

## Integration Testing

We implemented Bottom Up approach and White Box Testing for integration tests because of the following advantages

- Fault localization is easier
- No waste of time waiting for all modules to be done

Once we were assured of all the units working individually, we tested integrated units in a group.

### 1) Integration test for Main Menu Form

Units:

- Play Button
- Theme Button
- Rules Button

Functions:

1. The Play button successfully opens the Sudoku Board Form
2. The Theme button successfully opens the Theme Form
3. The Rule button successfully opens the Rules Form

Result:

The test performs efficiently with all units functioning properly

Form2

# X-tra Ulteame Sudoku

Play


Themes

Rules

Report Bug

boardForm

Start Pause Time



Check Back

Form3

# RULES!

\* Each number (1-9) must appear exactly once in every row, column and 3x3 square.

\* A number cannot go into any cell if the same color already appears in that row, column or square.

\* Diagonal lines don't count - Only 3x3 squares, the horizontal rows and the vertical columns count.

[Back To Main Menu](#)

Form4

# THEMES

Summer

Fall

Halloween

Christmas

BACK

## 2) Integration test for Sudoku Board Form

### Units:

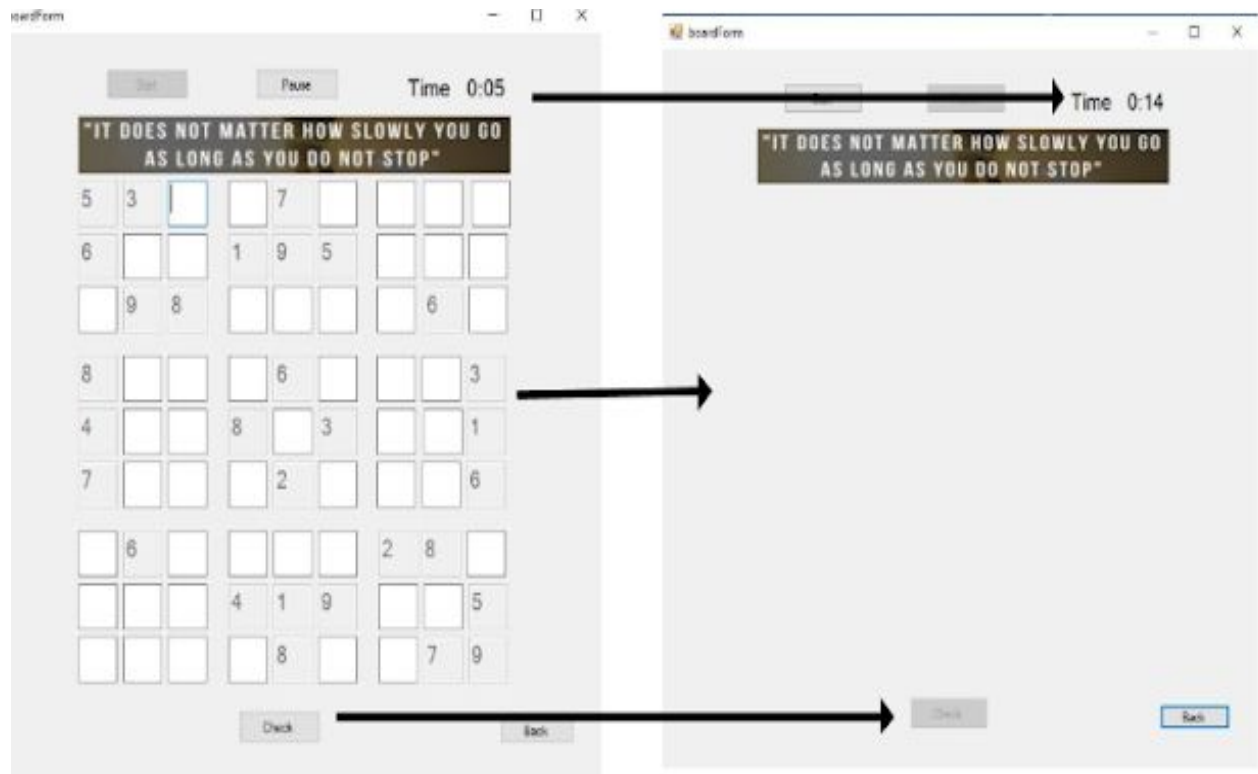
- Start Button
- Pause Button
- Timer
- Check Button
- Back Button

