HTML CSS Javascript Projects

1. 9 men morris game

Rules :

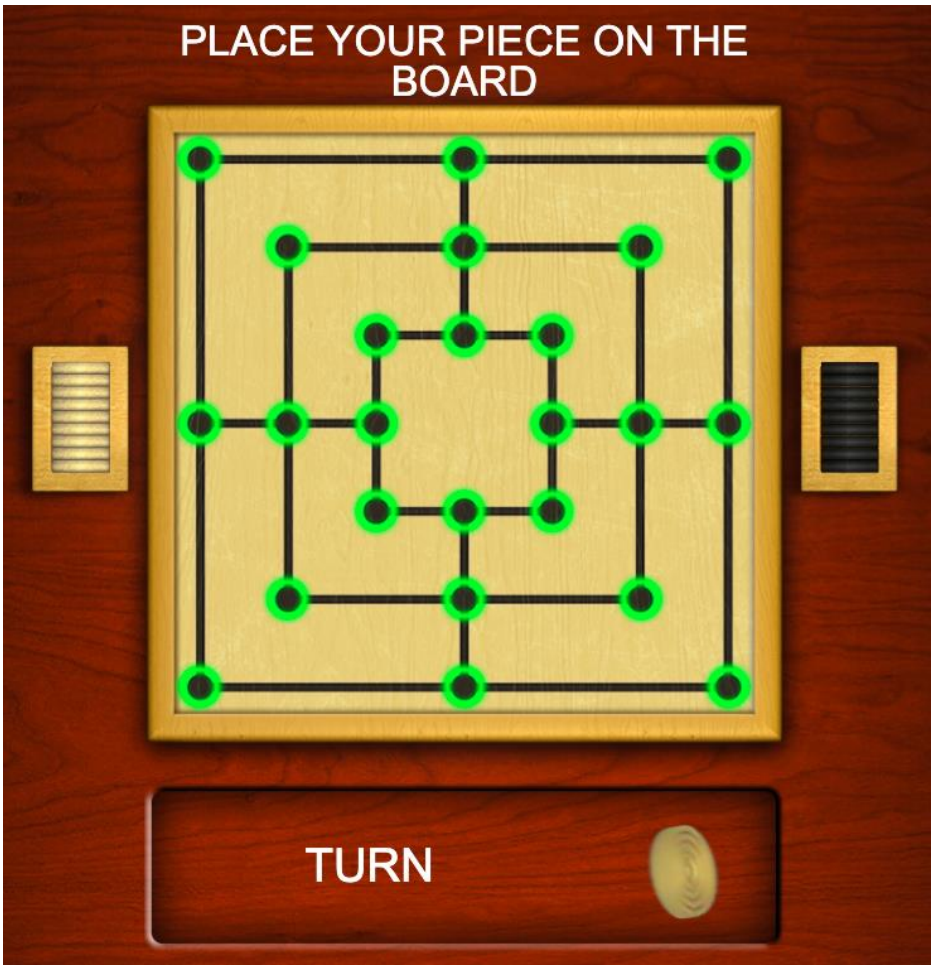
Setup Phase: Players take turns laying their pieces on vacant points. You each have nine pieces, so you choose from among the 24 points on the board to place your pieces. Each player alternates placing a piece. This is where you must use strategy, seeing where your opponent is placing a piece and where it will be advantageous for you to place yours. You want to block your opponent from creating a string of three pieces on one line, or they will be able to remove one of your pieces. You are also looking for your chance to create a string of three pieces on one line.

Regular Phase: After all 18 pieces have been laid down, the regular phase begins. In this phase, a turn consists of sliding a piece along a line to a vacant point.

Whenever a player creates a string of three pieces on one line, they immediately remove one of their opponent's pieces. (This can happen during the setup phase or the regular phase.) An opponent's piece that is part of a string may not be removed unless no other piece is available.

Note: Sliding a piece one space on one turn, then back to its original space on a subsequent turn is a legal sequence.

Goal: The goal is to get your opponent down to two pieces, or to block him from making any legal moves.



