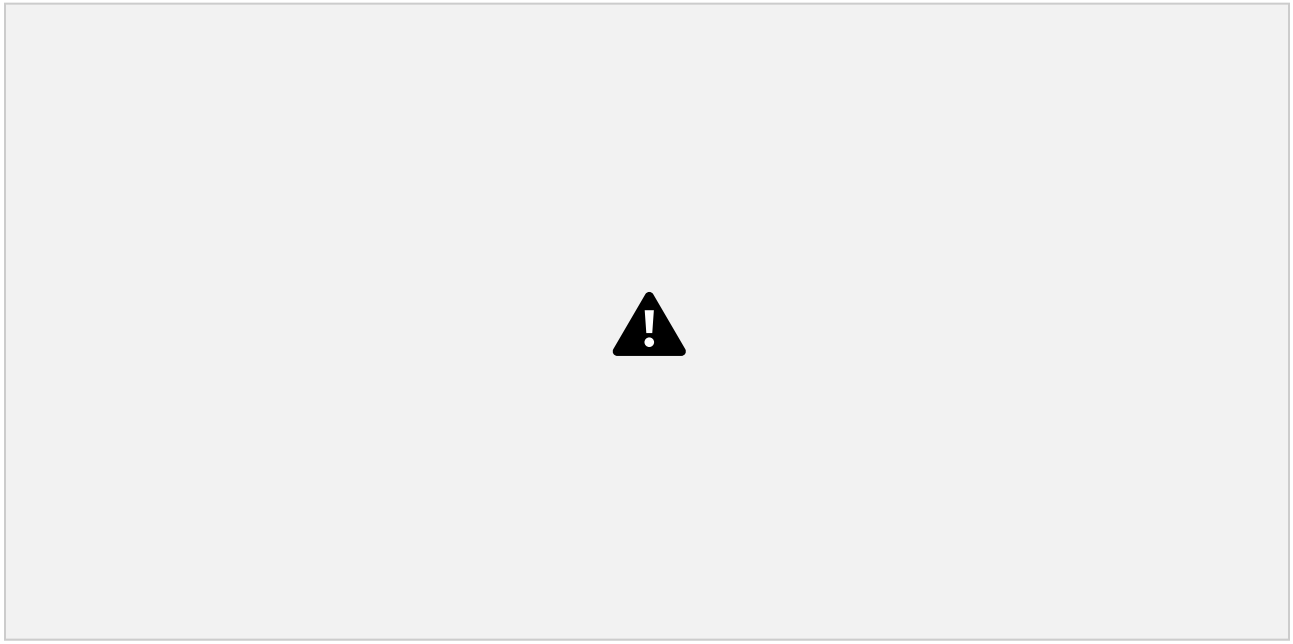
ADD ANIME PAGE



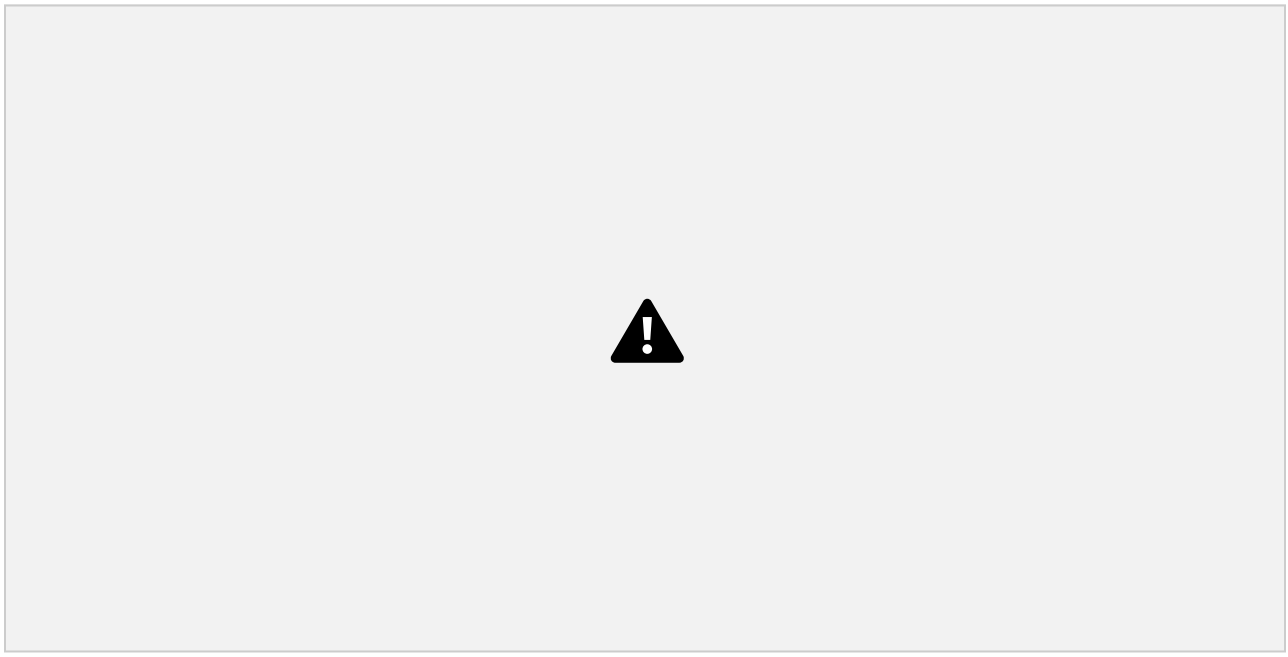
