RNS Institute of Technology, Bengaluru – 98

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Department of Information Science and Engineering

(Accredited by NBA for the Academic years 2018-19, 2019-20 and 2020-2021)

Data structures Laboratory-18CSL38

Mini Project Evaluation

Project Title	BULLS and BEARS		
USN	1RN19IS002	1RN19IS019	1RN19IS061
Name	Abhaya Simha S P	Akshay V Kaushik	Harsha D

Abstract

- This is a menu-driven project which contains two game modes namely, ASK and ANSWER. We have also included features involving details of the users who play our game.
- Bulls and Bears is conventionally a paper and pencil game of numbers or words.
- In this project, we deal with the numerical version of the game**.**

Introduction

Bulls and Bears is a Data Structures and Applications (DSA) mini project developed by Abhaya Simha S P (IS002), Akshay V Kaushik (IS019), Harsha D (IS061).

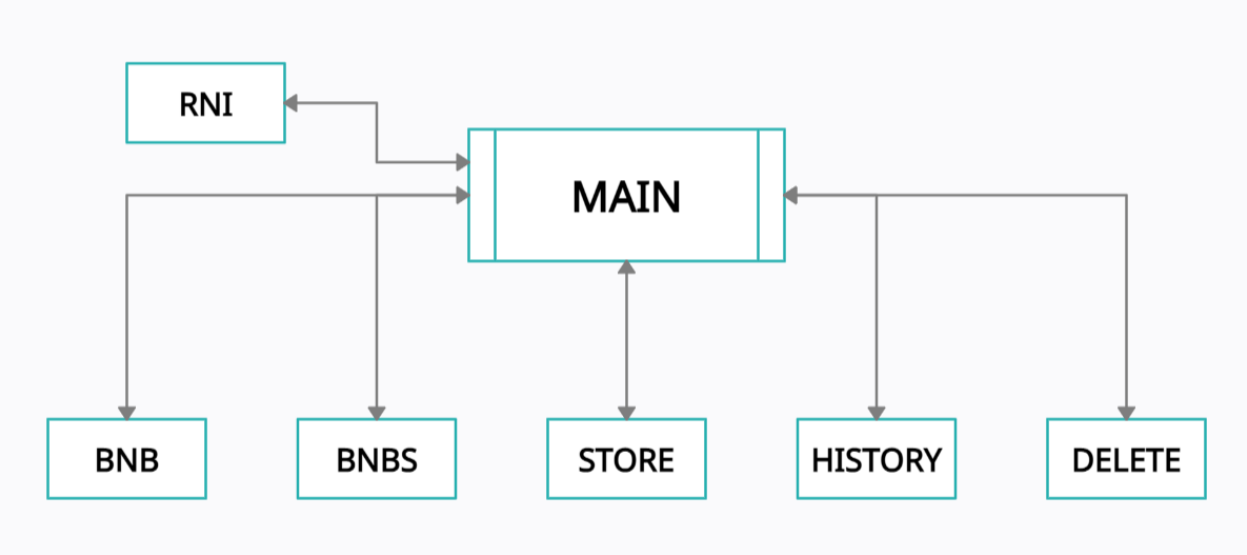
GAME MODES:

- **ASK –** This game is played is played with 4 digits. All the digits must be different. The computer generates such a number. The user has to guess that number using clues called Bulls and Bears. If the matching digits are in the right position, they are “Bulls” , if in different positions, they are “Bears”. The user is given 9 chances to guess the number.
- **ANSWER -** This game is played is played with 4 digits. All the digits must be different. The user thinks of a number and the computer has to guess it. This is done using clues called Bulls and Bears. If the matching digits are in the right position, they are “Bulls” , if in different positions, they are “Bears”. The computer is given 7 chances to guess the number.

HISTORY:

- History is a feature in our menu-driven project which stores and displays the following details – Name, Game Mode, Number, Tries, Date, Time and Result. There is also an additional option to clear history.

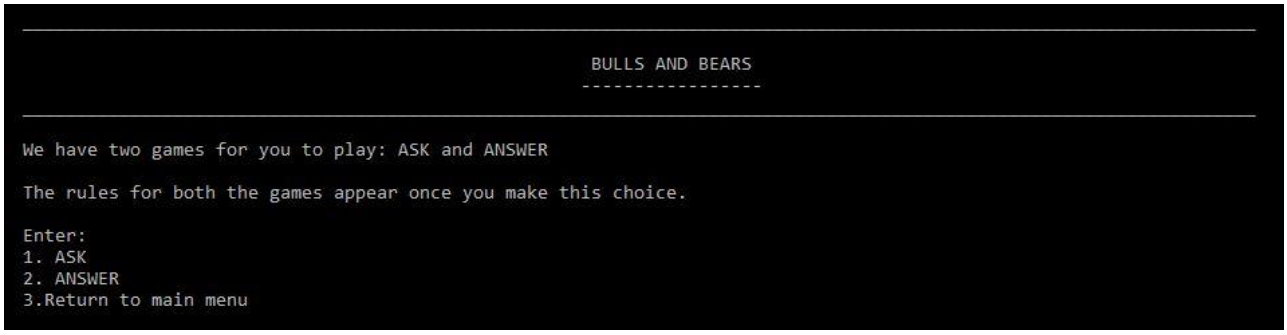
Description about the project work *(Write the detailed Project Architecture and brief description about the implementation)*