Objectives :

- Implement the game rules with creative and responsive UI.
- Implement betting rule : Any 1 player bets with the opponent that he will win in fixed amount of time. If he does not win in that fixed time, he loses.
- Implement Clock timer as per bet set.
- Implement saved state : a game state can be resumed from a saved state.
- Reference :

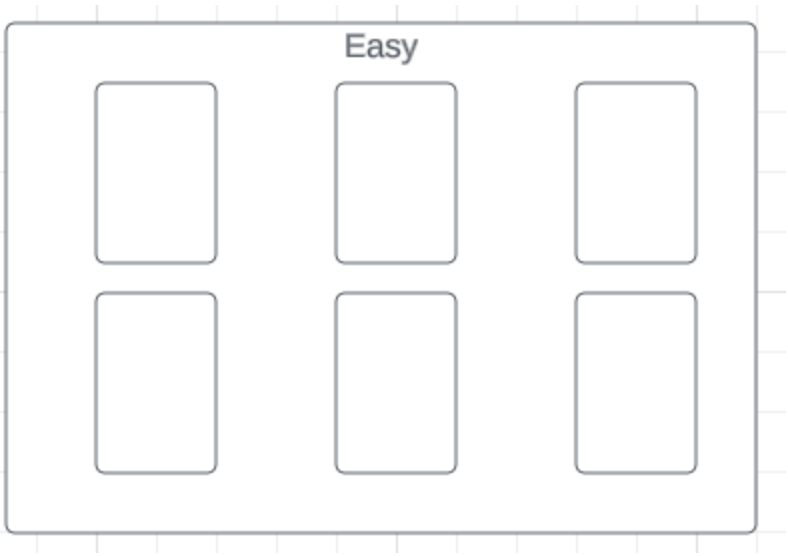
  https://www.mathplayground.com/logic_nine_mens_morris.html

2. <u>Kids Game</u> :

Visual games for kids which boost their memory and knowledge of fun facts about animals. Each game has 3 levels : easy, medium, hard. All games must have “loading page”. Each game type has 10 games based on which score will be calculated (No negative marking). Game types shown below :

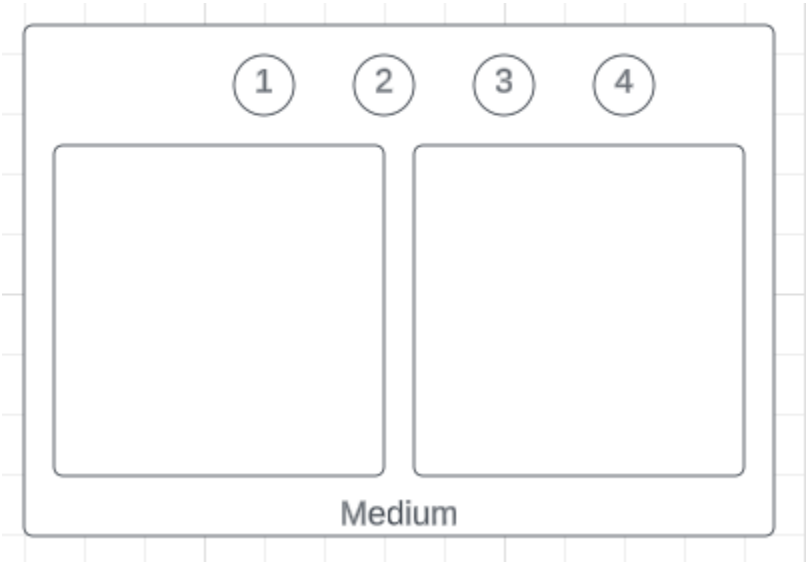
a) **Matching pairs** :

