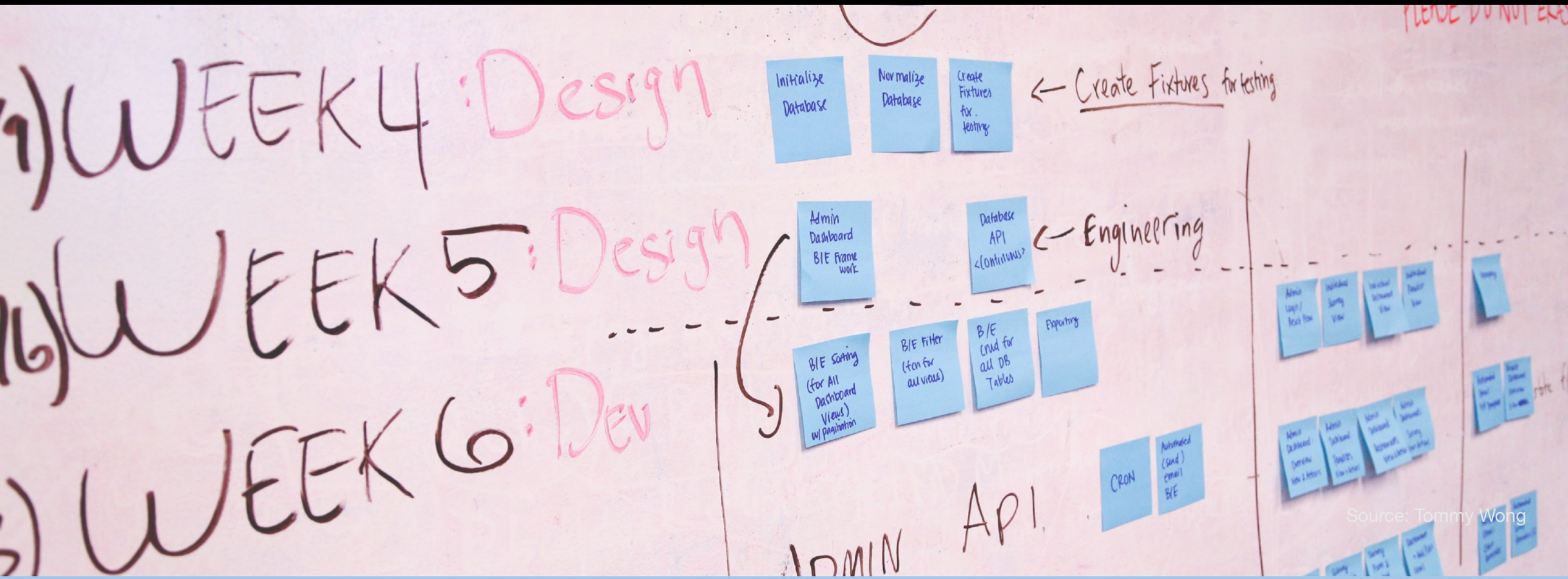


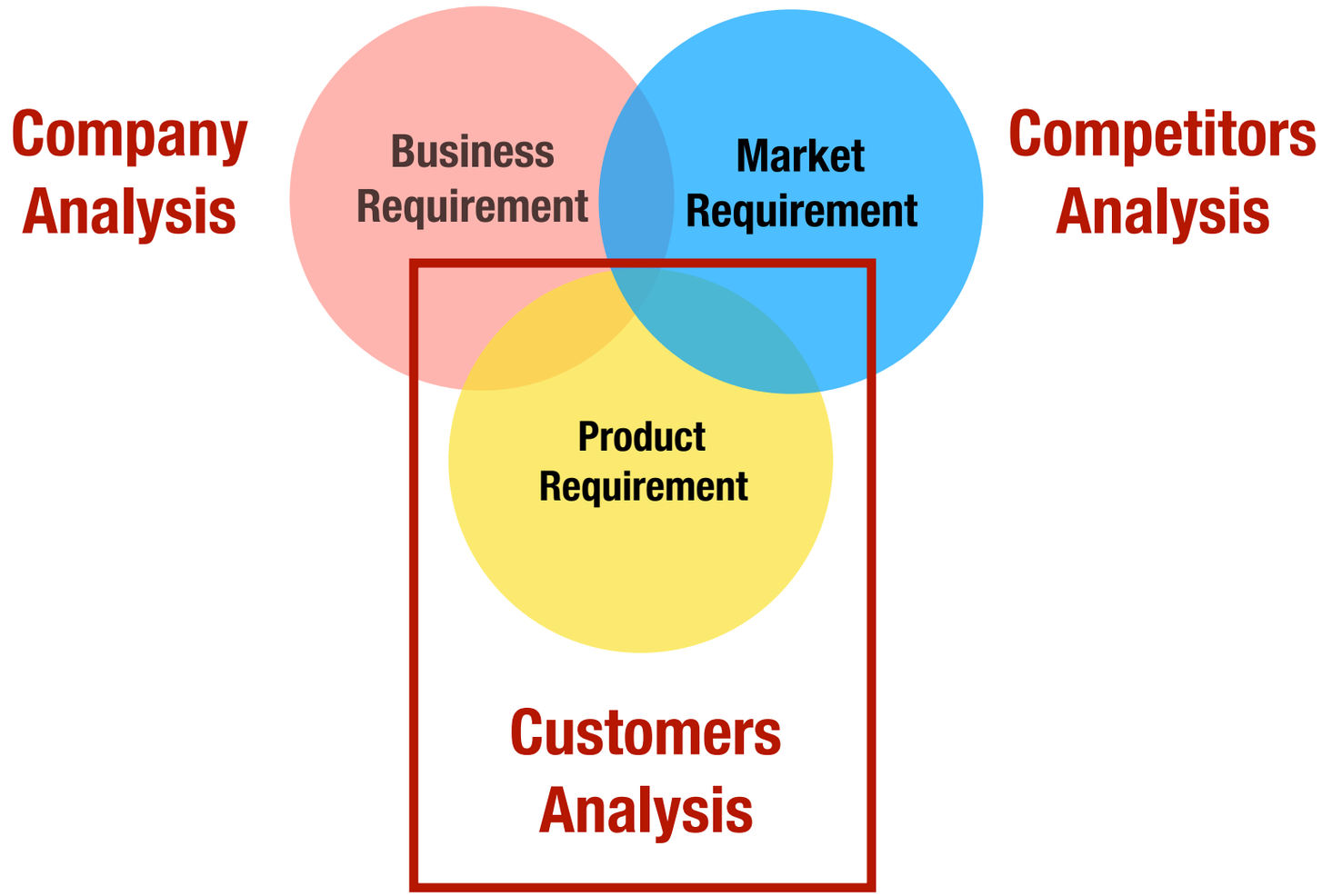
DOM AND EVENT HANDLING IN JAVASCRIPT AND JQUERY

Bernard Suen
Center for Entrepreneurship
Chinese University of Hong Kong

RECAP

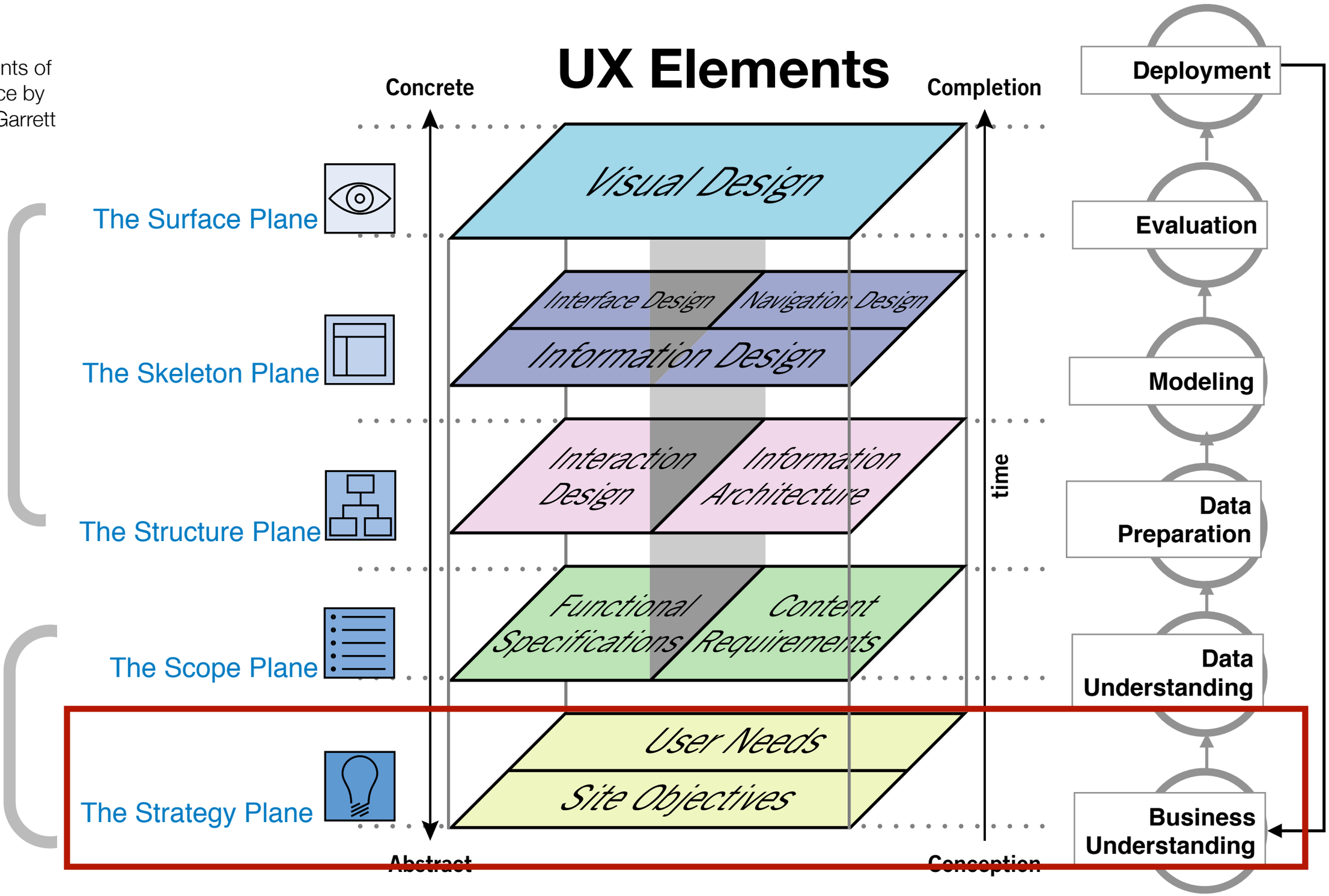
1. Understand Product Management and Requirement Analysis Using the Elements of UX Framework.
2. Understand the Relationship Among Information Architecture, SEO, and Web Analytics
3. Master Content Management System and Its Use in Improving SEO Through Using WordPress

Requirement Analysis

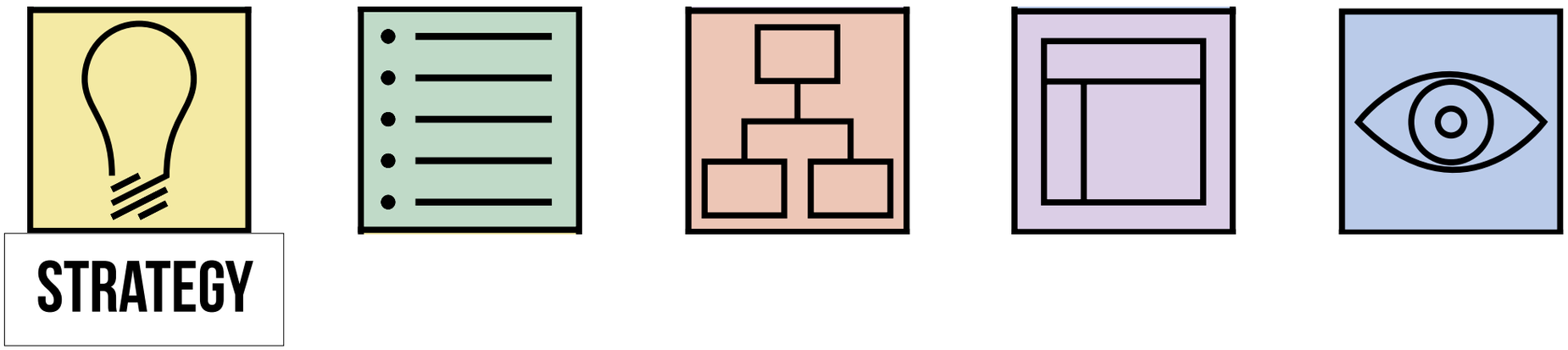


Source: Elements of User Experience by Jesse James Garrett

UX Elements

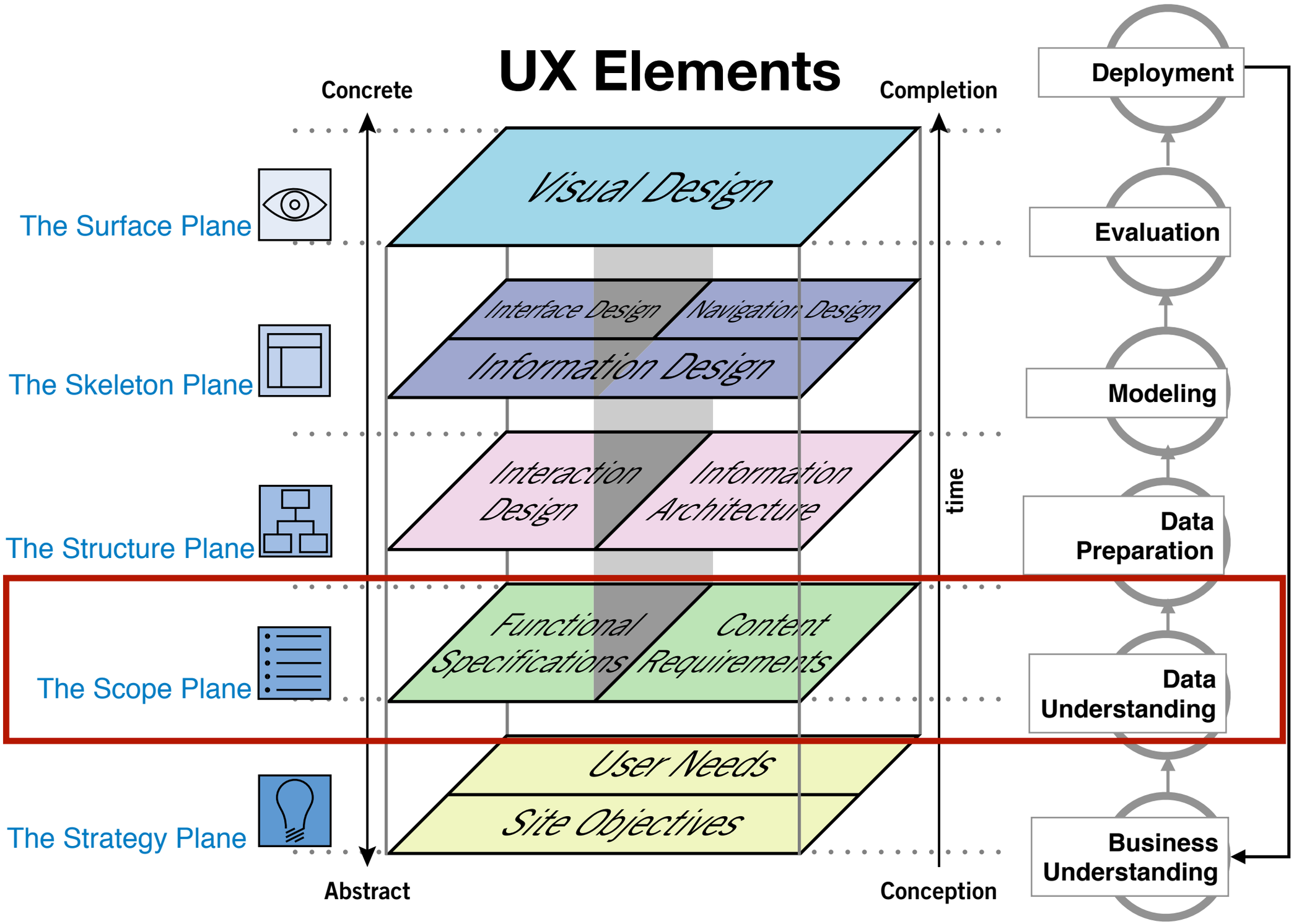


SITE OBJECTIVES		TARGET USERS		USER NEEDS
Primary goal	Become top tier university in the world.	Primary User	Top local students and world-class academics	Apply for degree enrollment and job vacancies.
Additional goal	Increase research output.	Secondary User	Chinese students interested in the west	Interested to come to CUHK to study to gain oversea experience and western knowledge.
Additional goal	Build strong alumni network.	Secondary User	Foreign students interested in PRC	Will consider CUHK for full-degree and exchange program.



Source: Elements of User Experience by Jesse James Garrett

UX Elements



Segments	Origin	Duration	Levels	Faculty	Ethnic Backgnd	Resident
1	Local	Full Time	Undergraduate	Arts	Chinese	Chung Chl
						New Asia
2	PRC	Part Time	Master	Science/ Engineering	Other Asian Pacific Countries	United
						Morningside
3	Foreign	Exchange	PhD	Business Admin	EU (Britain)	S.H.Ho
						C.W. Chu
4				Social Science	N. America	Wu Yee Sun
						Chung Chl
5				Law School	S.America	Lee Woo Sing
						Grad. House
6				Medical School	Middle Asia/ East Europe/Others	Off-Campus
						Home

Segmentation Table

Student Journey Map

John Li

Home

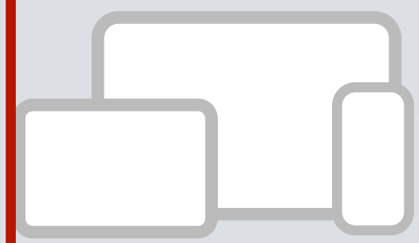
Roadshow

CU Online

CUHK

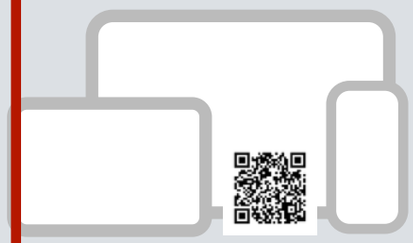
Students research online/off-line to compare different programs to kickstart application

Attend off-line and online intro event



Prepare application and apply for admission.

Admission received and start to adapt to life in HK and CUHK



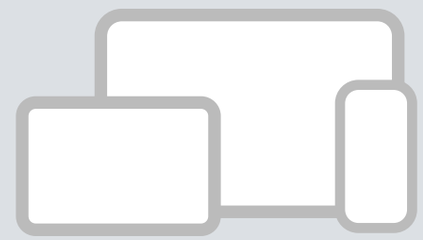
Complete grad. req. and pursue career goals.

Prepare for graduation and apply for work or further study.

Research | **Application** | **Admission** | **Enrolment** | **Graduation**

Student Journey Map

John Li

	Enquiry	Application	Financing	Travel to HK	Settle Down
Home	 Students research online/off-line to compare different programs to kickstart application				
Roadshow					
CU Online	 Information on program, financing, admission and living in HKSAR		 Tuition and living expenses arrangement.	 Formal letter of acceptance & travelling arrangement.	
CUHK		 Application process and admission status.			 Finalising accommodation contract & transportation arrangement.

Throughout the journey, what pain points did the applicants encounter?

Conduct research on prospective programs.	Prepare applications and taking required tests.	Ensure proper financing arrangement be made.	Once admitted, make travel plan to come to CUHK
Find accommodation and roommates to get settled.	Make sure all legal agreements are properly signed.	Contact school staff to coordinate orientation.	Buy daily necessities to prepare for living in HK.

Throughout the journey, what data points did the CUHK have to plan for?

Application requirement Information	Admission instruction information	Financial planning information	Travel to HK itinerary information
Housing and roommate information	CU Campus map and bus schedule	HK MTR & key destination info	Bank, phone/ Shopping information

Problem Statement:

How might we help student applicants from Mainland **(Who)** **to** collect and process the required information to complete their application to CUHK **(What)** **so that they can** be well prepared for living in Hong Kong and learning at the school to pursue their career **(Why)**?

Problem Statement:

How might we help CUHK recruit top student applicants from Mainland **(Who) and help them** acquire and process the required information to complete their application to CUHK **(What) so that** CUHK can build on their contributions to finance its operations, produce top research publications, nurture future leaders and expand alumni network **(Why)?**

dfd03.drawio

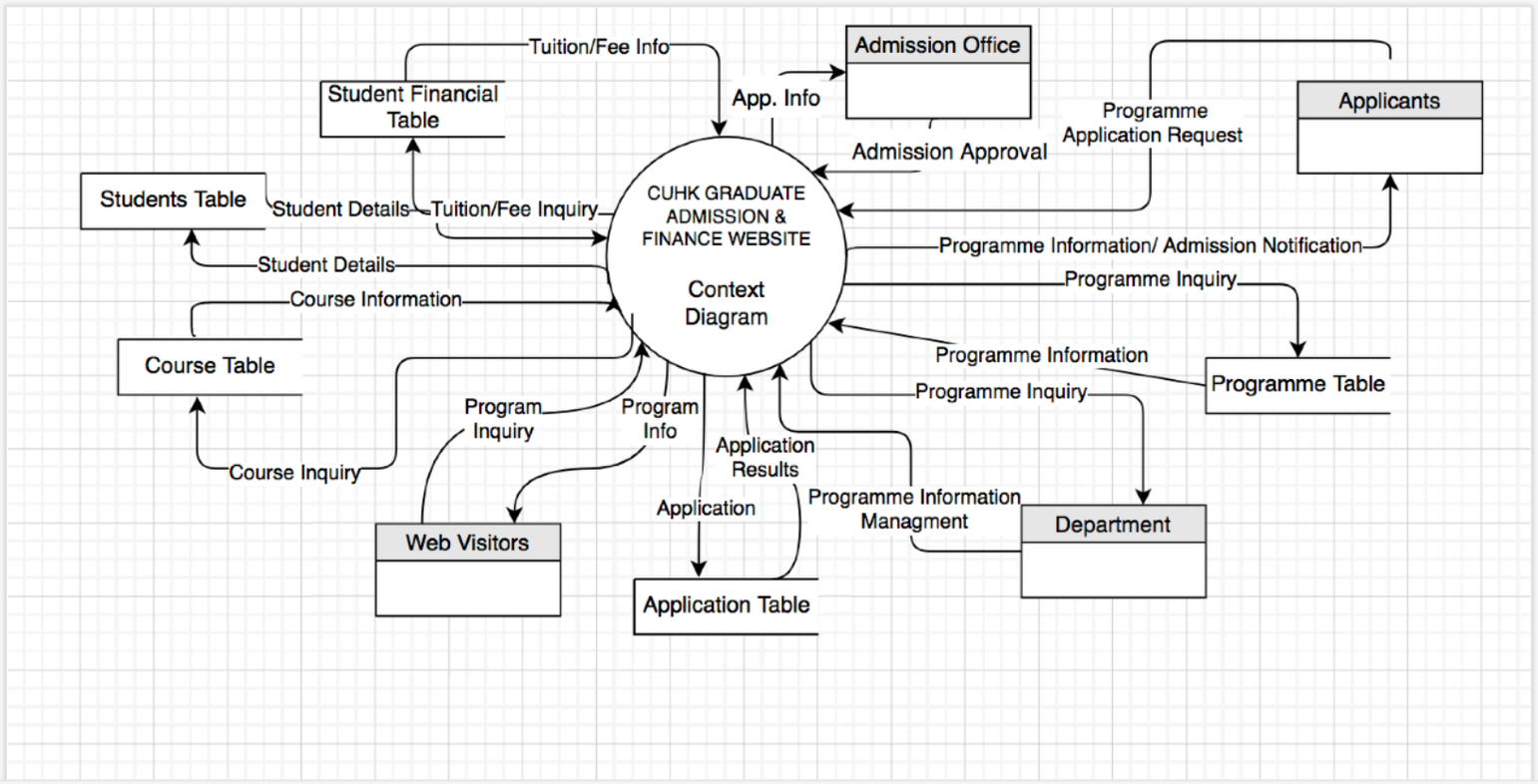
File Edit View Arrange Extras Help All changes saved

Share

100%

Flowchart
Android
Bootstrap
Data Flow Diagram
Entity Relation
iOS Icons
iOS UI
iOS6
+ More Shapes...

