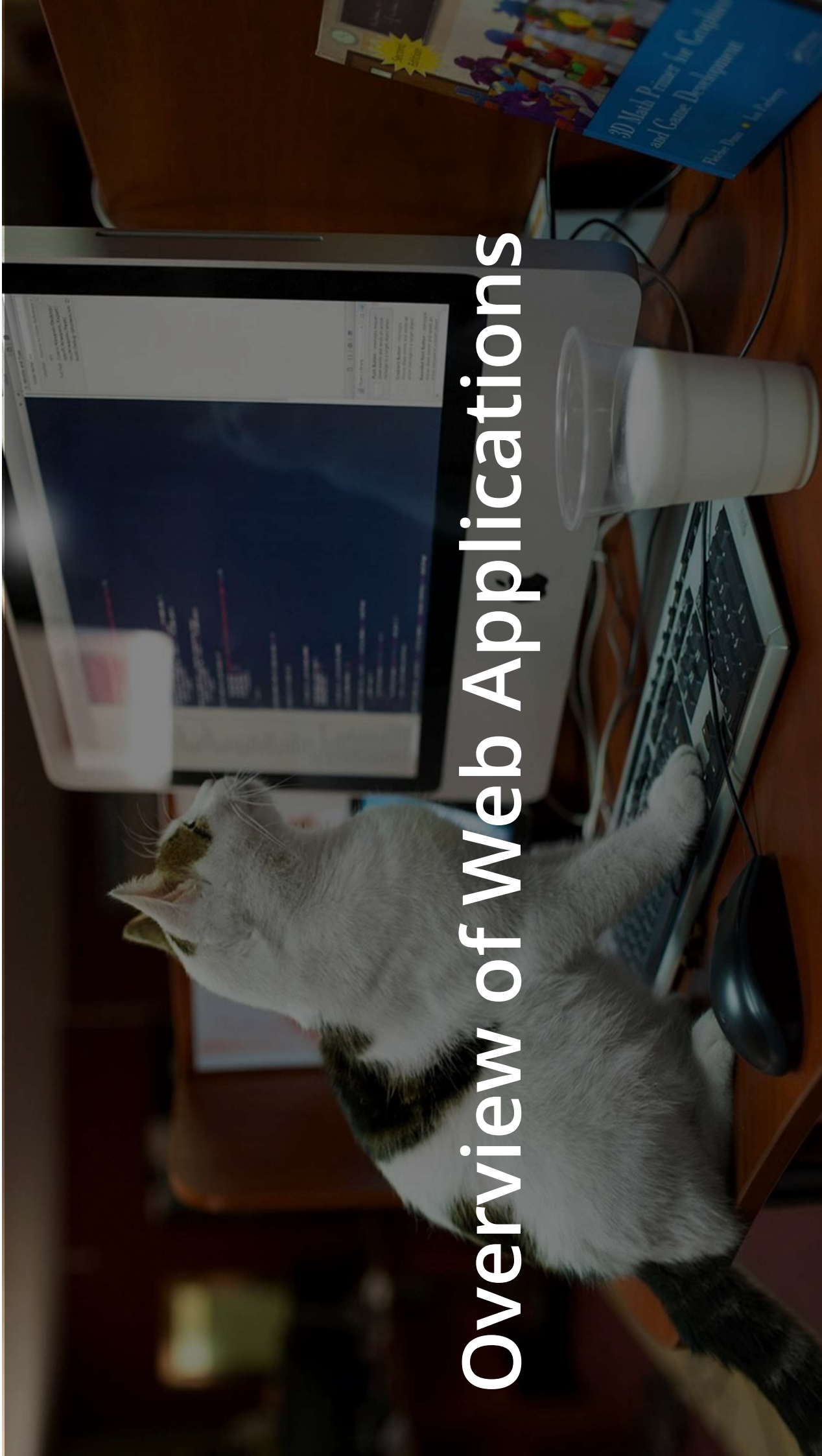# Overview of Web Applications

About me

I am Terence

Our Objective

To understand how a web application works basically, and **MORE**
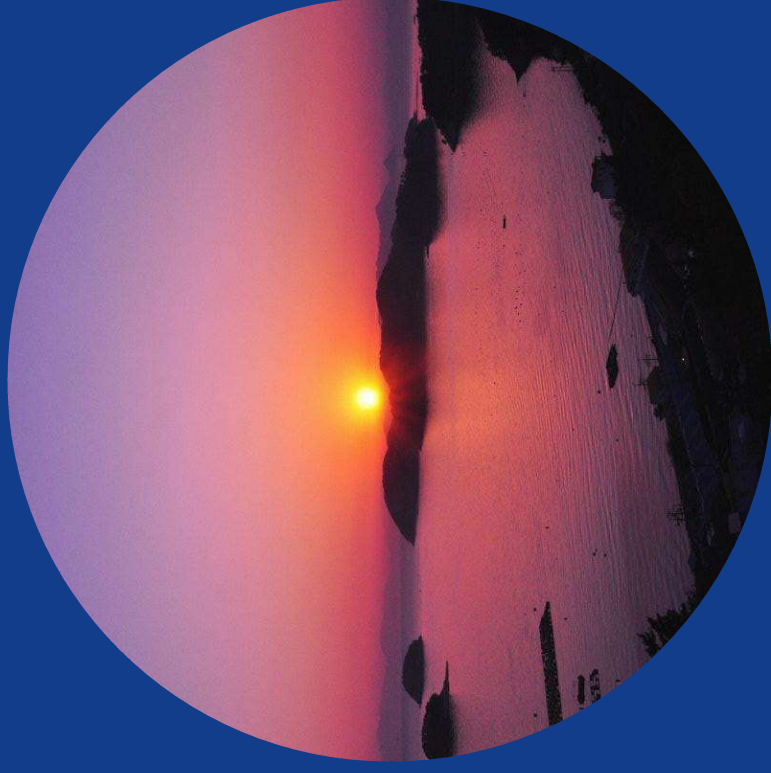
Table of Contents

