

## Excel Scrabble

### Introduction

I recreated the classic board game Scrabble in MS Excel. This would be a nice solution for playing the game remotely with someone over email (you can take turns by emailing the game back and forth to each other).

- The game is designed to handle 1-4 players.
- It sets up a new game board with all the special double letter, triple letter, double word, and triple word squares.
- It randomly selects tiles from a virtual "tile bag" (with identical numbers of letters for each tile type).
- It allows the players to exchange their tiles as needed.
- It allows the player to put tiles onto the game board.
- Helps the players keep score.

### Project Description (How it works)

When the user opens the file they see the following:

**EXCEL SCRABBLE**

3W			2L				3W				2L			3W
	2W				3L			3L				2W		
		2W			2L		2L					2W		
2L			2W			2L					2W		2L	
			2W							2W				
	3L				3L			3L				3L		
		2L			2L		2L				2L			
3W			2L			Start				2L			3W	
		2L			2L		2L			2L				
	3L				3L			3L				3L		
			2W					2W						
2L			2W			2L				2W			2L	
		2W			2L		2L			2W				
	2W				3L			3L			2W			
3W			2L			3W				2L			3W	

Start New Game

Add PointsGet New Tiles

Player 1)0 Points  

Hide / Unhide

Player 2)0 Points  

Hide / Unhide

Player 3)0 Points  

Hide / Unhide

Player 4)0 Points  

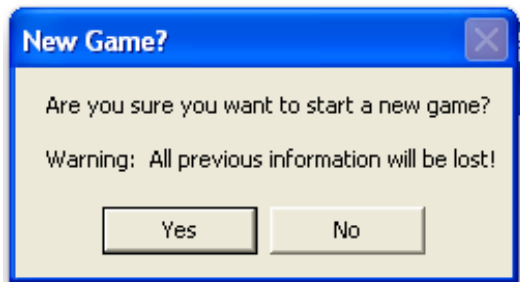
Hide / Unhide

End Game

On the left is the standard game board. The board is colored to show the "special" squares (Double Letter score, Double Word score, Triple Letter score, and Triple Word score). On the right are the tile trays for each player. The buttons to the right of each tray will "hide" or "reveal" the letters on

the tray. The buttons at the top allow the user to start a new game, add points (after a word is placed), and to get new tiles. The button at the bottom ends the game and displays the final scores. Gridlines and Headings are hidden for a “cleaner” look

The user begins by pressing “Start New Game” (note: at anytime during the game the user can start a new game by pressing the “Start New Game” button). When this button is pressed the user is cautioned that they are about to start a new game and that all previous information will be lost. Pressing “Yes” continues. Pressing “No” exits without changing anything.

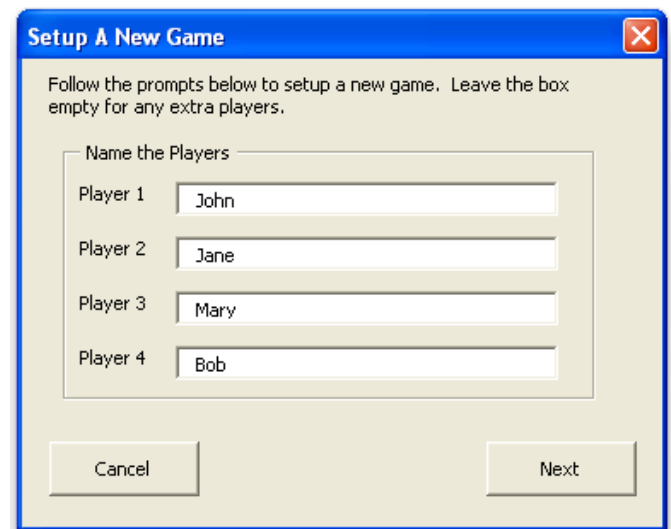


After the user presses “Yes” the following occurs:

- All information on the Gameboard sheet including old player names and scores is removed.
- The entire game board and tray area are redrawn (in case the previous user made any changes).
- The “tile bag” is reset. Scrabble® has 100 tiles. The virtual “tile bag” has the exact number of A’s, B’s, etc. as the real game.

After these events finish, the user is prompted to enter the names of the players:

- The user may then enter in the name of all the players. Any slot that is left empty will be ignored by all forms and macros throughout the game.
- For demonstration purposes, 4 player’s names are entered to the right.
- Clicking “Cancel” will exit the form.



