

GUESS WHO USER'S GUIDE

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Guess Who is a Multiplayer game where each player starts off by selecting their own secret character from a total of 9 options. The object of the game is to be the first to determine which character one's opponent has selected. Players simultaneously ask various yes or no questions to eliminate candidates, such as "Does this person have blue eyes?", by selecting options and suboptions to submit. The key to beating one's opponent is to select the various options such that it eliminates the most characters per turn. Each turn is of 30 seconds and each player's responses get submitted automatically.

Purpose: The purpose of us implementing a computer version of this game is because it demonstrates the algorithmic paradigm of divide and conquer. A divide and conquer algorithm works by recursively breaking down a problem into two or more sub-problems of the same or related type, until these become simple enough to be solved directly. Similarly, the purpose of the Guess Who game is to be able to determine one's opponent's character by eliminating other candidates in chunks each turn. There are many strategies to determining the opponent's character. Another strategy would be to individually guess their character each turn, but that wouldn't be efficient because at the start the player would have a 1 and 9 chance of guessing the correct character, then 1 and 8 the next turn and so on. So why is using the divide and conquer algorithm the optimal solution to solving this problem? The game starts out with all the characters displayed, however if a player is able to use the suboptions efficiently and effectively, they may reduce the characters displayed by as much as half. Reducing the amount of characters display each turn creates a smaller subproblem, and so on, until the player is able to accurately guess their opponent's character.

Ready to start playing??? Follow the following steps to start playing your first Guess Who game!

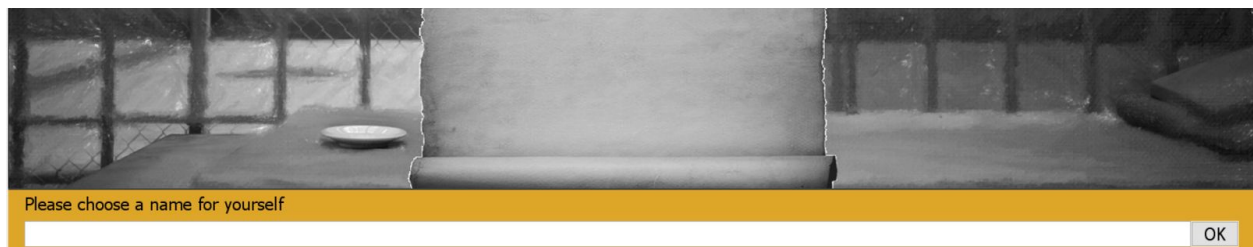
STEP 1:

The first screen you will see displayed is the welcome screen. You may select the intro option if you would like additional information about the game, or you can just skip the intro to start playing!



STEP 2:

When you decide to proceed to the game you will be prompted to enter a username for yourself. After you enter your name proceed by clicking "OK".



STEP 3:

After you have entered your name and selected “OK”, you will be asked to select a character. Go ahead and select a character and click on “Confirm” to proceed.



STEP 4:

If your opponent hasn't selected a character the game will display a load screen until your opponent has selected their character and joined the game. You can go back to the beginning from this screen if you would like as well.



STEP 5:

Once your opponent has joined the game and selected a character the game play screen will be displayed. Based on the color coding we will explain the game play screen.

The Black box represents the character you have selected, just as a constant reminder. The Red box represents the time left in the round, as each round is 30 seconds. You must have a selection before the time runs out or will virtually lose a turn. The Grey box represents the options you may select from, based on the character attributes. The Brown box represents the suboptions which provides specifics to each of the options. For example, the option “Hair” has suboptions to the color of character’s hair, or if character has hair at all. So selecting options and suboptions is one’s way of asking the “yes or no” questions mentioned earlier in this guide. (“Does your character have Grey hair?” is the question represented in this screenshot.)

Once one has selected an option and suboption, the attribute will be displayed on all the characters which have that attribute. Finally, the Green box represents the characters that have not yet been eliminated. So that when there is only a single character in the green box, you know that *that* is your opponent’s secret character!!



STEP 6:

The result of asking if their character has Grey hair from the previous step is displayed in this screenshot. So the game responded with “yes” the opponent’s character has grey hair, therefore only keeping the characters that have grey hair in the character box. By *asking* if the character has a specific attribute it created a reduced subproblem of only having to guess between four characters, this portrays the *divide and conquer* algorithm. Rather than selecting a specific character to guess during your turn and at best only eliminate one character, the divide and conquer algorithm eliminates more characters.



STEP 7:

Once you are able to reduce the number of characters to one or two then you know that you have a 50% chance of guessing the right character or even a 100% chance.



STEP 8:

Now how do you know you win, lose or draw??

To win you need to beat your opponent in guessing their character before they guess yours! If they guess yours before you guess theirs then you will lose. If both of you guess each others character in the same turn, the game will result in a draw.

Now you are fully ready to play the game, and have fun!!