- **Technical Overview**

- **Software Engineering Overview**

- **Orbital Requirements**

- **Advice**

Look out for the colored bars on top!
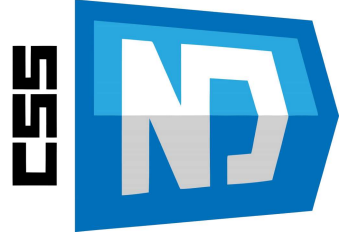
Straightforward, direct

Need some time to understand

Needs prior knowledge to understand

1.
Technical Overview

Basics of Web Programming

JavaScript

CSS

HTML

This is all you need, basically

HTML

HyperText Markup Language

*It's the **Structure** of all Web Pages*

*It also describes the **Content** of all Web Pages*

HTML Elements

There are many elements!

- <img>
- <h1>, <h2>, <h3>
- <div>
- <button>

And many more!

HTML

A simple example

```
<!DOCTYPE html>
<html>
<head>
<title>Page Title</title>
</head>
<body>

<h1>My First Heading</h1>
<p>My first paragraph.</p>

</body>
</html>
```
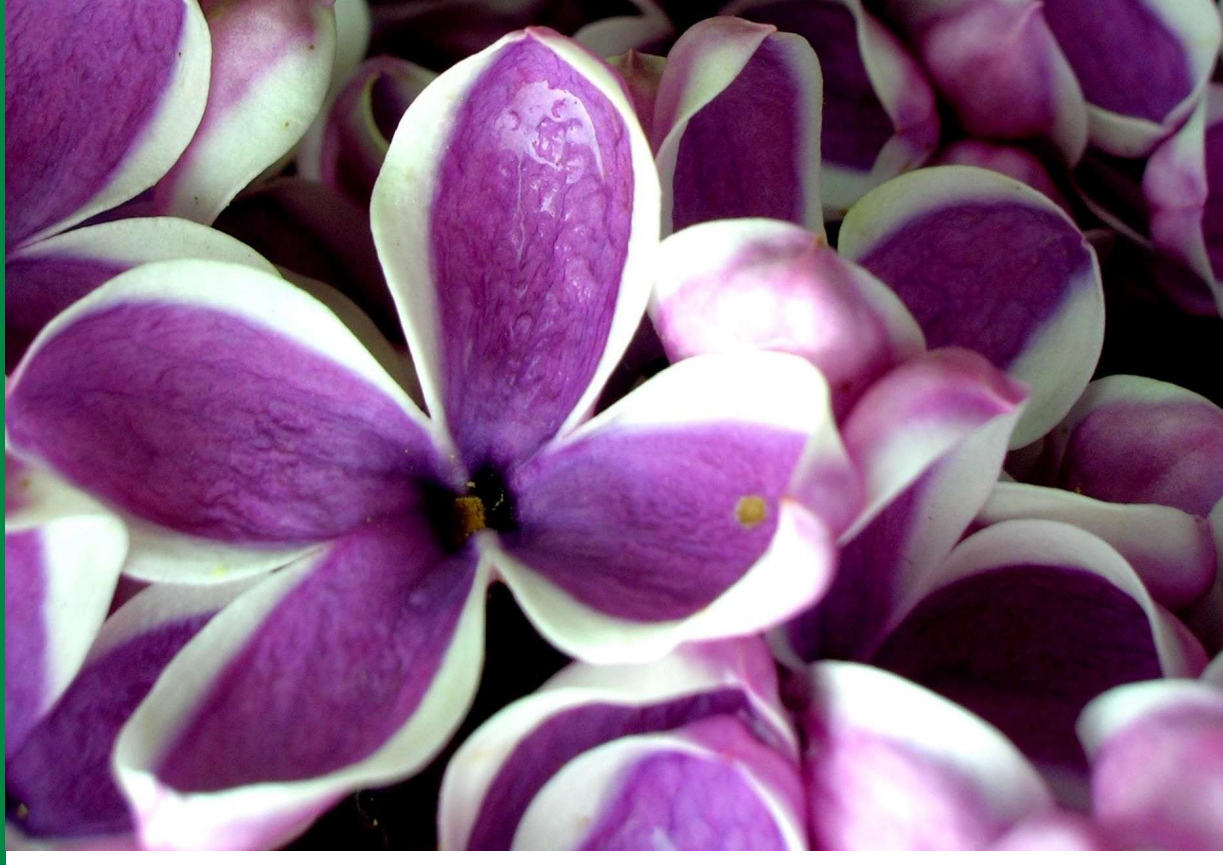
My First Heading

My first paragraph.

