

Breakout – A game(In order to run the app better, please set the Scale to 100% and the Display Resolution to 1920*1080).

Requirement to test	Test Data Input	Expected Outcomes	Actual Outcomes
1.1. Introduction form is displayed when the program is run	Double click "Breakout.exe" to run	1. Introduce form shows in the center of the screen. 2. There is a introduction about how to play the game showing on the top of the form. 3. Ranking, Start and Quit buttons show on the bottom of the form. 4. A Textbox shows in the middle of the form.	1. Introduce form shows in the center of the screen. 2. There is a introduction about how to play the game showing on the top of the form. 3. Ranking, Start and Quit buttons show on the bottom of the form. 4. A Textbox shows in the middle of the form.
1.2. Ranking button works correctly	Click the Ranking button	1. Introduction form hides; 2. Ranking form shows.	1. Introduction form hides; 2. Ranking form shows.
1.3. Start button works correctly	1. Click the Start button; 2. Input your name; 3. Click the Start button again;	1. Tip "Please enter your name before starting the game"; 2. Introduction form hides and the Game form shows.	1. Tip "Please enter your name before starting the game"; 2. Introduction form hides and the Game form shows.
1.4. Quit button works correctly	Click the Quit button	The application quit.	The application quit.
2.1 Ranking form displays correctly.	Click the Ranking button	1. A Datagridview shows top 10 users' name and scores order by the descent. 2. A Back button.	1. A Datagridview shows top 10 users' name and scores order by the descent. 2. A Back button.
2.2. Back button works correctly.	Click Back Ranking button	1. Back to the Introduction form if it comes from the Introduction form. 2. Back to the Result form if it comes from the Result form.	1. Back to the Introduction form if it comes from the Introduction form. 2. Back to the Result form if it comes from the Result form.

3.1. The Game form is displayed when clicking the Start button.	Click the Start button;	<p>1. There are 8*12 bricks with different colors show on the top of the form; Some bricks have special feature:</p> <ul style="list-style-type: none"> ✓ +10: get more 10 points. ✓ +20: get more 20 points; ✓ Bomb: destroy all bricks around it. ✓ Stretch: include the length of the paddle; ✓ Shrink: reduce the length of the paddle, the minimum is 2. ✓ Plus: add 1 ball. <p>2. Score displays on the left bottom corner;</p> <p>3. A pause button displays on the right bottom corner;</p> <p>4. A level label shows on the middle bottom of the form.</p> <p>5. A paddle shows above the Level label and a ball on the paddle.</p>	<p>1. There are 8*12 bricks with different colors show on the top of the form; Some bricks have special feature:</p> <ul style="list-style-type: none"> ✓ +10: get more 10 points. ✓ +20: get more 20 points; ✓ Bomb: destroy all bricks around it. ✓ Stretch: include the length of the paddle; ✓ Shrink: reduce the length of the paddle, the minimum is 2. ✓ Plus: add 1 ball. <p>2. Score displays on the left bottom corner;</p> <p>3. A pause button displays on the right bottom corner;</p> <p>4. A level label shows on the middle bottom of the form.</p> <p>5. A paddle shows above the Level label and a ball on the paddle.</p>
3.2. Paddle move when left and right key pressed.	<p>1. press Left key;</p> <p>2. press Right key;</p>	<p>1. the paddle moves left and stops when it reaches the border.</p> <p>2. the paddle moves right and stops when it reaches the border.</p>	<p>1. the paddle moves left and stops when it reaches the border.</p> <p>2. the paddle moves right and stops when it reaches the border.</p>
3.3. Ball move correctly	Move paddle to bound the ball	<p>1. The ball moves up automatically.</p> <p>2. The ball bound back when it hit the</p>	<p>1. The ball moves up automatically.</p> <p>2. The ball bound back when it hit the</p>