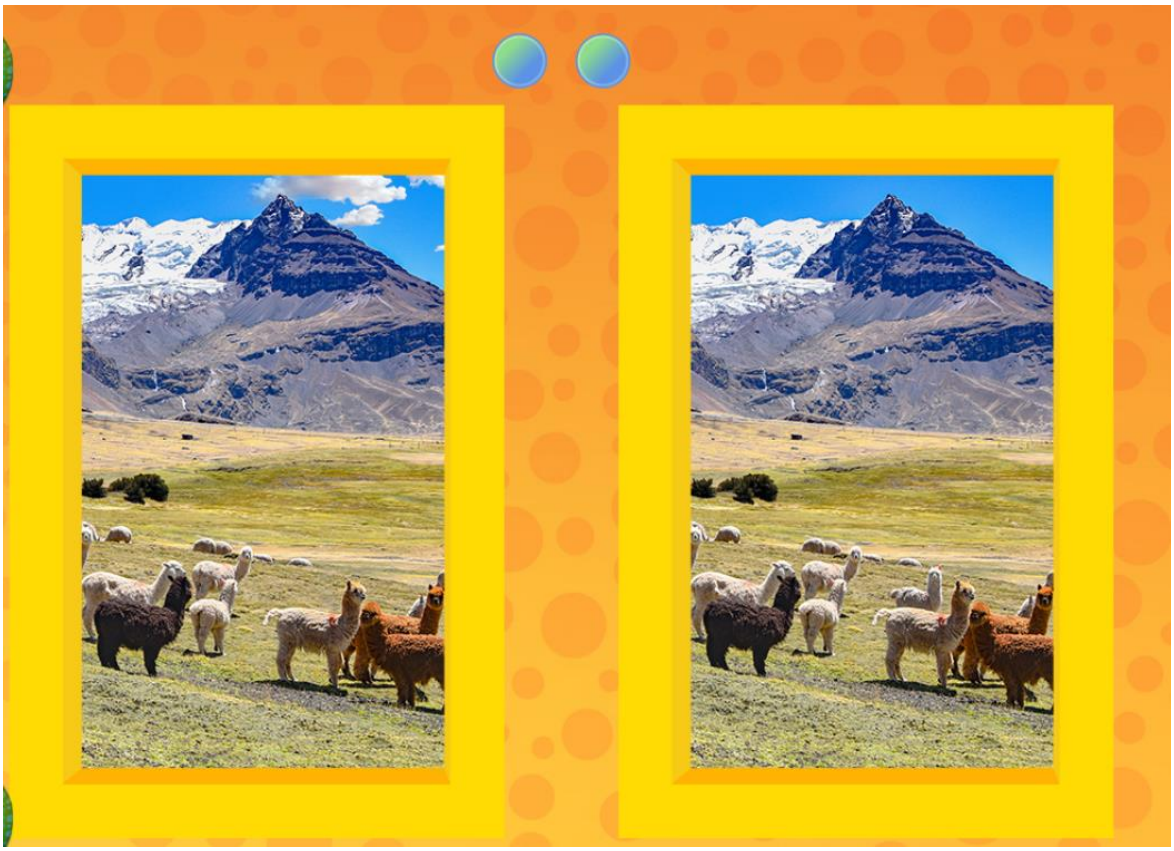
- match pairs of same animal pics/cards
- click on a card to see what’s inside, then click on another card to find match. Keep trying till you get a match. One you finish 1 game, show some fun facts about an animal and move to next game.
- each level has different no. of cards : easy (6), medium (10), hard (14)
- Sample mockup screens shown below :



b) **Spot the difference :**

- This is a memory game where the player needs to select differences between two images shown by clicking on the correct portion of the image.
- each level has different no. Of differences : easy (2), medium (4), hard (6)
- Sample mockup screens shown below :





c) **What goes together :**

- This is also a memory game where a player is shown a no. Of concealed cards and the player has find a pair of cards or a match which are someway related to each other. For ex. Goat and Grass, relation – food.
- each level has different no. Of differences : easy (6), medium (10), hard (16)

Objectives :

- Implement the game rules with creative and responsive UI.
- Maintain a timer.

3. Web site Development for CSG lab (Computer Systems Group)

Objectives :

- Develop a creative, highly interactive and responsive UI for CSG lab.
- Use data present at http://csg.iiit.ac.in/
- Use below UI design samples as much as possible. (at least one sample mandatory).
- Be innovative and add more UI samples for better look and feel.
- Prepare a shell script to automate the deployment process in server.
- Prepare a complete architecture diagram (showcasing main components and their interconnections) of the project, DB schema highlighting db tables and software technology selection with proper justification. For example, RDBMS selection compared to graphDB.

Note : The best implementation will be deployed to IIITH server and will go live.