CSS

Cascading Style Sheet

It controls the layout of multiple web pages at once

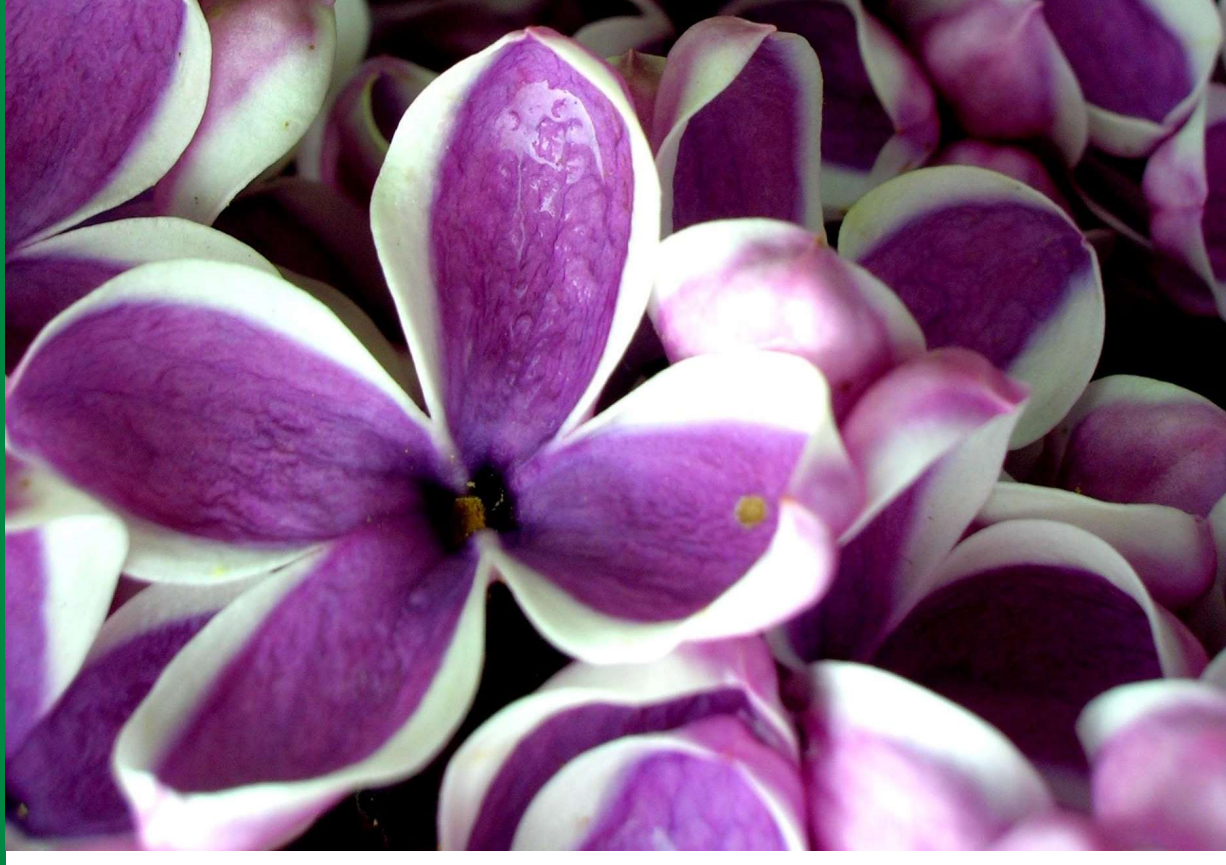*It also describes how HTML elements are to be **displayed on screen***

CSS

CSS Declarations

There are many types!

- **color**
- **width**
- **font-size**
- **text-align**

And many more!

A Simple Example

```
<!DOCTYPE html>
<html>
<head>
<style>
h1 {
    color: red;
    text-align: center;
}
</style>
</head>
<body>

<h1>My First Heading is styled with CSS</h1>
<p>My First Paragraph</p>

</body>
</html>
```

