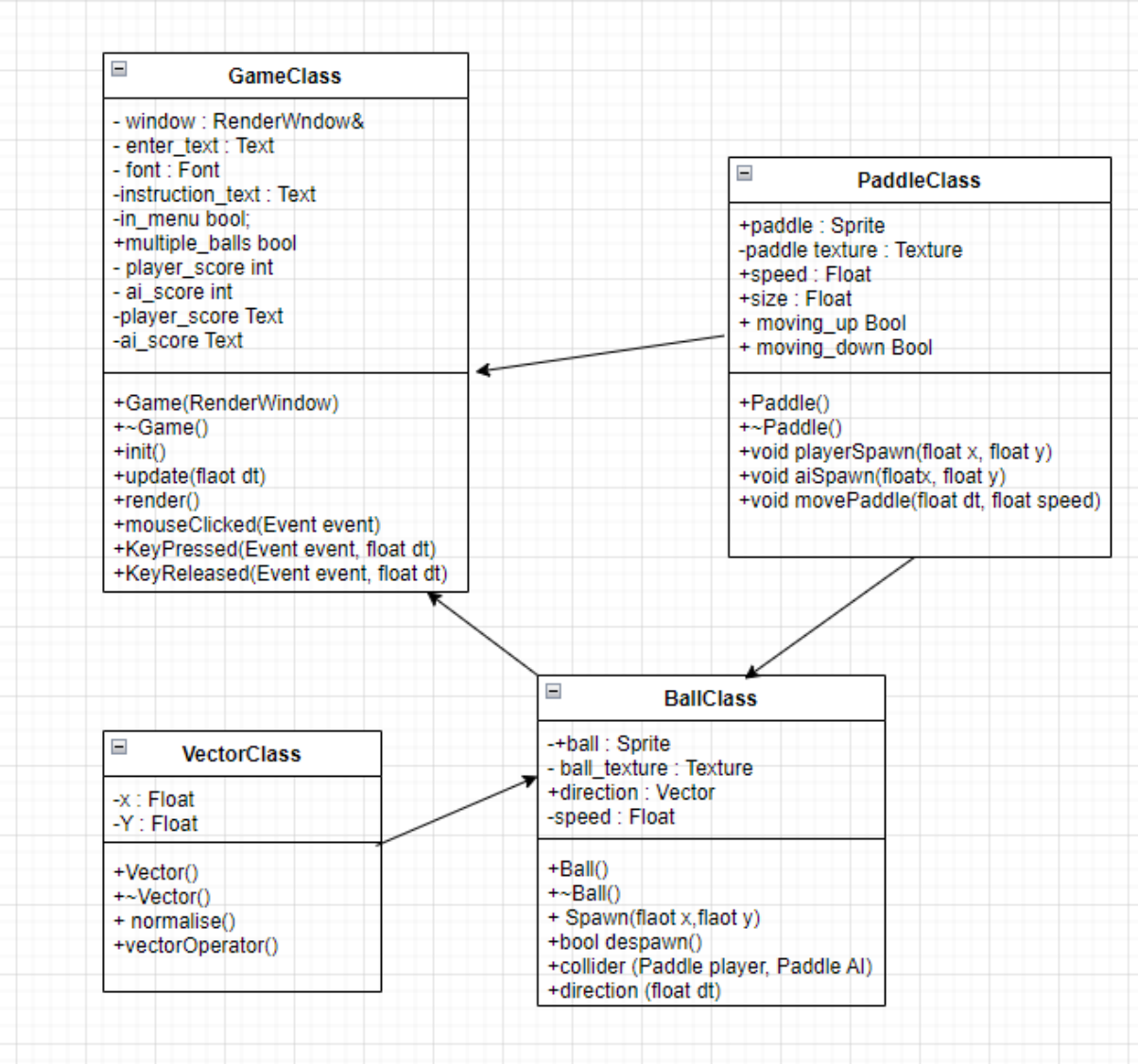
Pong Documentation

Pong is a simple two player-based game where there are a couple of Classes that can be created. The game class, the paddle class, the vector class, and the ball class. How these classes interact are all shown below in the UML diagram below.



Collision Detection

I will be using the AABB method to do collision. This is where the four corners of a rectangle are taken and compared to the four corners of another rectangle to see if there is any overlap and therefore any collision.

```
if(ball.x < paddle.x + paddle.width
 && ball.x + ball.width > paddle.x
&& ball.y < paddle.y + paddle.height
 && ball.y + ball.height > paddle.y)
```

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Key Handling

To achieve simultaneous movement for both paddles we will need to handle key handling differently. We can take a bool value when a key is pressed and move the paddle within update. When the key is released the paddle will then stop updating.

```
If (Key is pressed)

{

Bool = true

}

If (Key is released)

{

Bool = false

}

Update()
{

If (Bool = true)

  {

   Paddle move

  }

}
```

Respawn

When the ball hits the edge of the wall then it will need to be respawned and points must be allocated.

```
If (ball .x > int)

{

Ball.setPositon (int, int)

Score = score + 1

}
```

Vector Normalise

```
Ball.magnitude = ball.x * ball.x + ball.y *ball.y

Ball.magnitude = sqrt(ball.magnitude)

Ball.x = ball.x/ball.magnitude

Ball.y = ball.y/ball.magnitude
```

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Extras

If I do get extra time, I will attempt to improve upon my game by adding several features.

- Adding more balls – this should be easily done as I would have created a class for the balls and I would simply reuse the functions for different balls.
- AI – I would implement an AI as seen below with pseudocode

Rand_numb = rand(1,10) – generated once at the start then after whenever the ball is coming to the AI paddle.

If (!Rand_numb == 10)

{

Get ball.position

Get ball.vector

Estimate where the ball will hit the AI side of the wall

Move Paddle to there

}