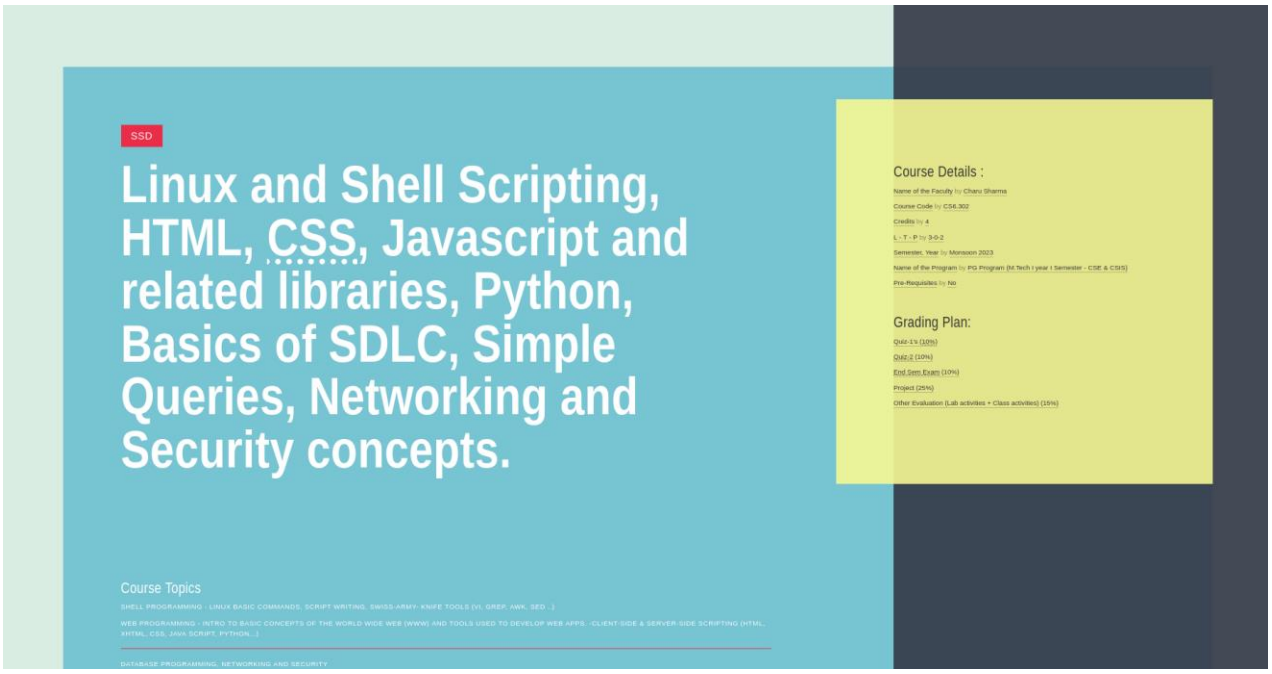
Sample mockups :

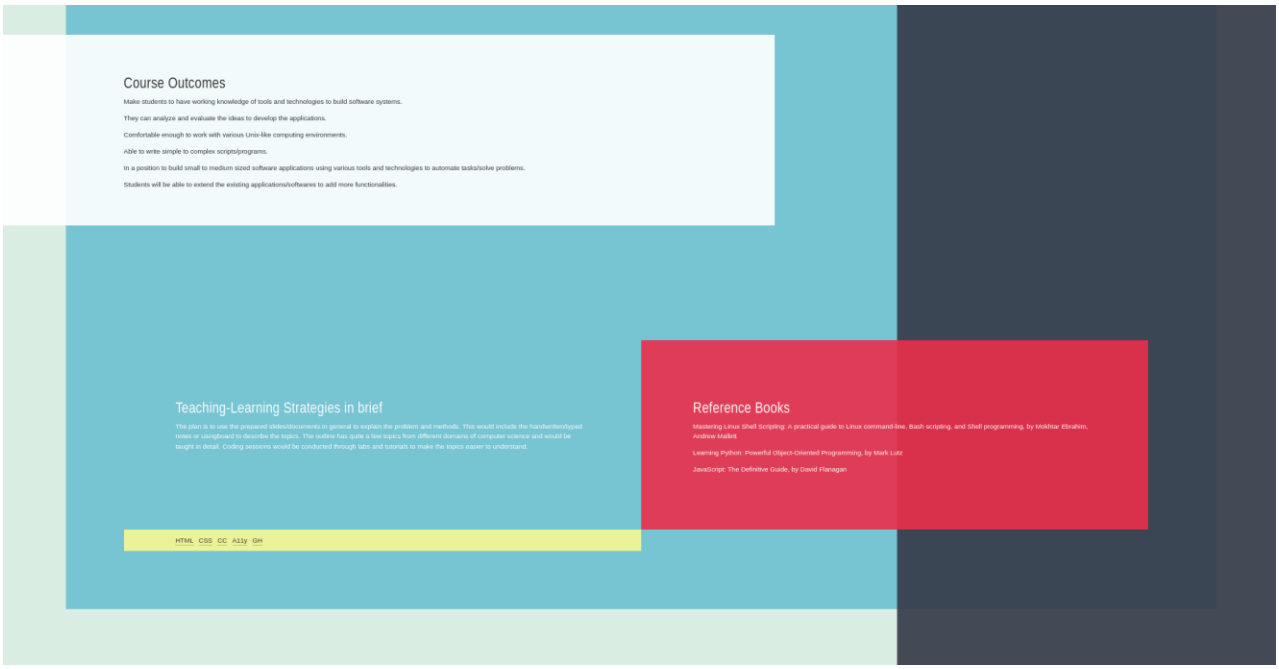
A)