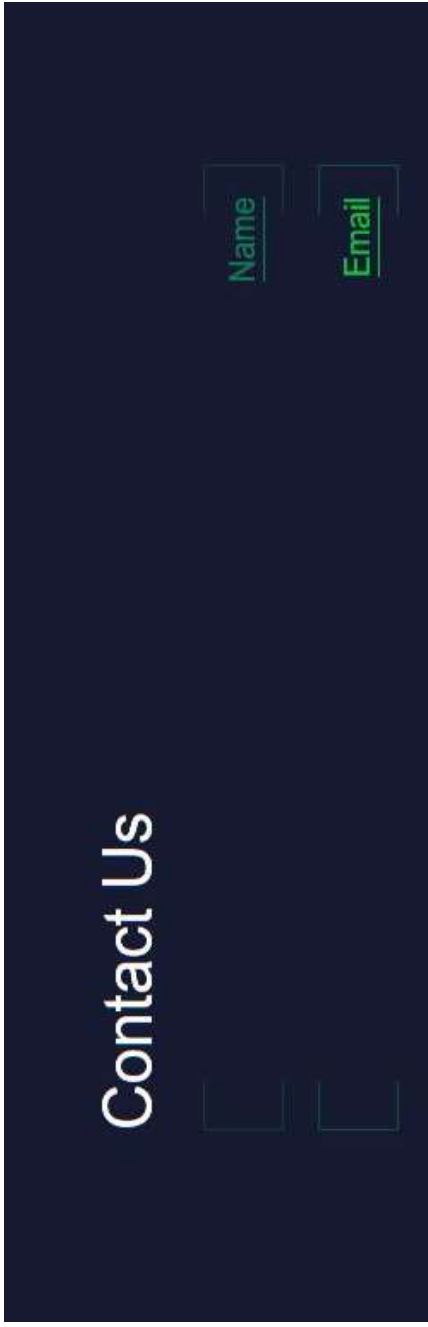**My First Heading is styled with CSS**

My First Paragraph

CSS

:hover, :focus

Contact Us

Name

Email

HOVER ME

p:hover
.class:hover

input:focus
.class:focus

Javascript

*It's the **Logic** of all Web Pages*

It also programs the behaviour of web pages

Different Tools

There are many tools!

- **getDate()**
- **getElementByID()**

And many more!

Go for the HTML/CSS Class later! **(at 4 pm)**

More information will be shared!

Web application demonstration

http://isteps.comp.nus.edu.sg/settings/userInfo

https://developer.mozilla.org/en-US/docs/Web/API/XMLHttpRequest

https://developer.mozilla.org/en-US/docs/Web/HTTP/Status
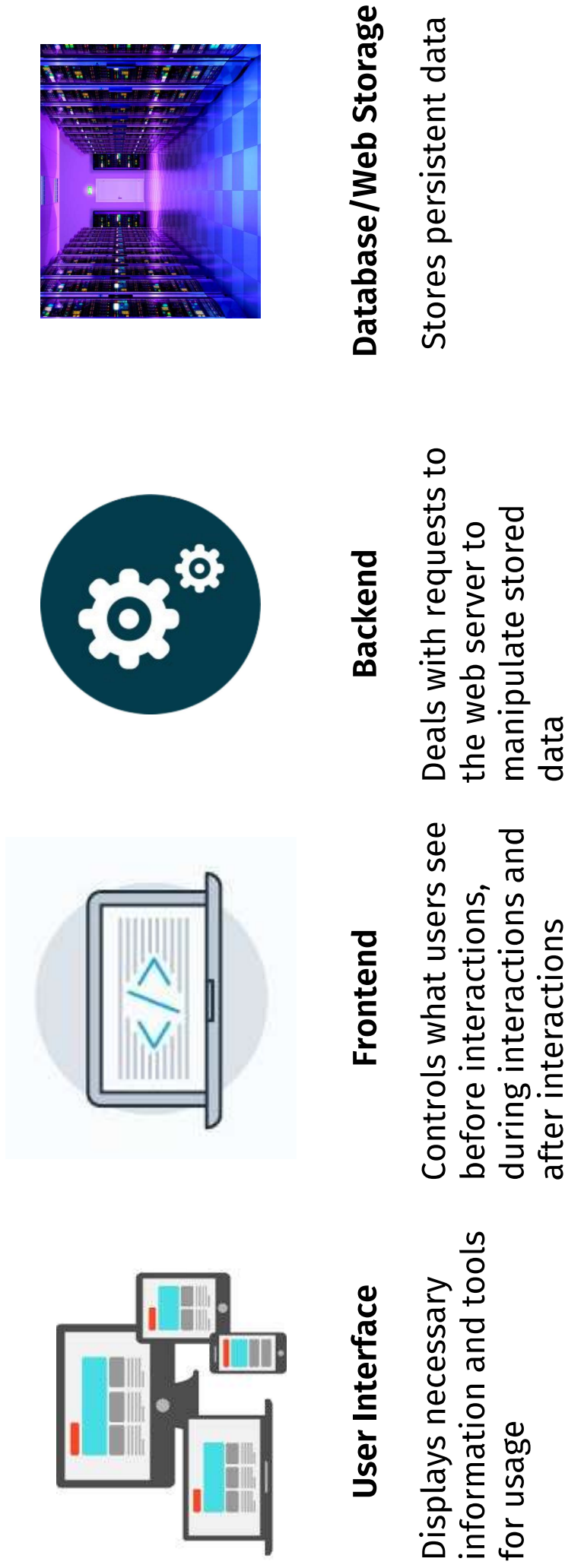
What is shown to a web app user?

✓
- HTML + CSS
- UI feedbacks when an action is completed

✗
- Underlying Javascript logic
- Requests to the server/Requests from the server

So, how are web apps structured?