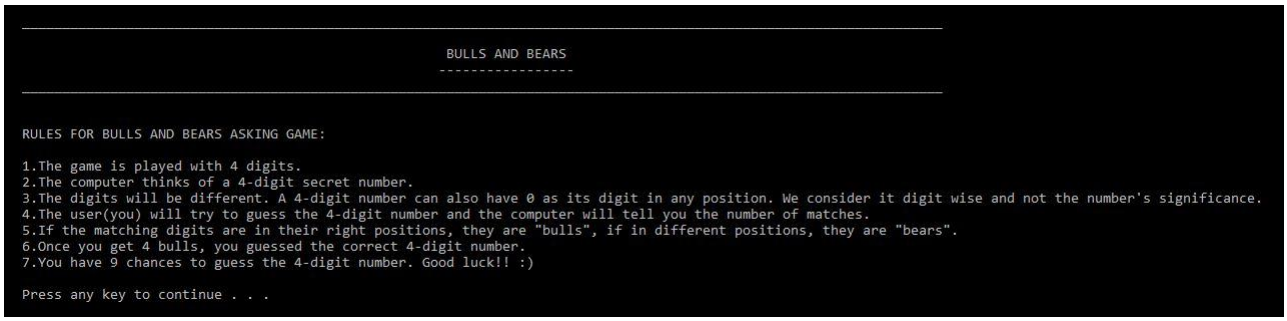
I. **void bnb()** : This function is used to implement the ASK game mode.
II. **void bnbs()** : This function is used to implement the ANSWER game mode.
III. **void store(char, char, int, int)** : This function is used to create, store nodes of the linked list which contain the details of the users. The details are also written onto the file.
IV. **void delet()** : This function is used to clear the entire history and also clear all the contents of the file.
V. **void history()** : This function is used to display the history from the file.
VI. **void rni(int)** : This function is used to display the rules and instructions of the respective game modes.
VII. **void main()** : This is the main function which implements the menu-driven program and calls all the other functions.

Result

Home Screen



Choose the mode of the game or to return to the main menu



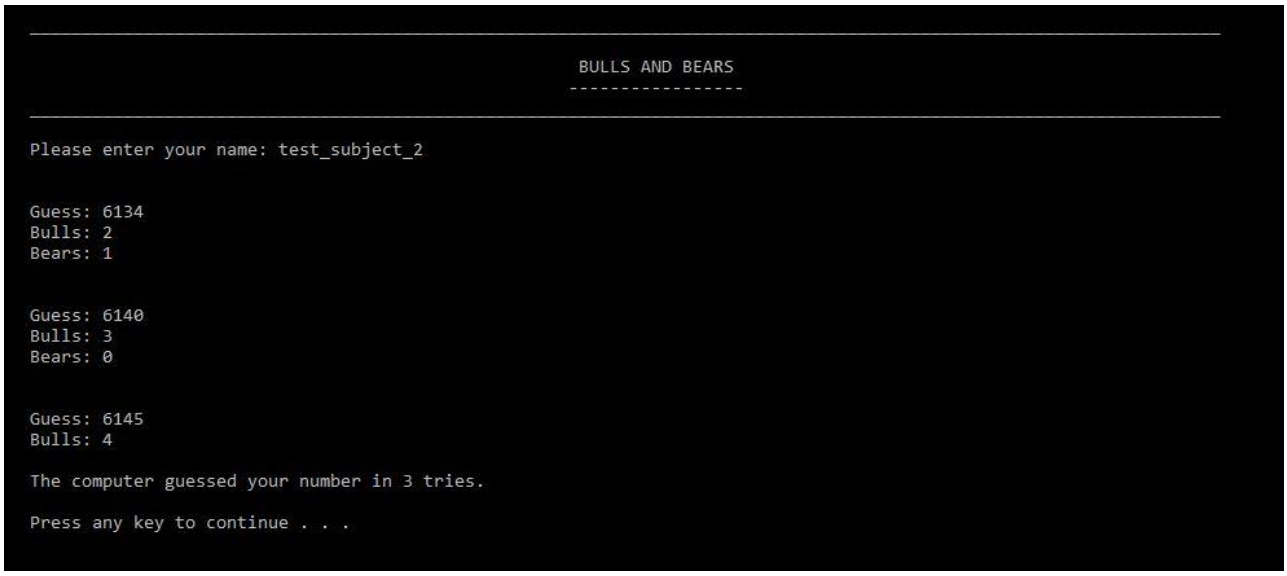
Rules for ASK game mode

```
                                        BULLS AND BEARS
                                        ---------------

Please enter your name: test_subject

Guess : 1234

Bulls   Bears
0         1


Guess : 2345

Bulls   Bears
1         1


Guess : 5678

Bulls   Bears
1         2


Guess : 2675

Bulls   Bears
0         2


Guess : 3567

Bulls   Bears
0         2


Guess : 5648

Bulls   Bears
2         2


Guess : 5846

Bulls   Bears
4         0

You won in 7 tries


Press any key to continue . . .
```