B)


SSD
Linux and Shell Scripting, HTML, CSS, Javascript and related libraries, Python, Basics of SDLC, Simple Queries, Networking and Security concepts.
COURSE TOPICS
Shell Programming - Linux basic commands, script writing, swiss-army- knife tools (vi, grep, awk, sed ..)
Web Programming - Intro to basic concepts of the World Wide Web (WWW) and tools used to develop web apps. -Client-side & server-side scripting (HTML, XHTML, CSS, Java script, Python,..)
Database Programming, Networking and Security
COURSE OUTCOMES
Make students to have working knowledge of tools and technologies to build software systems.
They can analyze and evaluate the ideas to develop the applications.
Comfortable enough to work with various Unix-like computing environments.
Able to write simple to complex scripts/programs.
In a position to build small to medium sized software applications using various tools and technologies to automate tasks/solve problems.
Students will be able to extend the existing applications/softwares to add more functionalities.
TEACHING-LEARNING STRATEGIES IN BRIEF
The plan is to use the prepared slides/documents in general to explain the problem and methods. This would include the handwritten/typed notes or usingboard to describe the topics. The outline has quite a few topics from different domains of computer science and would be taught in detail. Coding sessions would be conducted through labs and tutorials to make the topics easier to understand.
NAME OF THE FACULTY
By Charu Sharma
COURSE CODE
By CS6.302
CREDITS
By 4
L - T - P
By 3-0-2
SEMESTER, YEAR
By Monsoon 2023
NAME OF THE PROGRAM
By PG Program (M.Tech I year I Semester - CSE & CSIS)
PRE-REQUISITES
By No
REFERENCE BOOKS
Mastering Linux Shell Scripting: A practical guide to Linux command-line, Bash scripting, and Shell programming, by Mokhtar Ebrahim, Andrew Mallett
Learning Python: Powerful Object-Oriented Programming, by Mark Lutz
JavaScript: The Definitive Guide, by David Flanagan
QUIZ-1'S (10%)
QUIZ-2 (10%)
END SEM EXAM (10%)
PROJECT (25%)
5 3 c a g

C)


SSD
Linux and Shell Scripting, HTML, CSS, Javascript and related libraries, Python, Basics of SDLC, Simple Queries, Networking and Security concepts.
Course Topics
SHELL PROGRAMMING - LINUX BASIC COMMANDS, SCRIPT WRITING, SWISS-ARMY- KNIFE TOOLS (VI, GREP, AWK, SED ..)
WEB PROGRAMMING - INTRO TO BASIC CONCEPTS OF THE WORLD WIDE WEB (WWW) AND TOOLS USED TO DEVELOP WEB APPS. -CLIENT-SIDE & SERVER-SIDE SCRIPTING (HTML, XHTML, CSS, JAVA SCRIPT, PYTHON...)
DATABASE PROGRAMMING, NETWORKING AND SECURITY
Course Details :
Name of the Faculty by Charu Sharma
Course Code by CS6.302
Credits by 4
L - T - P by 3-0-2
Semester, Year by Monsoon 2023
Name of the Program by PG Program (M.Tech I year I Semester - CSE & CSIS)
Pre-Requisites by No
Grading Plan:
Quiz-1's (10%)
Quiz-2 (10%)
End Sem Exam (10%)
Project (25%)
Other Evaluation (Lab activities + Class activities) (15%)



4. PhD Research Knowledge Collaboration Tool

Description :

In the entire tenure of 5-6 years of a PhD student, he reads about 250 research papers approximately and its very complicated to memorize every information presented in each paper. Moreover, even if we store the knowledge from each paper we must have an efficient storage mechanism and search feature to extract relevant information to revisit the ideas in future. In addition to storage, the innovative ideas that the student thought of should be tagged or saved in a particular format.