Dataflow Diagram: Context (Level 0)



Page-1

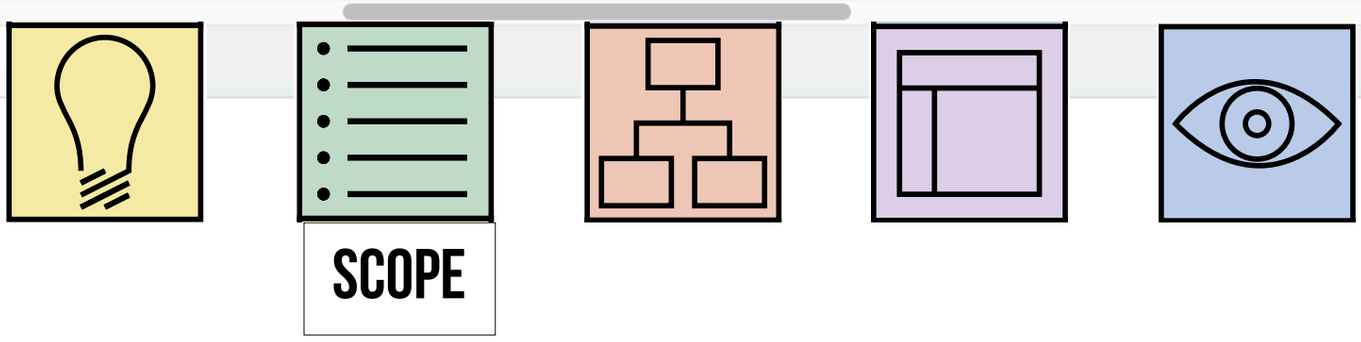
Diagram Style

View
Grid 10 pt
Page View
Background Image
Shadow

Options
Connection Arrows
Connection Points
Guides

Paper Size
A4 (210 mm x 297 mm)
Portrait Landscape

Edit Data
Clear Default Style



dfd04.drawio

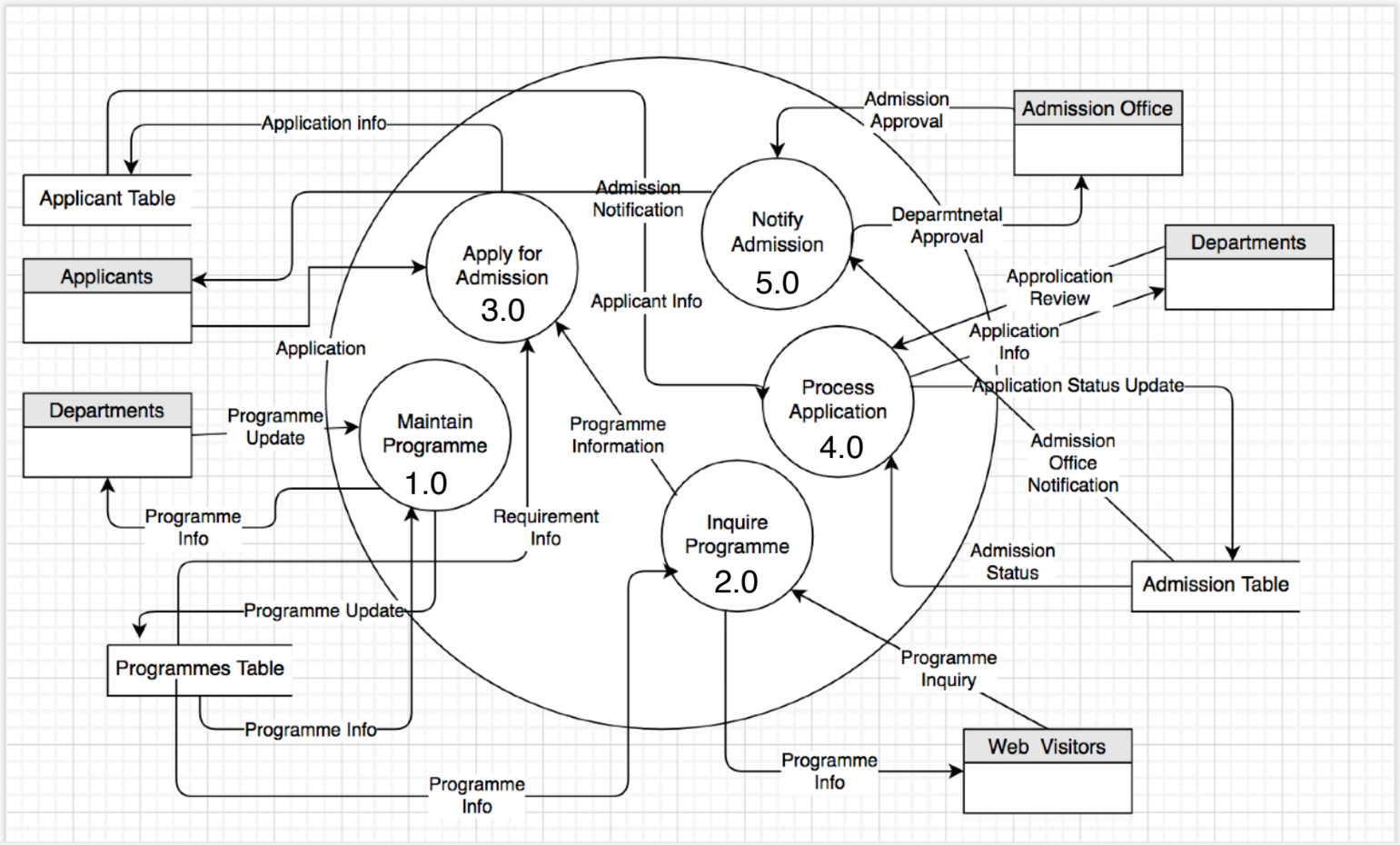
File Edit View Arrange Extras Help All

Share

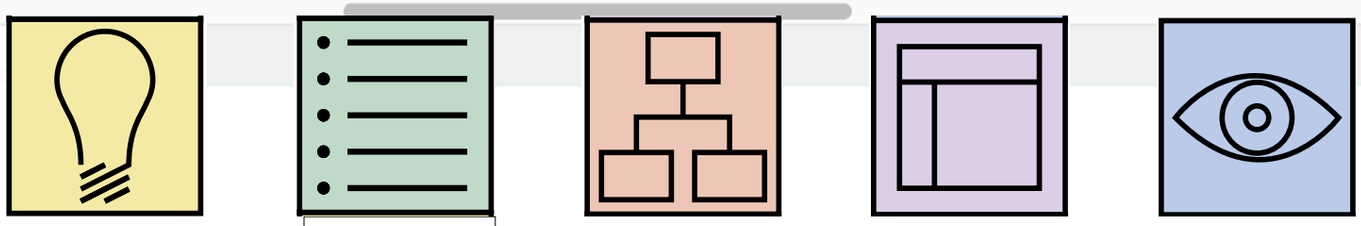
Dataflow Diagram (Level 1)

100%

Flowchart
Android
Bootstrap
Data Flow Diagram
Entity Relation
iOS Icons
iOS UI
iOS6
+ More Shapes...



Page-1



SCOPE

Diagram Style

View
Grid 10 pt
Page View
Background Image
Shadow

Options
Connection Arrows
Connection Points
Guides

Paper Size
A4 (210 mm x 297 mm)
Portrait Landscape

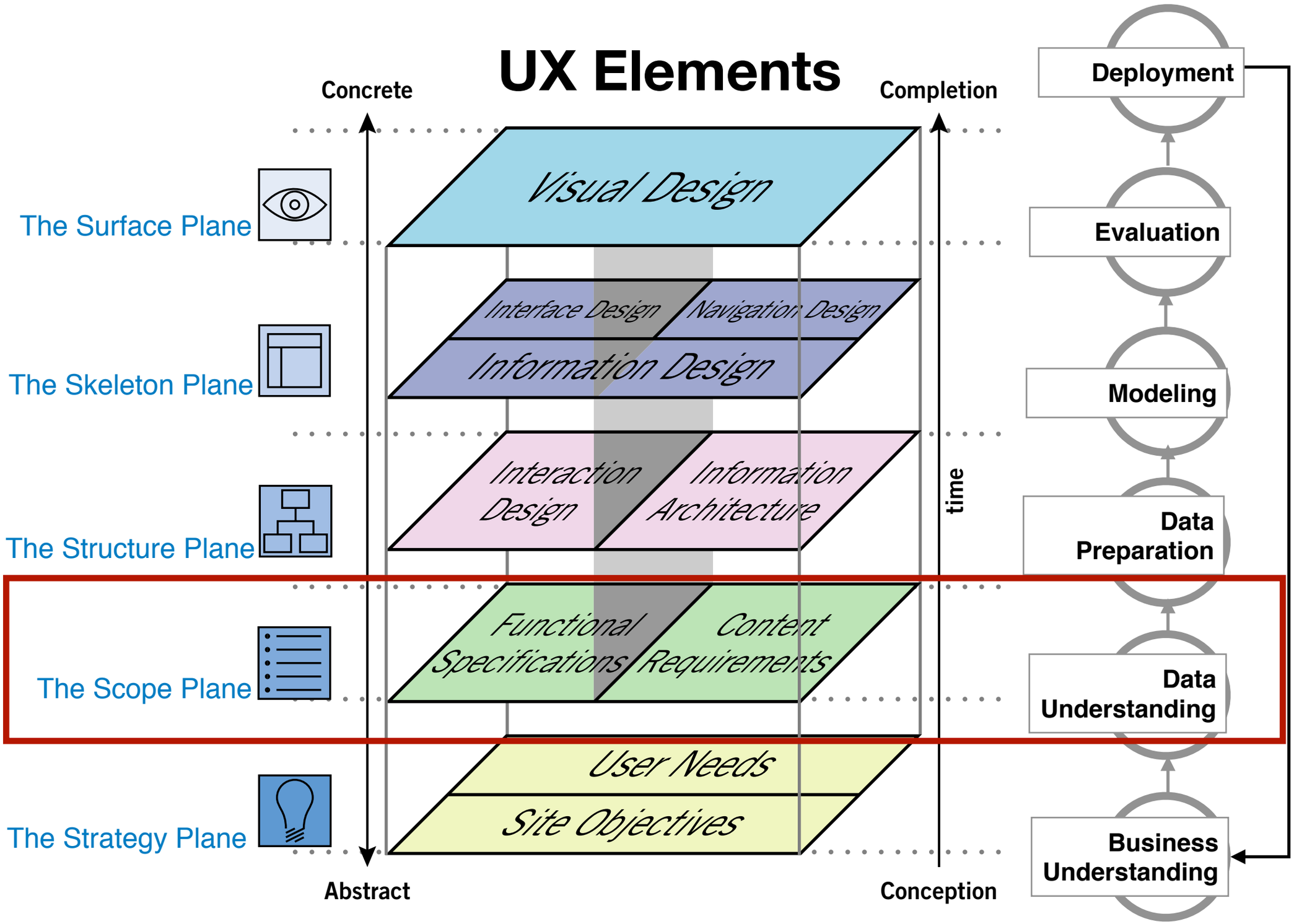
Edit Data
Clear Default Style

Throughout the data flow, what features/ functions have to be in place to process the data?

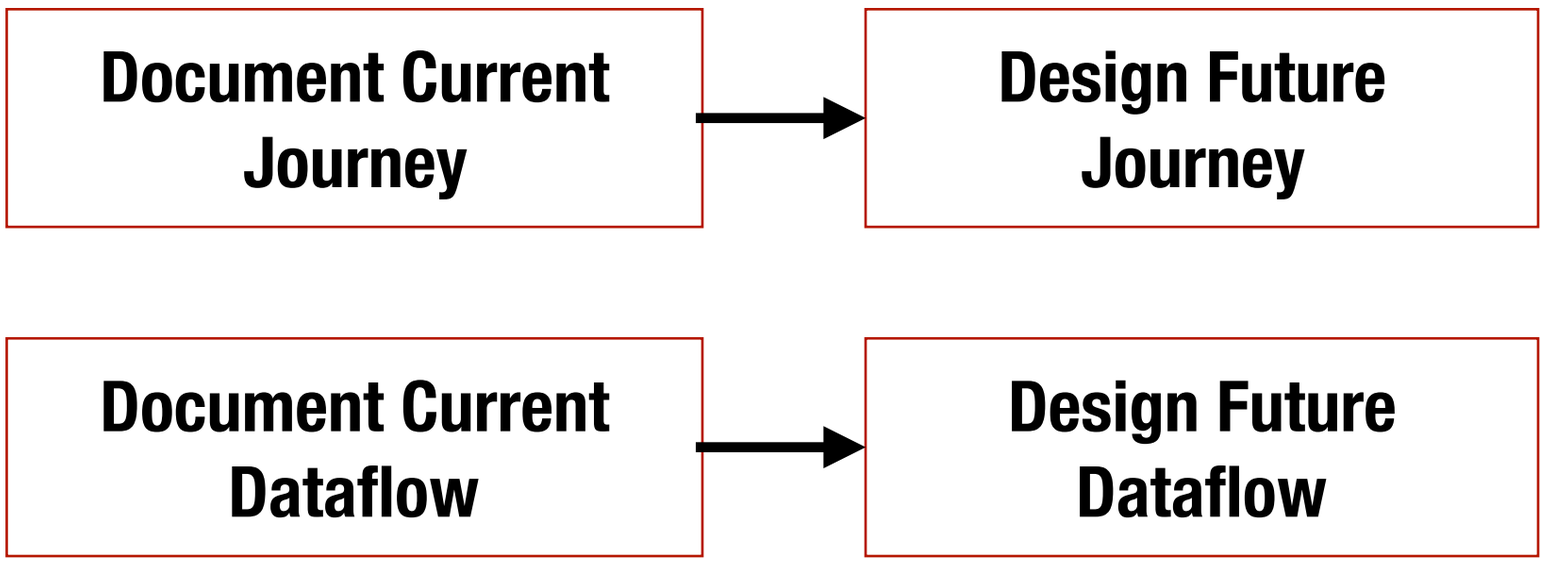
Process CUHK application	Process admission & notification	Process financial verification	Process travel plan and arrival to HK
Process accommodation support	Process academic orientation	Process daily transportation support	Process daily living & medical support

Source: Elements of User Experience by Jesse James Garrett

UX Elements



From Current Situation (Problem) to Future Design (Solution)



Source: Elements of User Experience by Jesse James Garrett

UX Elements

Concrete

Completion

The Surface Plane

The Skeleton Plane

The Structure Plane

The Scope Plane

The Strategy Plane

Visual Design

Interface Design

Navigation Design

Information Design

Interaction Design

Information Architecture

Functional Specifications

Content Requirements

User Needs

Site Objectives

Solution Space
how and how much

Problem Space
who, what, and why

Abstract

Conception

time

Deployment

Evaluation

Modeling

Data Preparation

Data Understanding

Business Understanding

Card Sorting

Home

Admissions

Programmes

Campus Support

About CUHK

Registration

Research Programme

Business Administration

Engineering

Medicine

Arts

Social Science

Law

FAQ

Why CUHK

Scholarship & Fees

Taught Programme

Scholarship Scheme

Study Options

Content Organization Scheme

Logical Grouping

- **Alphabet** (e.g. Contact list)
- **Time** (e.g. Calendar)
- **Place** (e.g. Train route)
- **Hierarchy** (e.g. Organisation chart)
- **Category** (e.g. Product catalog)

Source: Richard Wurman, “Information Anxiety”

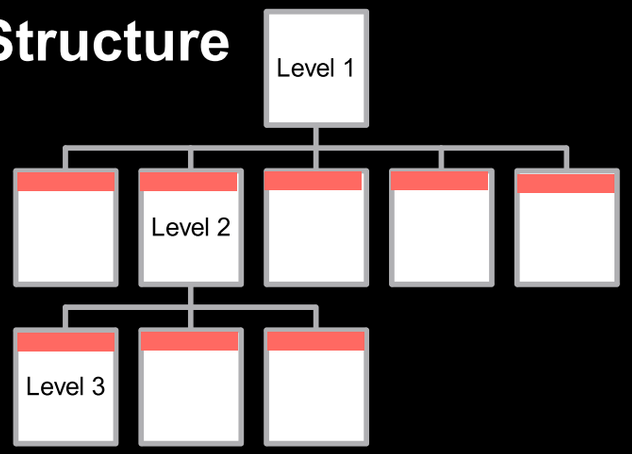
Visual Grouping

- **Linear** (e.g. Carousel)
- **Parallel** (e.g. Timeline)
- **Web** (e.g. Airline route)
- **Matrix** (e.g. City map)
- **Hierarchical** (e.g. tournament)
- **Spatial Zoom** (e.g. Baidu Map)
- **Overlay** (e.g. Anatomy Overlay)

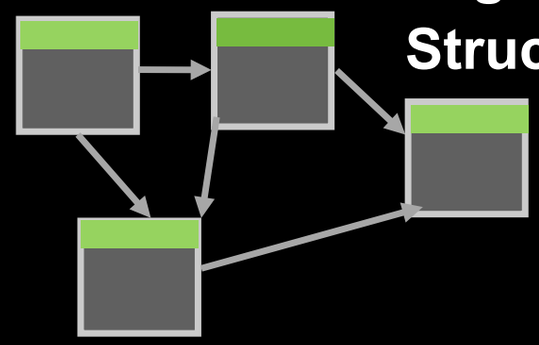
Source: Clement Mok, “Designing Business”

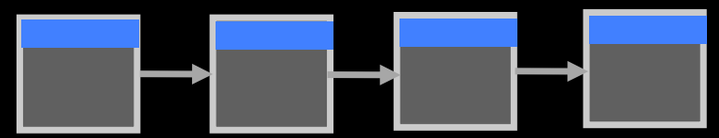
Information Architecture

Hierarchical Structure

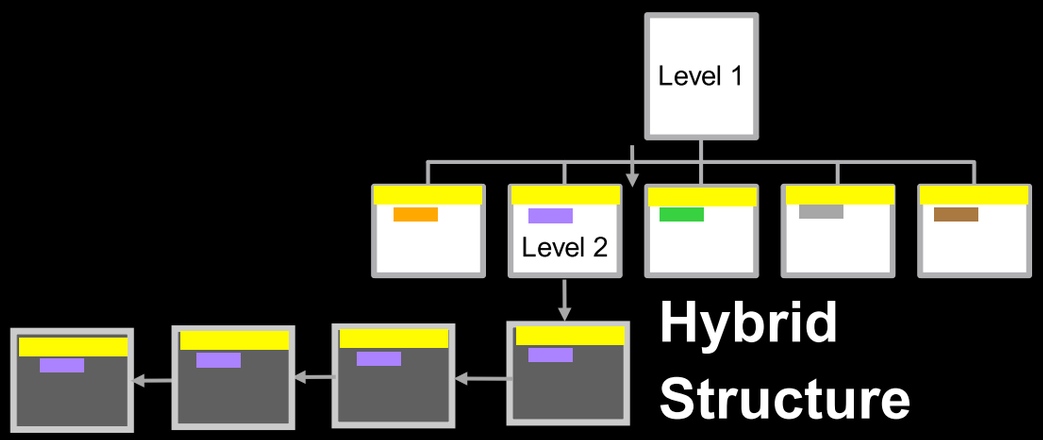


Organic Structure

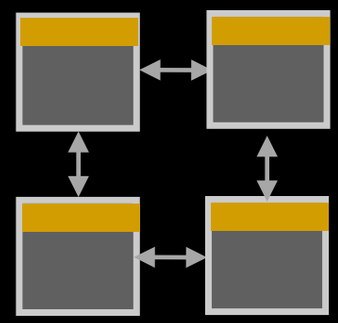




Sequential Structure



Hybrid Structure



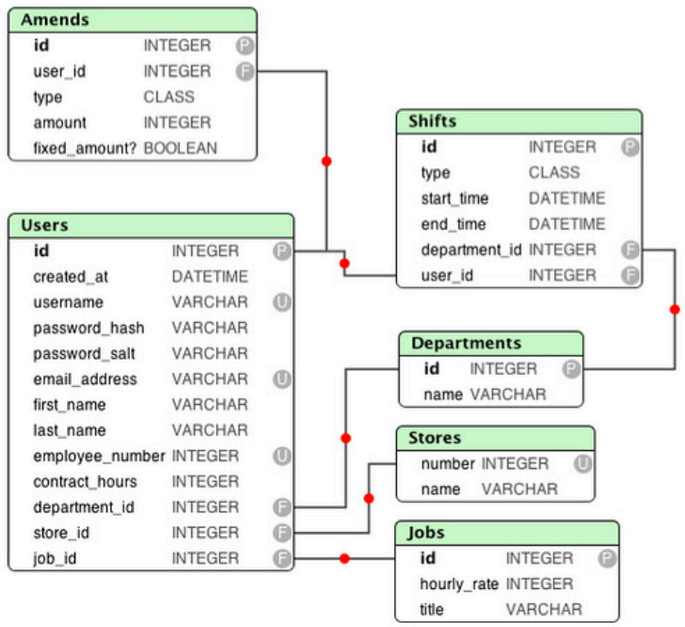
Matrix Structure

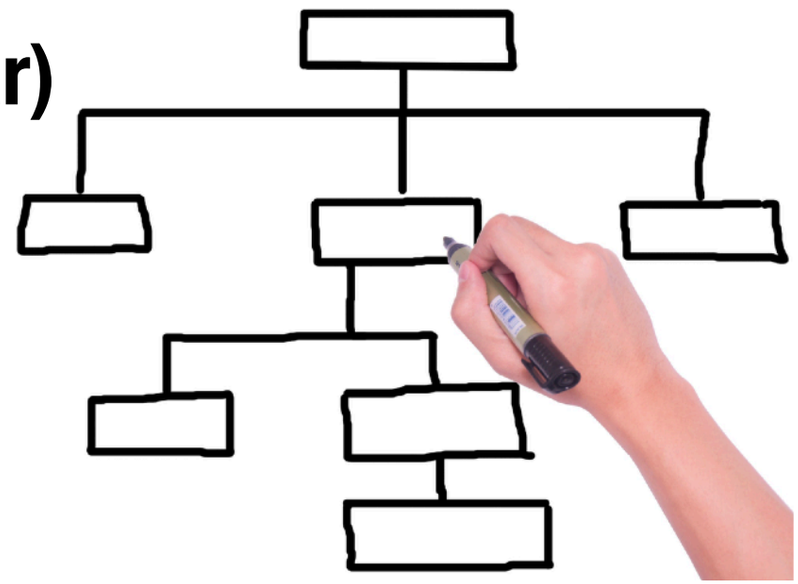
Source: commons.wikimedia.org

Source: Caius Durling (Flickr)

Source: pexels.com

V(iew)
(e.g. Kanban, Calendar)





M(odel)
(e.g. table, relations, and formulas)

C(ontroller)
(e.g. Sitemap,menu, navbar)

erd02.drawio

File Edit View Arrange Extras Help Unsaved changes. Click here to save.

Share

100%

Search Shapes

Scratchpad

Drag elements here

General

+ More Shapes...