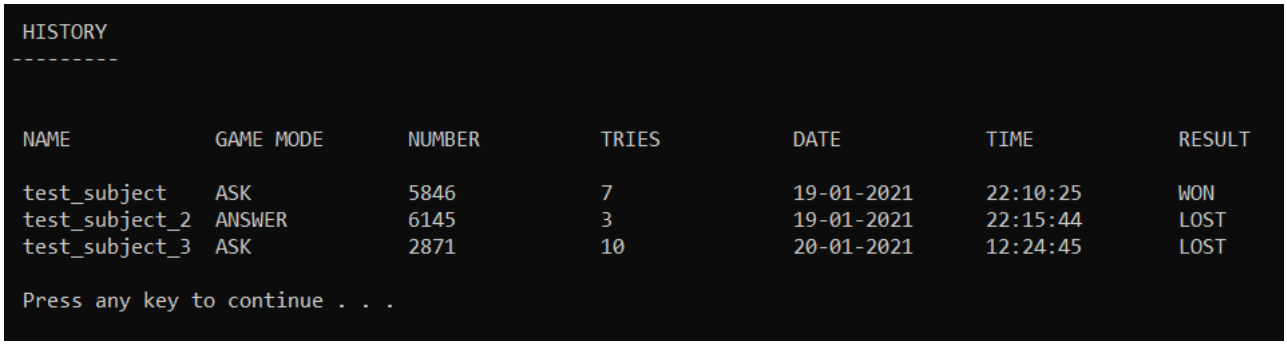
ASK game

```
                                        BULLS AND BEARS
                                        ---------------


RULES FOR BULLS AND BEARS ANSWERING GAME:

1.The game is played with 4 digits.
2.You must thinks of a 4-digit secret number where all the digits must be different.
3.A 4-digit number can also have 0 as its digit in any position. We consider it digit wise and not the number's significance.
4.The computer will try to guess the 4-digit number.
5.Once the computer guesses a 4-digit number you are prompted to enter the number of BULLS and the number of BEARS.
6.If the matching digits are in their right positions, they are "bulls", if in different positions, they are "bears".
7.The computer has 7 chances to guess the 4-digit number, beyond which you win.
8.Good luck deceiving the computer ;)

Press any key to continue . . .
```