ALL ANIME VIEW PAGE



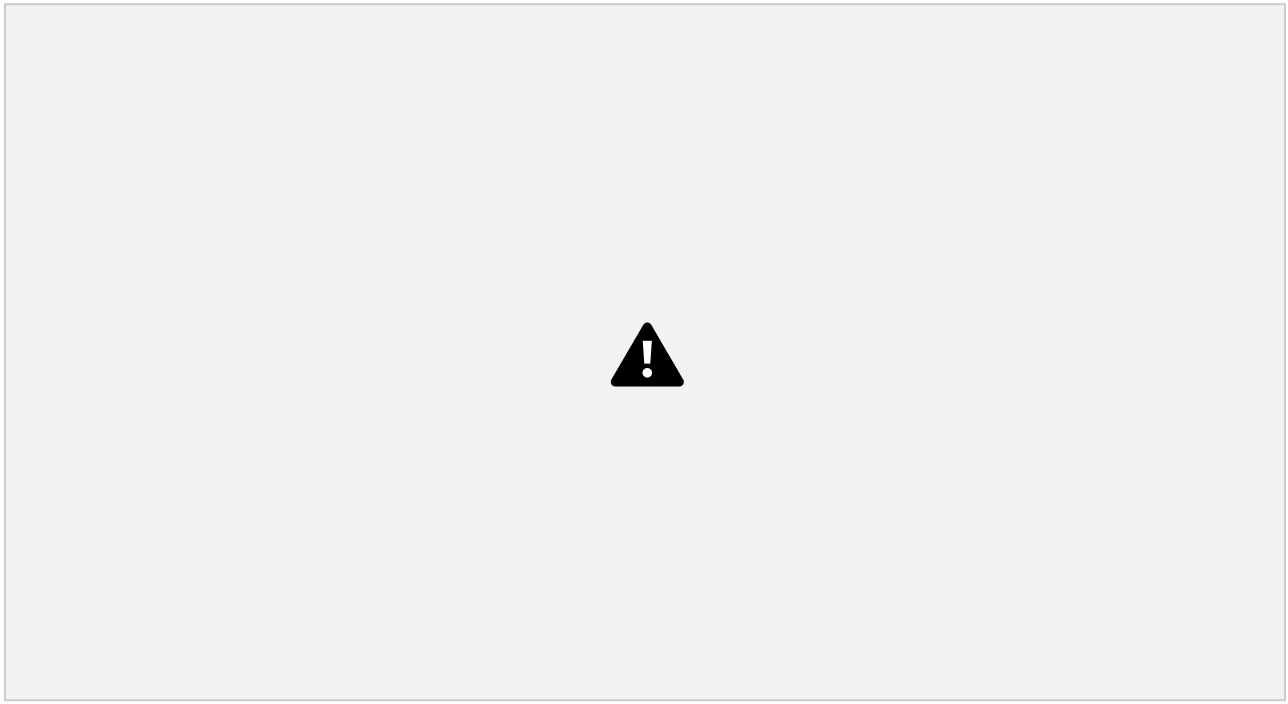
WATCHING ANIME PAGE



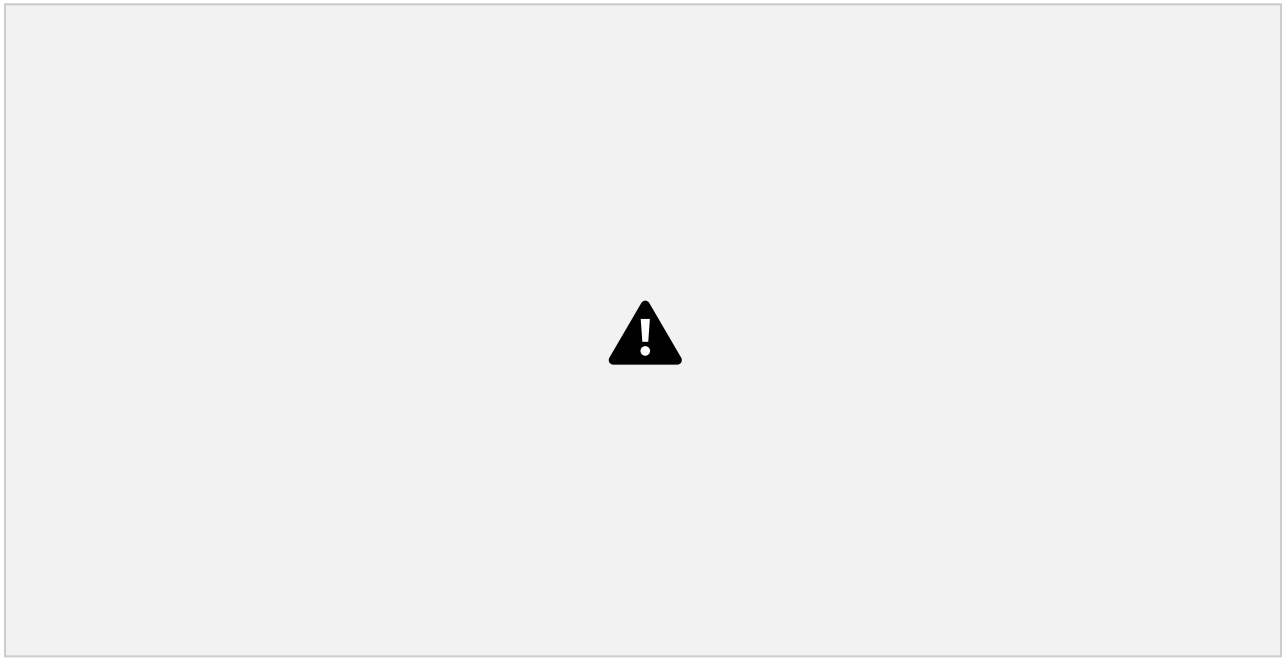
