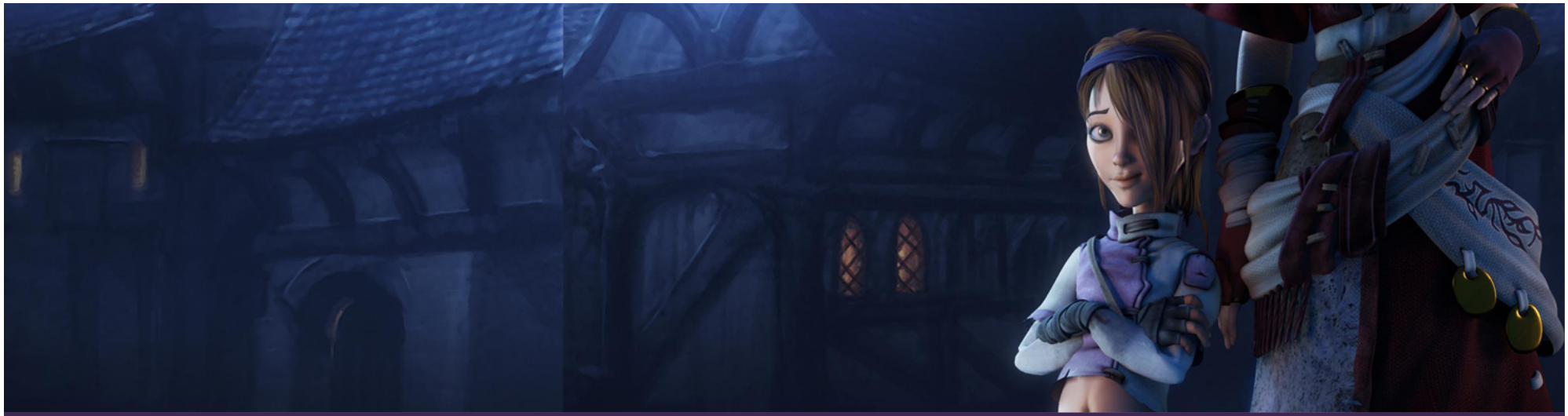

FALMOUTH
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Programming Workshop 5: SDL Programming

GAM340: Professional Practice
BA(Hons) Game Development

FALMOUTH UNIVERSITY

Digital Attendance

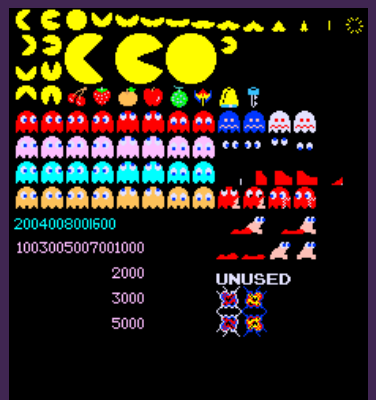
- The system replaces paper-based registration with a network of card readers in Learning & Teaching spaces around the college.
- We hope it will save lots of time!
- You 'TAP' your ID card to register your attendance in a session.
- The window for registration is from 15 minutes before a session is timetabled to start through to 15 minutes after the start time.

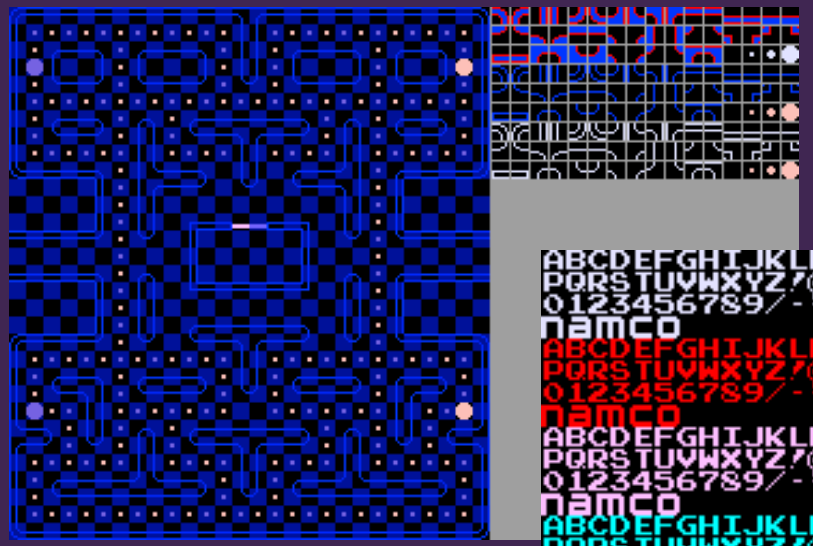
- Learning Objectives
  - **Feedback** on the SDL podcast
  - **Review** the programming activities in the podcast
  - **Create** a font renderer to demonstrate texture page mastery
  - **Design** & **build** Pong using OO techniques

