X&O and GuessTheWord

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0.1 INTRODUCTION

The program GuessTheWord is a computerized version of the game Hang Man, which has been popular among kids since 1984. This project has been initiated with the object of bringing joy to children when isolated, such as the global lock down in the year 2020.

If the user chooses to play the game, he/she will be asked their name and be given a choice of categories. Once the user has chosen a category the program will randomly choose a word for that specific topic, and the game will begin. X&O which is also known as tic tac toe were first invented in the 1300BCE by the Ancient Egyptian Empire. Our program has the computerized version of it.

X&O which is also know as 'Tic Tac Toe' is played among two players on 3x3 grid. Player 1 has the option to choose whether they want to be X or O, they then take turns to place an 'X' and then 'O' on the grid. Whichever player gets 3 'X's or 3 'O's in a row vertically, horizontally, or diagonally wins.

0.2 BACKGROUND

After many days of researching we came down to two categories for our project, namely management systems and games; however, management systems were very common in our batch and the codes for these are widespread over the internet . Therefore, our group chose the games category to work on.

Now there were many games that could have been chosen; however, most of these games had OOP (Object Oriented Programming) involved. Some of the games that we came up with were: a maze, Snakes and Ladders, the mind reader, X&O and GuessTheWord. Since only X&O and GuessTheWord could be implemented without using OOP, they were chosen. After consulting with our instructors we decided to include both games in the project and give the user a choice.

0.3 PROBLEM ANALYSIS

The user is given a overview of both X&O and GuessTheWord. The user is then asked which game they would like to play if they want to play GuessTheWord, the user will enter '1' if they want to play X&O the user will enter '2'.

The game 'GuessTheWord' is a computerized adaptation of the children's game Hangman, which was invented in 1984. The firstly is asked to enter his/her name. After the user selects GuessTheWord as their option, they are given the choice of choosing a category from the following:

1. Movies

2. Books

3. Animals

4. Colors

5. Countries

6. Rock Bands

The user enters their choice by entering the corresponding number of their choice. Their choice is validated by first checking if the choice entered is within the range of one to six. The program then generates a random number from one to twenty and stores it as the 'index'. The program then accesses the background text file and chooses the word corresponding to the value stored in the 'index'. The user is then shown a set of blank dashes that match the word or phrase. He/she then has to guess these letters by inputting them using their keyboard.

The user is asked to enter their guess, which is validated by first checking if the player has entered only one letter or a couple of letters by checking the length of the input. If the length exceeds one, then the user is told that they should enter only one letter and they are asked to enter their guess again. The second level of validation is if the value entered by the user is actually an alphabet or not, if the value entered is not an alphabet, then the player is told to enter an alphabet again. The third level of validation is whether or not the letter guessed has been entered before, if it has then the user is told to enter a different letter. After these three levels of validation the guess is then sent forward.

They will then be given the choice whether or not they want to continue playing. When the user enters their answer if it is anything other than 'y' or 'n', they will be told that it is an invalid input and they will be asked to input their answer again. If they answer 'y' then they are given the choices of topics again and they can continue playing. If they answer 'n' then the program ends and the game is closed.

X&O is a computerized version of the well-known game 'Tic Tac Toe' which was first invented in the 1300 BCE by the Ancient Egyptian Empire. It is now widely popular among children and teens.

After the user has selected X&O player 1 is given the option of choosing their token whether they want to be 'X' or 'O'. They are then asked to enter the number on the grid where they would like to place their token. Then player 2 is given the choice of placing their token on the grid board. If they enter a number that player 1 has already chosen, it will tell the user that this block is taken. This is done until one of the players get all X's or O's placed in a row horizontally, vertically, or diagonally. If neither of them win the game ends in a draw. The score is then displayed of both Player 1, Player 2 and also of the number of games that have been drawn between them.

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0.4 METHODOLOGY

A methodology is a set of standards and applications that guide you in organizing your projects to ensure their optimum performance. There are many different methodologies that can be adopted when working on a project depending on the budget, team size, flexibility, and timeline. Our group chose the Critical chain project management (CCPM) methodology.

This methodology consists of identifying and scheduling all of the critical tasks that compromise the project, as well as their dependencies. The critical path, longest sequence of critical tasks, can be visualized using PERT and Gantt charts.