COMPLETED ANIME PAGE



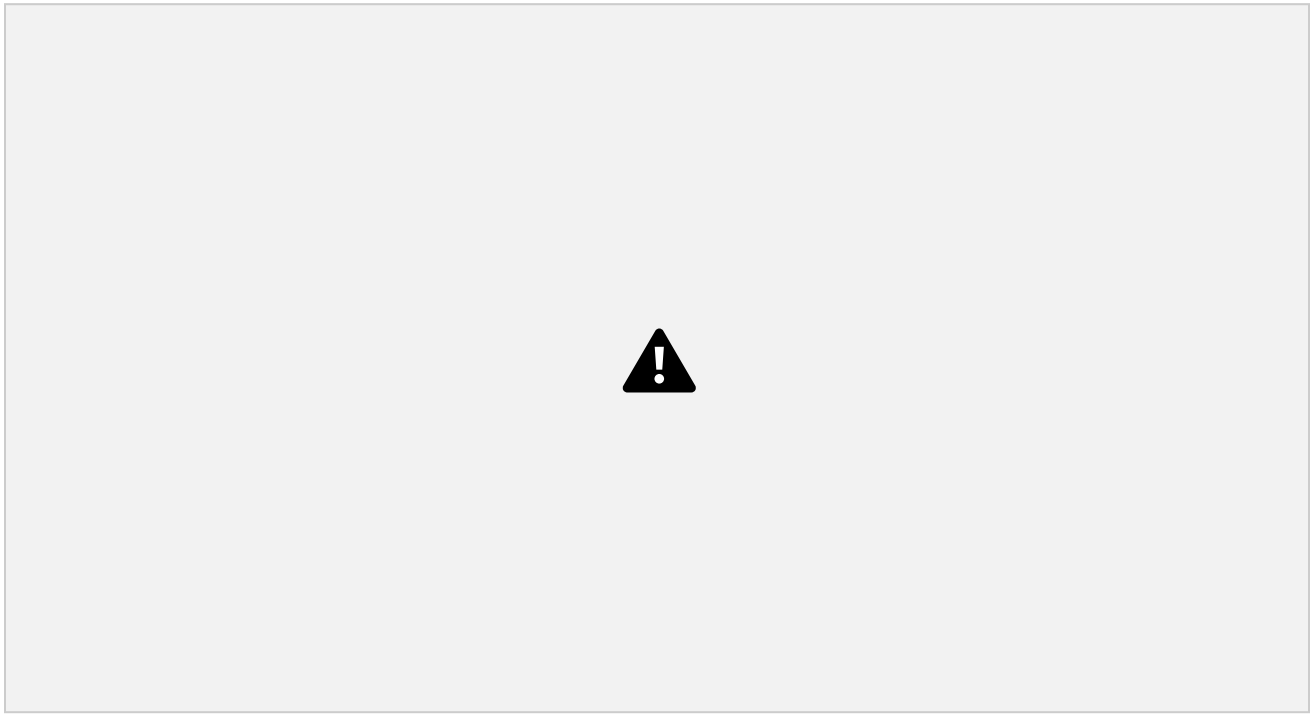
PLANNING ANIME PAGE