Admission Table

PK	AdmissionTable
FK	Application #
	Recommendation
	Academic Standing
	Financial Confirmation
	Departmental Approval
	⋮

Applicants Table

PK	Application #
	Fullname
	Email
	Address
	City
	Country
	Undergraduate
	GPA
	TOFEL Score
	⋮

Programme Table

PK	Programme ID
	Programme Name
FK	Department ID
	Tuition Fee
	⋮

Departments Table

PK	Department Code
	Department Name
FK	Department ID
	Department Head
	⋮

Page-1

Diagram Style

View

Grid 10 pt

Page View

Background Image

Shadow

Options

Connection Arrows

Connection Points

Guides

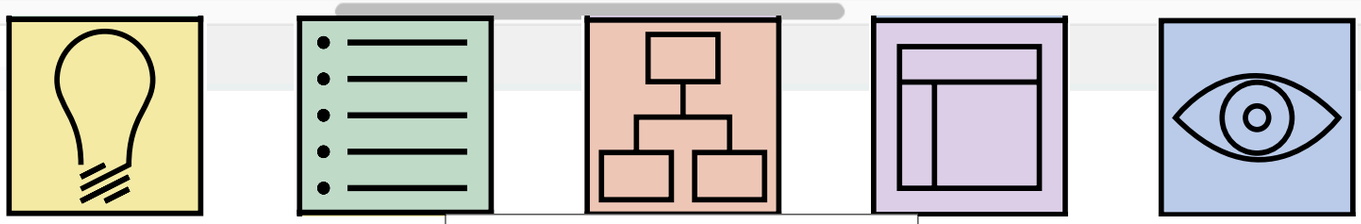
Paper Size

A4 (210 mm x 297 mm)

Portrait Landscape

Edit Data

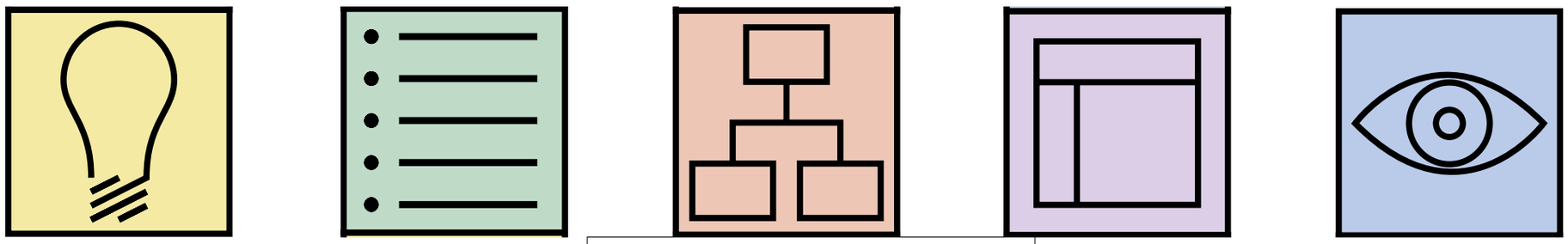
Clear Default Style

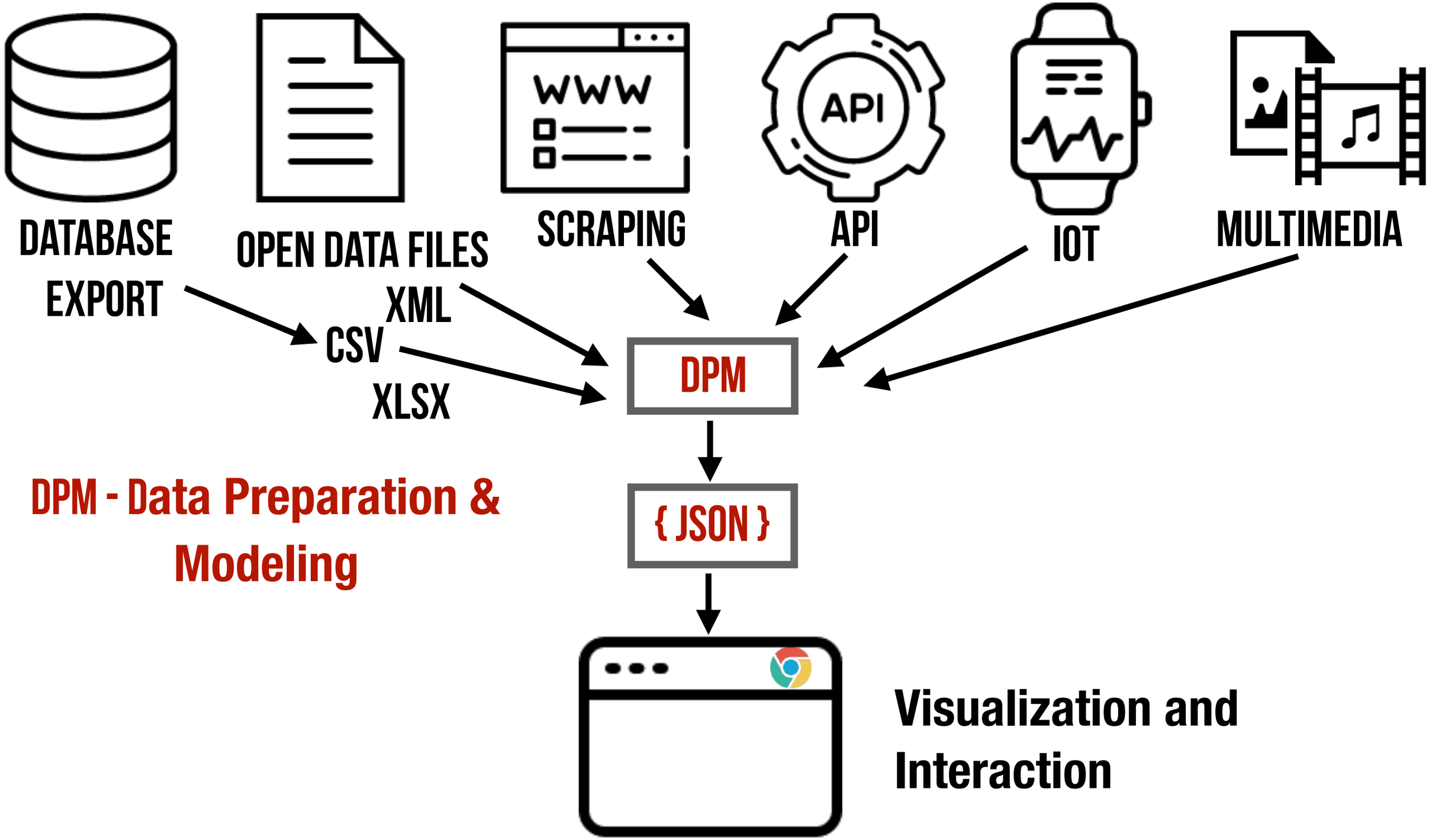


STRUCTURE PLANE

Data Collection & Content Production Plan

Level	Section	Description	Status	Deadline	Assigned
1.0	About CUHK	An overview of the school	Done	NA	John
2.0	Admission & Financial Aid	General Admission and Financial Information	Final Review	1/9/2020	Peter
3.0	Programmes	Programme Description and Admission Req.	Collect Updates	1/9/2020	Mary
4.0	Contact Us	Contact info and location	Done	NA	Paul





DPM - Data Preparation & Modeling

Visualization and Interaction

How do we know…

- Are we building a product that the market wants?
- Is our marketing campaigns (SEO/SEM, social media, email, events, KOL, traditional media, etc.) bringing in the traffic?
- Is our product pretty, useful, and simple to use and our content engaging?
- Are the visitors/customers returning/repurchasing?

Data driven product and service design is supposed to address these questions.

Data Driven Web Development

Keyword Search Results (e.g. Clicks, impressions CTR, queries)

Google crawlers & index updates based on new contents

(Drive content production of website with CMS, **Google Keyword Planner** + Google Analytics)

2

SEO/SEM (**Google Search Console**)

WordPress CMS (WordPress + RankMath)

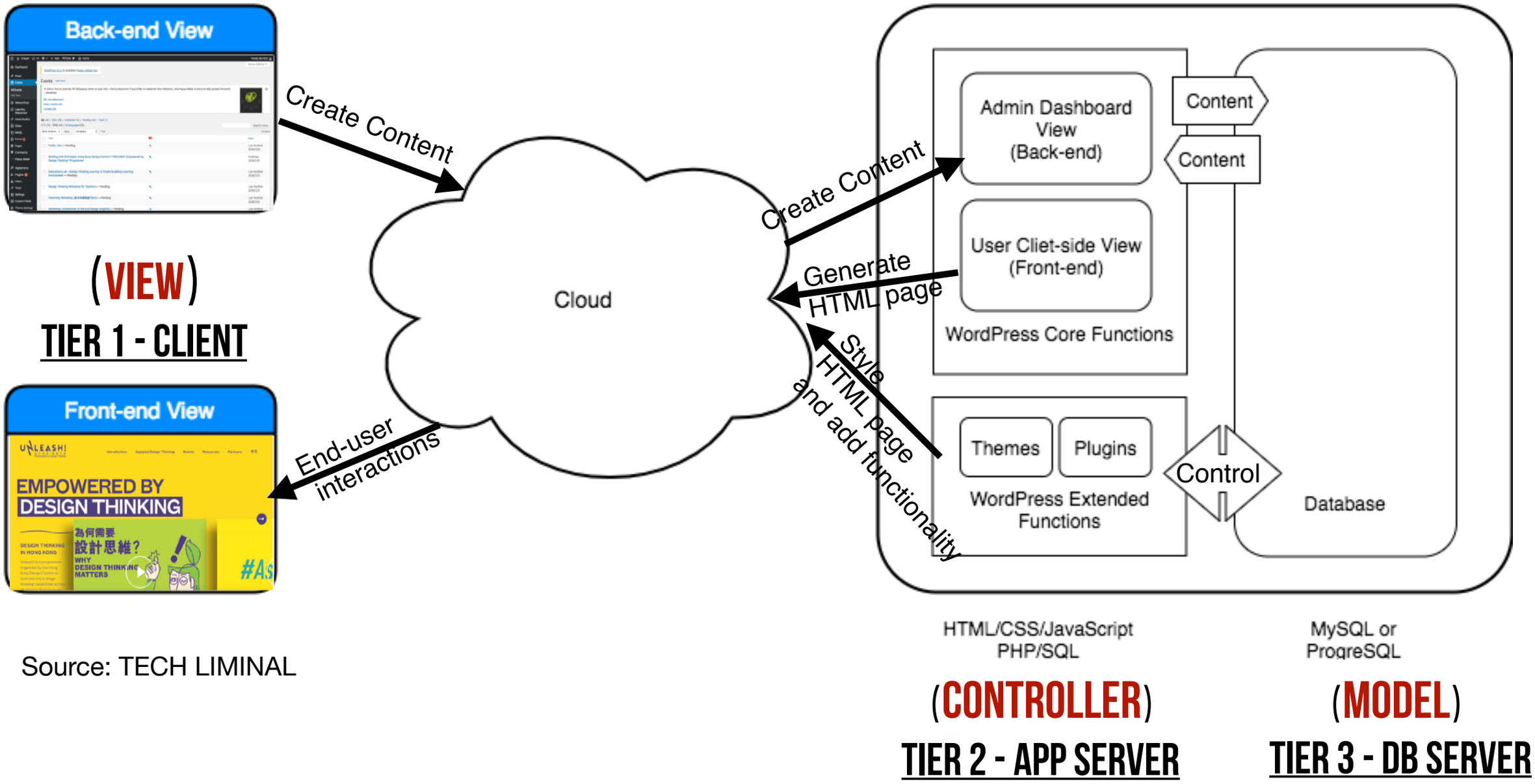
1

Traffic data from search and other sources (e.g. social media, email)

Analytics (**Google Analytics**)

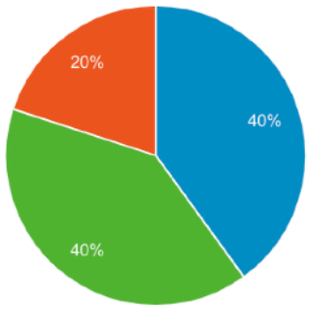
Speed and content optimisation (e.g. title, meta tag, description, links using keywords) and data source enhancements.

3

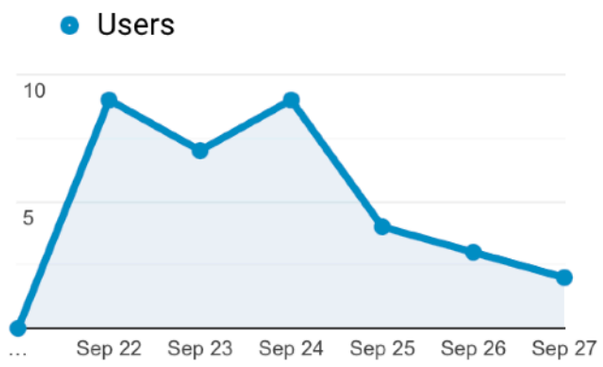


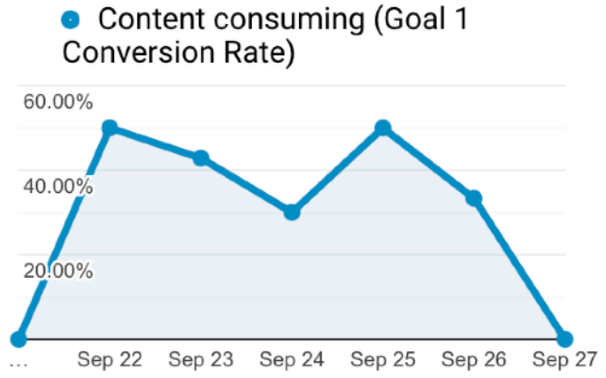
Source: TECH LIMINAL

Home
Customization
REPORTS
Realtime
Audience
Acquisition
Overview
All Traffic
Google Ads
Search Console
Social
Campaigns
Behavior
Conversions
Attribution BETA
Discover
Admin



Direct
Organic Search
Social





	Acquisition			Behavior			Conversions		
	Users ↓	New Users	Sessions	Bounce Rate	Pages / Session	Avg. Session Duration	Goal 1 Conversion Rate	Goal 1 Completion	Goal 1 Value
	30	26	36	41.67%	6.78	00:02:24	38.89%	14	$0.00
1 Direct	12			28.57%			50.00%		
2 Organic Search	12			73.33%			13.33%		
3 Social	6			0.00%			71.43%		

To see all 3 Channels click here.

This report was generated on 9/28/20 at 1:50:59 AM - Refresh Report

Google Search Console

Inspect any URL in "https://clab.wys.cuhk.edu.hk/"

https://clab.wys.cuhk.edu.hk/

- Overview
- Performance
- URL inspection

Index

- Coverage
- Sitemaps
- Removals

Enhancements

- Core Web Vitals
- Mobile Usability

Security & Manual Actions

Legacy tools and reports

- Links
- Settings

Submit feedback

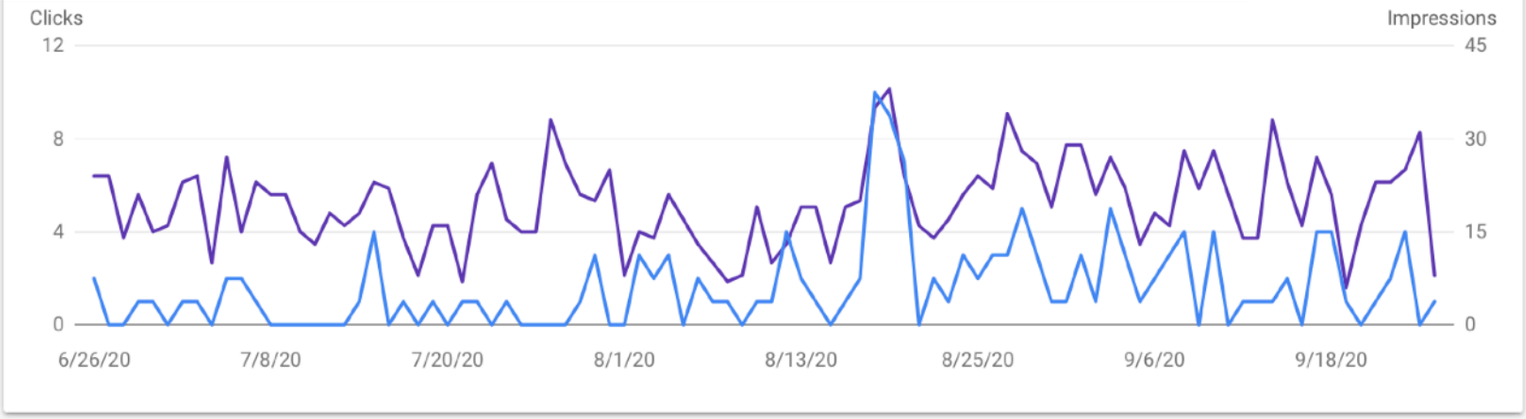
Performance

EXPORT

Search type: Web | Date: Last 3 months | + NEW

Last updated: 10 hours ago

Total clicks	Total impressions	Average CTR	Average position
147	1.8K	8.2%	13.4



QUERIES | PAGES | COUNTRIES | DEVICES | SEARCH APPEARANCE | DATES

Query	Clicks	Impressions
啱key	4	75

Discover new keywords

Get keyword ideas that can help you reach people interested in your product or service

Get search volume and forecasts

s for
ey

Let's go

Click the **Discover new keywords** card to begin.

1/5

PLANS CREATED BY YOU | PLANS SHARED WITH YOU

ADD FILTER

COLUMNS

Plan	Status	Last modified ↓	Forecast period

Find new keyword ideas, get search volumes and create a plan

1 / 2 **None of your ads are running** - Your campaigns and ad groups are paused or removed. Enable them to begin showing your ads. LEARN MORE

Keyword ideas
Grouped ideas
Plan overview
Ad Groups
Keywords
Locations

Plan settings | Plan name: Plan from Sep 28, 2... | Locations: Hong Kong | Language: All languages | Search networks: Google | Next month 1 - 31 Oct 2020

FORECASTS NEGATIVE KEYWORDS HISTORICAL METRICS *Saved 1 minute ago* CREATE CAMPAIGN

Clicks	Impressions	Cost	CTR	Avg. CPC	Avg. Position
45	2.8K	HK$680	1.6%	HK$15	0.99

Daily Budget: HK$37

+ Add conversion metrics

COLUMNS

Keyword	Ad group	Max. CPC	Clicks	Impressions	Cost	CTR	Avg. CPC
[code]	Ad group 1	HK$79.50	1.61	29.00	HK$13.26	5.6%	HK$8.24
[design]	Ad group 1	HK$79.50	43.72	2,791.95	HK$669.48	1.6%	HK$15.31
[design and code]	Ad group 1	HK$79.50	0.00	0.00	HK$0.00	–	–

1 - 3 of 3

Data Preparation: Sourcing Data through API and Developing Content in WordPress

Dashboard
Posts
Media
Pages
Comments
Appearance
Plugins 2
Installed Plugins
Add New
Plugin Editor
Users
Tools
Settings
Collapse menu

Add Plugins

Upload Plugin

Help

Search Results | Featured | Popular | Recommended | Favorites

Keyword | Airpress

1 item

Airpress

Airpress allows you to use your Airtable data inside Wordpress as custom fields, virtual posts,...

By Chester McLaughlin

Install Now

More Details

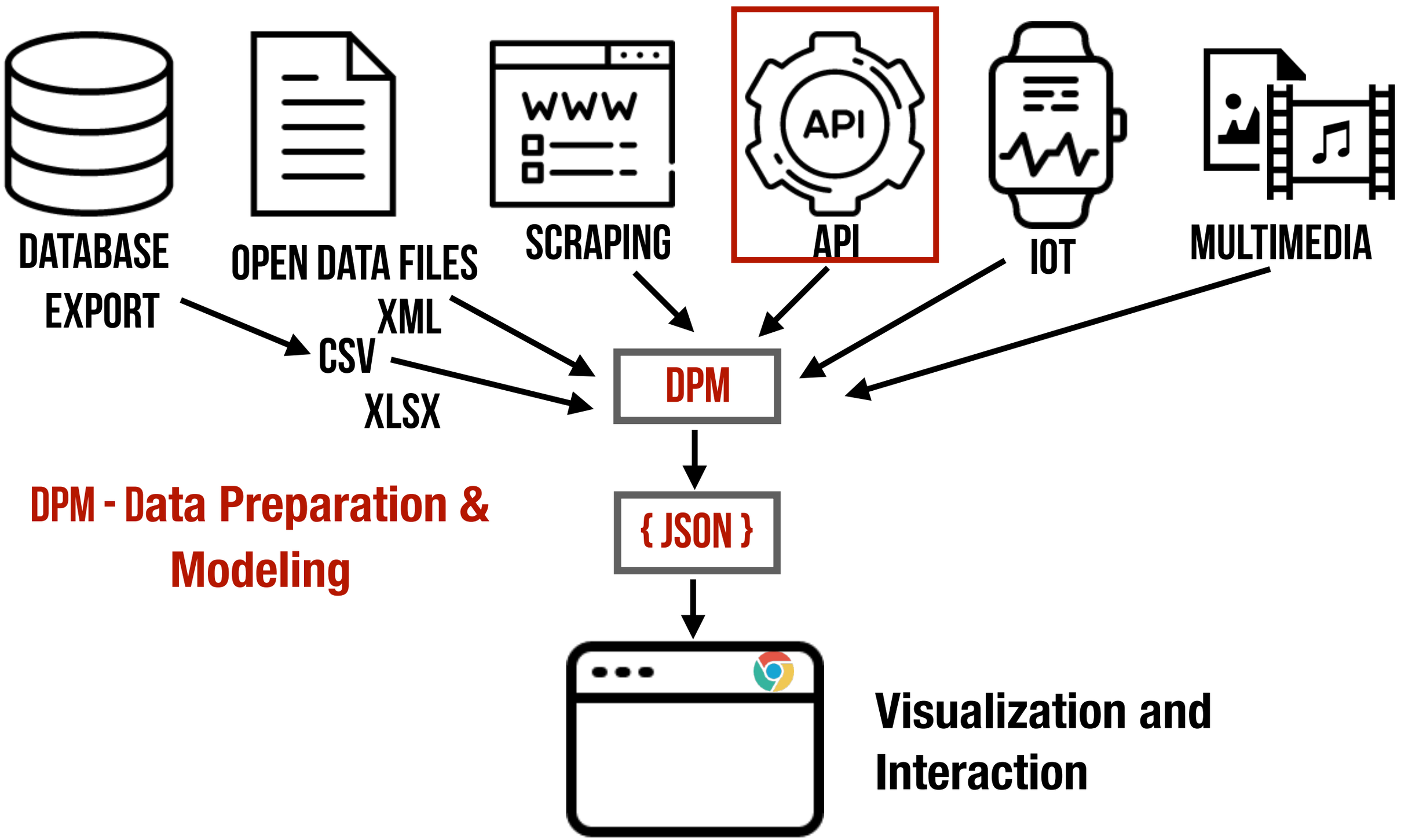
★★★★★ (12)

1,000+ Active Installations

Last Updated: 6 months ago

Untested with your version of WordPress

1 item



DPM - Data Preparation & Modeling

Visualization and Interaction

Airtable API for "Amazines"

Open base

- INTRODUCTION
- RATE LIMITS
- AUTHENTICATION
- ARTICLES TABLE
- AUTHORS TABLE
- ERRORS

AUTHENTICATION

Airtable uses simple token-based authentication. To generate or manage your API key, visit your account page. **Your API key carries the same privileges as your user account, so be sure to keep it secret!**

You can authenticate to the API by providing your API key in the HTTP authorization bearer token header. Alternatively, a slightly lower-security approach is to provide your API key with the `api_key` query parameter.