User Interface

Displays necessary information and tools for usage

Frontend

Controls what users see before interactions, during interactions and after interactions

Backend

Deals with requests to the web server to manipulate stored data

Database/Web Storage

Stores persistent data

Full Stack Explained

User Interface

Placement of Elements with HTML

Aesthetics controlled by CSS

Frontend

Client-sided logic that performs user feedback

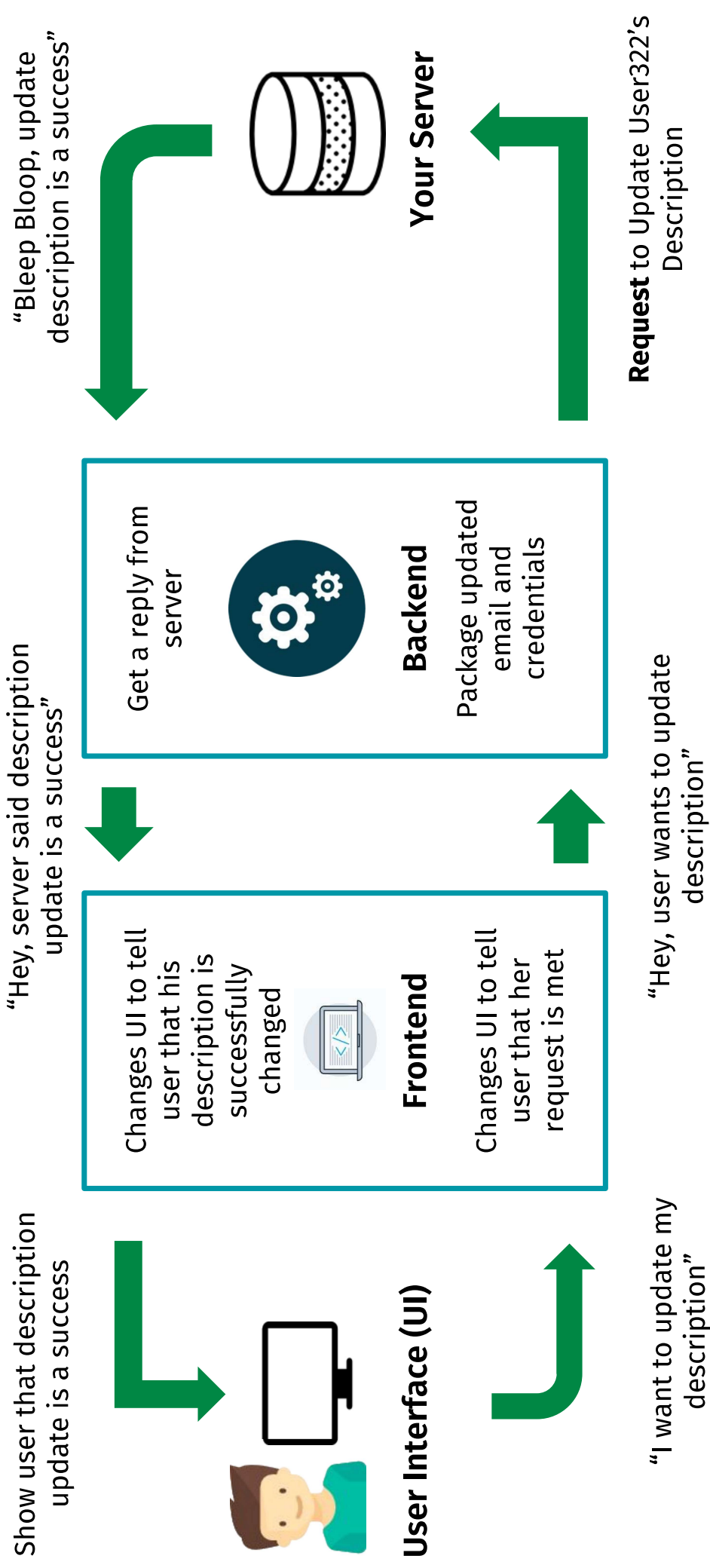Commonly in Javascript

Backend

Server-sided logic that manipulates stored data in storage
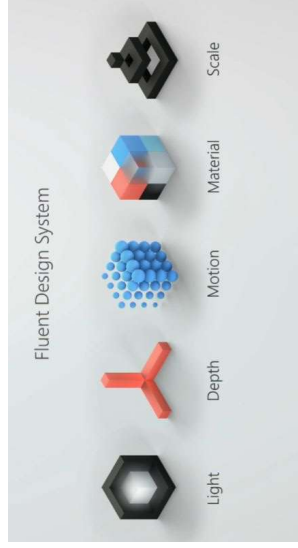
Database/Web Storage

Captures data

Allows queries, updates and creations.

Process flow of a web application

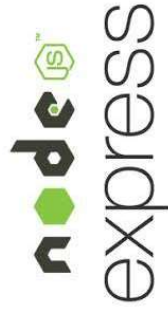"Bleep Bloop, update description is a success"

Request to Update User322's Description

Your Server

"Hey, server said description update is a success"

"Hey, user wants to update description"

Get a reply from server

Backend

Package updated email and credentials

Show user that description update is a success

"I want to update my description"

Changes UI to tell user that his description is successfully changed

Frontend

Changes UI to tell user that her request is met

User Interface (UI)

Popular Frameworks!

User Interface

Frontend

Backend

Database/Web Storage

How to choose the right UI Guidelines?