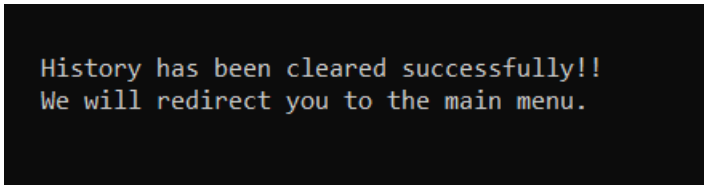
Rules for ANSWER game mode



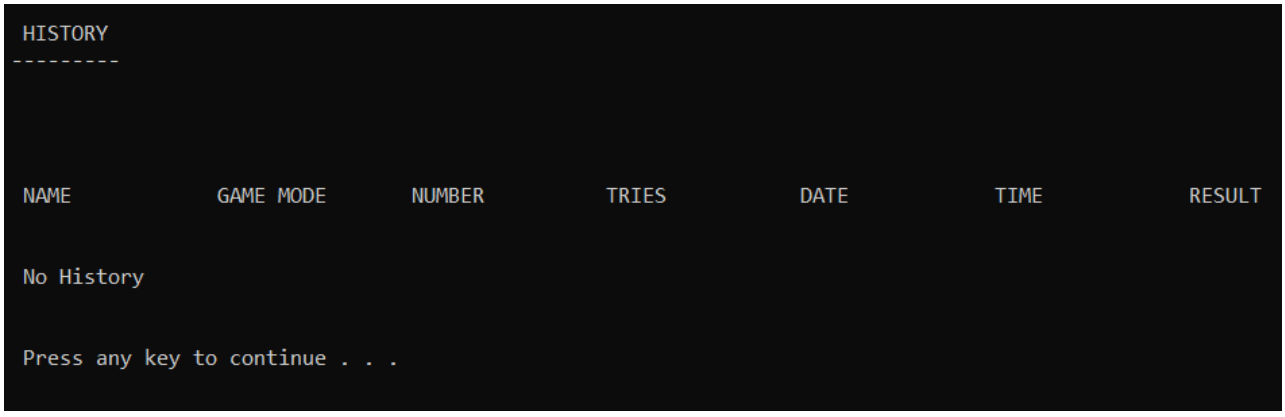
ANSWER game



History



Clearing History



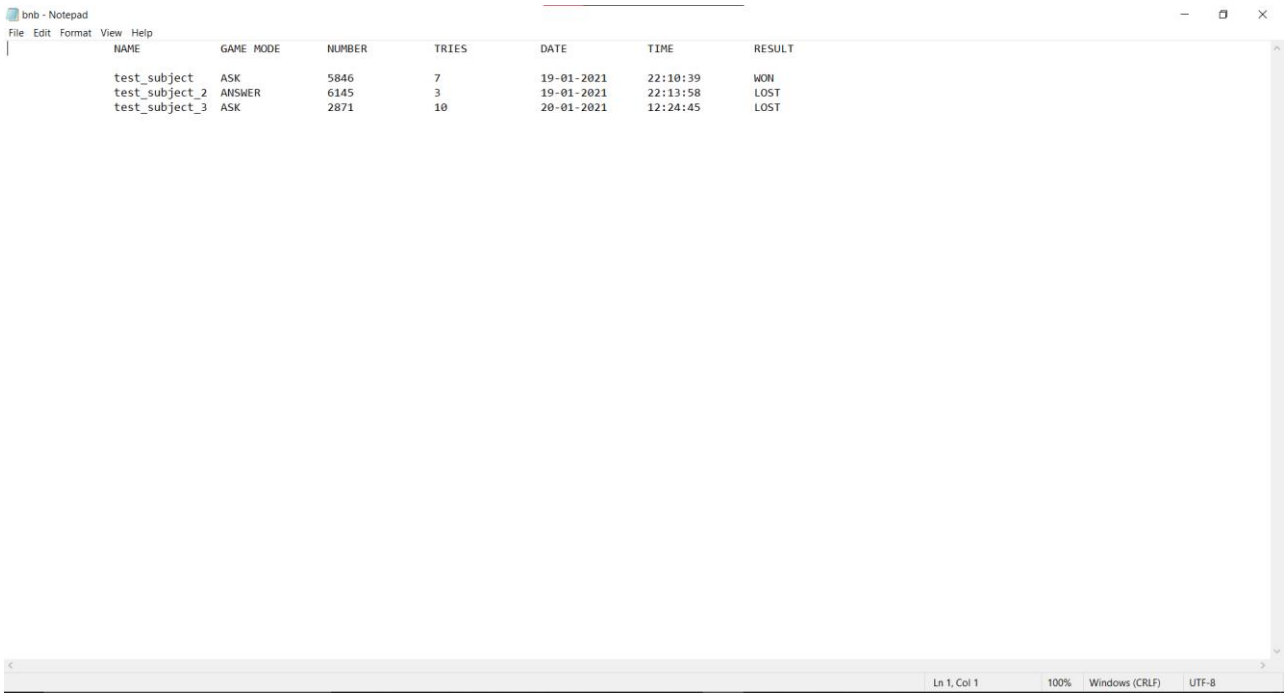
Empty History

```
There is no record to delete.
We will redirect you to the main menu.
```

Clearing empty History

```
BYE BYE!!
WE HOPE TO SEE YOU AGAIN :)
```

Quit screen message



File that stores details of the users

Conclusion and Future Enhancements

- This menu driven project serves to improve your mathematical deduction and logical thinking efficiency by posing a challenge in the ASK game and to relax and take a breather in the ANSWER game.
- The History feature allows you to compare your previous attempts or other users' attempts and lets you try competing with them.
- Since this involves permutation and combinations, one may get better, faster and more efficient in implementing these concepts in real life scenarios.
- In the forthcoming future, we would also like to implement the alphabetical version of the game hence try and increase the scale and scope for improvement in your deduction skills. By doing so, one may get better and faster at solving anagrams and other word games.
- We would also like to try and implement other challenges in cracking these

games by involving a time factor instead of limiting the number of tries, or to make it even harder both.

- We would also like suggestions or advices to improve this project and take this project further.

References

- https://www.geeksforgeeks.org/
- https://www.tutorialspoint.com/
- https://www.programiz.com/
- https://stackoverflow.com/
- Fundamentals of Data Structures in C (Textbook)