All API requests must be authenticated and made ov

123chu5586

curl | JavaScript | show API key

EXAMPLE USING BEARER TOKEN (RECOMMENDED)

```
$ curl https://api.airtable.co /v0/app /Articles
-H "Authorization: Bearer keyc "
```

EXAMPLE USING QUERY PARAMETER

```
$ curl https://api. irtable.com/v0/app
/Articles?api_key=k yc
```

ARTICLES TABLE

Fields

Each record in the Articles table contains the following fields:

FIELD NAME	TYPE	DESCRIPTION

Dashboard
Posts
Media
Pages
Comments
Appearance
Plugins
Users
Tools
Settings
Shortcodes
Airpress
Airtable Connections
Debug Info
Virtual Posts
Virtual Fields
Contact Us
Support Forum
Collapse menu

Airpress Virtual Fields

Managing custom fields for hundreds or thousands of posts can be tedious and daunting! Airpress Virtual Fields allow you to automatically retrieve Airtable records for each post/page/etc by specifying a Wordpress field (such as ID or post_name) and an Airtable table and field.

default +

Configuration Name	default
Select Connection	Amazines
Select Post Type	post
Airtable Table Name	Articles
Airtable Column	title
Wordpress Field (ID or post_name)	post_title
Enable only for single posts (not archive, search, etc)	single
Delete Configuration?	Yes, delete this configuration

Save Changes

All changes saved

Amazines

HELP

Articles | Authors

SHARE | AUTOMATIONS | APPS

VIEWS | grid | 4 hidden fields | Filter | Group | Sort | Color | Share view

Find a view

grid

Create a view

- Grid
- Form
- Calendar
- Gallery
- Kanban

	title	_date	article_aut...	body	Author
1	The Universe in a Grain of Sand	2020	Adrian Joele	People all over the world ...	Adrian Joele
2	Nepal | The Ultimate Destinations For ...	2020	Anish Sah	2. Nepal | The Ultimate D...	Anish Sah
3	Complete Guide For Students To Stud...	25, 2020	Anish Sah	3. Complete Guide For St...	Anish Sah
4	How to Get Your Wife Back After an A...	r 19, 2019	maxwell jiang	4. How to Get Your Wife ...	maxwell jiang
5	Thinking About How to Get Your Girlfr...	r 19, 2019	maxwell jiang	5. Thinking About How to...	maxwell jiang
6	How to Get Your Husband Back - Mak...	r 19, 2019	maxwell jiang	6. How to Get Your Husb...	maxwell jiang
7	How to Get Your Girlfriend Back Even ...	r 19, 2019	maxwell jiang	7. How to Get Your Girlfri...	maxwell jiang
8	How to Get Your Ex Back - The Good ...	r 19, 2019	maxwell jiang	8. How to Get Your Ex Ba...	maxwell jiang
9	How to Get Your Man Back From Anot...	r 19, 2019	maxwell jiang	9. How to Get Your Man B...	maxwell jiang
10	How to Get Your Ex Back Before You ...	r 18, 2019	maxwell jiang	10. How to Get Your Ex B...	maxwell jiang
11	How to Get Your Ex Back From Anoth...	r 18, 2019	maxwell jiang	11. How to Get Your Ex Ba...	maxwell jiang
12	How to Get Your Ex Back in Seven Da...	r 18, 2019	maxwell jiang	12. How to Get Your Ex B...	maxwell jiang
13	Fastest Way on How to Get Your Girl ...	r 18, 2019	maxwell jiang	13. Fastest Way on How t...	maxwell jiang

50 records

Dashboard
Posts
All Posts
Add New
Categories
Tags
Media
Pages
Comments
Appearance
Plugins 1
Users
Tools
Settings
Shortcodes
Rank Math
Airpress
Collapse menu

Please keep only one Sitemap plugin active, otherwise, you might lose your rankings and traffic. Click here to Deactivate.

Edit Post Add New

The Universe in a Grain of Sand

Permalink: https://dev-demo5961.pantheonsite.io/2020/09/23/the-universe-in-a-grain-of-sand/ Edit

Add Media Insert shortcode Visual Text

```
[apr field="body"]
```

Word count: 0 Last edited by bsuen on September 24, 2020 at 10:27 am

Rank Math SEO

General Schema Social

Publish

Preview Changes

Status: **Published** Edit

Visibility: **Public** Edit

Revisions: **8** Browse

Published on: **Sep 23, 2020 at 16:12** Edit

Move to Trash Update

Categories

All Categories Most Used

Uncategorized

+ Add New Category

Tags

Add

Separate tags with commas

Choose from the most used tags

The Universe in a Grain of Sand

September 23, 2020 | bsuen

People all over the world are advised to stay at home to stop the spread of the Corona virus. Most people will pass the time by watching TV, listening to music or playing a came. They can also keep them busy by browsing the internet on their laptop or smart phone, keeping in contact with family and friends on social media like Facebook and Twitter. Others spend there time well by studying or doing indoor exercises to keep them fit. Another way to keep your mind occupied and keep informed is to read an eBook online, as most libraries are closed during this time of quarantine.

| Edit

← Hello world!

Leave a Reply

Search …

Search

Recent Posts

The Universe in a Grain of Sand
Hello world!

Recent Comments

A WordPress Commenter on Hello world!

Archives

September 2020

Our Agenda Today

1. Understand the 5 Elements of Computational Thinking.
2. Perform interface, navigation and information design with wireframes.
3. Use JavaScript and JQuery as means to apply computational thinking to solve problems.

VERB

JS

JavaScript acts on a HTML tag (CSS selector), CSS property or responds to an event triggered by user action.

What is JavaScript? How does it fit into computational thinking?

https://www.youtube.com/watch?v=5dFxQRcsKpw

Computational thinking is about system and how it transforms data into information and knowledge. All computational systems have the following **5 elements**.

The 5 Elements of Computational Thinking

Bitesize

Introduction to computational thinking

Before computers can be used to solve a problem, the problem itself and the ways in which it could be resolved must be understood. Computational thinking techniques help with these tasks.

What is computational thinking?

Computers can be used to help us solve problems. However, before a problem can be tackled, the problem itself and the ways in which it could be solved need to be understood.

Computational thinking allows us to do this.

https://www.bbc.co.uk/bitesize/guides/zp92mp3/revision/1

Decomposition

Pattern

Abstraction

Algorithm

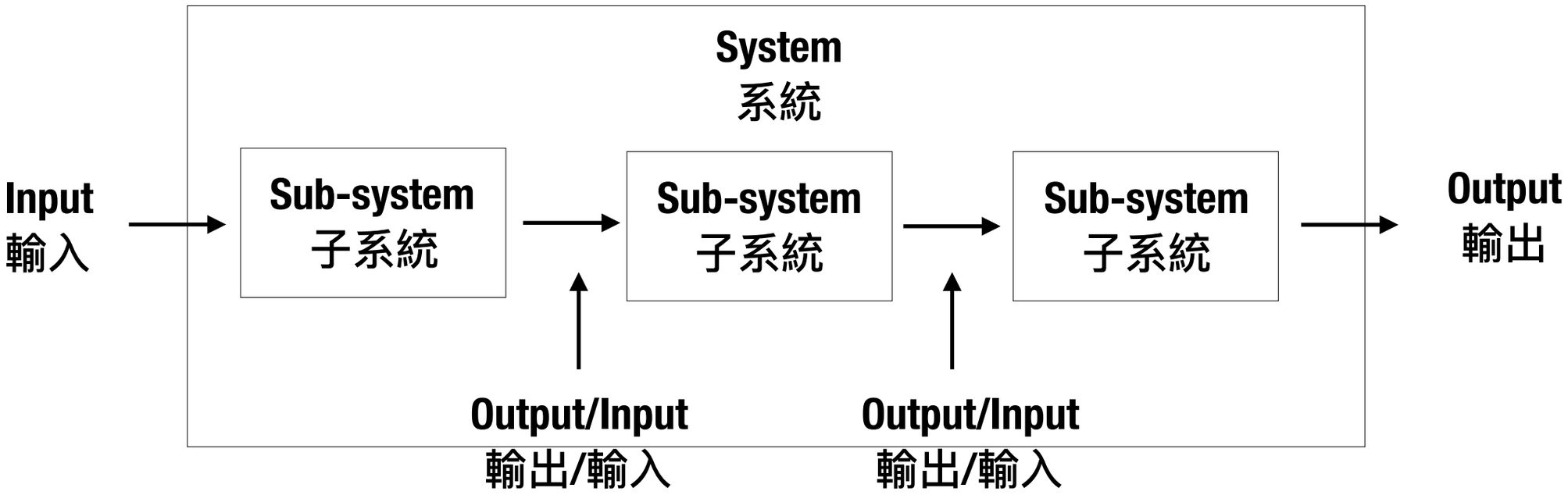
Automation & Testing (Evaluation)

Decomposition

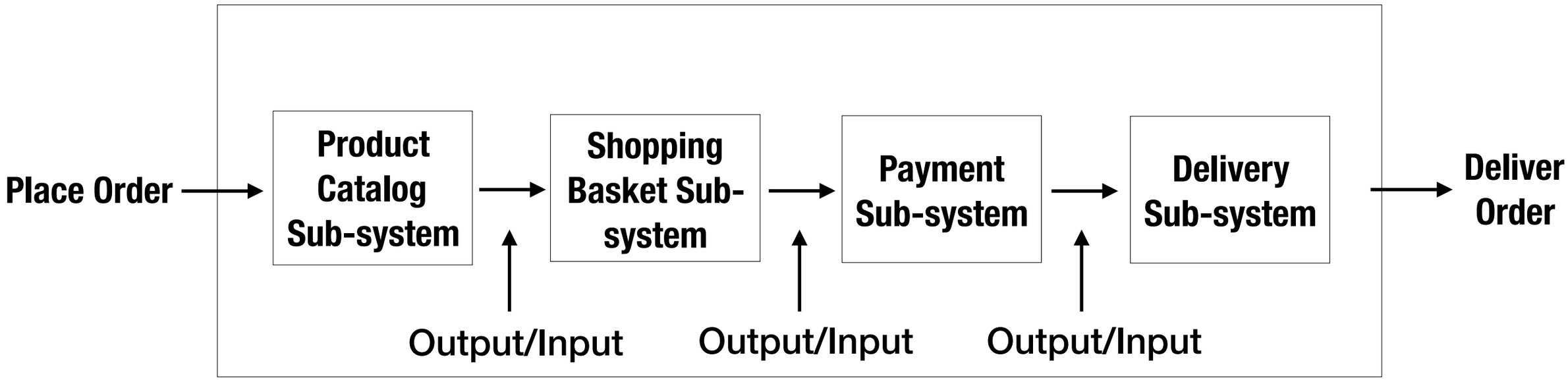
Break a problem down into smaller parts.


Input
輸入
System
系統
Output
輸出


Place Order
E-Commerce Platform
Deliver Order


System
系統
Input
輸入
Sub-system
子系統
Sub-system
子系統
Sub-system
子系統
Output
輸出
Output/Input
輸出/輸入
Output/Input
輸出/輸入

E-Commerce System



Decomposition is essentially
“system analysis” (系統分析)

Examples

dfd04.drawio

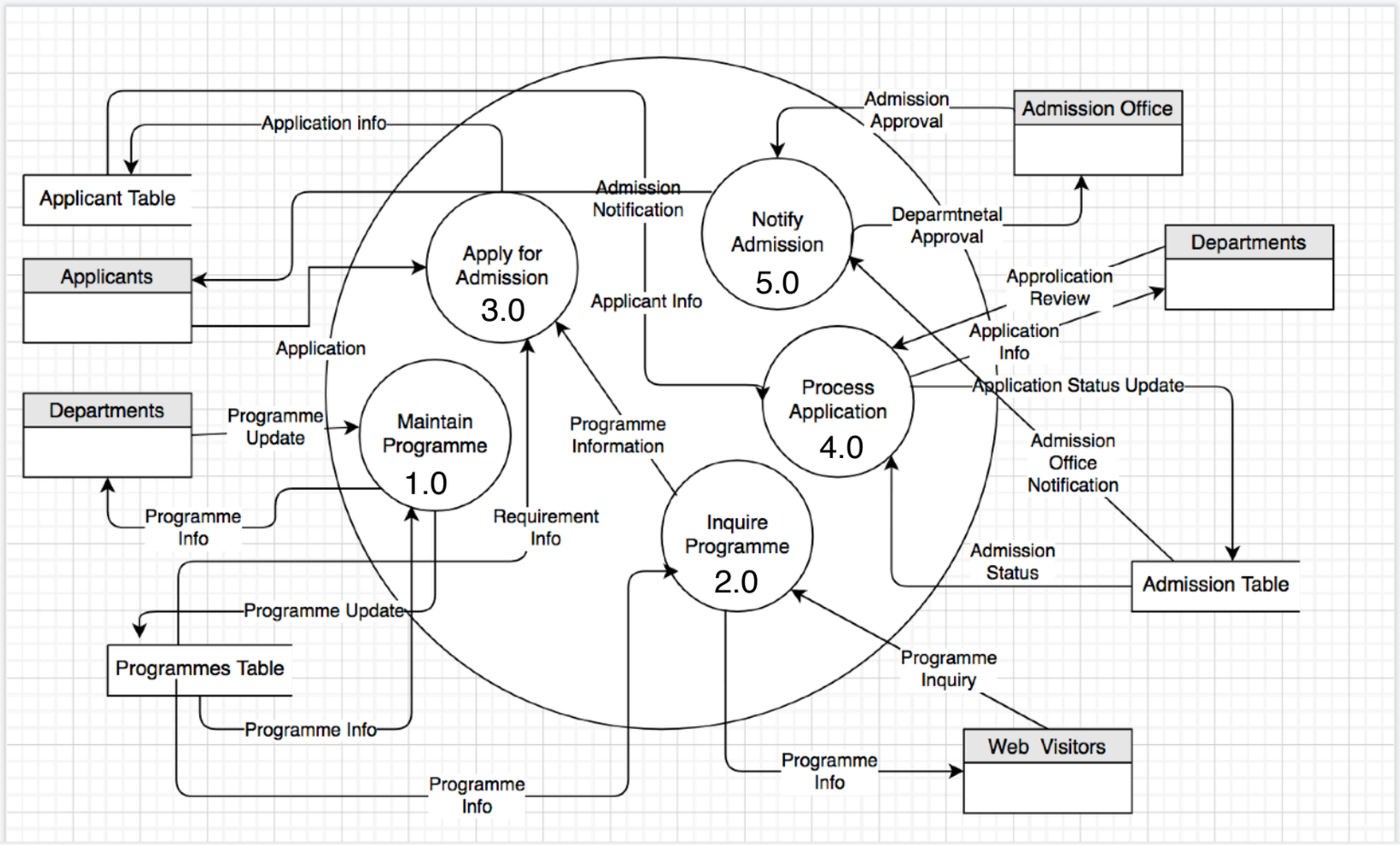
File Edit View Arrange Extras Help All

Share

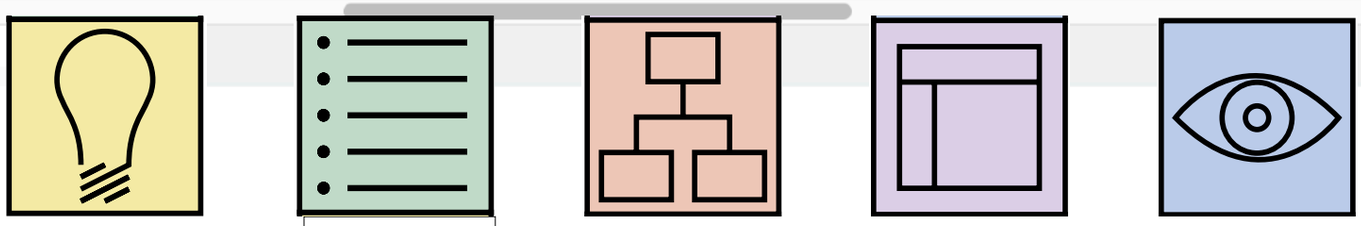
Dataflow Diagram (Level 1)

100%

Flowchart
Android
Bootstrap
Data Flow Diagram
Entity Relation
iOS Icons
iOS UI
iOS6
+ More Shapes...



Page-1



SCOPE

Diagram Style

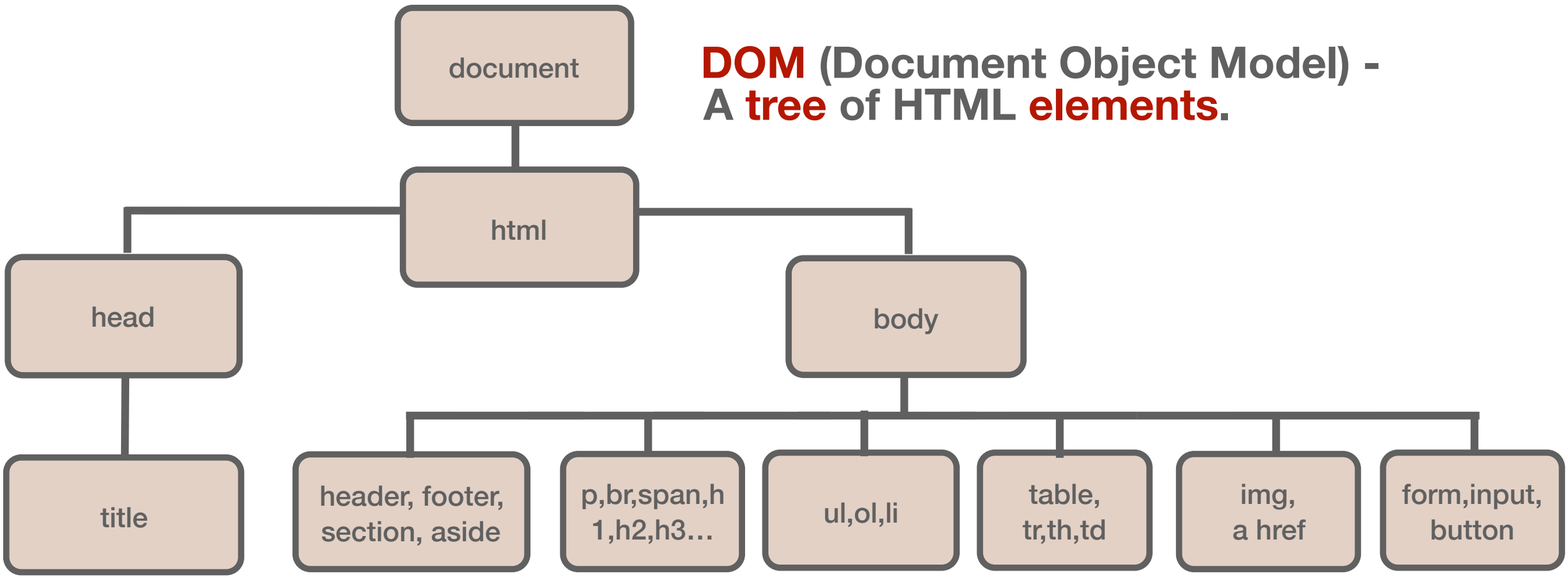
View
Grid 10 pt
Page View
Background Image
Shadow

Options
Connection Arrows
Connection Points
Guides

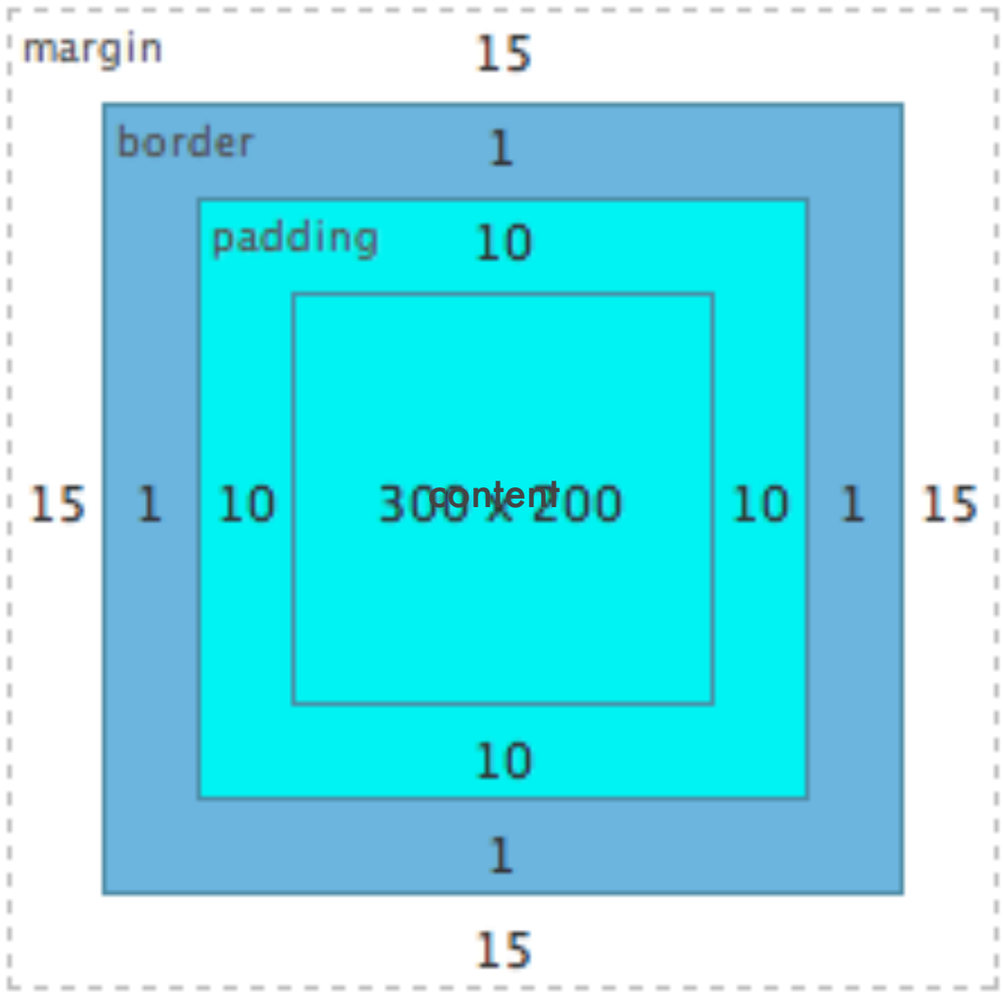
Paper Size
A4 (210 mm x 297 mm)
Portrait Landscape

Edit Data
Clear Default Style

DOM (Document Object Model) -
A **tree** of HTML **elements**.