### Functions:

1. Start button successfully removes the “ARE YOU READY?” Picture
2. Start button successfully starts the timer at 0:00
3. Start button successfully makes the board visible
4. Pause button successfully stops the time of running
5. Pause button successfully makes the 9x9 Grid invisible so player can not cheat
6. Pause button successfully enables Start button s the player can resume
7. Timer successfully starts every time the game starts
8. Timer successfully gets paused every time the player presses the Pause button
9. Check button successfully runs through the solution array
10. Check button successfully gets each value that the player input
11. Check button successfully checks that value with the solution array
12. Check button successfully prompts “You have Completed the puzzle” if all the values match
13. Check button successfully prompts “Board is not Solved, Keep Trying” if the players input does not match with the solution board
14. Back button prompts up “YOU QUIT”
15. After the prompt the program goes back to the Main Menu

### Result:

The test performs efficiently with all units functioning properly



boardForm

Start Pause Time 0:05

"IT DOES NOT MATTER HOW SLOWLY YOU GO  
AS LONG AS YOU DO NOT STOP"

5	3			7				
6			1	9	5			
	9	8					6	
8				6				3
4			8		3			1
7				2				6
	6					2	8	
			4	1	9			5
				8			7	9

Check Back

YOU QUIT, WHAT A LOOOOSER

OK

Form2

# X-tra Ultreame Sudoku

Play

Themes

Rules

Report Bug

### 3) Integration test for Rules Form

Units:

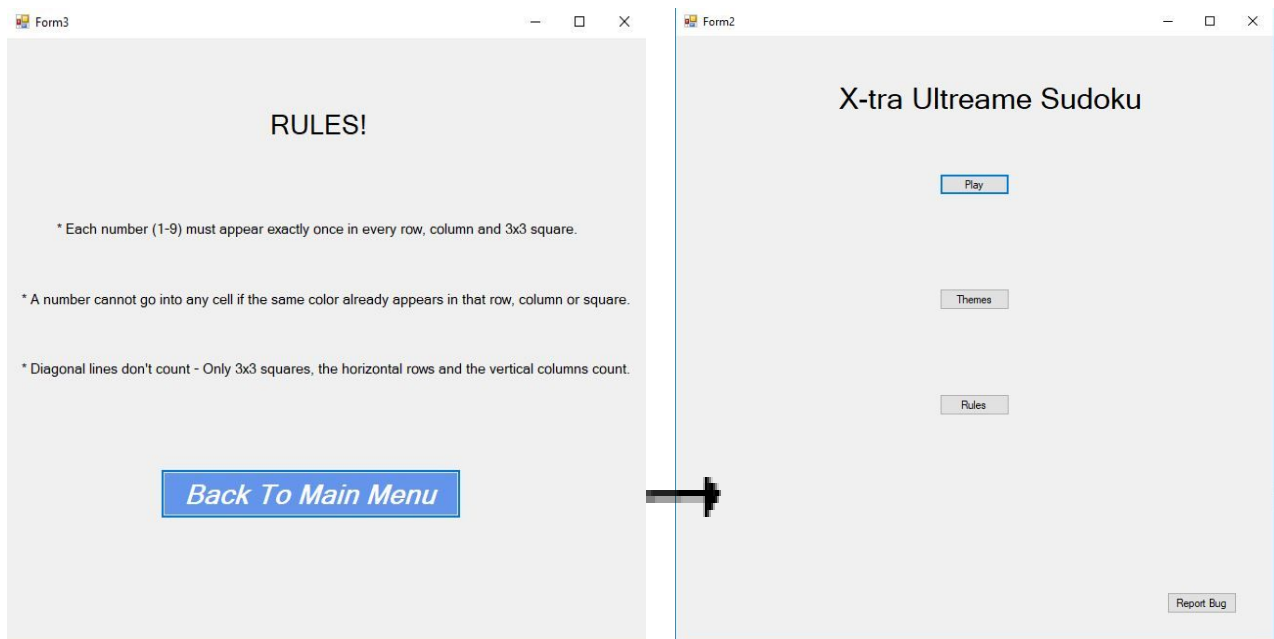
- Back Button

Functions:

1. Back button returns the player back to the Main Menu

Result:

The test performs efficiently with the unit functioning properly



#### 4) Integration test for Theme Form

Units:

- Back Button
- Theme Options (Classic, Spring, Beach, Halloween, Fall, Christmas)

Functions:

1. Back button returns the player back to the Main Menu
2. Different theme options allow user to pick between themes
3. The selected theme shows up on all the form Main Menu, Rules, and Sudoku Board Forms

Result:

The test performs efficiently with all units functioning properly

