[STAThread]?

Library vs Engine?

Variable/fluid time step

Deterministic games

Game loops → Render() → Track time → Input detection → Do action & update

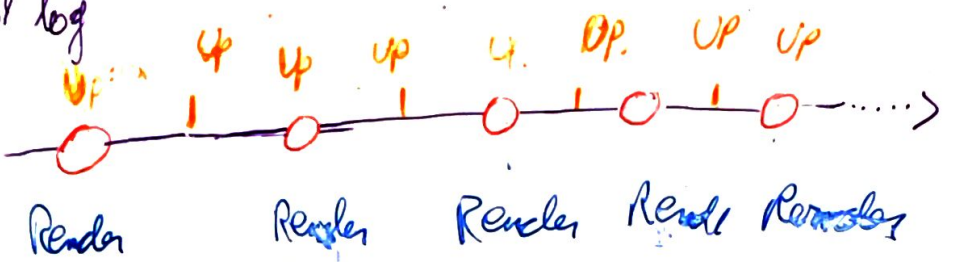
Text Based game
trivia game

• Game physics → laws of mechanics
Damping

• Interfaces
• Monogame?

DON'T WORRY ABOUT RENDERING!

Residual lag

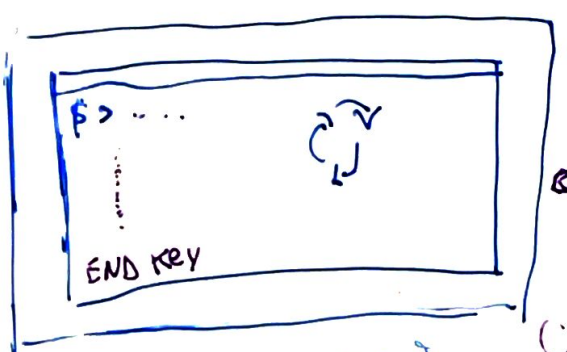


Up = Update

Delta time: time that elapsed between previous and current frame

ex: 60fps : 0.0166... time(60f)

Makes the game framerate independent



Reference the SFML to your IDE?
↳ use Nuget

• Store strings in an Array

Check if File exists
↳ How to do so?

Handle file and directory path creation with given input

• Track the player's last state
↳ How to get the state?
Load/Create File:
Q1: First & last Name
Q1.5: Mood
Q2: Hobbies
END & Save file

Adding the option where parameters can be nulled

"@" means a verbatim String. It ignores the escape characters in a string

How can I read the time elapsed Inside of my loop?

→ Prevents inconsistency and improves clean code

some kind of updating the gameloop

Would be nice

* Use of Enums, Dictionaries
* Asynchronous Programming & await

If I want a Stopwatch use either Task ...

* deltaTime → understand delays in the loop

```
Void main()
{
    Game game = new Game();
    Game.Introduction(); //Maybe
    Game.Display();
    while (!Game.Finished())
    {
        Game.Step();
        ...
    }
}
```

Let's start using more Classes, interfaces, Vectors, Files, inheritance!

Give a last try to play audio

↳ if it works, maybe move into making it as OO

Domain Specific Modeling

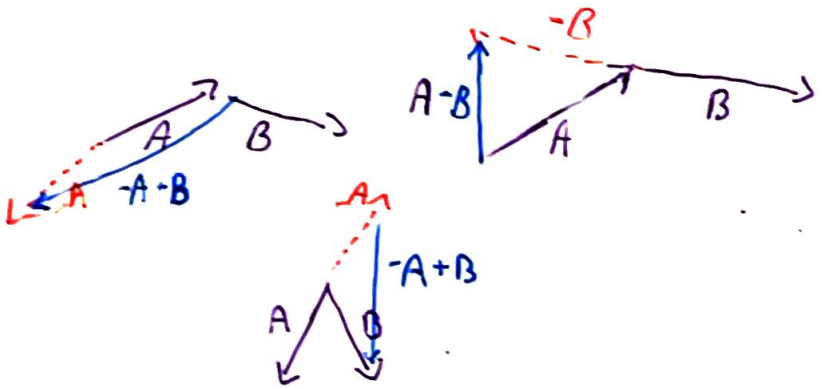
Procedural programming: on making calls to functions/routines/subroutines