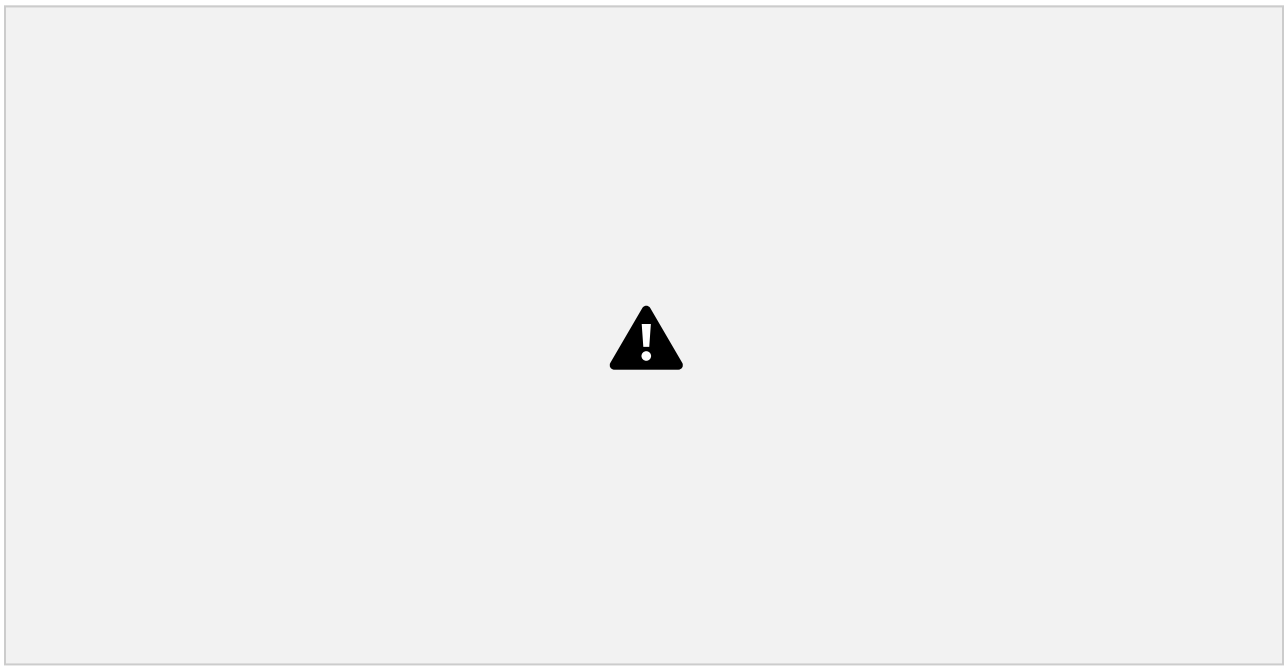
EDIT ANIME PAGE



MANGA PAGE



MANHWA PAGE



MANHUA PAGE