Problem statement: to make a game with main menu, game play, and research modes. The main menu must display games played and games won. The game is the monty hall game where there are three doors a winning door is chosen at random and a door is chosen by the participant. A losing door(a door wich is not the winning door or the door chosen by the player) is revealed. After the reveal the player may chose to either switch what door they picked or to switch to the other door. After the chose is made the winning door is revealed.

Input output statement:

Main menu: for the main menu the user will input a mode, this will then redirect the user to the appropriate part of the program, be it play or research.

Game Play: in the game the user will input a door number, the program will then output a losing door. The user will then input whether they would like to switch or not. The program will then output if they have won or not nd take them back to the main menu.

Research: the player will enter in how many games they would like to simulate. Then will enter whether or not they want the simulated games will want to switch doors. The program will then simulate the games and output the number of games which one using the technique the programmer picked.

Algorithm:

Over all:

1. Initiate variables ; mode, games played, games won
2. Set mode = -1
3. Start a while loop with the condition that mode!=0
4. Print the main menu and prompt the user to enter a mode
5. Use a switch statement dependent on mode to choos wether they want to play the game, do research, or exit.

Game:

1. Initiate variables; winning door, losing door, choice, alternate
2. Use the random function to choose a winning door
3. Prompt user to enter a door number
4. Print the losing door that isn't their choice and ask if they would like to switch
5. If they do want to switch make choice = alternate
6. Check to see if choice = wining door
7. If yes add one to the games won

Research:

1. Prompt the user to input how many games they would like to simulate
2. Prompt the user to input whether they would like the simulated games to switch doors or stay with the same door
3. Initiate a while loop for i<games user wants to simulate
4. Reuse same program for games with a few changes
5. Door chose will be picked at random

6. The option to switch or not s predetermined by the user
7. Nothing will be printed out
8. Winning games will be counted and printed a the end of the program

Exit

1. Set mode = 3
2. This will stop the over all while loop, ending the program

Implementation of code: see attached C file.

Test and validation:

Discussion: Over all the program went smoothly, the only problem encountered was that a function could only return one value. This meant that the player could not repeatedly play the game and have the function return the amount of games played as well as the amount of games won. This was over come by the player only laying the games once at a time returning the winning value to add to the games won score and having the games played score manually increase by one.