↳ Chunking functions into smaller ones

Unity Player
IL2CPP

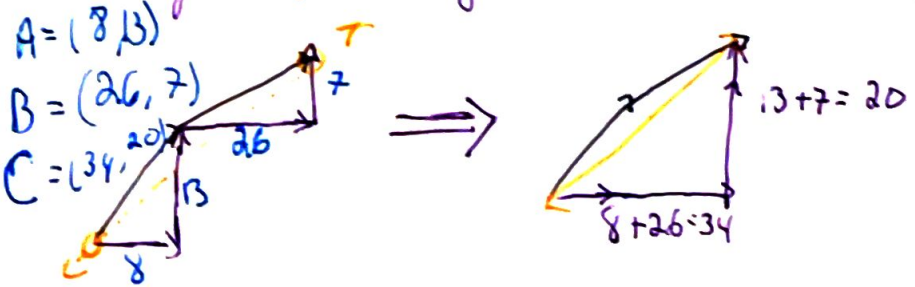
Vectors vs. Templates vs. Interfaces

- Create a linear algebra Calculator? Maybe it will come in handy to start doing Flappy Bird?
  - * Vector has a magnitude and direction
  - * Dot Product: Result scalar vector
  - * Cross Product: vector result. Vector Product
  - * Vectors can also be part of force, acceleration, and velocity
- Subtracting: 1. Reverse the direction of the vector we want to subtract
  2. Add them



- Adding Vectors: adding x parts and y parts (Z = X + Y)

A = (8, 13)
B = (26, 7)
C = (34, 20)



* Magnitude Vectors = |v| OR ||v||

To Calculate it, use Pythagoras Theorem

$c^2 = a^2 + b^2$

ex: b = (6, 8)

$|b| = \sqrt{6^2+8^2}$

$= \sqrt{36+64}$

$= \sqrt{100}$

$= 10$

A vector with magnitude 1 is called a unit vector

Masterclass:

I. Neil Degrasse Tyson

- Not by what you know, but in what you think
  - How is it wired to ask question in what is True
- Teaching the tools and instruments that enables from ignorance → understanding → objective truth
- After this, I want to think of how empowered because of what I figured out

II. Frontier of Science

"What is the one question you want to before I die?"

"As the area of our knowledge grows, so too does the perimeter of our ignorance"

a) Hypothesis vs. Theory (check the notebook)

III. The Scientific Method

- Do whatever it takes to prove
  - ↳ A lot of experimenting

"Nature is the ultimate judge, jury, and executioner. You can argue all what you want, but if nature doesn't agree then you are wrong".

a) The Search of Truth
- Planetary motion on Uranus and Neptune with Newton's law
- Mercury and Vulcan
- General Theory of Relativity
- Planet X, Lowell observatory 1930 → Pluto
- one result is not the only answer

IV. Be a Skeptic - Ask Questions

- Crystal Energy example
  - ↳ where is it from
  - ↳ what energy
  - ↳ on what ailment has it been tested? Show me the tests
  - ↳ what are they made of
  - ↳ Is there a ....
- Spectra → light from stars? (Plural)
- tattered information to avoid "fake information"

a) Skepticism: The path of Inquiry to what is True
- skepticism is saying might not be true, Not a rejection
- a good testimony is provided with evidence, not by mouth and call it a day

- Person was skeptic of the Moon landing and believes it is fake. Instead, Neil asked him/her "how much fuel did the Saturn V hold?" and can Provide a Calculation for it.
  - ↳ In order for the person to believe it, it must come from an "authority", which is not the right way because there was not evidence in the Process and doesn't hold "Truth"
  - ↳ Photographs of the Moon landing Site

b) How True is Objectively True?