How to choose the right UI Guidelines?

https://atlassian.design/

https://material.io/
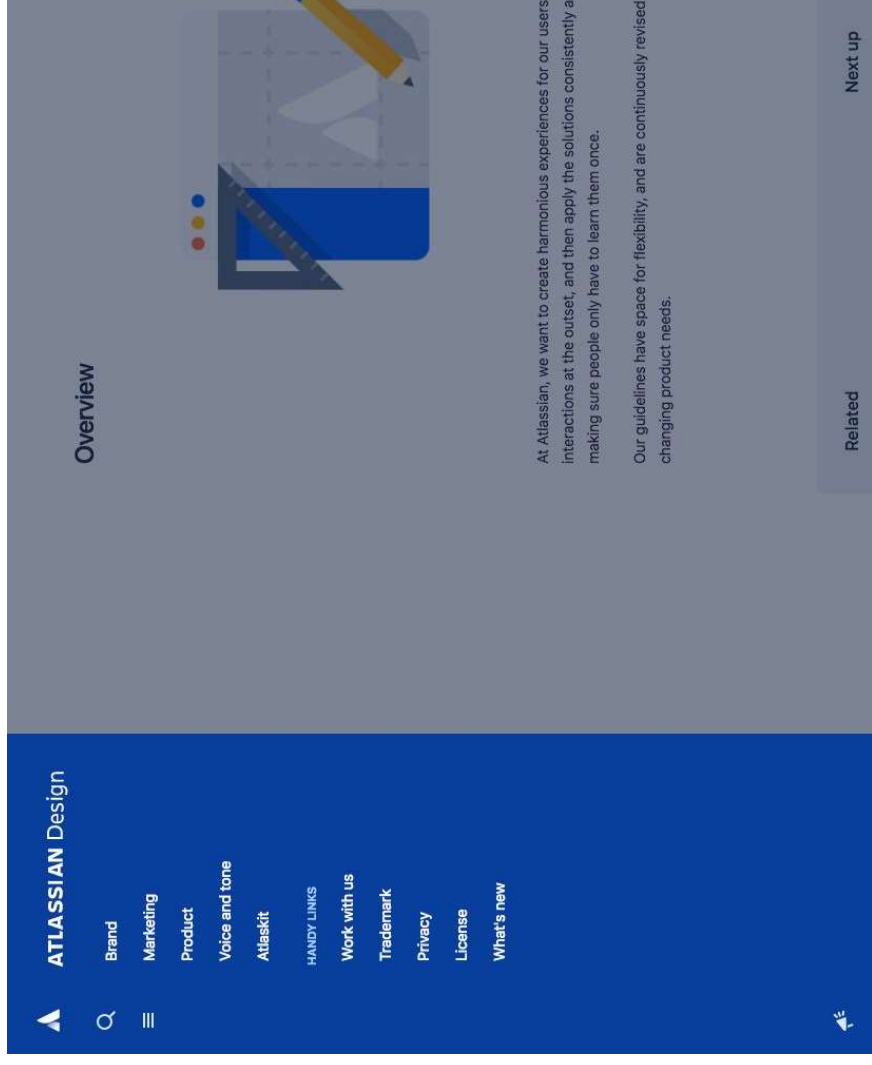
How to choose the right Frontend/Backend framework?

How to choose the right Frontend/Backend framework?

- Pick the one that is popular - React, Express
- Pick the one you are comfortable with
- Pick the one you have prior knowledge - not recommended

https://medium.com/@ZombieCodeKill/choosing-a-javascript-framework-535745d0ab90

How to choose the Right Database?

Relational vs Non-relational

Employees Table

IdNum	LName	FName	JobCode	Salary	Phone
1876	CHIN	JACK	TA1	42400	212/588-5634
1114	GREENWALD	JANICE	ME3	38000	212/588-1092
1556	PENNINGTON	MICHAEL	ME1	29860	718/383-5681
1354	PARKER	MARY	FA3	65800	914/455-2337
1130	WOOD	DEBORAH	PT2	36514	212/587-0013

- Good for user profiles, forms etc
- **ACID -** intended to guarantee validity even in the event of errors, power failures, etc – https://en.wikipedia.org/wiki/ACID

```
{
  idNum: 1556,
  LName: "PENNINGTON",
  FName: "MICHAEL",
  JobCode: ""
```

- Good for unstructured or semi-structured data like videos, text, audio etc
- Allows flexibility