After the user clicks Next:

- One of the players is randomly selected to go first. The file will not select a user name that is left blank. For this example, player 3 was chosen to go first.

Tiles are picked for all of the active players. The tiles are hidden with “?” to prevent the user from seeing other player’s trays. To unhide a tray, click the “Hide/Unhide” button.

**EXCEL SCRABBLE**

3W			2L				3W				2L			3W
	2W				3L				3L				2W	
		2W				2L		2L				2W		
2L			2W				2L				2W			2L
				2W						2W				
	3L				3L				3L				3L	
		2L				2L		2L				2L		
3W			2L				Start				2L			3W
		2L				2L		2L				2L		
	3L				3L				3L				3L	
				2W						2W				
2L			2W				2L			2W				2L
		2W				2L		2L			2W			
	2W				3L			3L				2W		
3W			2L				3W				2L			3W

Start New Game

Add PointsGet New Tiles

Player 1) John0 Points  
? ? ? ? ? ? ?  
Hide / Unhide

Player 2) Jane0 Points  
? ? ? ? ? ? ?  
Hide / Unhide

Player 3) Mary0 Points  
? ? ? ? ? ? ?  
Hide / Unhide

Player 4) Bob0 Points  
? ? ? ? ? ? ?  
Hide / Unhide

End Game

Player 3 will press the “Hide/Unhide” button. She is prompted first before the tray is unhidden. When a player hides a tray, the tray is hidden immediately without a prompt. It’s designed to be easy to hide, but not easy to accidentally unhide. Clicking “Yes” reveals Mary’s tray.

Hide / Unhide

Are you sure you want to unhide?

Only click YES if you are Player 3

YesNo

Player 3) Mary0 Points  
T F O R V O E

The letters on Mary's tray can spell the word FORT. Mary may now record these letters on the game board and click on the "Add Points" button to claim her points.

**EXCEL SCRABBLE**

Start New Game

Add Points

Get New Tiles

Player 1) John 0 Points

Player 2) Jane 0 Points

Player 3) Mary 11 Points

Player 4) Bob 0 Points

End Game

After Mary clicks on the "Add Points" button, the following form is shown:

**Add Points**

If you made more than one word, you can use this prompt as many times as needed to get all your points.

Select your player

What letters did you use?

Letters

Points

Find Points

Keep in mind the following:

- Pink boxes (2W) are a double word bonus.
- Light blue boxes (2L) are a double letter bonus.
- Dark blue boxes (3L) are a triple letter bonus.
- Dark red boxes (3W) are a triple word bonus.

Player Score

How many points did you earn?

Cancel

Next

This form requires the Mary to:

- Select which player she is.
- To enter in the letters from her word (the "Find Points" looks up the point value for each letter).
- To enter in the number of points received.

Mary selects player 3.

Add Points

If you made more than one word, you can use this prompt as many times as needed to get all your points.

Select your player

Player 1

Player 2

Player 3

Player 4

What letters did you use?

Letters

Points

Find Points

Keep in mind the following:

Pink boxes (2W) are a double word bonus.

Light blue boxes (2L) are a double letter bonus.

Dark blue boxes (3L) are a triple letter bonus.

Dark red boxes (3W) are a triple word bonus.

Player Score

How many points did you earn?

Cancel

Next

Next she enters in the letters of her word

Add Points

If you made more than one word, you can use this prompt as many times as needed to get all your points.

Select your player

Player 3

What letters did you use?

Letters

Points

F

O

R

T

Find Points

Keep in mind the following:

Pink boxes (2W) are a double word bonus.

Light blue boxes (2L) are a double letter bonus.

Dark blue boxes (3L) are a triple letter bonus.

Dark red boxes (3W) are a triple word bonus.

Player Score

How many points did you earn?

Cancel

Next

Pressing the “Find Points” button looks up the point value for each letter.

**Add Points**

If you made more than one word, you can use this prompt as many times as needed to get all your points.

Select your player  
Player 3

What letters did you use?

Letters	F	O	R	T			
Points	4	1	1	1			

Find Points

Keep in mind the following:  
Pink boxes (2W) are a double word bonus.  
Light blue boxes (2L) are a double letter bonus.  
Dark blue boxes (3L) are a triple letter bonus.  
Dark red boxes (3W) are a triple word bonus.

Player Score  
How many points did you earn?

Cancel Next

This word has a double word score, so the number of points earned is 14.