Research results can be a breeze

- ↳ Repeated, different, etc.
- ↳ Is the uncertainty drops by repeating the experiment

V. Cognitive Bias

Think that are true but are not

ReadLine() vs WriteLine(): //Endl;
WriteLine() => Cout
ReadLine() => Cin

Having enum to work as an integer input?

Convert strings into integers or other primitive datatype

Create a list that can random generated numbers → Also, Create a Prim Array!
↳ Using a list template
↳ Dynamically => List<T>
↳ Call the list once and print it (or return it)

Garbage Collector to avoid memory leaks
↳ GC.Collect()
GC.WaitForPendingFinalizers
↳ DisplayMemory() method

Control Flow: which function goes top to bottom

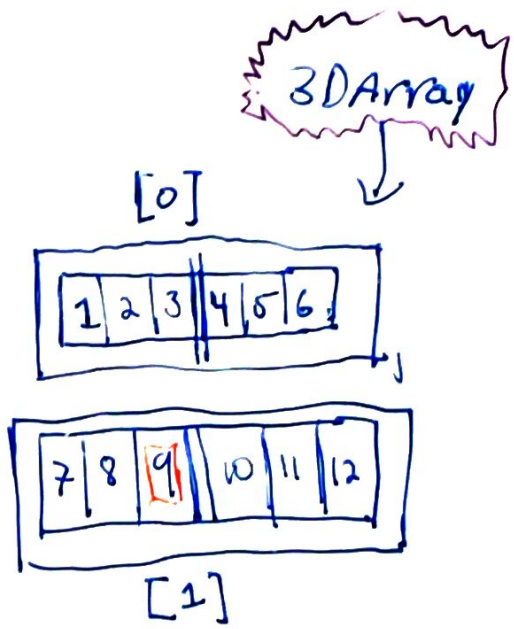
Get 2D Matrix to print → 2D

Get 3D Matrix to print → 3D

When Jagged Arrays mostly used?
↳ List of lists

```
{ 0: [ "Apple", "Pear" ],
  1: [ "Jam", "PB", "CreamCheese" ],
  2: [ "Bagle", "Pizza", "Kaek" ]
}
```

Count() => Size of the list Remove() => Delete a specific list



Web development Class
Udemy

Intro's: Pass Auth., Data Encryption, Form Valid, blogs

What happens behind the scene of the internet:

- Transmission of data Packets
  - → Data Packet has:
    - Header
      - Senders
      - Receivers
      - Protocol
      - Packet # (?)
    - Payload
      - Data
    - Trailer (?)
      - Data to show end Packet
      - Error Connection
- Bandwidth, measured by bi:hale
- Protocol is a well established rules between machine. Examples are:
  - TCP/IP Protocol → Transmission of data Packets
  - HTTP/HTTPS → Communication between web browsers and web servers
  - SMTP
  - FTP

The domains are translated to IP into their DNS

HTTPS > HTTP Why?
- better security
- Encrypted

- SSL can be created by hosting a Security Certificate from a Credible Vendor

Classes for Vector Math

Class for Transformation (Scaling, translations, rotations, etc)

Class for Projection

Create a header file with helper classes

Tuple.Create(...) vs Tuple Constructor?

- how to create my Tuple with its values declared?
  - ↳ getting (0, 0) if it is before my x and y

Fix the callbacks

How the MoveNext() functions at Current?

↳ Maybe Return it as a class?
  - ↳ How to return classes

+ Create a Vector 3D based from the Vector 2D

M.V.P = Model View Projection

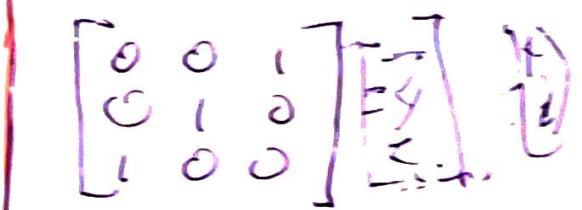
Idea ...

Vector 2D class

Lerp !!!