2.
SE Overview

You'll need these too

Collaborative Software Development

GitHub

Software Version Control

Allow you and your partner to work in real-time!
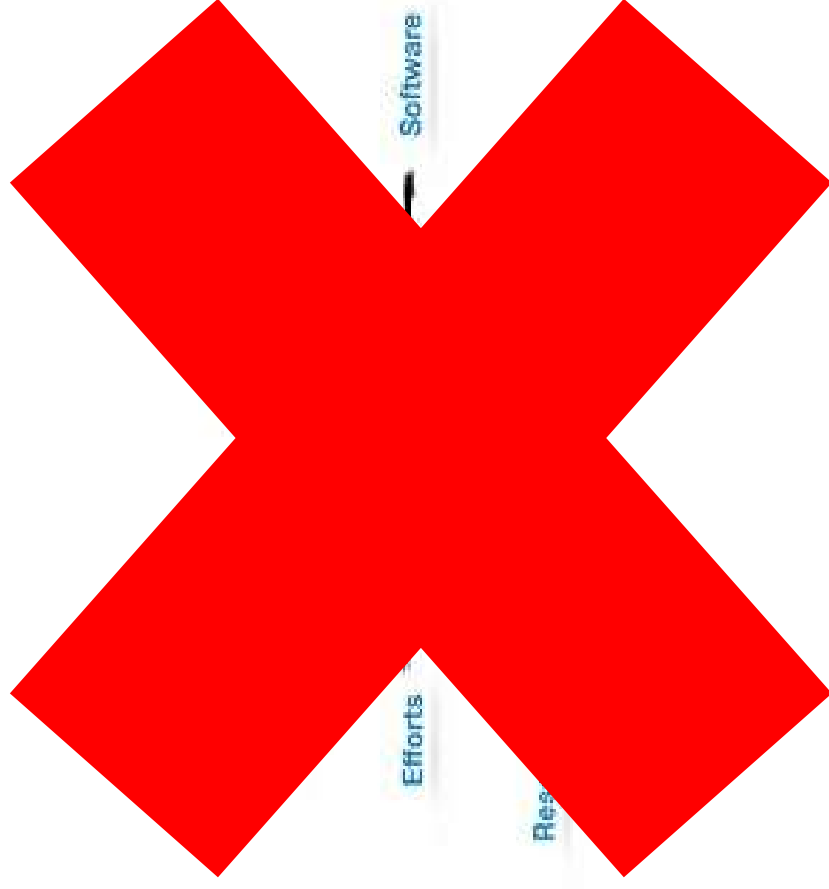

Trello

Ticketing system

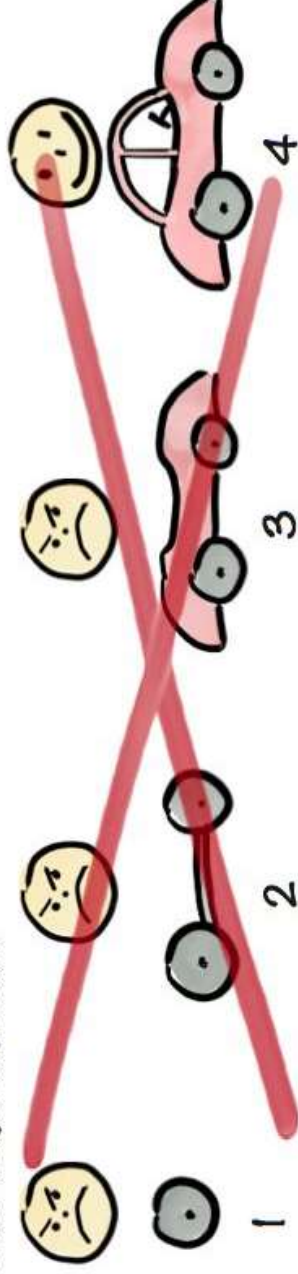Plan and assign tasks

Slack

Team communication tool

Integrations with GitHub, Trello, Google Drive and more
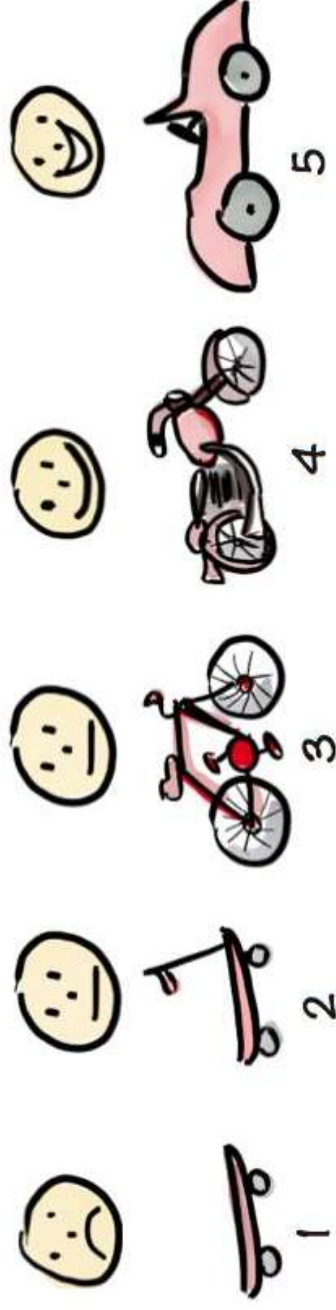
Big Bang Development

Iterative Software Development

Not like this....

Like this!

Working with a partner

1. One person in charge of UI + Frontend, the other in charge of Backend + Database. Communicate and integrate often.

2. Modularize your development – one person does login feature, covering front to back. The other does profile feature, covering front to back. Communicate and integrate very often.