The Box Model



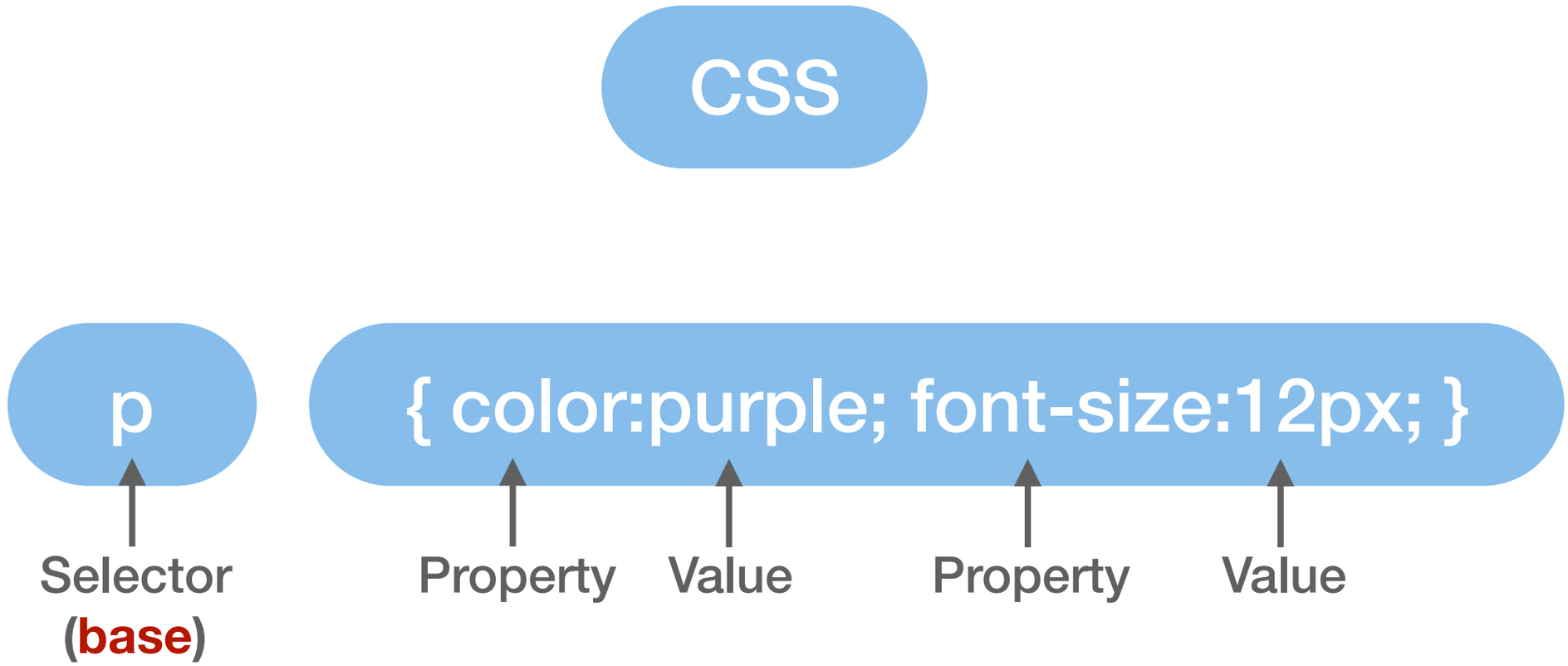
HTML Elements

<html>, <head>, <title>, <meta>, <style>, <script>, <body>, **<header>**, **<footer>**, **<nav>**, **<main>**, **<section>**, **<aside>**, <p>,
, <a>, <ol>, <ul>, <li>, <table>, , <form>

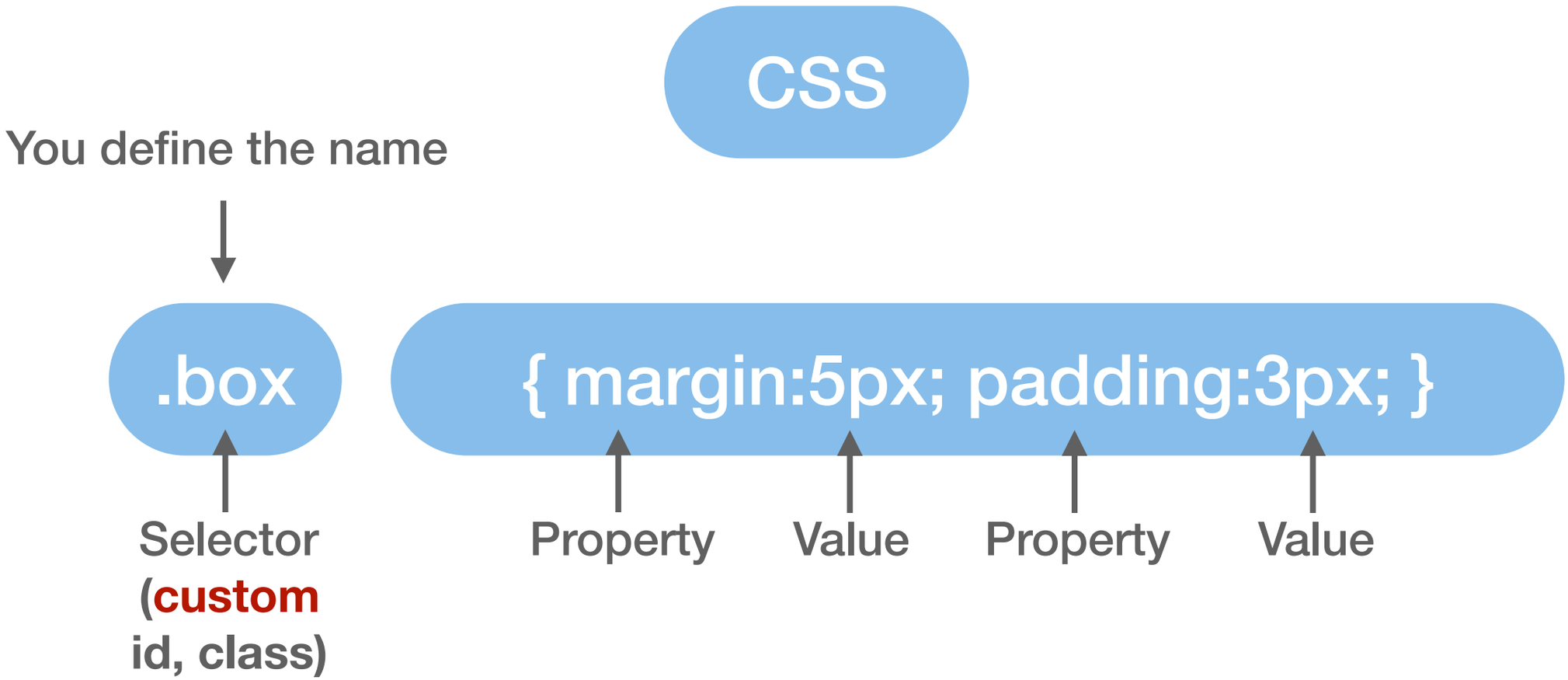
Elements has attributes (Also called properties which can be styled by CSS)

(e.g. color, background-color, position, font-family, font-size, font-style, display, width, margin, border, padding)

***HTML5 semantic tags



In CSS, the HTML tags are called selectors.



In CSS, the HTML tags are called selectors.

A Quick Demo of HTML/CSS as System Components Using Visual Studio Live Server and Chrome Inspector

Source: Elements of User Experience by Jesse James Garrett

UX Elements

Concrete

Completion

Abstract

Conception

time

The Surface Plane

The Skeleton Plane

The Structure Plane

The Scope Plane

The Strategy Plane

Visual Design

Interface Design

Navigation Design

Information Design

Interaction Design

Information Architecture

Functional Specifications

Content Requirements

User Needs

Site Objectives

Solution Space
how and how much

Problem Space
who, what, and why

Deployment

Evaluation

Modeling

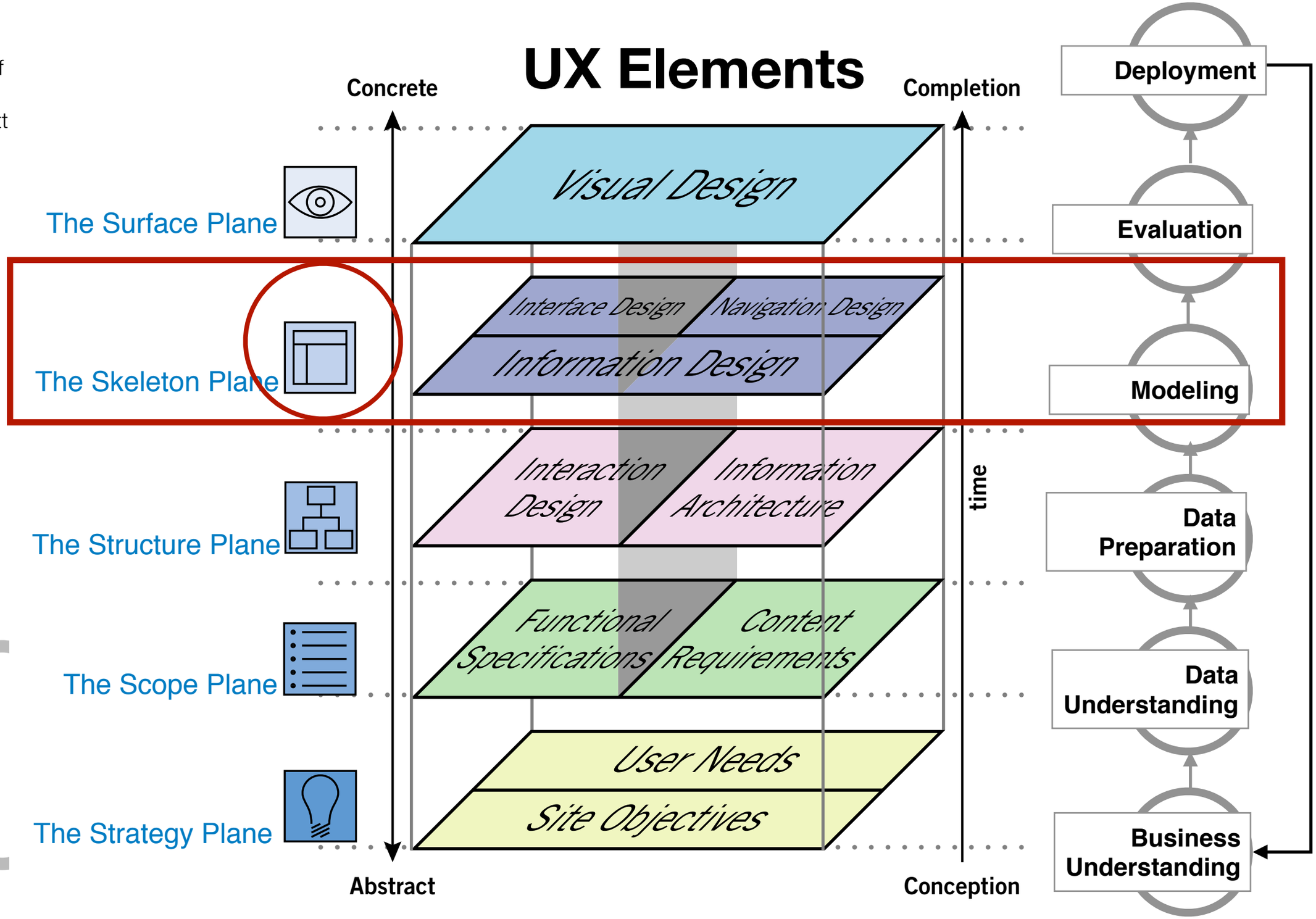
Data Preparation

Data Understanding

Business Understanding

Source: Elements of User Experience by Jesse James Garrett

UX Elements

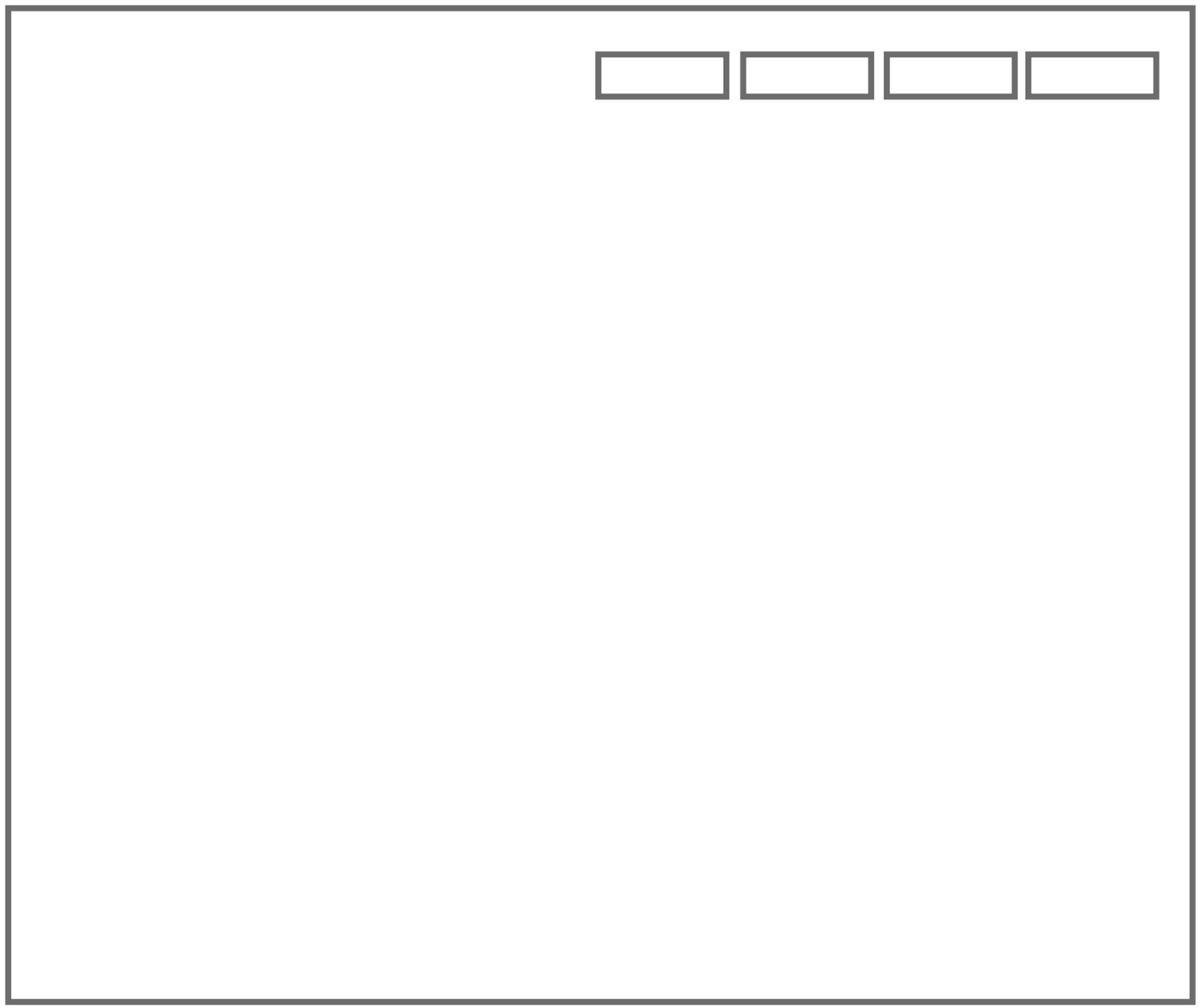


Solution Space
how and how much

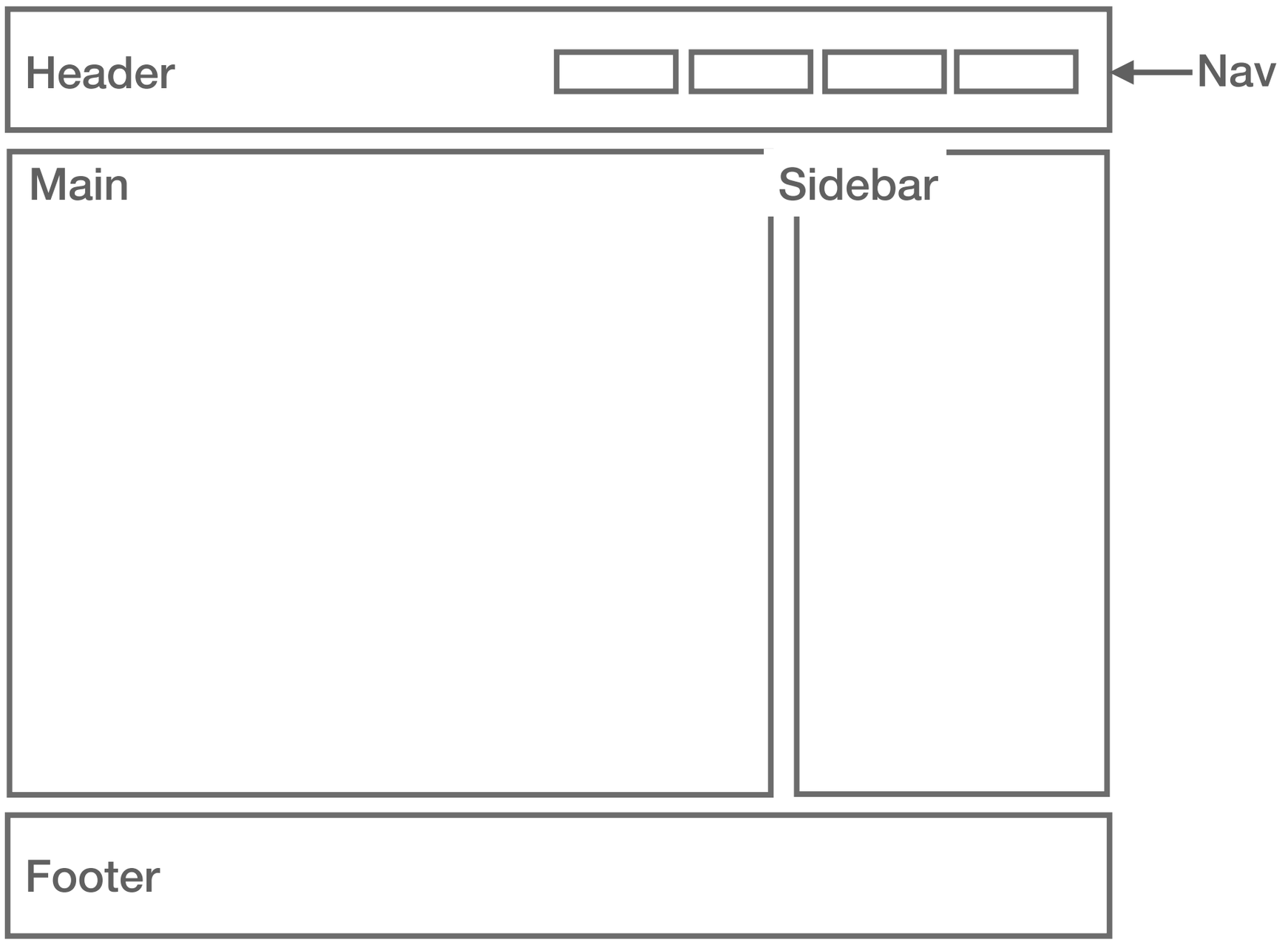
Problem Space
who, what, and why

Wireframe

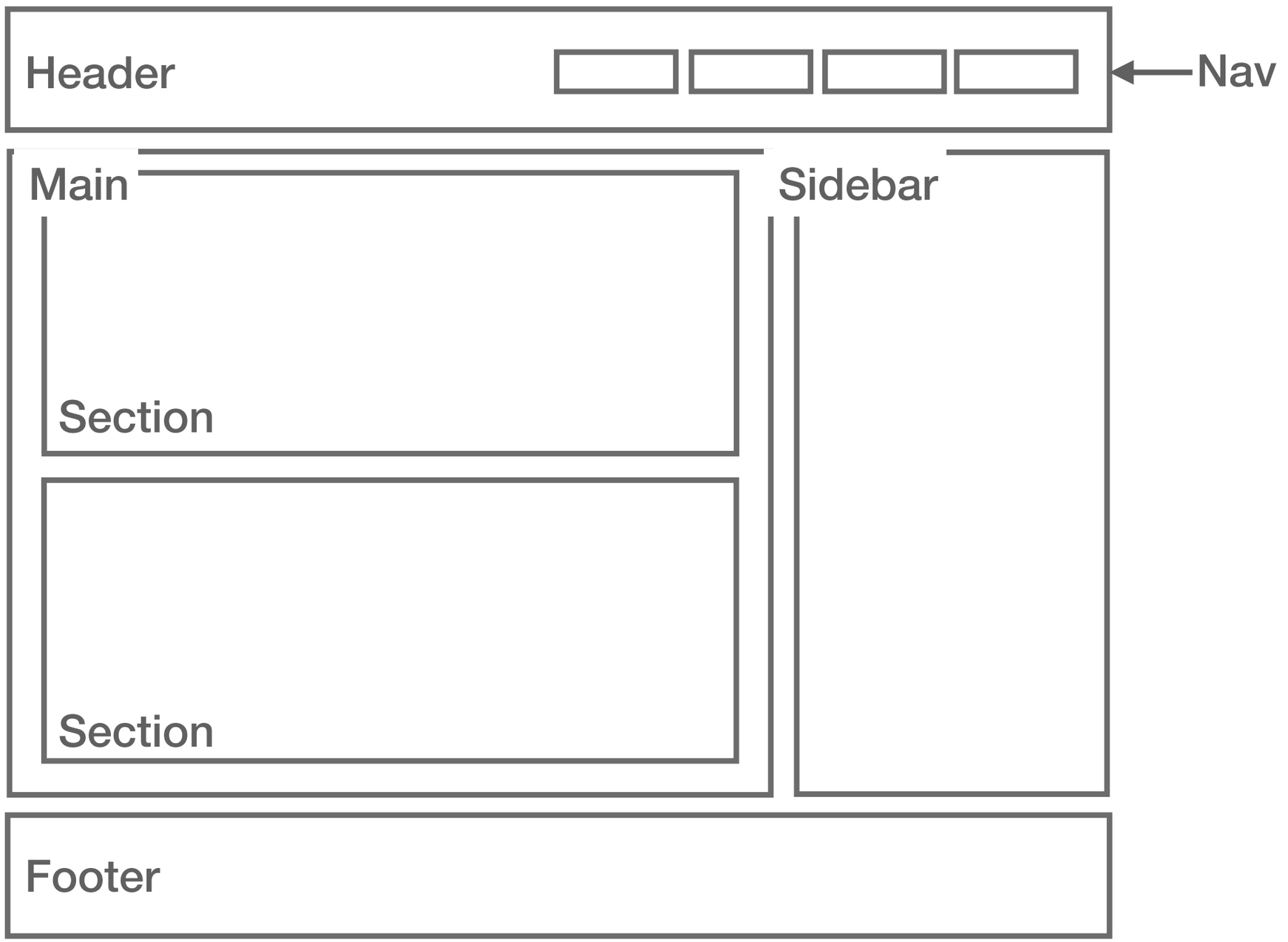
Wireframe



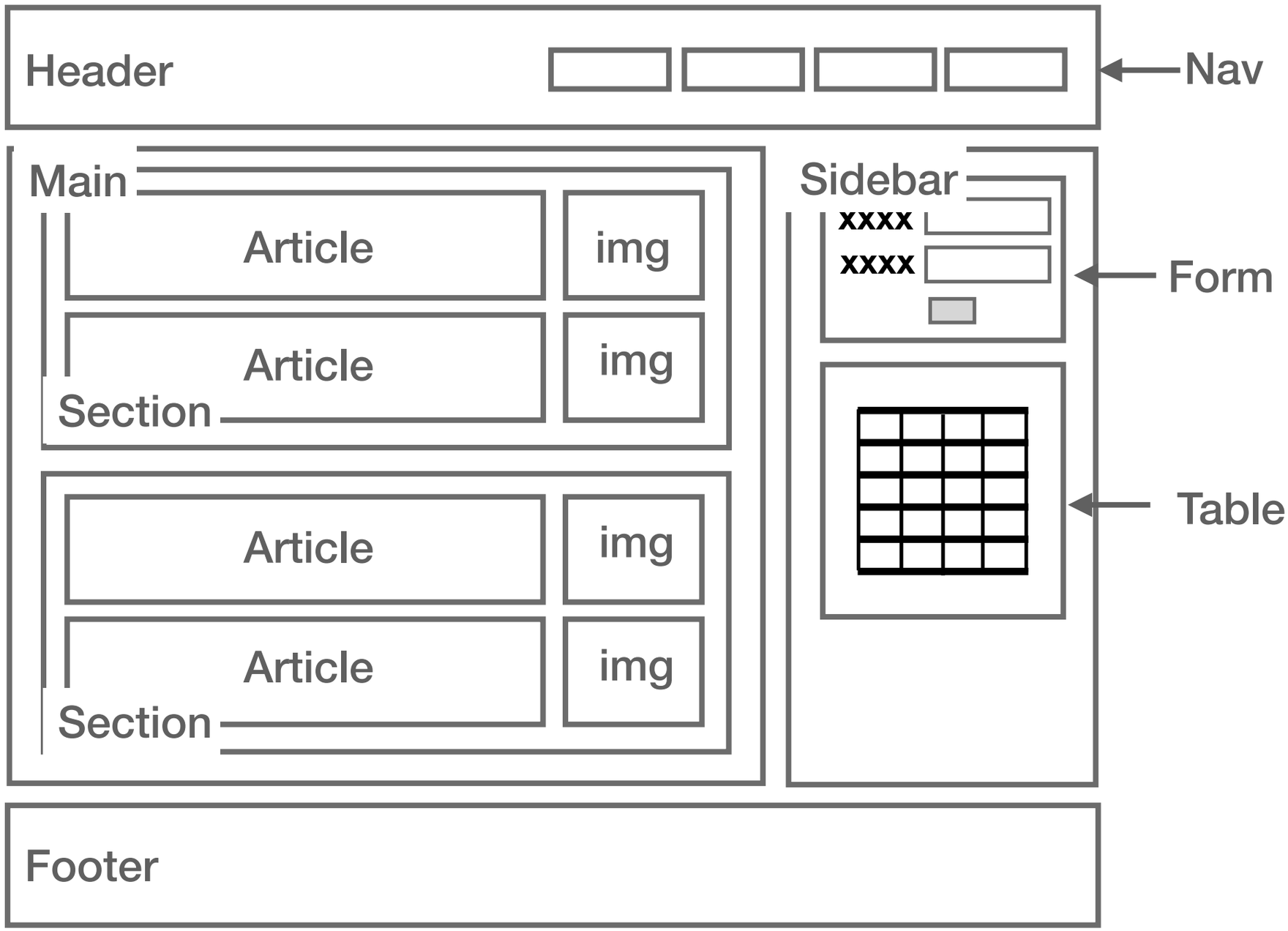
Wireframe



Wireframe



Wireframe


Header
Nav
Main
Article
img
Article
img
Section
Article
img
Article
img
Section
Sidebar
xxxx
xxxx
Form
Table
Footer

- About
- Courses
- Meetings
- Blogs

Section 1

Section 2

- About com5961
- Courses
- Meetings
- Blogs

Section 1

Section 2

Section 1

Article 1

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Phasellus eu ligula consequat nisl tempor ultricies. Suspendisse porta tempus eleifend. Suspendisse potenti. Nam ultrices, dolor ac faucibus ornare, nulla enim feugiat ante, a bibendum velit felis in libero. Nullam feugiat metus lacinia urna mollis venenatis. Mauris mollis erat molestie, pharetra massa eget, placerat lectus. Aenean pharetra dolor sed odio vehicula, ut commodo lacus fringilla. Duis et diam placerat, eleifend orci eget, egestas erat.