Although a lot of research tools are available in the market, they come with their own limitations, and none of the tools have focused on the difficulties faced by a PhD student for their research. For example,

Researchrabbit (https://researchrabbitapp.com) : It displays the list of all papers added by a user and based on that it recommends relevant papers. It has a nice graph-based UI displaying all information related to a specific research paper (related papers, prior work, references, author info etc.). Search engine allows user to add relevant paper to its collection. It also adds comments for each paper but it lacks using these

for further recommendations. It also does not take input from user based on their ideas.

ResearchGate (https://www.researchgate.net) : Its more of a linkedin for researchers where apart from all features that researchrabbit gives, it provides stats information (Research Interest Score, citations, recommendations, reads) of a particular paper. It lacks from the perspective of an attractive UI and efficient storage of comments, ideas etc.

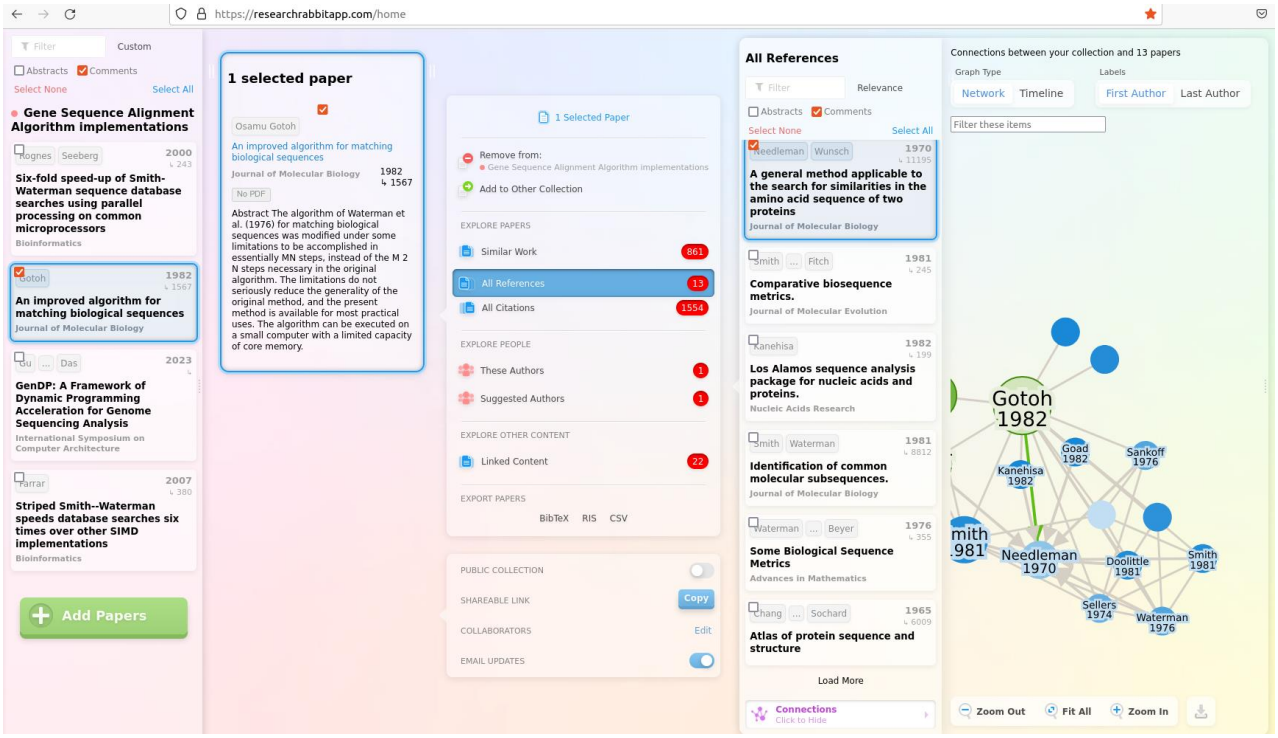
There are other research tools as well like Mendeley **(https://www.mendeley.com)**, Google Scholar **(https://scholar.google.com/)** available in the market and can explored with free subscriptions.

