**PROJECTS LIST OF DS**

* **MAXIMUM THREE CANDIDATES ARE ALLOWED IN A GROUP.**
* **THE PROJECT ASSIGNED TO A GROUP COULD NOT BE ASSIGNED TO ANOTHER GROUP.**
* **PROJECT ASSIGNMENT IS ON FIRST COME FISRT SERVE BASIS.**

1. Take an **INFIX** algebraic expression from the user then convert it into equivalent **POSTFIX** and **PREFIX** notation. Maximum five operators are allowed in an expression given by user.
2. Take an **INFIX** algebraic expression from the user then convert it into binary tree which shows the expression should be solved in specific order. Maximum five operators are allowed in an expression given by user.
3. Make **“DICTIONARY”.** User can add words in the dictionary and hence enhance the database of dictionary. If user wants to search any text, it searches and displays the meaning of respective word on screen. The searching algorithm must be **binary search**. (In which all words must be already sorted).
4. Make a game **“TOWER OF HANOI”** for **SIX** 7 plates using STACK. Instead of using plates used Alphabets, A is less than B and so on.
5. Make a game **“GAME OF NIM”** for **2 players.**
6. Make a game **“TIC TAC TOE”** for two players but the rows and columns are 7x7.
7. Implement **HASHING** in Data Structures
8. Implement **HUFFMAN CODE**. Take any string from user then convert it to respective HUFFMAN CODE. Show the simulation of all the steps involved.
9. Make a game **“TETRIS”**. There are number of alphabets dropping from top to down in the STACK of game, if user did not press the alphabet while it dropping, then the alphabet dropped into STACK and when STACK becomes full, it will stop and show the score.
10. Row Transposition Cipher (Ciphering and deciphering). All parameters are given by user. Two iterations at least required for ciphering. Show all the steps on screen of ciphering and deciphering.
11. Make a game “**SHOOTER**” in which the shooter shoots the alphabets dropping from top to down. If any alphabet hits the shooter, the shooter will destroy. Maximum 5 lives of shooter are given. There would be certain alphabets that are dropping much faster than other alphabets, if shooter hits that alphabet then the live will increase by 1.
12. Make a **“Typing Tutor”**. There is a paragraph given to user. User types that paragraph. If the user typed wrong character, then it would not display. Only right words typed should display. At the end it shows total number of wrong characters typed by user. It also suggests which characters are difficult for user while typing at the end.
13. Make a program that demonstrates the **LINKED LIST** in following parameters. All operations performed must be executed on a same linked list. E.g if user constructs the linked list, then he could insert into it, he could delete from it, he could search any value inside the linked list and he could sort the elements of linked list. Show all steps while program in execution.
    1. Construction of linked list
    2. Insertion in linked list
    3. Deletion in linked list
    4. Searching in sorted and unsorted linked list (Indicating best, average and worst cases)
    5. Sorting in linked list.
    6. Display linked list
14. Make a game “PACMAN”.
15. Implement play fair cipher in C#. Take any Text from user then cipher it with PLAY FAIR cipher. Show each step while Ciphering and Deciphering it.
16. Mines game
17. Simulation of binary tree.
18. Take an array from the user, sort it by performing step by step simulations of selection sort and bubble sort.
19. Generalized Metrics solver (unlimited dimensions, un-limited matrices)
20. Snake game (if eat bonus food its size should decrease).
21. Make INDEX (How much times a word comes in text on which page)
22. Take an array from the user, sort it by Boyer Moore algorithm then apply binary search on it. Show full simulation of each process step-by-step
23. Take an array from the user, sort it by Horsepool algorithm then apply binary search on it. Show full simulation of each process step-by-step
24. Take an array from the user, sort it by Insertion sort algorithm then apply binary search on it. Show full simulation of each process step-by-step
25. Take an array from the user, sort it by Merge sort algorithm then apply Depth First Search on it. Show full simulation of each process step-by-step.
26. Take an array from the user, sort it by Radix sort algorithm then apply Best First Search on it. Show full simulation of each process step-by-step
27. Calculator that can solve the expression in single step including brackets. It also calculates the Modulus.
28. Simulation of each step of heap construction, also simulate the insertion and deletion in heap as well as heapsort.
29. Make a program that take a text and key from the user then cipher the text by using Vigenere Cipher.
30. Take any range from user then generate Random Number Generator by Linear Congruential Method within the range, if the user entered less than that value then the message shown” YOU ENTERED SMALLER VALUE” and if the user entered larger value then the message shown “YOU ENTERED HIGHER VALUE”, and if the user entered that same value then display the message “GREAT YOU WON THE GAME”. Make the game level “Easy”, “Medium” and “Hard”. In easy the trials are more for user while in hard the trials are less.
31. Let the user to construct the bidirectional weighted graph, then you simulate step by step construction of Minimum Spanning Tree by Prim’s Algorithm.
32. Develop a search engine by using any efficient searching algorithm. It also suggest searcher the related searches.
33. Let the user to construct the bidirectional weighted graph, then you simulate step by step construction of all Hamiltonian Circuits inside the graph. Also identify the shortest Hamiltonian Circuit in them.
34. Develop your own searching and sorting algorithm. Show step by step simulation of your proposed algorithm.
35. Model that simulate CAR security System.
36. A Calendar for any month for any year entered by user.
37. TEXT EDITOR with all basic functions.
38. Model that simulates two LIFTS in a 10 floor building.
39. Time Table Constructor that shows all types of clashes.
40. Any logical game developed by you.