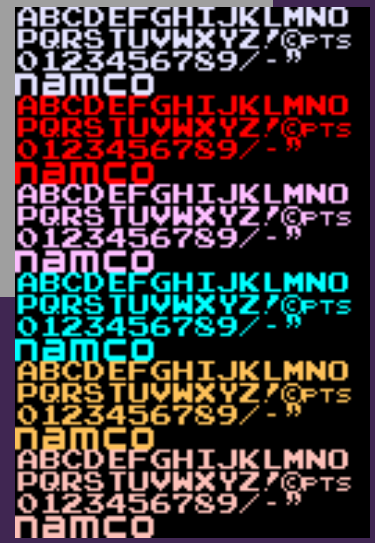
- SDL Podcast
  - Did it make any sense?
  - How far did you get with it?

- 00. Balls!
  - Work out how to:
    - Store some balls
    - Update them so they bounce in the screen
    - Use the keyboard controller to add and remove balls on demand

- Texture page use in SDL
  - Fundamental for displaying naff 8-bit text for debug & in-game
  - Also for working with texture pages (atlases)







- 01.sdl_printfont
  - Load a bmp font file
  - Convert it to 32-bit
    - Alpha channel that can be alpha tested
  - Work out the relationship between characters in a string and their glyphs in the font texture
  - Draw them in the correct place
  - Use scaling to make things bigger

- Booch OO Development method

- Booch OO Development method
  - Pong (1972)
    - First successful arcade game, launched Atari to become the dominant player of the 1st & 2nd computer consoles generations
    - Cause of first games lawsuit

- Booch OO Development method
- Pong game design
  - Pong is a two player game of tennis. Players take it in turns to move up and down the screen to hit the ball to each other. If the player misses the ball and it goes off the screen, the other player is awarded a point and the serve. If the ball goes to the top or the bottom of the screen, the ball will bounce back. The winner is the first player to 10 points.