		left, right, bottom and top of the bricks. 3. The ball bound back when it hit the left, right and paddle. 4. The ball bound back when it hit the left, right and top wall. 5.The system play sound when the ball hit paddle and wall.	left, right, bottom and top of the bricks. 3. The ball bound back when it hit the left, right and paddle. 4. The ball bound back when it hit the left, right and top wall. 5.The system play sound when the ball hit paddle and wall.
3.4. The bricks disappear when the ball hit them	Move paddle to bound the ball	1.The brick disappears when the ball hit the brick. 2.The score of the brick add to total score. For normal brick add 10 point. +10 brick add 20 point. +20 add 30 point. 3. When different bricks disappear, the system plays different sound. 4.If the brick with bomb is hit, the bricks around the it also disappear and the score add together. 5.If the brick with Stretch or Shrink is hit, the paddle becomes longer or shorter. 6.If the brick with Plus is hit, a new ball appears.	1.The brick disappears when the ball hit the brick. 2.The score of the brick add to total score. For normal brick add 10 point. +10 brick add 20 point. +20 add 30 point. 3. When different bricks disappear, the system plays different sound. 4.If the brick with bomb is hit, the bricks around the it also disappear and the score add together. 5.If the brick with Stretch or Shrink is hit, the paddle becomes longer or shorter. 6.If the brick with Plus is hit, a new ball appears.
3.5. Pause button works correctly	1.Click Pause button. 2.Click Resume button.	1. The ball and paddle stop. 2. The paddle does not move when the	1. The ball and paddle stop. 2. The paddle does not move when the

		<p>mouse moves or when the left or right keys are pressed.</p> <p>3. The ball and paddle continue to move after the Resume button is clicked.</p>	<p>mouse moves or when the left or right keys are pressed.</p> <p>3. The ball and paddle continue to move after the Resume button is clicked.</p>
3.6. game over	The paddle misses the ball	<p>1.The Game form disappears.</p> <p>2. Play the Death sound.</p> <p>3. The Result form shows with “Game Over! your final score is: *. Your best ranking is * with score(*)”</p> <p>4. If the score is bigger than the top 10, it will be recorded to the list.</p>	<p>1.The Game form disappears.</p> <p>2. Play the Death sound.</p> <p>3. The Result form shows with “Game Over! your final score is: *. Your best ranking is * with score(*)”.</p> <p>4. If the score is bigger than the top 10, it will be recorded to the list.</p>
3.7. game finish	All bricks is hit	<p>1.The Game form disappears.</p> <p>2. Play the Good Job sound.</p> <p>3. The Result form shows with “Congratulations! You have completed level *. Your current score is: *. Your best ranking is * with score(*)”.</p> <p>4. If the score is bigger than the top 10, it will be recorded to the list.</p>	<p>1.The Game form disappears.</p> <p>2. Play the Good Job sound.</p> <p>3. The Result form shows with “Congratulations! You have completed level *. Your current score is: *. Your best ranking is * with score(*)”.</p> <p>4. If the score is bigger than the top 10, it will be recorded to the list.</p>
4.1. Result form displayed when the game is over or finishes	Reach 3.6 or 3.7	<p>1. Next, Replay, Ranking and Quit buttons display at the bottom of the form.</p> <p>2. If the game is over or the level reaches</p>	<p>1. Next, Replay, Ranking and Quit buttons display at the bottom of the form.</p> <p>2. If the game is over or the level reaches</p>

		the maximum, the Next button is disabled.	the maximum, the Next button is disabled.
4.2. Ranking button works correctly	1. Click the Ranking button. 2. Click the Back button	1. The Result form hides. 2. The ranking form shows. 3. Back to the Result form when clicking the back button.	1. The Result form hides. 2. The ranking form shows. 3. Back to the Result form when clicking the back button.
4.3. Replay button works correctly	Click the Replay button.	1. The Result form disappears. 2. The Game form shows with level 1 and score 0;	1. The Result form disappears. 2. The Game form shows with level 1 and score 0;
4.4. Quit button works correctly	Click the Quit button	The application quit.	The application quit.
4.5 Next button works correctly	Click the Next button	1. The Result form disappears. 2. The Game form shows with new level and the previous score; the new score will add to the score. 3. The speed of the ball becomes faster. 4. The bricks with Streth become fewer. 5. The bricks with Shrink become more.	1. The Result form disappears. 2. The Game form shows with new level and the previous score; the new score will add to the score. 3. The speed of the ball becomes faster. 4. The bricks with Streth become fewer. 5. The bricks with Shrink become more.