

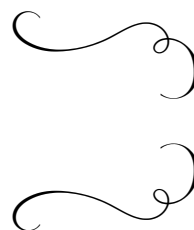
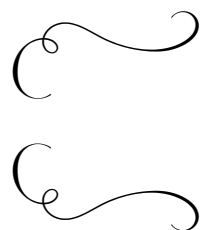


University of Science
Viet Nam National University Ho Chi Minh

REPORT: PROJECT 1(PRO)

Student:
Ho Thanh Nhan
Student ID: 21127122

Lecturers
Ms. Tran Thi Thao Nhi
Mr. Bui Huy Thong



1 - Overall

*Notes: This game is only for players to play 20 times.

Contents

1 - Overall	1
2 - Features	1
2.1 Board design	1
2.2 Game mode and Game play	1
2.3 Display interface	2
2.4 Others	2
3 - Source code organization	2
3.1 Functions and annotations	2
3.2 Running program	3
4 - Illustration	4
5 - References	6

2 - Features

2.1 Board design

- Using Two-Dimensional Arrays with formulas about division and modulus to design the board.
- **Board type**: Zigzag Board.
- Can choose the size board from 3x3 to 7x7 to play.

2.2 Game mode and Game play

- **Game mode and settings**:
 - **Background/text color**: Can choose dark mode or day mode.
 - **Sound setting**: Can choose turning off or turning on sound.
 - **Multiple players** Can type the number of players from 1 to 4.

- **Name of each player:** Type name with one character, the name will appear with two parts, first is the name and the other is the horse number.
- **Multiple horses:** Can type the number of horses of each player from 1 to 4.
- **Dice type:** There are two types of dices: 1 to 3 and 1 to 6.
- **Turn play:** Can type the number of turns of each horse less than 50.
- **Game play:**
 - **Print new board:** After having chosen the game mode, the board with directions and destination will appear after the setting and the mode game.
 - **Winner check:** The winner will be confirmed if one horse has gone to the finish line before the number of turns ends. Or else, the game is tie.
 - **Valid move check:** A horse can't move through the other horses. To pass the nearest horse, you should go to the same position with it and kick it out to the start position (Can't kick the horse with the same name).
 - **Game replay:** You can choose to play again after decide the result of the current game. You only can replay the game 19 times.
 - **Statistical outcome(s):** the statistic will appear at the end of the game.

2.3 Display interface

- **There are 2 mode:** Day mode and Dark mode.
- **Animations:** there are animations when the horses move on the board.

2.4 Others

- If playing with multiple players mode, players must have different names.
- **Sound:** There are 2 sounds: the sound of the game, the sound of each step (that is acceptable).

3 - Source code organization

3.1 Functions and annotations

- **Interface support function:**
 - `void makeColor(); // Turn off Dark mode`
 - `void fill_board_with_arrow(); // Make arrow of directions`
 - `void fill_board_with_space(); // Make blank position`

```
void horizontal_line_edge(); // Make horizontal line 1
void horizontal_line(); // Make horizontal line 2
void vertical_line(bool checkMid, int row); // Make vertical line
void output_board(); // Print the board
```

- **Audio support function:**

```
void Sound_Game_1(); // Sound of game
void Sound_Game_2(); // Sound of each step
```

- **Game support function:**

```
void input_setting(int& boardSize, int& numberOfPlayers, int& numberOfHorses,
char nameOfPlayer[], int& diceType, int pos[]); // Setting before playing game
void setting_color_and_sound(); // Setting color background and turn on/off
sound
void roll_dice(int& step, int first, int last); // Roll dice
bool check_move(int pos[], int step, int i); // Check if the current move is
accepted
void move_turn(int step, int pos[], int i, int j, char nameOfPlayer[], char horse,
bool& check_acceptable); // Process of a moving turn
bool check_win(); // Check if there is a player win or not
void output_not_acceptable(); // Print a line of notification that the current
move is not accepted
bool replay_game(int& first); // Ask the player to play again or not
void outcome(char nameOfPlayer[], int numberOfTies, int play_times); // Print
the number of wins, ties, and total game.
```

3.2 Running program

My code is running on Windows and must be compiled by IDE: Visual Studio Community 2019 and Compiler: MSVC.

Library:

```
#include <iostream>
#include <stdlib.h>
#include <conio.h>
#include <windows.h>
```

Because I use PlaySound function which is only available on Windows Operating System and can only run on Visual Studio 2019.

#pragma comment(lib,"Winmm.lib") supports for the PlaySound function.

4 - Illustration

```
Dark mode? Y(yes) or N(no)
Your choice: N
Do you want to play sound? Y(yes) or N(no)
Your choice: Y
```

Set the mode game and the sound game

```
WELCOME TO HORSES BOARD GAME!!!
Board game size (n x n) (3..7): 3
Number of players (1..4): 2
Name of Player 1: A
Name of Player 2: B
Number of horses of each Player (1..4): 2
Which dice type?
1: 1_3
2: 1_6
Type: 2
Number of turns of each horse (1..50): 2

=====
|-----| |-----| |-----|
|   >>   | |   >>   | |   ↓↓   |
|-----| |-----| |-----|
|-----| |-----| |-----|
|   ↓↓   | |   <<   | |   <<   |
|-----| |-----| |-----|
|-----| |-----| |-----|
|   >>   | |   >>   | |   **   |
|-----| |-----| |-----|
=====
Press Enter to continue... 
```

Settings before starting game

```
Player 1 roll dice: 6 (horse 1)
=====
| | | |
| | | |
| | | |
| A1 | | |
| | | |
| | | |
| | ** | |
| | | |
=====
Please Enter to roll dice...
```

Please Enter to roll dice...

Playing game

```

          1
        ====
Win:      | 00 |
          ====
          =====
Tie:      | 01 |
          =====
          =====
Total:    | 01 |
          =====
Enter to continue...

```

Statistical outcomes

5 - References

- I have discussed with Tran Thanh Quy - 21127411 about the idea.
- <https://cplusplus.com>
- <https://www.geeksforgeeks.org>

THE END