This methodology was perfect for our project since our project had many depending modules, and we needed a visual map of the sequence. We also had a strict deadline and needed buffers to test out our ideas. These conditions were met by the CCPM methodology.

A Gantt chart is a horizontal bar chart developed as a production control tool, it is frequently used in project management, a Gantt chart provides a graphical illustration of a schedule that helps to plan, coordinate, and track specific tasks in a project.

Below is the Gantt chart created for the program on "Project By 20k-0213 20k-0393", where the cells shaded in green show the week number.

	1	2	3	4	5	6	7	8	9	10	11
Identify Requirements	■										
Produce design		■									
Write Program code for X&O			■	■							
Test Modules				■							
Write Program code for GuessTheWord					■	■	■				
Add Data Files							■	■			
Test Modules								■			
Combine Modules and testing									■	■	
Write Report											■
Week Number	1	2	3	4	5	6	7	8	9	10	11

0.5   IMPLEMENTATION

For this project the programming language used is C. C is a general-purpose programming language that supports structured programming, lexical variable scope, and recursion, with a static type system. It has a lasting use in applications previously coded in assembly language. Such applications include operating systems and various application software for computer architectures that range from supercomputers(a computer with a high level of performance as compared to a general-purpose computer) to PLCs(Programmable Logic Controller) and embedded systems.

The header files used are stdio.h, stdlib.h, string.h, ctype.h and time.h . The stdio.h header file stands for Standard Input Output. This header file has functions related to input/output. The stdlib.h header file stands for Standard Library, it consists of functions involving memory allocation , process control, conversions and others. The string.h header file is used not only for string handling but also various memory handling functions. The ctype.h header contains declarations for character classification functions. The header file time.h contains time and date function declarations to provide standardized access to time/date manipulation and formatting.

The data structure use in our programm is character array(strings). The datat types used include, although are not limited to, user-defined data types suuch as structures,etc. The structures used in our programm are used to store the different themes for the game "GuessTheWord".

0.6 RESULTS

When we finally run our code the instructions of both X&O and GuessTheWord are displayed to the user so they are given a basic idea of both the games and how to play them.

They are then given the option to choose between the games 1.GuessTheWord or 2.X&O. The user then enters the corresponding choice of what game they would like to play. If they choose option 1 which is GuessTheWord, the user is then asked to enter their name. The user is then given 6 categories to choose from and and the option to select a particular category. The user is then given a randon word which they had chosen from that specific category which they have to guess correctly, they are only given 10 guesses.

They are then given the option to play again or switch between games. If the user then selects 'X&O'. Player 1 is given the option of choosing their token whether they want to be 'X' or 'O'. They are then asked to enter the number on the grid where they would like to place their token. Then player 2 is given the choice of placing their token on the grid board. If they enter a number that player 1 has already chosen, it will tell the user that this block is taken. This is done until one of the players get all X's or O's placed in a row horizontally, vertically, or diagonally. If neither of them win the game ends in a draw. The score is then displayed of both Player 1, Player 2 and also of the number of games that have been drawn between them.

0.7 CONCLUSION

The program on "Project By 20k-0213 20k-0393" is aimed on the younger age group, since this is the time where most of the human development takes place. This program helps children not only to enjoy their leisure time but can also be used to learn spellings of words. The game can also be used in schools to teach children the spellings of different colors, countries, etc. It can also be used to teach children about strategizing, which can be learnt using X&O.

The advantages of this game are that even though it is aimed for the younger generation even the older generation can take joy in playing "GuessTheWord" and "X&O" which is a huge part of their childhood. The option of guessing Rock bands has been kept for the enjoyment of adults, this game can help them relax and unwind after a day of hard work.

This game can also be used in schools as part of their Geography and English lessons, since there are options such as Countries, colors, animals, etc. The Countries option can be used for an interactive lesson in Geography, while the other options can be used as an interactive method to learn spellings.

The "X&O" game can be used in mathematics to show how probability works, and how many possible moves there are. It can also be used to hold friendly competitions within a class, as an interactive session. Both the games included can be used not only as educational tools but also as leisure activities.