Article 2

Vestibulum ullamcorper nisl elit, non semper nunc viverra eu

User Name:

Password:

Submit

Event	Month	Day	Venue
Lesson 5	Oct	5th	Online
Lesson 6	Oct	12th	Online
Lesson 7	Oct	19th	Online
Lesson 8	Oct	26th	Online

Section 1

User Name:

Password:

Send

Article 1

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Phasellus eu ligula consequat nisl tempor ultricies. Suspendisse porta tempus eleifend. Suspendisse potenti. Nam ultrices, dolor ac faucibus ornare, nulla enim feugiat ante, a bibendum velit felis in libero. Nullam feugiat metus lacinia urna mollis venenatis. Mauris mollis erat molestie, pharetra massa eget, placerat lectus. Aenean pharetra dolor sed odio vehicula, ut commodo lacus fringilla. Duis et diam placerat, eleifend orci eget, egestas erat.

Event	Month	Day	Venue
Lesson 5	Oct	5th	Online
Lesson 6	Oct	12th	Online
Lesson 7	Oct	19th	Online
Lesson 8	Oct	26th	Online

Article 2

Vestibulum ullamcorper nisl elit, non semper nunc viverra eu

Decomposition enables us to breakdown complex problem into smaller parts for making it easier to discover and combine repeatable patterns with proven outcome into the final solution.

Pattern

Discover similarities between things.

Like other programming languages, JavaScript provides us with the capabilities to build system and transform data.

All programming languages rely on similar data and operation patterns to function.

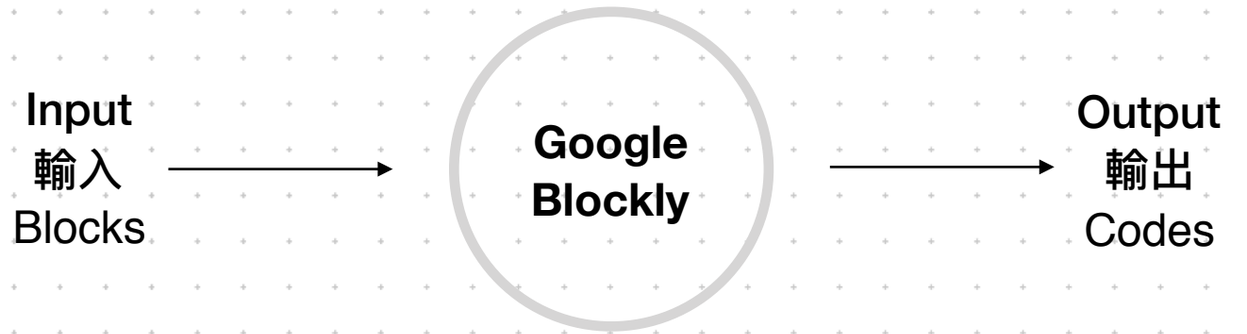
Blockly > Demos > Code

English

Blocks | JavaScript | Python | PHP | Lua | Dart | XML

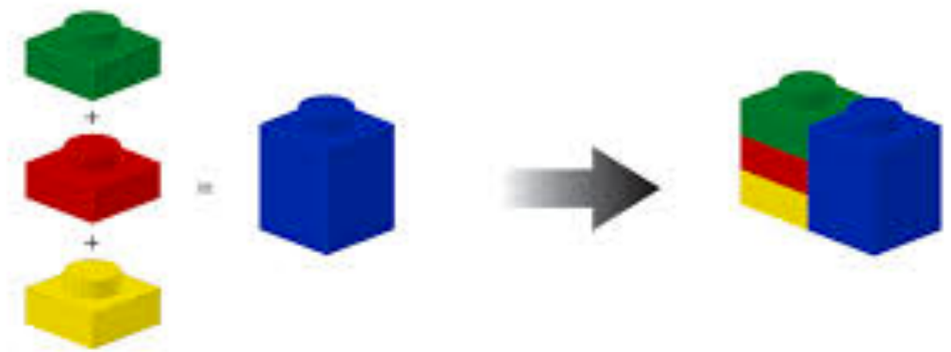
- Logic
- Loops
- Math
- Text
- Lists
- Colour
- Variables
- Functions

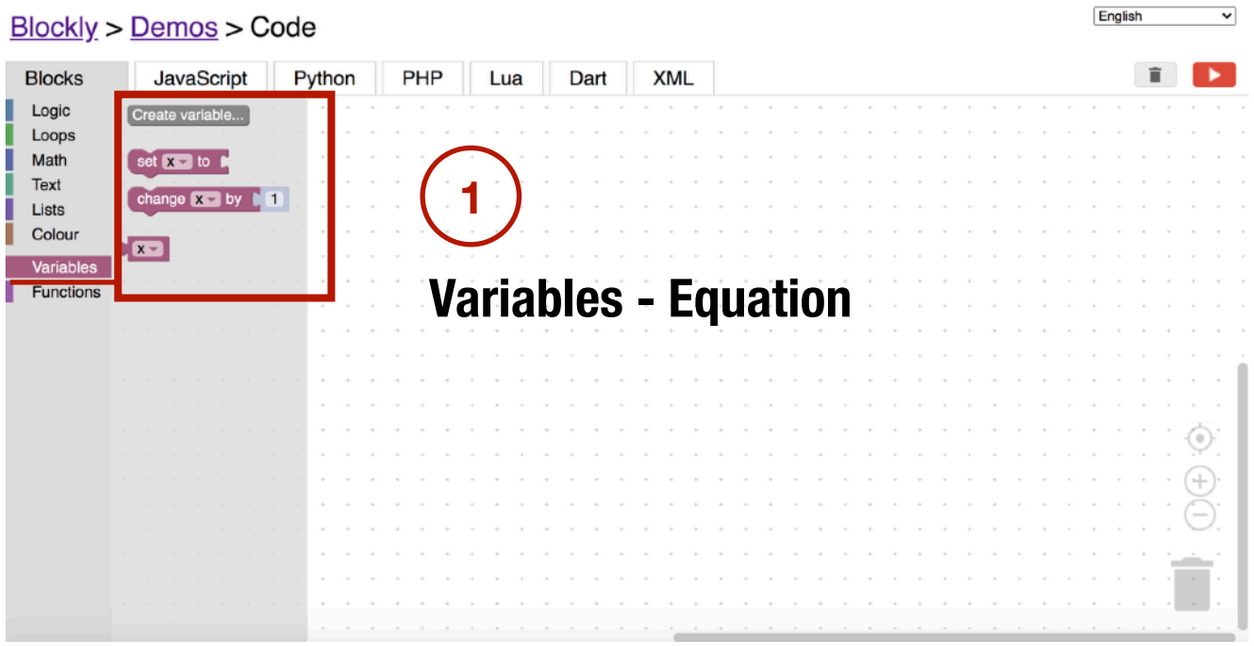
From Google Blockly to JavaScript, Python, PHP, etc.

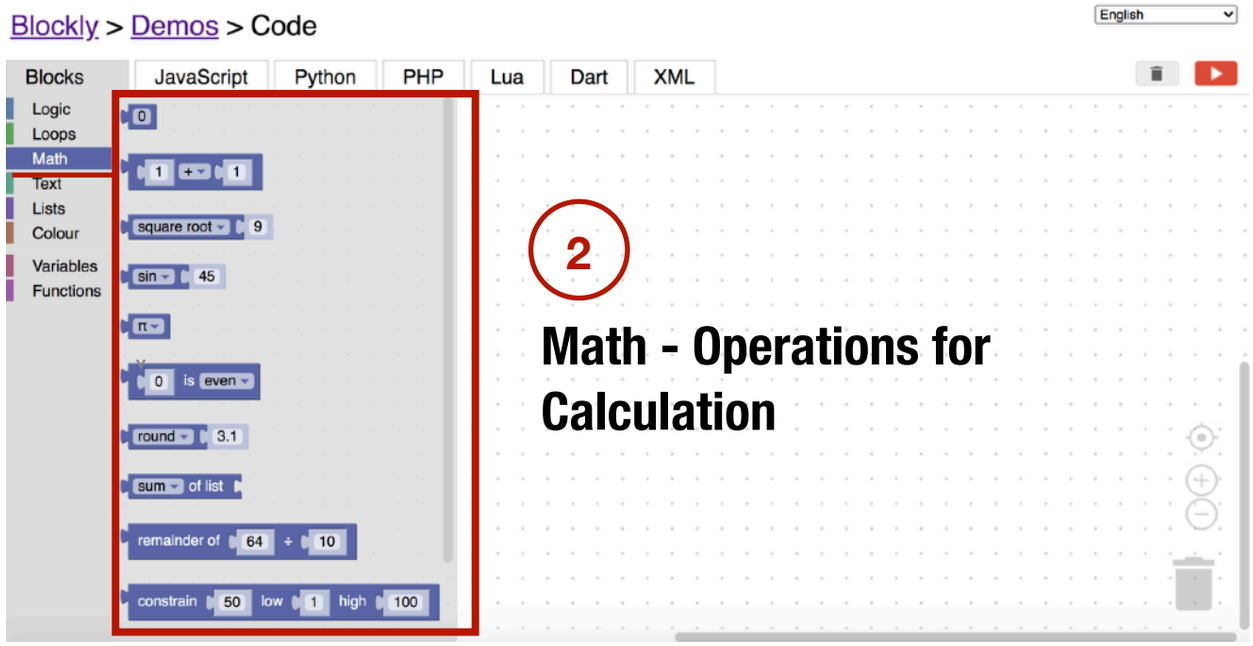


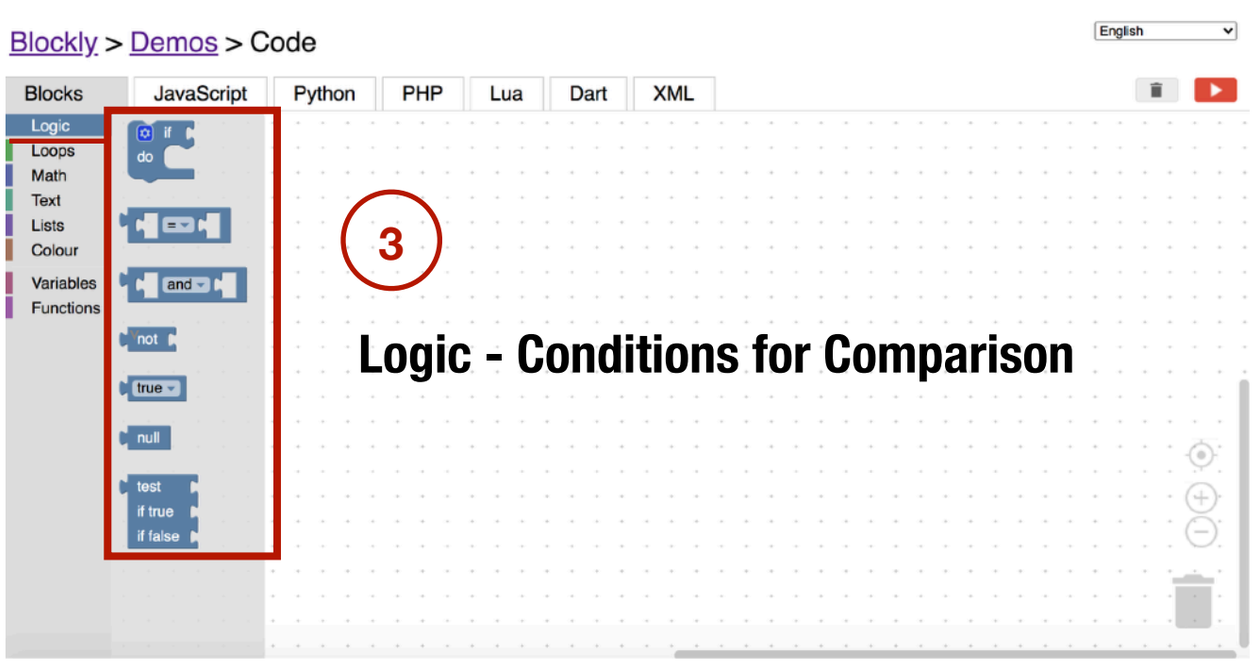
The Blocks reflect common patterns.

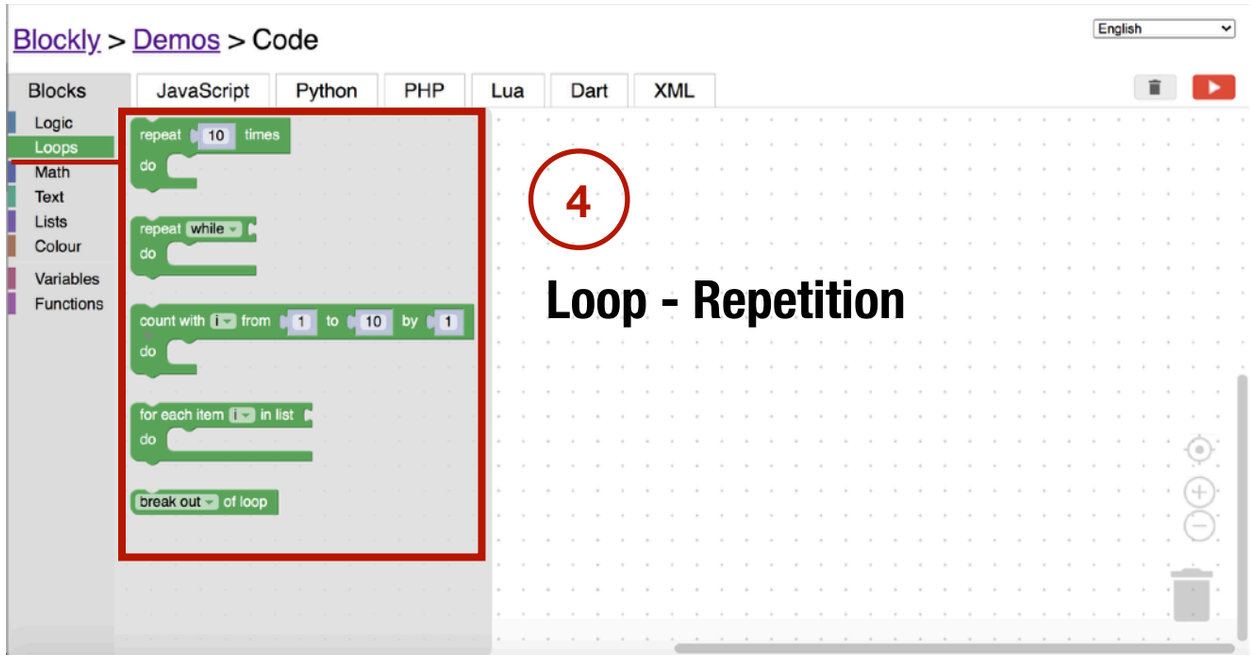
The blocks are like lego set for building more advanced system and complex product from simple and basic elements.



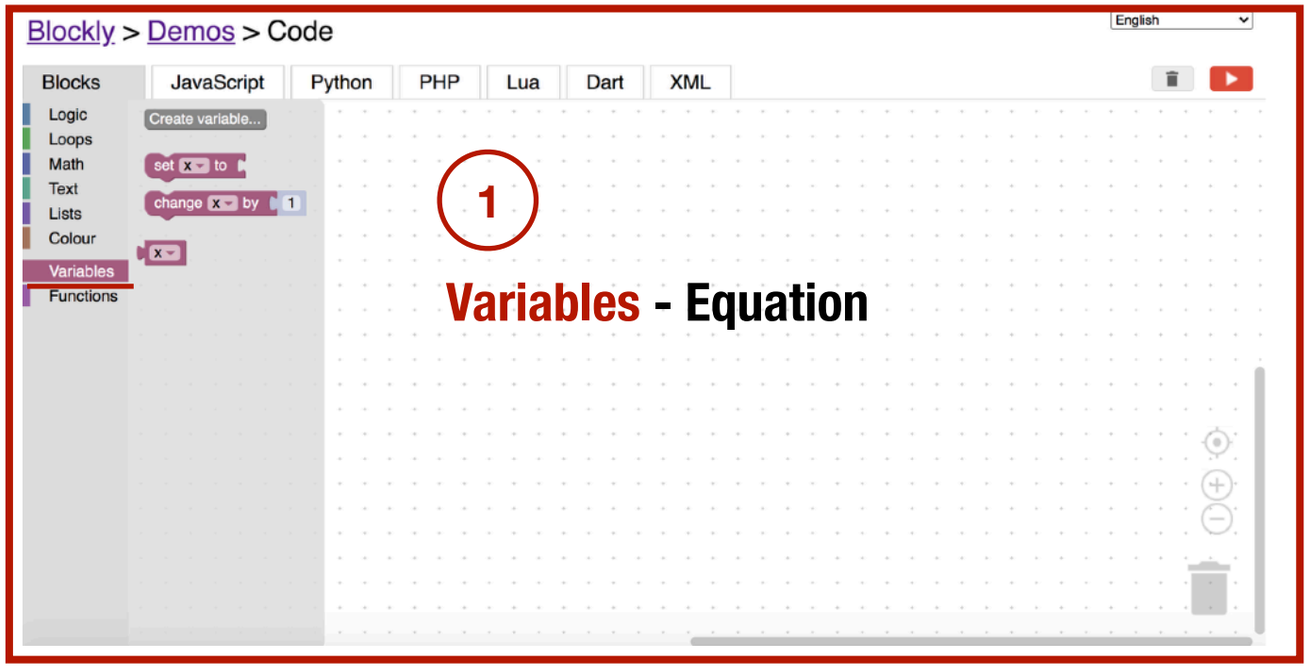

Blockly > Demos > Code
English
Blocks
JavaScript
Python
PHP
Lua
Dart
XML
Logic
Loops
Math
Text
Lists
Colour
Variables
Functions
Create variable...
set x to
change x by 1
x
1
Variables - Equation

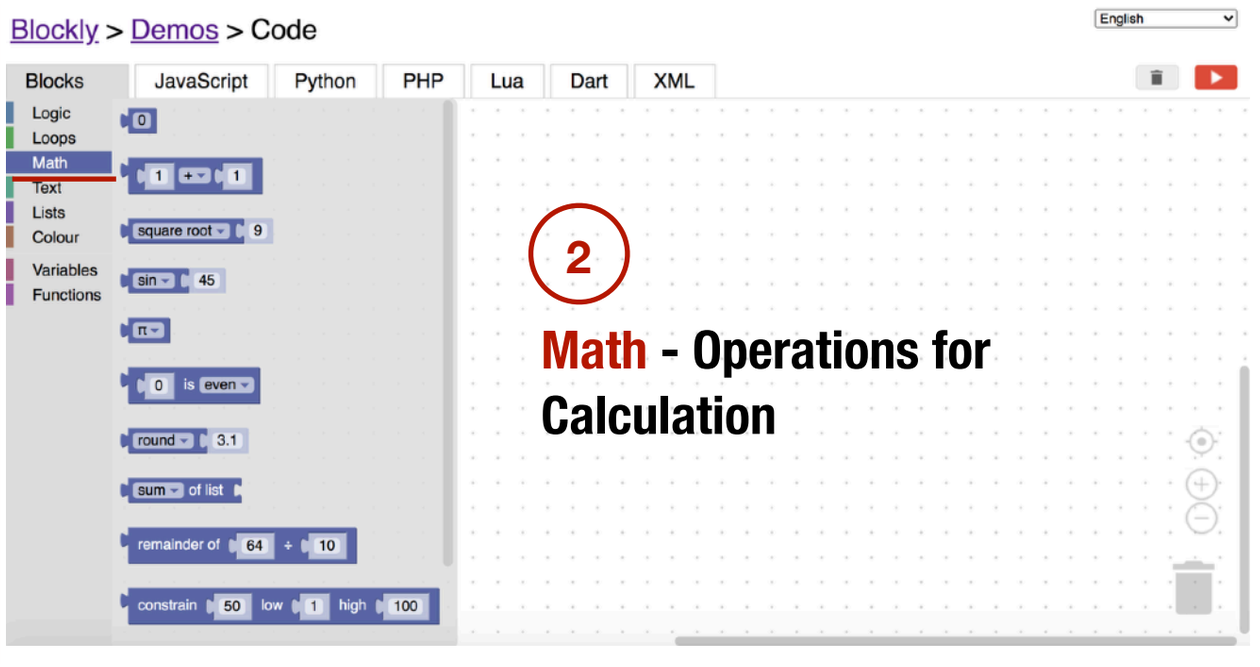

Blockly > Demos > Code
English
Blocks
JavaScript
Python
PHP
Lua
Dart
XML
Logic
Loops
Math
Text
Lists
Colour
Variables
Functions
0
1 + 1
square root 9
sin 45
π
0 is even
round 3.1
sum of list
remainder of 64 ÷ 10
constrain 50 low 1 high 100
2
Math - Operations for Calculation