3. Everyone does everything. *At your own risk*

3.
Orbital Requirements

What is needed

Requirements for **Vostok**

- *Basic level web app*

- *Your web application must contain CRUD*

- *Must be minimally viable – features are working, decent aesthetics*

- *Give better than average feedback for your peers!*

Requirements for **Gemini**

- *A Web application with suitable extensions. ie. Google Maps API, Facebook Graph APIs.*

- *Use web application frameworks*

- *More than just a minimal viable product, very good aesthetics, great features*

- *Give good feedback to your peers!*
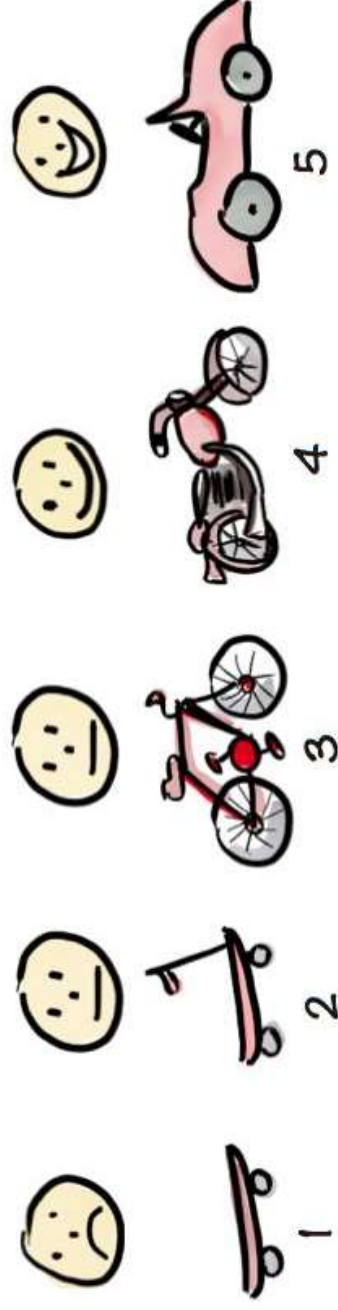
Requirements for **Apollo 11**

- *NUSMods-Quality*

- *Good software engineering practices*

- *Usability testing*

- *Give comprehensive and beneficial feedback to peers!*

Remember this?

Not like this....
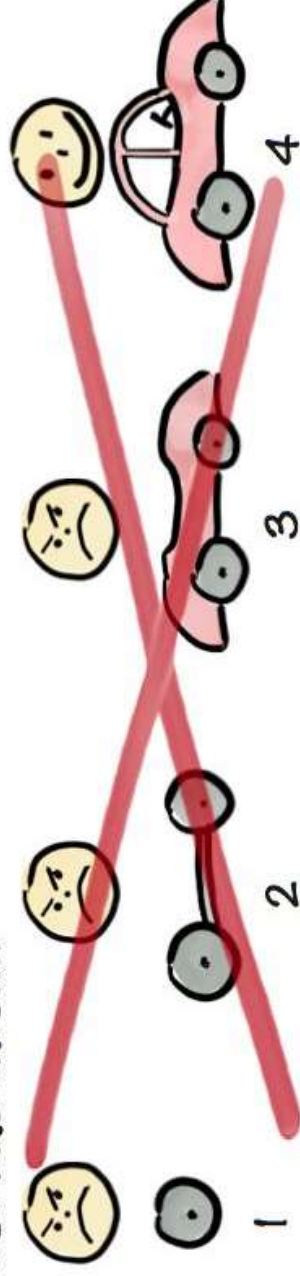
Like this!

My example would be ..

An app that summarises books of interest into 6 minute articles.

Book Summarizer
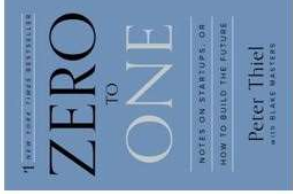
Your Recommendations Today

Start-up

Start-up

Start-up

Start-up

Download as PDF

Summary

Bacon ipsum dolor amet shankle shank ribeye ground round short loin, salami burgdoggen ball tip meatloaf corned beef venison buffalo fatback boudin. Venison salami meatloaf cow biltong. Doner turkey bacon pork filet mignon. Bacon pancetta pig, pork loin strip steak short loin boudin bresaola sausage picanha. Pancetta kielbasa t-bone short loin pork belly sirloin tongue meatball alcatra pig ham buffalo boudin pork loin kevin. Beef ribs pastrami kielbasa, tail porchetta tenderloin pork jerky beef venison shoulder shank sirloin prosciutto.

Beef ribs hamburger tongue spare ribs fatback, bresaola t-bone alcatra meatloaf. Ham hock boudin pastrami short ribs, flank cupim cow shankle

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Learn the habits of those who achieved everything in life. Some of the habits may come as a surprise

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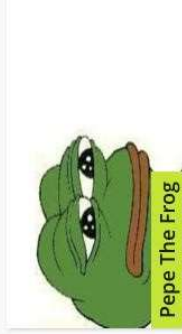
6 mins read

Show all (10+) ⟩

Trending

Joey Tribbiani

Friends, Companions and Soulmates. The Why How When.

Everyone needs friends in their lives, even introverts and the eccentric. Tribbiani tells

Pepe The Frog

Memes as a form of Stress Therapy

How did it become such an internet phenomenon? Memes are a 21st century

Bymore Itams

The Instrinsic Nature of Purchasing Power

Want to understand your customers better? This book highlights the important

4.
Advice

You need this too

Constant Communication

- *Your partner is your best friend this summer*

- *You need to talk to your Orbital mentor/advisor/tutor/profs constantly – I only went through 0.1 % of web application development, ask questions!*

- *Use Slack extensively – ask anything, reply to questions you can answer*

Be Resourceful

- *Google anything you don't know – **StackOverflow** is your programming best friend*

- *Find online courses/resource repositories online*

- *(Optional) Purchase courses online to accelerate learning*

Time for Questions!