Game

- font : sf::Font

- tittle_display : sf::Sprite
- tittle_display_texture : sf::Texture
- spritesheet_rect : sf::IntRect
- animation_timer : sf::Clock
- animation_back : bool
- enter_text : sf::Text
- background : sf::Sprite
- background_texture : sf::Texture

- mode_selection_text : sf::Text
- one_player_button : sf::Sprite
- one_player_button_texture : sf::Texture
- two_player_button : sf::Sprite
- two_player_button_texture : sf::Texture
- mode_selected : bool

- paddle : Paddle
- ball : Ball
- pause : bool
- pause_option_selected : bool
- game_finished : bool
- random_num : int
- score_blue : int
- scoreboard_blue : sf::Text
- score_red : int
- scoreboard_red : sf::Text
- pause_text : sf::Text
- exit_button : sf::Sprite
- exit_button_texture : sf::Texture
- resume_button : sf::Sprite
- resume_button_texture : sf::Texture
- grey_overlay : sf::Sprite
- grey_overlay_texture : sf::Texture
- winner_text : sf::Text
- wall[8] : sf::Sprite
- wall_blue_texture : sf::Texture
- wall_red_texture : sf::Texture

- init() : bool
- update(in dt : float)
- render()
- mouseClicked(in event : sf::Event)
- keyPressed(in event : sf::Event)

- playAnimation()
- checkScore(in score : int)
- collision(in sprite : sf::Sprite, in ball_x : float, in ball_y : float) : bool
- resetGame()

Ball

- ball_speed : float
- ball_texture : sf::Texture
+ vectors[2] : float
+ unit_vector[2] : float
+ ball_x : float
+ ball_y : float
+ ball : sf::Sprite

+ init() : bool
+ normalise()
+ moveBall(in dt : float)
+ checkEdge() : int
+ resetGame()

Paddle

- paddle_speed : float
- paddle_blue_texture : sf::Texture
- paddle_red_texture : sf::Texture
+ paddle_blue : sf::Sprite
+ paddle_red : sf::Sprite

+ init() : bool
+ moveBluePaddle(in dt : float)
+ moveRedPaddle (in dt : float)
+ botRedPaddle(in dt : float, in ball_x : float, in ball_y : float, in random_num : int)
+ resetGame()

```
Collision
   │
   ▼
Get X and Y
coordinates of the
center of ball
   │
   ▼
Is X coordinate of ball within the X value of the sprite ──Yes──┐
   │                                                             │
   No                                                            │
   ▼                                                             │
Return false                                                     │
                                                                 ▼
                           Is the ball above the sprite ──Yes──▶ Set the ball direction vector Y to -5 ──▶ Return true
                                    │
                                    No
                                    ▼
                           Is the ball below the sprite ──Yes──▶ Set the ball direction vector Y to 5 ──▶ Return true
                                    │
                                    No
                                    ▼
                           Is the Y coordinate of the ball within the upper part of the sprite ──Yes──▶ Inverse the ball direction vector X ──▶ Did the ball collide with the sprite while going up ──Yes──▶ Set the ball direction vector Y to -7.5 ──▶ Return true
                                    │                                                                          │
                                    No                                                                         No──▶ Set the ball direction vector Y to 2.5 ──▶ Return true
                                    ▼
                           Is the Y coordinate of the ball within the middle part of the sprite ──Yes──▶ Inverse the ball direction vector X ──▶ Did the ball collide with the sprite while going up ──Yes──▶ Set the ball direction vector Y to -5 ──▶ Return true
                                    │                                                                          │
                                    No                                                                         No──▶ Set the ball direction vector Y to 5 ──▶ Return true
                                    ▼
                           Is the Y coordinate of the ball within the lower part of the sprite ──Yes──▶ Inverse the ball direction vector X ──▶ Did the ball collide with the sprite while going up ──Yes──▶ Set the ball direction vector Y to -2.5 ──▶ Return true
                                    │                                                                          │
                                    No                                                                         No──▶ Set the ball direction vector Y to 7.5 ──▶ Return true
                                    ▼
                           Return false
```