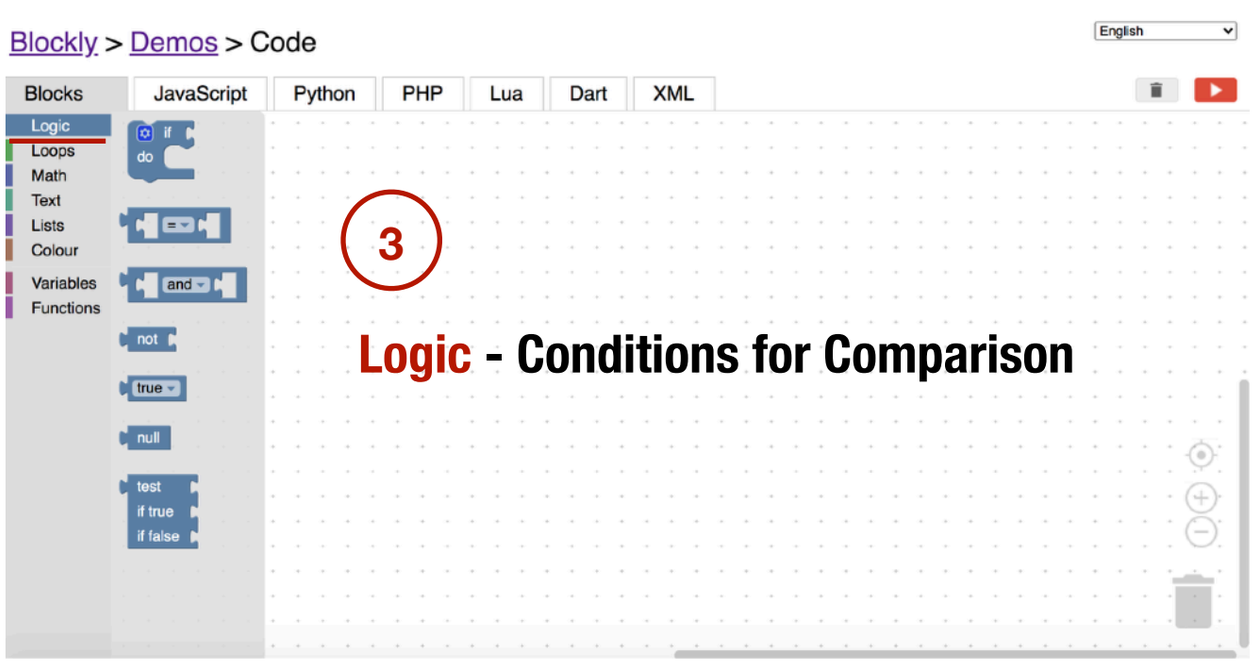

Blockly > Demos > Code
English
Blocks
JavaScript
Python
PHP
Lua
Dart
XML
Logic
Loops
Math
Text
Lists
Colour
Variables
Functions
if do
=
and
not
true
null
test
if true
if false
3
Logic - Conditions for Comparison

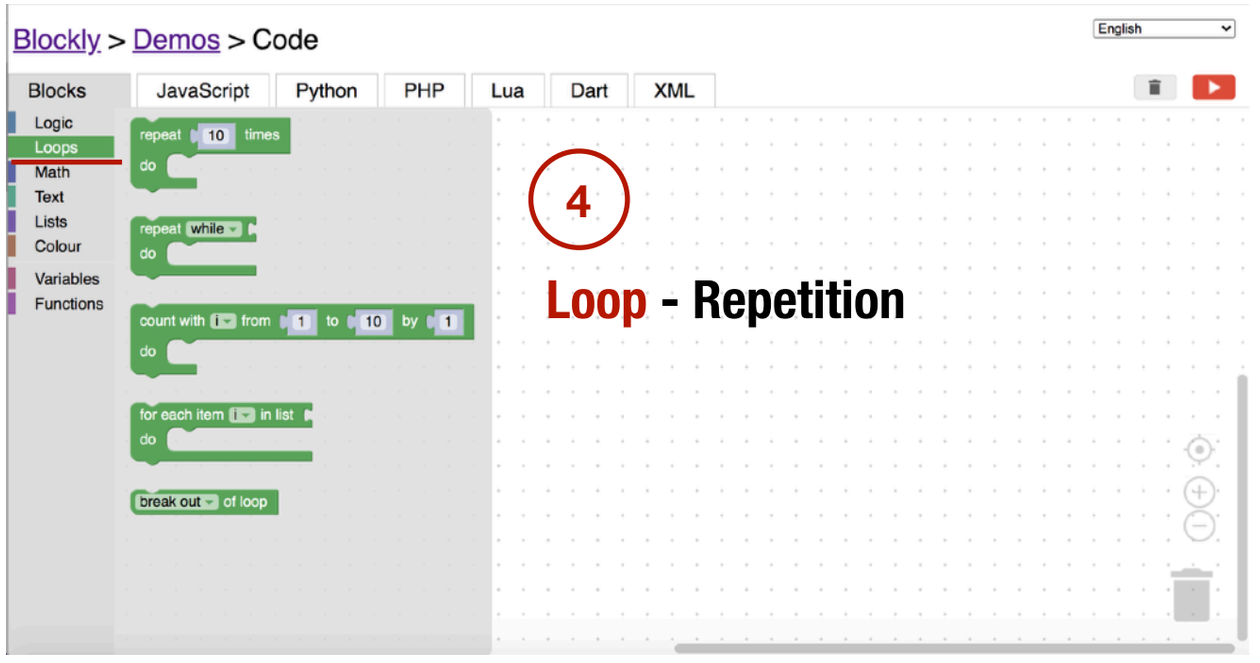

Blockly > Demos > Code
English
Blocks
JavaScript
Python
PHP
Lua
Dart
XML
Logic
Loops
Math
Text
Lists
Colour
Variables
Functions
repeat 10 times do
repeat while do
count with i from 1 to 10 by 1 do
for each item i in list do
break out of loop
4
Loop - Repetition

Let’s begin with “data” related patterns.


Blockly > Demos > Code
English
Blocks
JavaScript
Python
PHP
Lua
Dart
XML
Logic
Loops
Math
Text
Lists
Colour
Variables
Functions
Create variable...
set x to
change x by 1
x
1
Variables - Equation


Blockly > Demos > Code
English
Blocks
JavaScript
Python
PHP
Lua
Dart
XML
Logic
Loops
Math
Text
Lists
Colour
Variables
Functions
0
1 + 1
square root 9
sin 45
π
0 is even
round 3.1
sum of list
remainder of 64 ÷ 10
constrain 50 low 1 high 100
2
Math - Operations for Calculation


Blockly > Demos > Code
English
Blocks
JavaScript
Python
PHP
Lua
Dart
XML
Logic
Loops
Math
Text
Lists
Colour
Variables
Functions
if do
=
and
not
true
null
test
if true
if false
3
Logic - Conditions for Comparison


Blockly > Demos > Code
English
Blocks
JavaScript
Python
PHP
Lua
Dart
XML
Logic
Loops
Math
Text
Lists
Colour
Variables
Functions
repeat 10 times do
repeat while do
count with i from 1 to 10 by 1 do
for each item i in list do
break out of loop
4
Loop - Repetition

Data Types in JavaScript

Assigning HTML Element to Variable

Assigning a value to a variable is called:
declaring a variable
and its data type:

- **String - e.g. var str_var = “This is a string.”;**
- **Numeric - e.g. var num_var = 3.2;**
- **Boolean - e.g. var bol_var = true;**

Data Structures in JavaScript

More Advanced JS Data Structures: Array and Object

- Array - a list of elements e.g.

```
var fruits = [“apple”,”grape”,”pear”];
var student_list = [ ]; // empty student list;
```

- Object - a collection of properties represented in name:values pairs e.g.

```
var student {
        student_id: 1155115511;
        student_fname: “Bernard”;
        student_lname:”Suen”;
        student_major: “New Media”;
      }
```

Search Google or type a URL

Apps | Cyberport Bootca... | Blockchain | NLP and Chatbot | FinTech | E-Commerce | Classes | Development Tools | Data Science | Machine Learning | Music | Drupal | Cloud Providers | Other Bookmarks

Gmail Images

Google

Search Google or type a URL

Elements Console Sources Network Performance Memory Application Security Audits JavaScript Profiler

top Filter Default levels 5 hidden

6 messages
1 user mes...
No errors
2 warnings
2 info
2 verbose

```
17:25:20.426 SW registered                                   newtab?ie=UTF-8:8
> 17:26:54.913 var student1 = {name:'John',id:1001};
< 17:26:54.918 undefined
> 17:27:13.330 var student2 = {name:'Mary',id:1002};
< 17:27:13.335 undefined
> 17:28:15.340 student3 = {name:'David',id:1003};
< 17:28:15.346 ▶ {name: "David", id: 1003}
> students = [];
```

Search Google or type a URL

Apps | Cyberport Bootca... | Blockchain | NLP and Chatbot | FinTech | E-Commerce | Classes | Development Tools | Data Science | Machine Learning | Music | Drupal | Cloud Providers | » | Other Bookmark

Gmail Images

Google

Search Google or type a URL

Elements Console Sources Network Performance Memory Application Security Audits JavaScript Profiler 4 4

top Filter Default levels 21 hidden

23 messages
2 user mes...
No errors
4 warnings
14 info
5 verbose

```
                ▶ 0: {name: "John", id: 1001}
                  length: 1
                ▶ __proto__: Array(0)
> 17:45:10.195 students.push(student2);
< 17:45:10.206 2
> 17:45:19.164 students.push(student3);
< 17:45:19.169 3
> 17:45:23.621 students;
< 17:45:23.629 ▼ (3) [{…}, {…}, {…}] i
                ▶ 0: {name: "John", id: 1001}
                ▶ 1: {name: "Mary", id: 1002}
                ▶ 2: {name: "David", id: 1003}
                  length: 3
                ▶ __proto__: Array(0)
```

Search Google or type a URL

Apps | Cyberport Bootca... | Blockchain | NLP and Chatbot | FinTech | E-Commerce | Classes | Development Tools | Data Science | Machine Learning | Music | Drupal | Cloud Providers | Other Bookmarks

Gmail Images

Google

Search Google or type a URL

Elements Console Sources Network Performance Memory Application Security Audits JavaScript Profiler

top Filter Default levels 5 hidden

- 6 messages
- 1 user mes...
- No errors
- 2 warnings
- 2 info
- 2 verbose

```
> 17:40:25.934 students.push[student2];
< 17:40:25.939 undefined
> 17:40:28.751 students.push[student3];
< 17:40:28.756 undefined
> 17:40:31.102 students.push[student3];
< 17:40:31.107 undefined
> 17:40:37.113 students
< 17:40:37.116 ▼ [] i
                   length: 0
                 ▶ __proto__: Array(0)
> 17:41:33.699 students;
< 17:41:33.705 ▶ []
> for (i = 0; i<4; i++) {document.write(students[i].name + "/" + students[i].id + "<br>")};
```

After data, let's move on to "operation" related patterns.

To transform data, we need input/output, mathematical and logical operations.

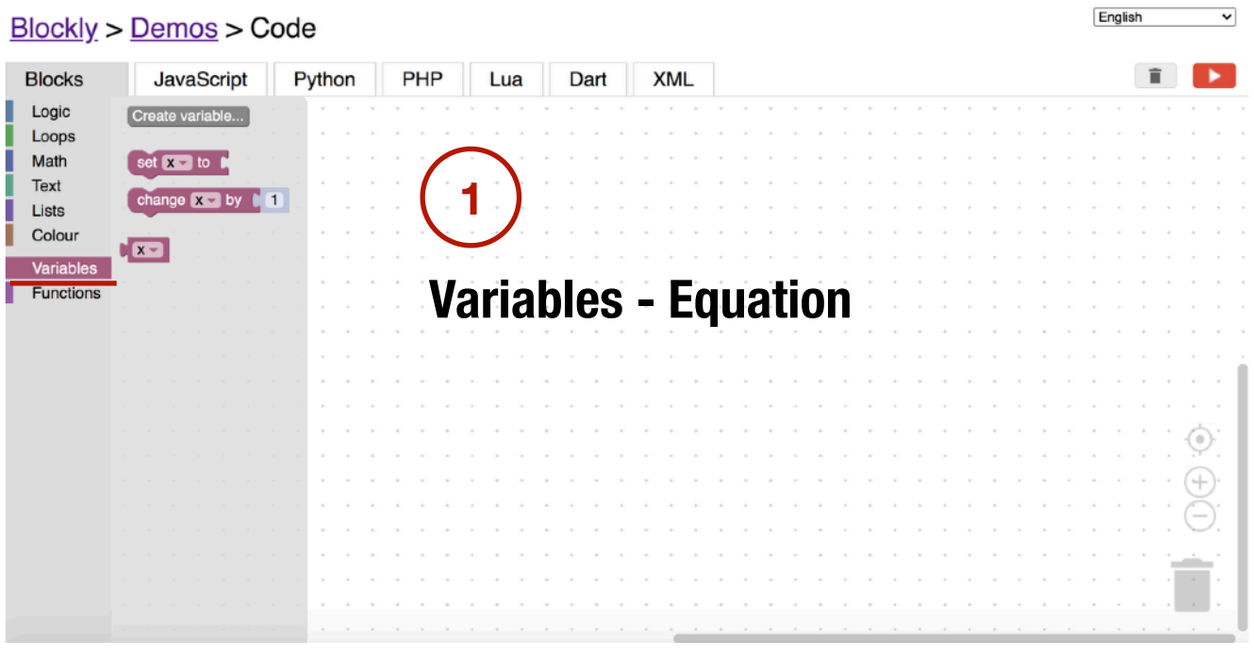
Basic Input/Output Commands

- **Entering a variable - e.g. var x = prompt(“Enter x value”);**
- **Displaying a variable - e.g. alert(“x = “ + x_var);**

The HTML Form and Input Tags

HTML Form

```
<form name='guessForm'>
        <input name = "guessValue" class="inputField">
</form>
<button class='button' onclick='guessInteger()'>Guess an
Integer</button>
<div id='demo'></div>
```


Blockly > Demos > Code
English
Blocks
JavaScript
Python
PHP
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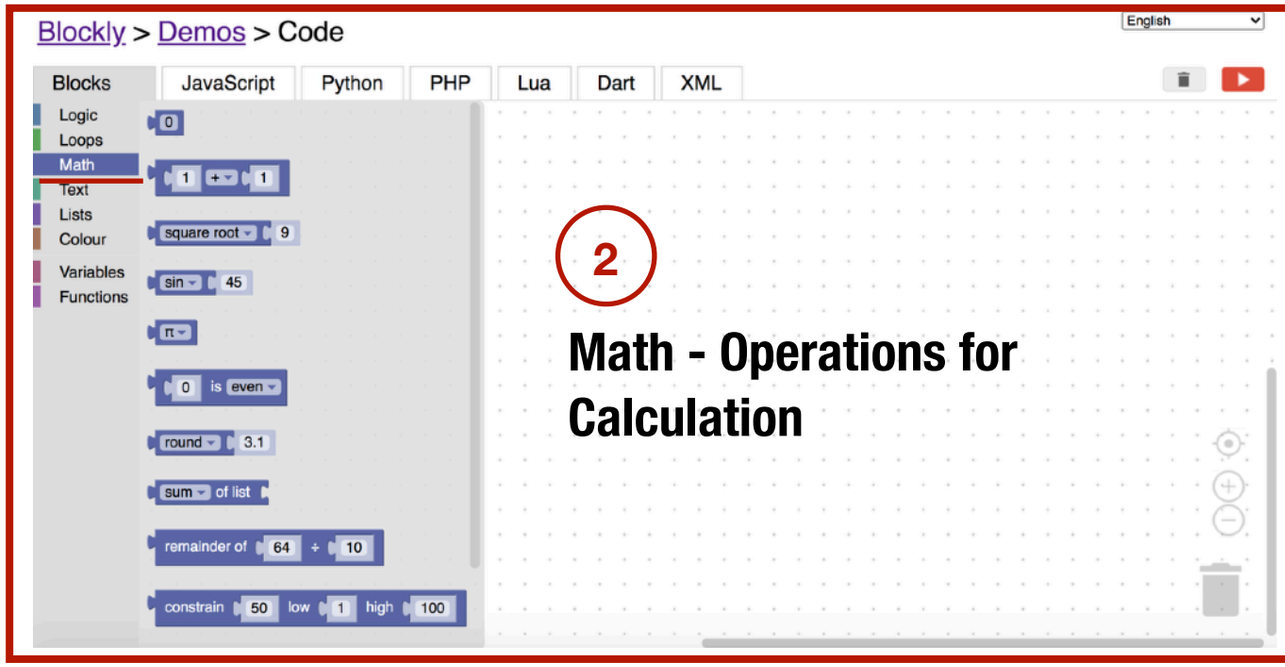
Dart
XML
Logic
Loops
Math
Text
Lists
Colour
Variables
Functions
Create variable...
set x to
change x by 1
x
1
Variables - Equation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Variables
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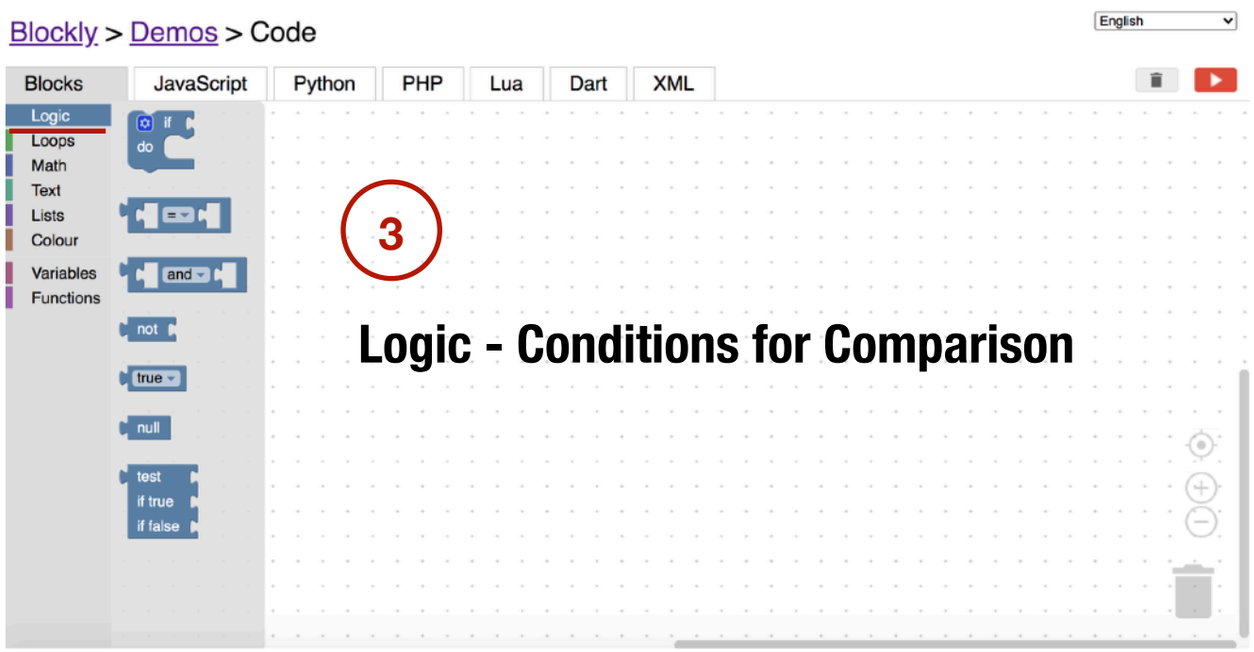
0
1 + 1
square root 9
sin 45
π
0 is even
round 3.1
sum of list
remainder of 64 ÷ 10
constrain 50 low 1 high 100
2
Math - Operations for Calculation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Variables
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and
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true
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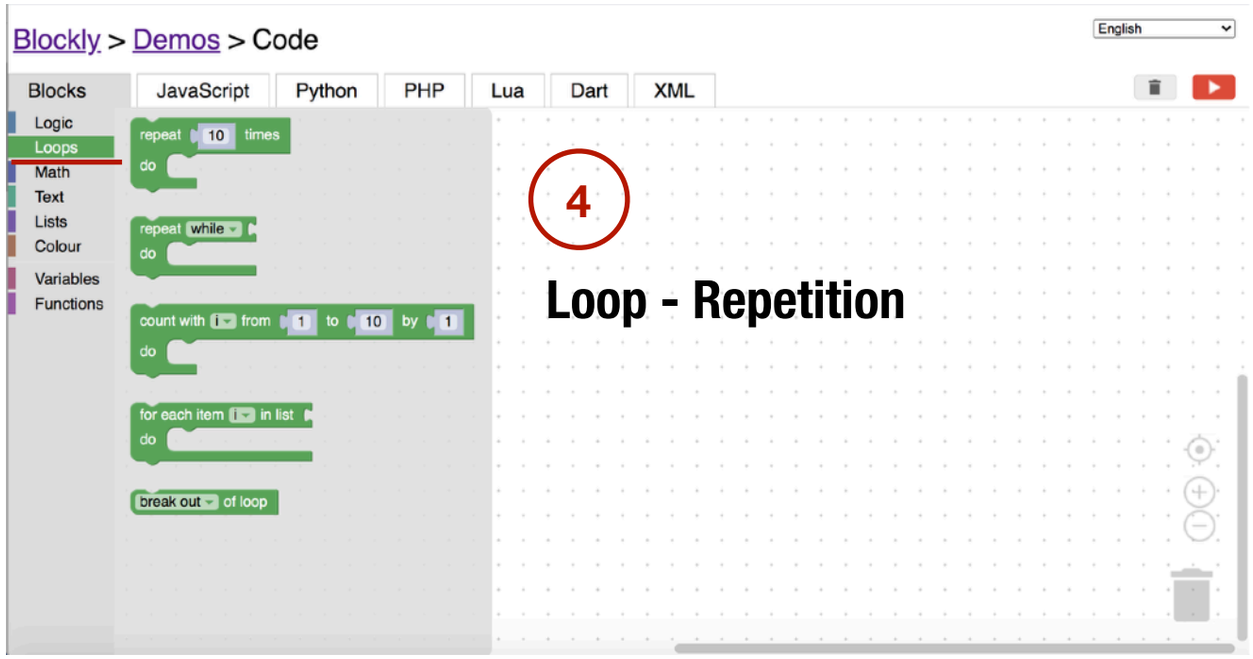
test
if true
if false
3
Logic - Conditions for Comparison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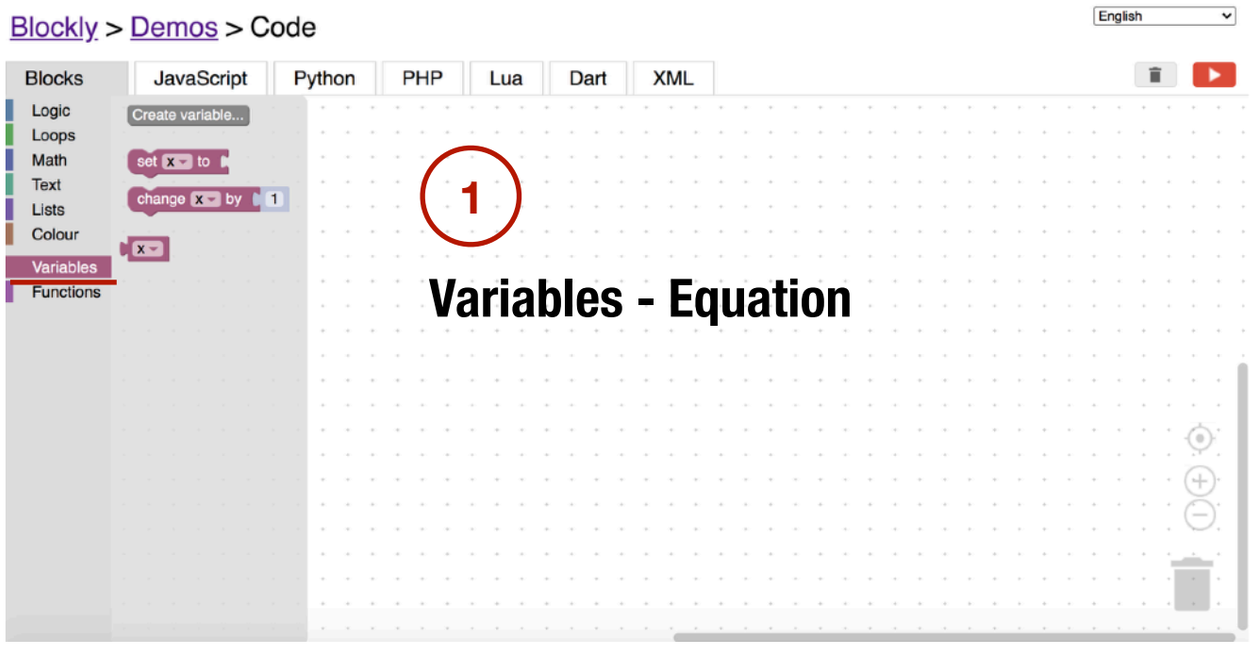
repeat 10 times do
repeat while do
count with i from 1 to 10 by 1 do
for each item i in list do
break out of loop
4
Loop - Repetition