Note **:** *Please go through all resources to understand their advantages and limitations.*

Objective :

- To Help a PhD student to find an efficient Research Knowledge Collaboration tool.
- An efficient search engine to find papers based on title, author, topic etc.
- An efficient storage management system.
- An interactive UI to visualize information and explore.
- Strong recommendation system based on multiple criteria.
- Capture comments and ideas in an efficient manner so that it can be recommended by engine or revisited by the student in future.

Sample screenshots from Researchrabbit and researchgate :


https://researchrabbitapp.com/home
Gene Sequence Alignment Algorithm implementations
Six-fold speed-up of Smith-Waterman sequence database searches using parallel processing on common microprocessors
An improved algorithm for matching biological sequences
GenDP: A Framework of Dynamic Programming Acceleration for Genome Sequencing Analysis
Striped Smith--Waterman speeds database searches six times over other SIMD implementations
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Abstract The algorithm of Waterman et al. (1976) for matching biological sequences was modified under some limitations to be accomplished in essentially MN steps, instead of the M 2 N steps necessary in the original algorithm. The limitations do not seriously reduce the generality of the original method, and the present method is available for most practical uses. The algorithm can be executed on a small computer with a limited capacity of core memory.
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Journal of Molecular Evolution
Los Alamos sequence analysis package for nucleic acids and proteins.
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Needleman 1970
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Smith 1981
Sellers 1974
Waterman 1976
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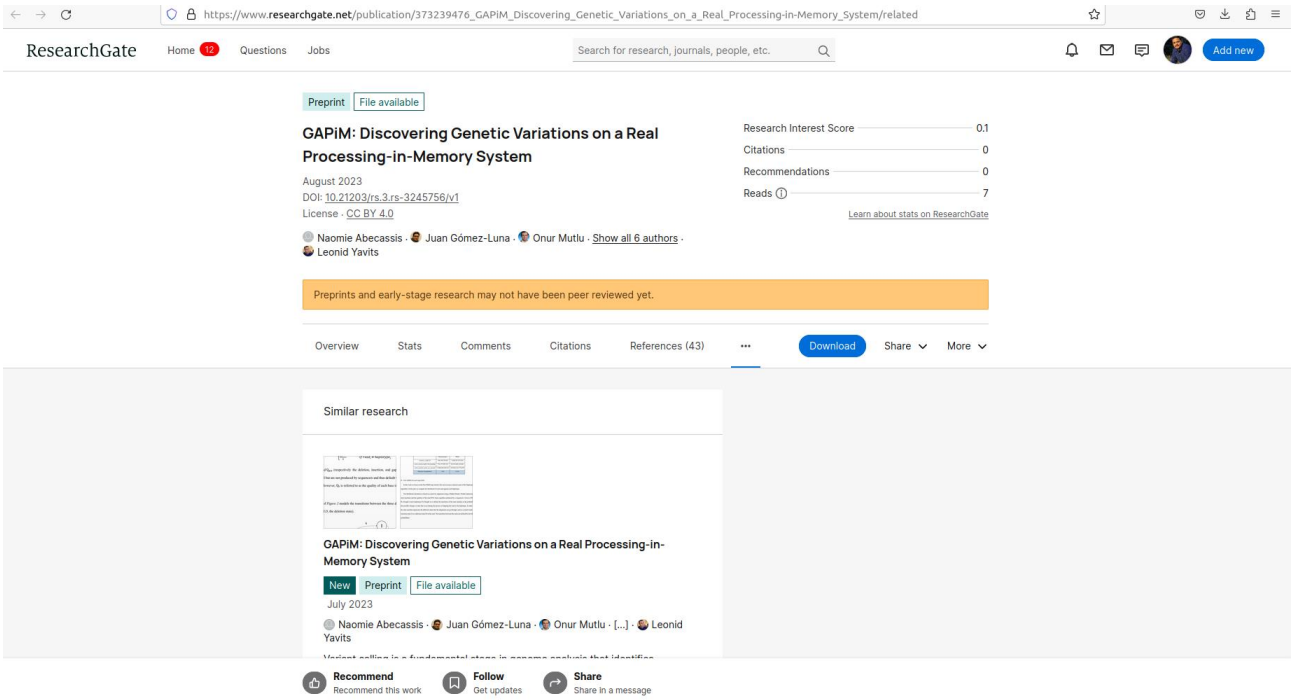
Fit All
Zoom In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