The score box will only accept positive integers.

**Add Points**

If you made more than one word, you can use this prompt as many times as needed to get all your points.

Select your player  
Player 3

What letters did you use?

Letters	F	O	R	T			
Points	4	1	1	1			

Find Points

Keep in mind the following:  
Pink boxes (2W) are a double word bonus.  
Light blue boxes (2L) are a double letter bonus.  
Dark blue boxes (3L) are a triple letter bonus.  
Dark red boxes (3W) are a triple word bonus.

Player Score  
How many points did you earn? 14

Cancel Next

Pressing “Next” adds the score to a running total.

The next page prompts Mary for the letters to remove.

On this form, Mary selects the letter that she “used up” from her tray.

Remove Letters

Which letters did you move to the board?

Tiles

T F O R V O E

Check All UnCheck All

Cancel Done

- The letters that she gets points for and the letters that are used up are NOT always the same (e.g. when you build on another person’s word).
- Checking the “Check All” or “UnCheck All” buttons will check or uncheck all the letters for convenience.

In this case, Mary used the letters, T, F, O and R.

- The letters are shown selected.
- Clicking “Done” will remove the letters from her tray.
- Clicking “Cancel” exits the form.

Remove Letters

Which letters did you move to the board?

Tiles

T F O R V O E

Check All UnCheck All

Cancel Done

The game board now looks like this:

EXCEL SCRABBLE

3W			2L				3W				2L			3W
	2W				3L			3L					2W	
		2W				2L		2L				2W		
2L			2W				2L					2W		2L
				2W						2W				
	3L				3L				3L				3L	
		2L				2L		2L				2L		
3W			2L				F				2L			3W
		2L				2L	O	2L				2L		
	3L				3L		R		3L				3L	
				2W			T			2W				
2L			2W				2L				2W			2L
		2W				2L		2L				2W		
	2W				3L			3L				2W		
3W			2L				3W				2L			3W

Start New Game

Add PointsGet New Tiles

Player 1) John0 Points  
? ? ? ? ? ? ?

Hide / Unhide

Player 2) Jane0 Points  
? ? ? ? ? ? ?

Hide / Unhide

Player 3) Mary14 Points  
? ? ? ? V O E

Hide / Unhide

Player 4) Bob0 Points  
? ? ? ? ? ? ?

Hide / Unhide

End Game

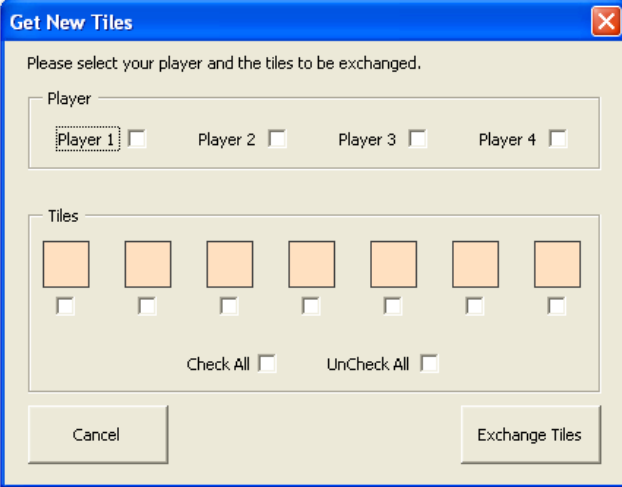
The tiles that Mary used were removed from her tray and the tiles that she placed on the board are automatically recolored. Tiles placed on special spaces (2L, 3L, 2W, 3W) are not recolored to remind the player how valuable those spots are. She has a new score of 14 points.

Player 3) Mary14 Points

				V	O	E
--	--	--	--	---	---	---

Hide / Unhide

Mary now needs to replenish the tiles on her tray. Clicking “Get New Tiles” brings up the following form:

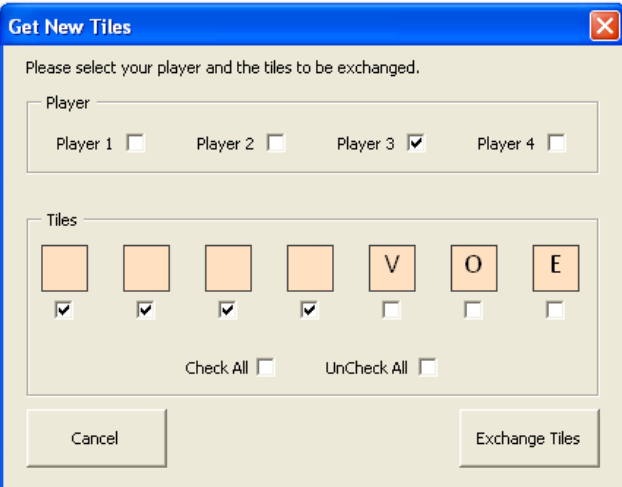
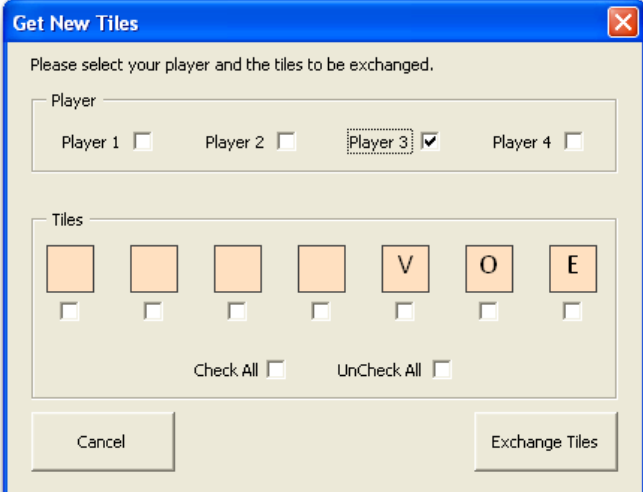


Checking one of the Player boxes will pull up the players tray into the beige boxes.

- The program will not allow you to change the trays for a hidden tray or if you do not have a player.
- The user may exchange his/her tiles at any time using this form.
- The official rules only allow you to replenish your tray once. The program allows you to do it more than once in case you have different rules for your household.

When Mary clicks on Player 3, her tray is loaded into the form.

- It will load the entire tray including blank empty slots.



Mary then selects the 4 empty slots that need to be filled.

- For convenience, the user can quickly select (or unselect) the entire tray using the “Check All” and “UnCheck All” buttons.
- Clicking on Exchange tiles will randomly select 4 new tiles from the “Tile Bag”
- If there are letters in the beige boxes, those letters are first returned to the “Tile Bag” before new tiles are randomly selected.

Four new tiles are randomly selected and placed in Mary's tray. Her tray now looks like:

Player 3)	Mary	14 Points					
K	B	O	N	V	O	E	Hide / Unhide

Mary's turn is now over; she hides her tray by pressing the "Hide/Unhide" button. After pressing it, all the positions in her tray are shown by "?".

Player 3)	Mary	14 Points					
?	?	?	?	?	?	?	Hide / Unhide

### Continuing Gameplay

The game continues with each player taking turns until one of the following occurs:

- A player selects the "End Game" Button.
- The last tile is drawn from the bag.

When the game ends the final scores are displayed. The game board is left intact incase any players want to look for ways they could have played differently. Pressing "Start New Game" will clear the game board and start a new game.

End of Game!

X

The game is over! The scores for each player are below:

Player 1, John: 36

Player 2, Jane: 15

Player 3, Mary: 62

Player 4, Bob: 28

OK

### **Expansions Opportunities**

There are multiple opportunities to expand on this game.

- A dictionary function would be useful to “challenge” words that players disagree on. VBA can query a website like merriamwebster.com and see if the word is valid.
- A more advanced scoring system could also be implemented. I attempted to introduce this functionality, but I ran into trouble when more than one word was formed at the same time (e.g. when two words are parallel to each other). Another problem I ran into was when a special scoring spot (2L, 3L, 2W, 3W) was used twice.
- Another expansion would be to subtract the point value of any remaining tiles from a player score at game end. I left this out as different families use different rules.
- A “help” function that looks for words that can be made with the tiles on your tray. This would be a cheat, but it would be interesting to implement.

### **Conclusion**

This project took much longer than I thought it would. The largest problem (that I eventually solved) was figuring out how to manage the “Tile Bag”. I wanted VBA to remember what was left in the bag even if a user closed the file, mailed it to someone, and another person reopened it later. I solved this by having a hidden worksheet that contained the remaining bag tiles.

My biggest overall problem was with the scoring system. I really wanted the program to automatically figure out which word you place and know how to score it. I had to pare down the scope of the scoring function to get it to work.