COMP140-GAM160: Creative Computing: Hacking & Further Game Programming

1: Introduction to Object Orientated Programming

Learning outcomes

- **Understand** Object Orientated principles
- **Understand** the Single Responsibility principle
- **Implement** a simple class hierarchy

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Assignments

Assignment 1

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- The outcomes of the coursework are the same, just a slightly different structure

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- We expect for you to build something or embedded the controller into an item

Examples from Last Session

- Safe - `https://youtu.be/X4wB3AakSvA`
- Tank - `https://youtu.be/AL3LrcRskig`
- Skateboard - `https://youtu.be/Wj4EbOyUejE`
- Powerglove - `https://youtu.be/dp9xM55eZUM`
- Snooker - `https://youtu.be/4XFZ4PMoPTE`

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Alt-Controller

Notable Alt-Controller Games

- Steel Battalion - https://www.youtube.com/watch?v=rGgxRsaGdcA
- Deep VR - https://www.polygon.com/2015/3/2/8133675/deep-vr-meditation
- Space Box - https://www.gamasutra.com/view/news/290700/ALTCTRLGDC_Showcase_Spacebox.php
- Line Wobbler - http://wobblylabs.com/projects/wobbler
- GDC Alt-Ctrl 2017 Roundup https://www.youtube.com/watch?v=IoqAJ7ynuhw
- Nintendo Labo - https://www.nintendo.co.uk/Nintendo-Labo/Nintendo-Labo-1328637.html

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- **Keep this document, it will feed into your coursework!**

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Object Orientated Principles

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- We can add our own data types by declaring and defining Classes
- Classes are a collection of data and functions which operate on the data
- We can then use these classes like any built-in data type

Class Examples - C++

```
class Player
{
public:
    Player()
    {
        Health=100;
    };

    void TakeDamage(int health)
    {
        Health-=health;
    };

    void HealDamage(int health)
    {
        Health+=health;
    };

    ~Player(){};
private:
    int Health;

};
```

Class Examples - C# Unity

```
class Player : MonoBehaviour
{
    private int Health=100;

    void Start()
    {
        Health=100;
    }

    public void TakeDamage(int health)
    {
        Health-=health;
    }

    public void HealDamage(int health)
    {
        Health+=health;
    }
}
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- Comments! You should add comments before each function!

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Single Responsibility Principle

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- Take for example a Player class which handles input, physics, weapons, health and inventory
- This should probably be split into several classes (Remember Class naming from previous slide)


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- Unity Starter Project - `https://github.com/Falmouth-Games-Academy/bsc-course-materials/raw/2017-18/COMP140/01/GAM160-Ex1.zip`

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- C++ Starter Project - Live Coding