Smooth Step

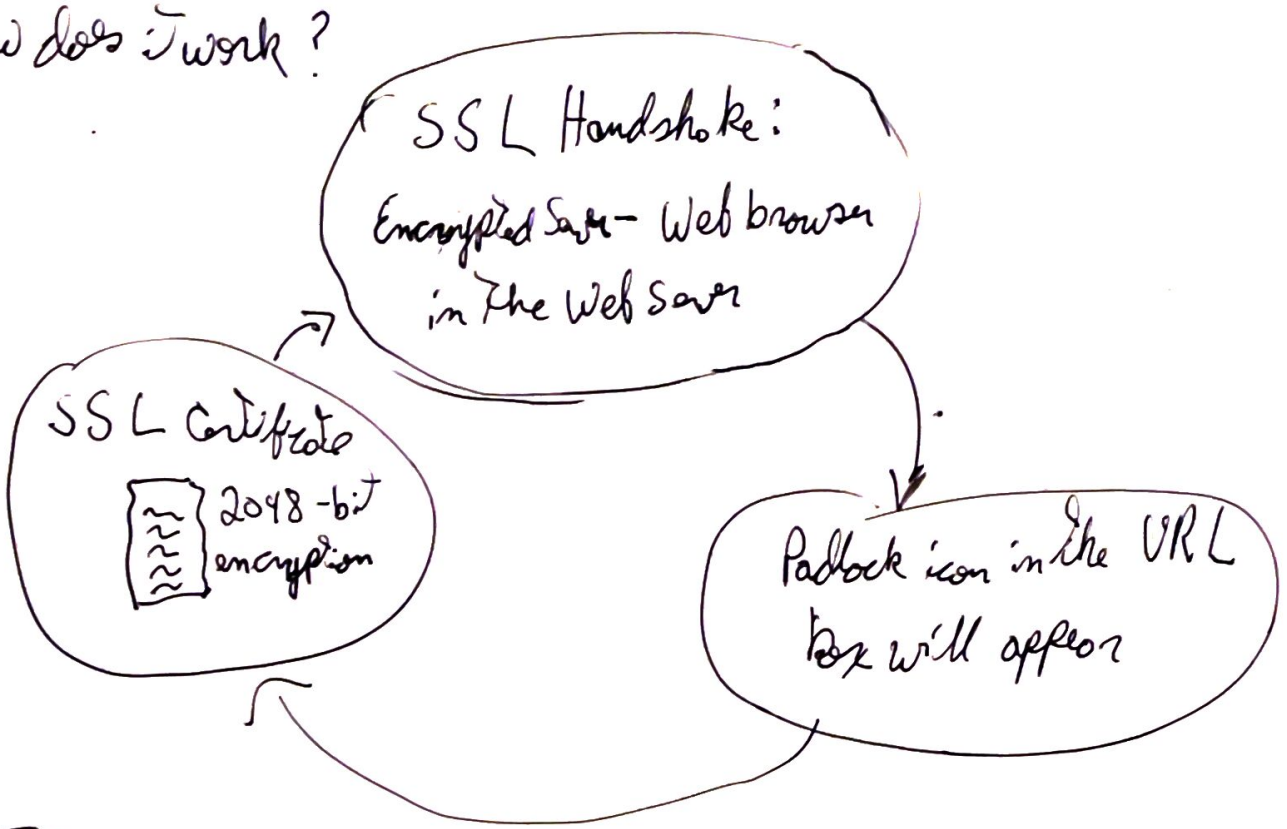
Vector 2D → Vector 3D



World Coord

- There are other more certificates like the EV (extended validation) + requires detailed information.

How does it work?



SMTP stands for "Simple Mail Transfer Protocol"

↳ Useful after finishing a developed website to email your users

↳ Two types of mail delivery:

local: gmail to gmail (etc..)

outbound: gmail to Yahoo (etc...)

Network Basics:

WAN (Wide Area Network): More complex network that spans across much longer scope like cities, towns