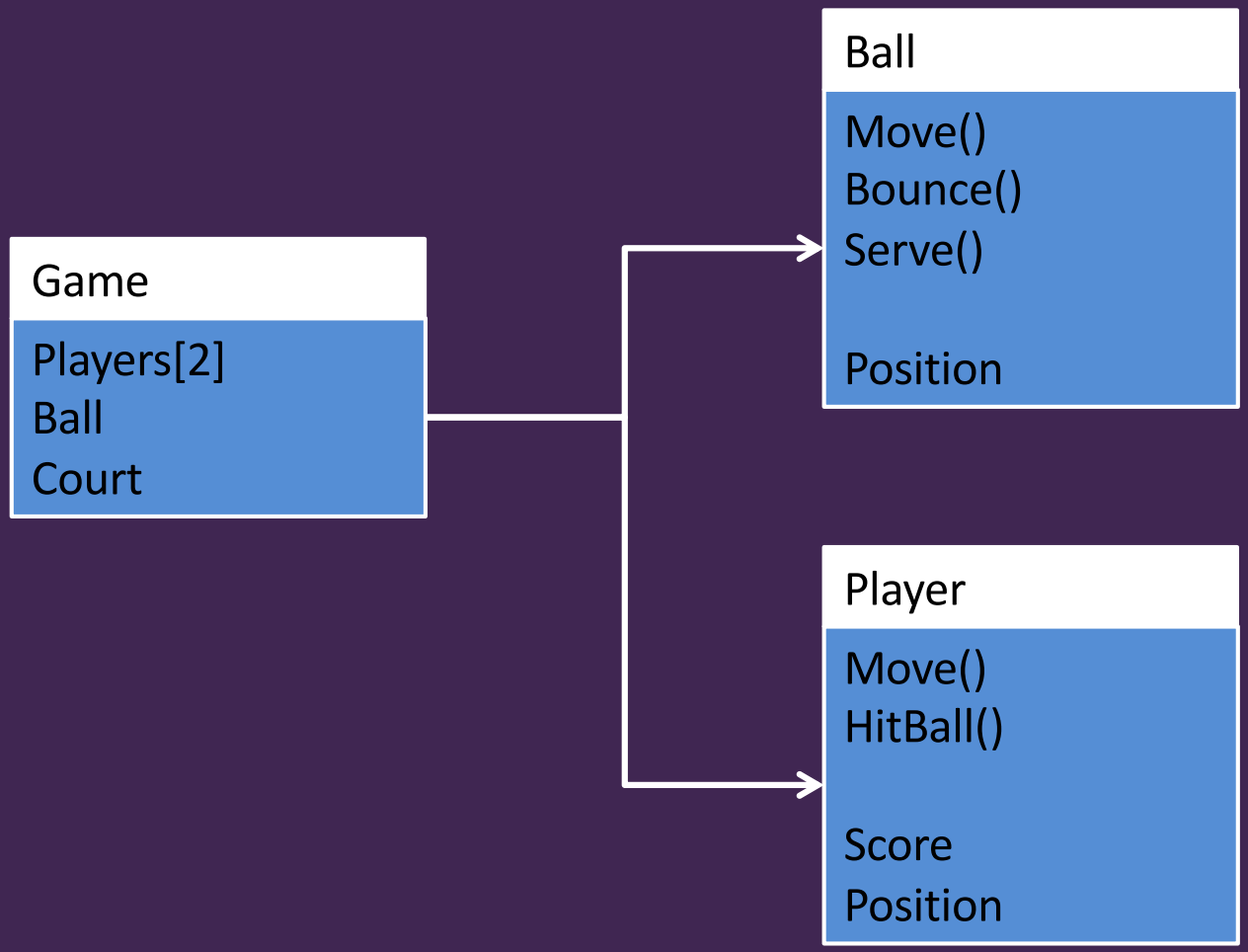
- Booch OO Development method
- Pong game design
  - Pong is a two player game of tennis. Players take it in turns to move up and down the screen to hit the ball to each other. If the player misses the ball and it goes off the screen, the other player is awarded a point and the ball is served into the opponents part of the court. If the ball goes to the top or the bottom of the screen, the ball will bounce back. The winner is the first player to 10 points.

Class	Method	Attributes
Player	Move Hit ball	
Ball	Move Bounce Serve	
		Players [2] Ball

- Booch OO Development method
- Pong game design
  - It's the nature of designer-led game design that some aspects are implicit
    - So as implementers, you need to fill in the games to create something that is systemic
    - This is the nature of iterative activities -> it's v. difficult to capture everything in one (or a few goes)

Class	Method	Attributes
Player	Move Hit ball	Score Position
Ball	Move Bounce Serve	Position
Game	Play	Players [2] Ball Court

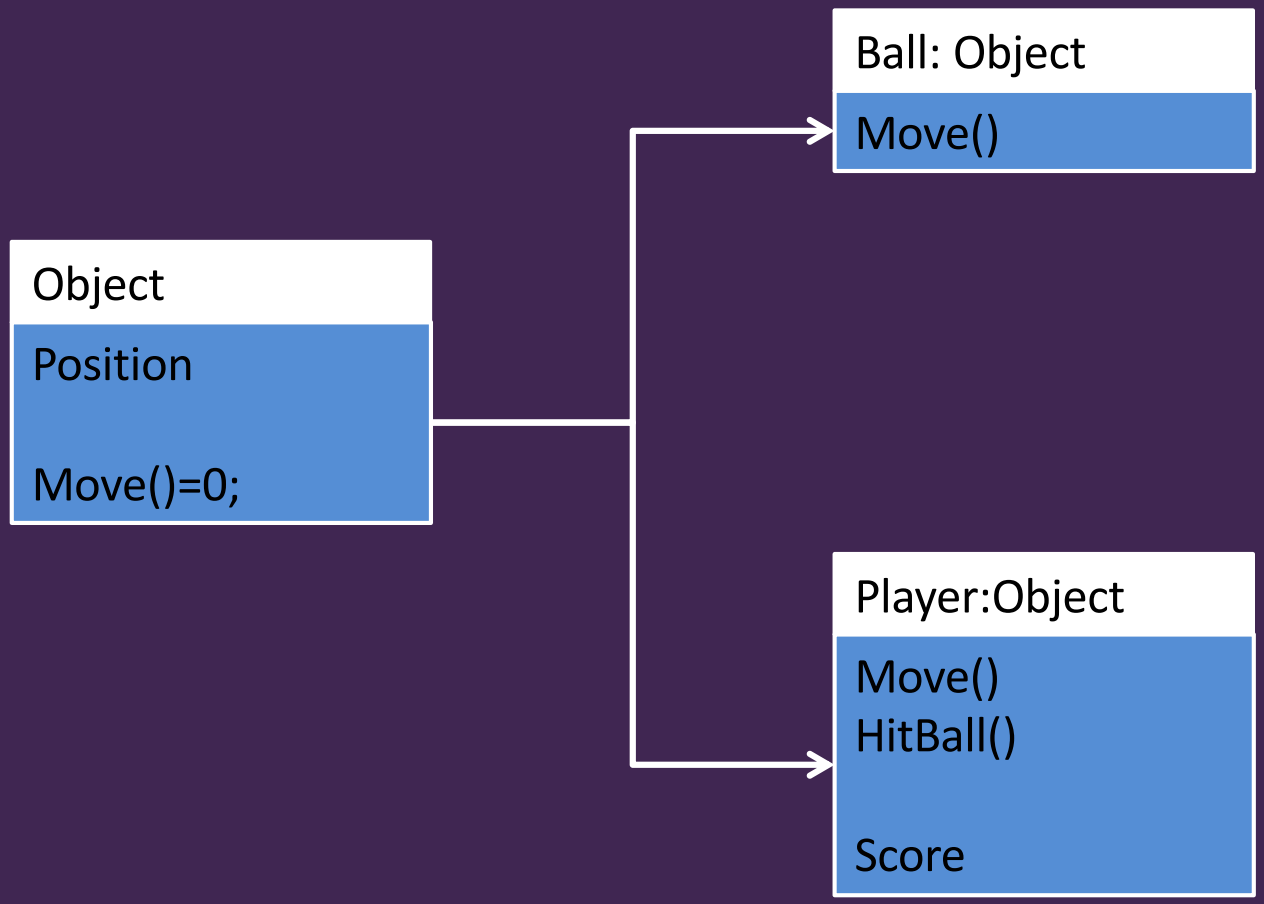
- Booch OO Development method
- Pong game design – as UML



- Booch OO Development method
- Design / code choice
  - What kind of functionality and data will they have?

Class	Method	Attributes
Player	Move Hit ball	Score Position
Ball	Move Bounce Serve	Position
Game	Play	Players [2] Ball Court

- Booch OO Development method
- Pong game design – as UML



- 01. simple pong
  - Simple working pong game within SDL framework

- Booch OO Development method
- Pong dynamic behaviour
  - Pong isn't just about classes and objects, what happens when they interact?
  - What states are in the game and how does the game go from one state to another (transition)
    - This is kind of implicit with the design document
    - As implementers, it's our job to dig into this to create straw man systems that can be refined

- Booch OO Development method
- Pong dynamic behaviour

Entry State	Transition	Description
Attract	Start	Put game in mode where players can start game
Start	P1 Serve	Game serves to player 1
P1 / P2 Serve	Rally	The game will serve at the player who lost the last point
Rally	P1 / P2 Miss	Ball travels between players
P1 / P2 Miss	P1 / P2 Serve	Player misses ball, server back to player

- Booch OO Development method
- 03.simple_states
  - View the game as a set of states `StateMachine::state`
    - Use `StateMachine` class to hold them
    - And manage state changing

- To Do
  - Make Pong into a state-based game using the state machine approach
  - Develop Breakout Game from ‘designer’ brief
    - Build OO model of game
    - Build state model of game
    - Make work in SDL/C++
  - Use flappybird texture page as a starting point for your own flappy clone
    - https://flappybird.fandom.com/wiki/Sprites