Basic Logical and Mathematical Operations

- == equal (comparing string and boolean)
- != not equal (comparing string and bollean)
- = equal (comparing numerical values)
- >= greater than or equal to (comparing numerical values)
- <= smaller or equal to (comparing numerical values)
- +,-,*,/,%, &&, ||,! (addition, subtraction, multiplication, division, modular, and, or, not)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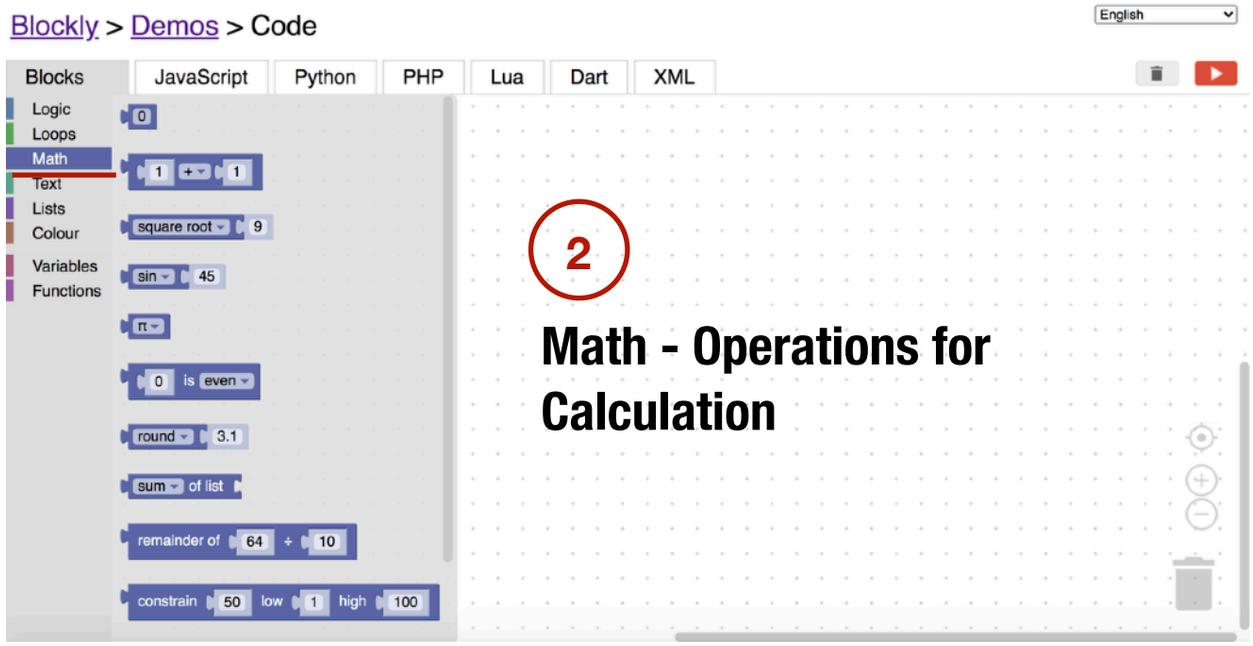
Variables - Equation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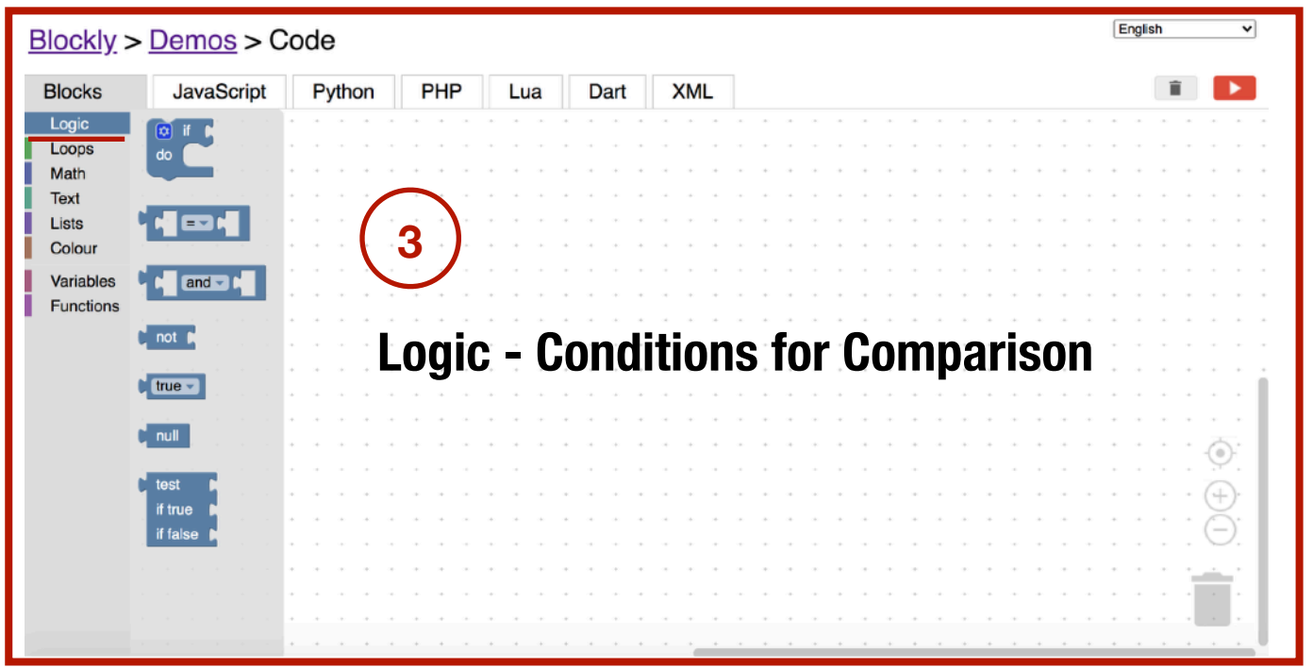
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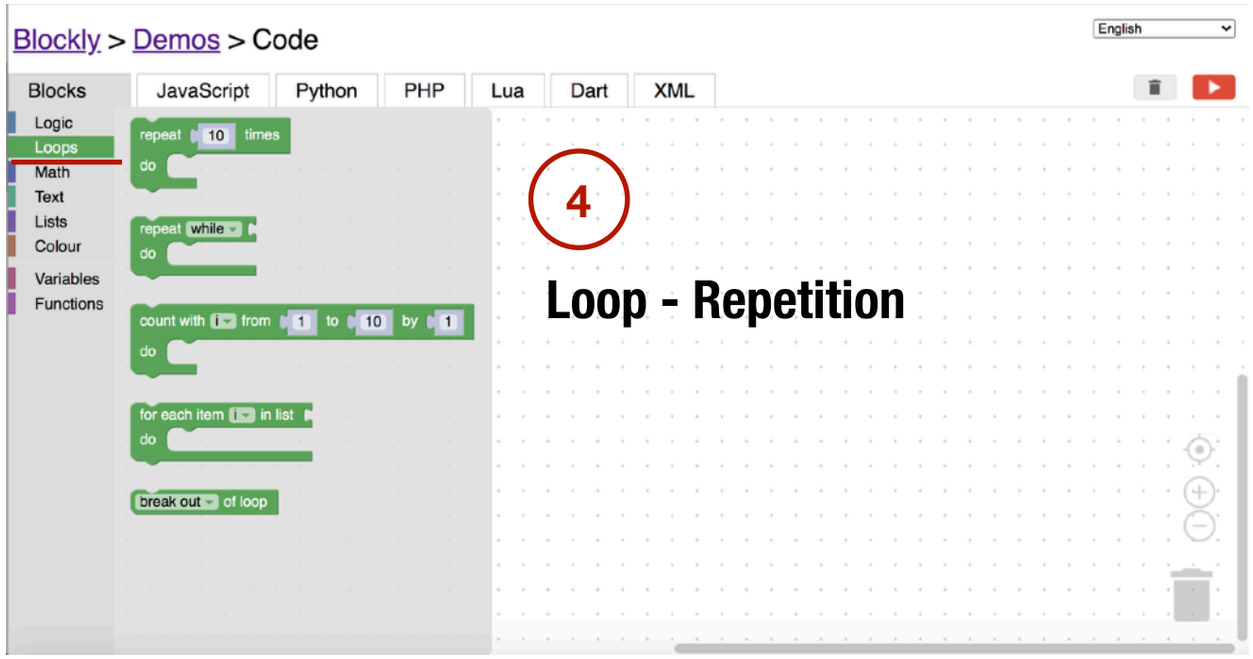
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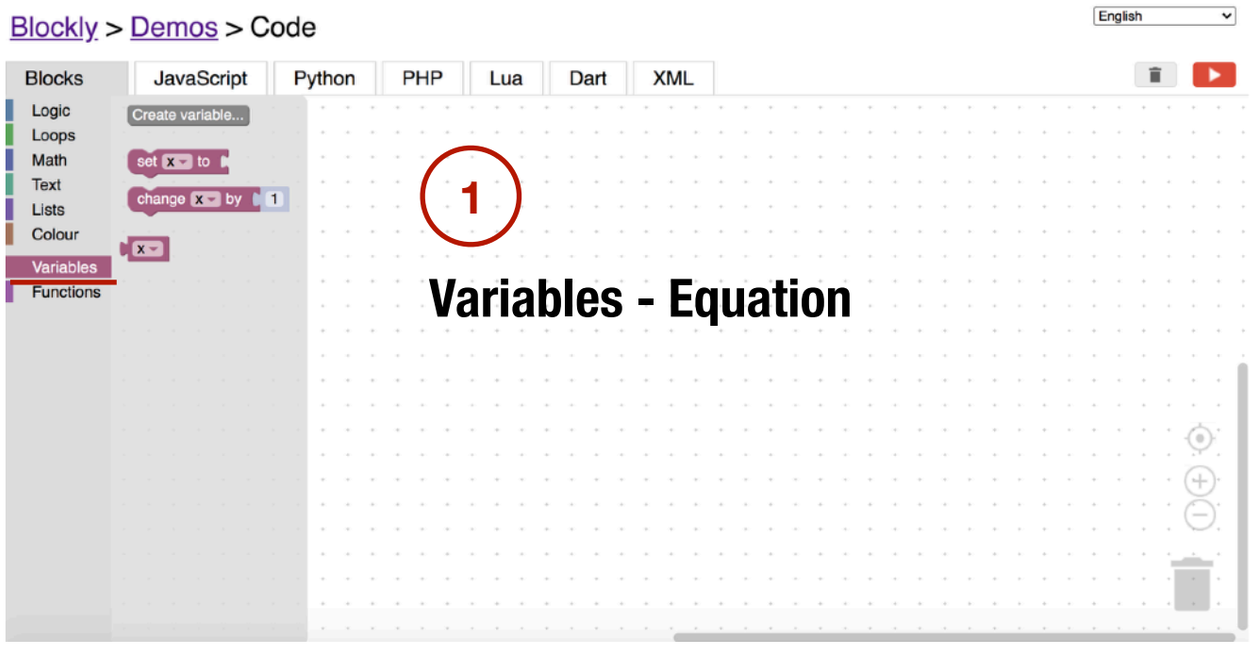
Loop - Repetition

Basic Logical and Mathematical Operations

if (condition) {action} else {action}
Examples:

- if (boolean_var == true) {alert(“That is correct”);} else {alert(“That is incorrect”);}
- if (string_var != “Peter”) {alert(“Not Peter”);}
- if (num_var >= 8) {alert(“The number is greater than or equal to eight.”);} else {alert(“The number is smaller than eight.”);}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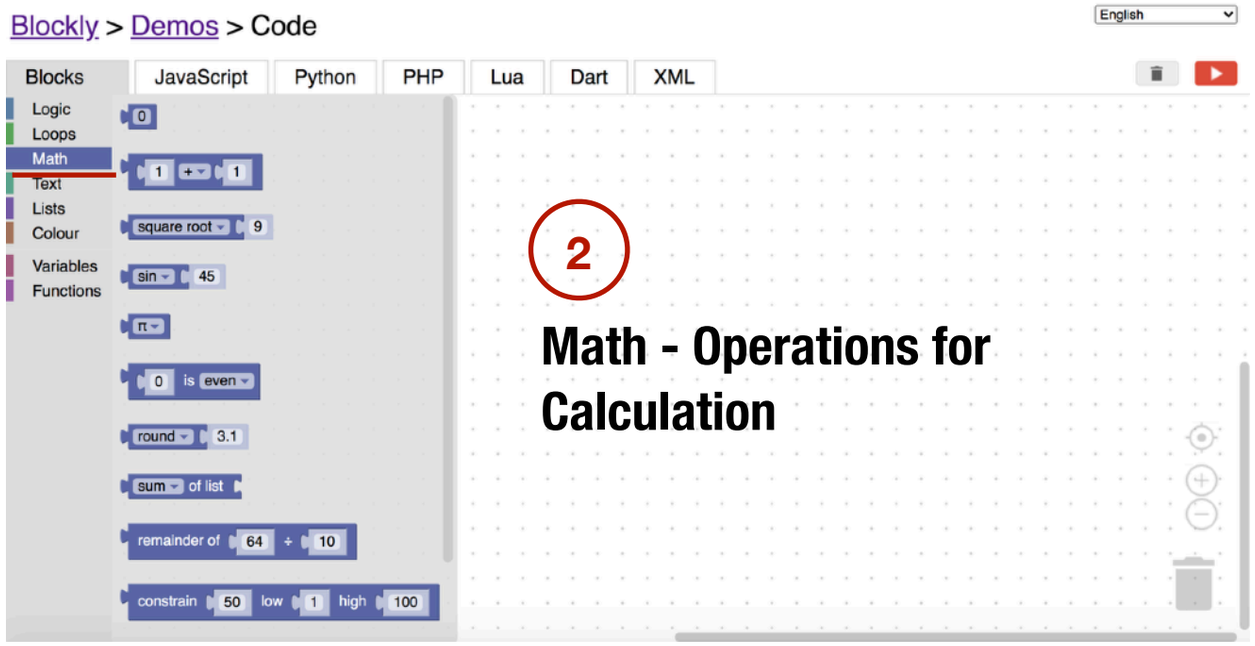
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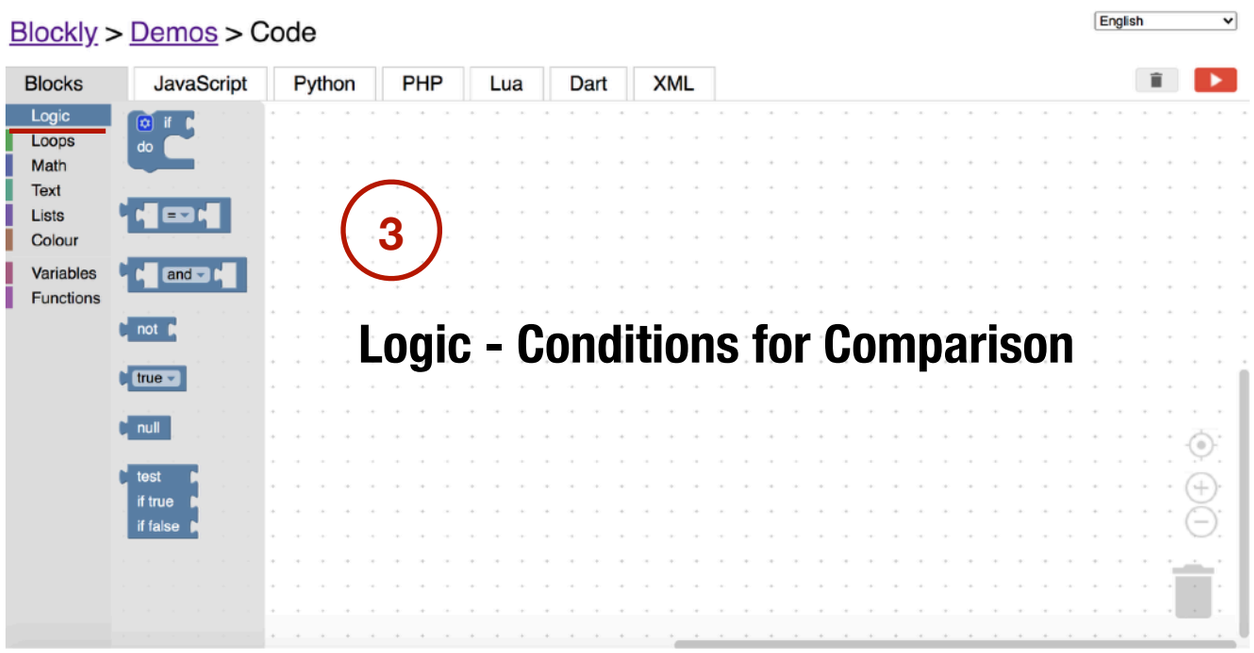
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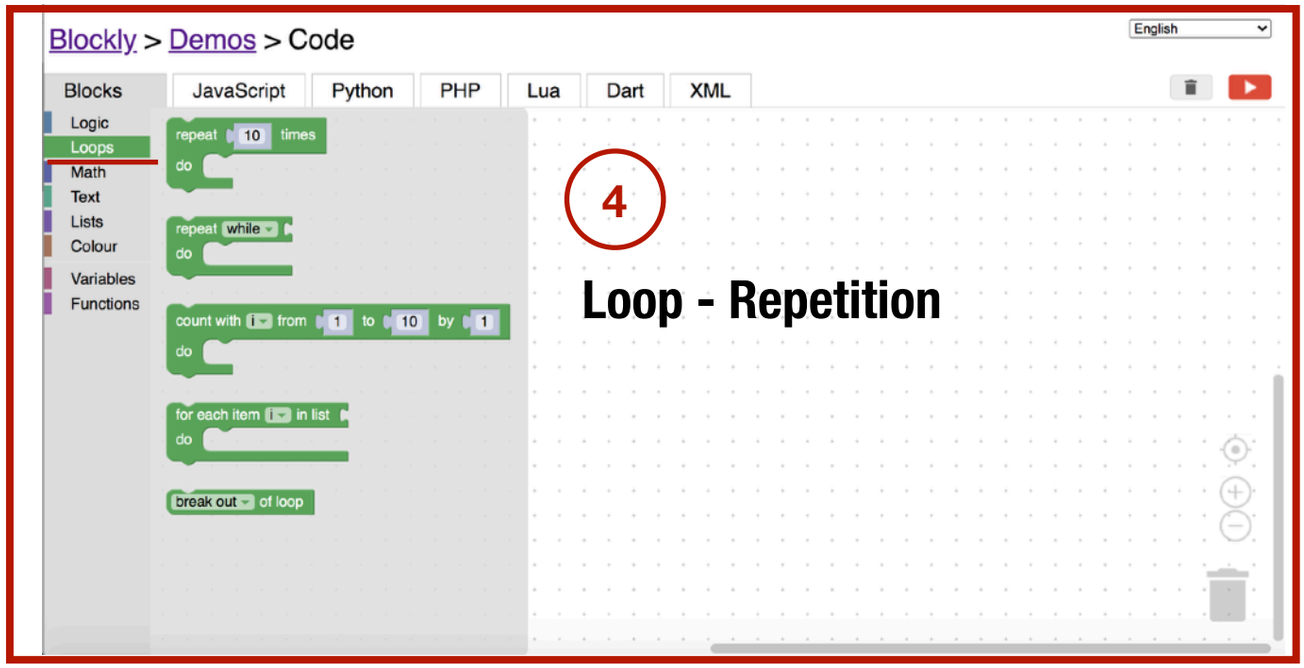
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break out of loop
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Loop - Repetition

Loop

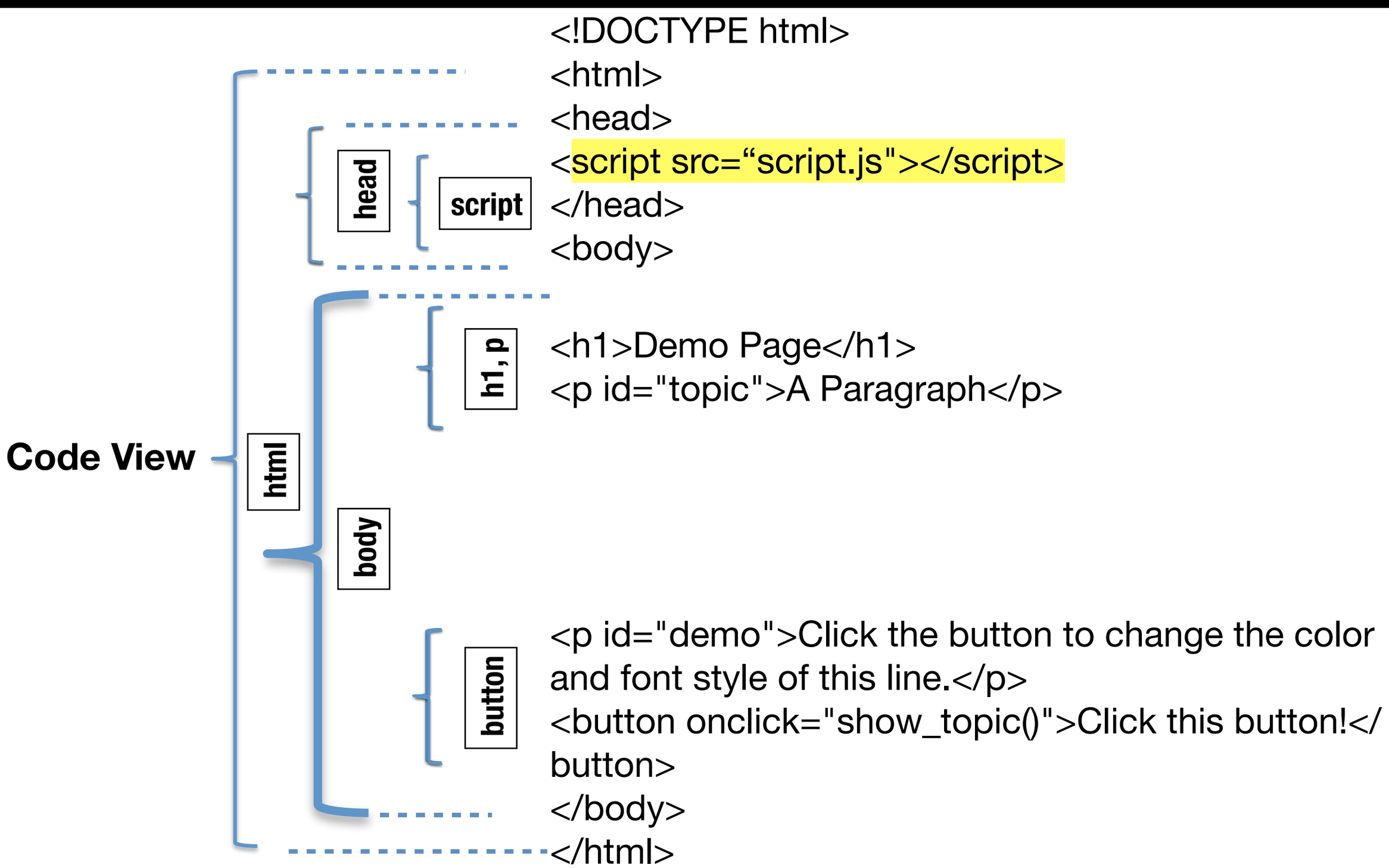
Loop is an iterative programming construct suitable for handling JavaScript array and object.

```
for (initialization; condition; increment) {
    JavaScript statements
}
```

Try the following steps:

```
1) var fruits = [];
2) for (i=1; i< 10 ;i++) {
        fruits[i] =
   prompt("Enter
   fruit:");
   }
3) alert("fruits contain"
   + fruits);
```

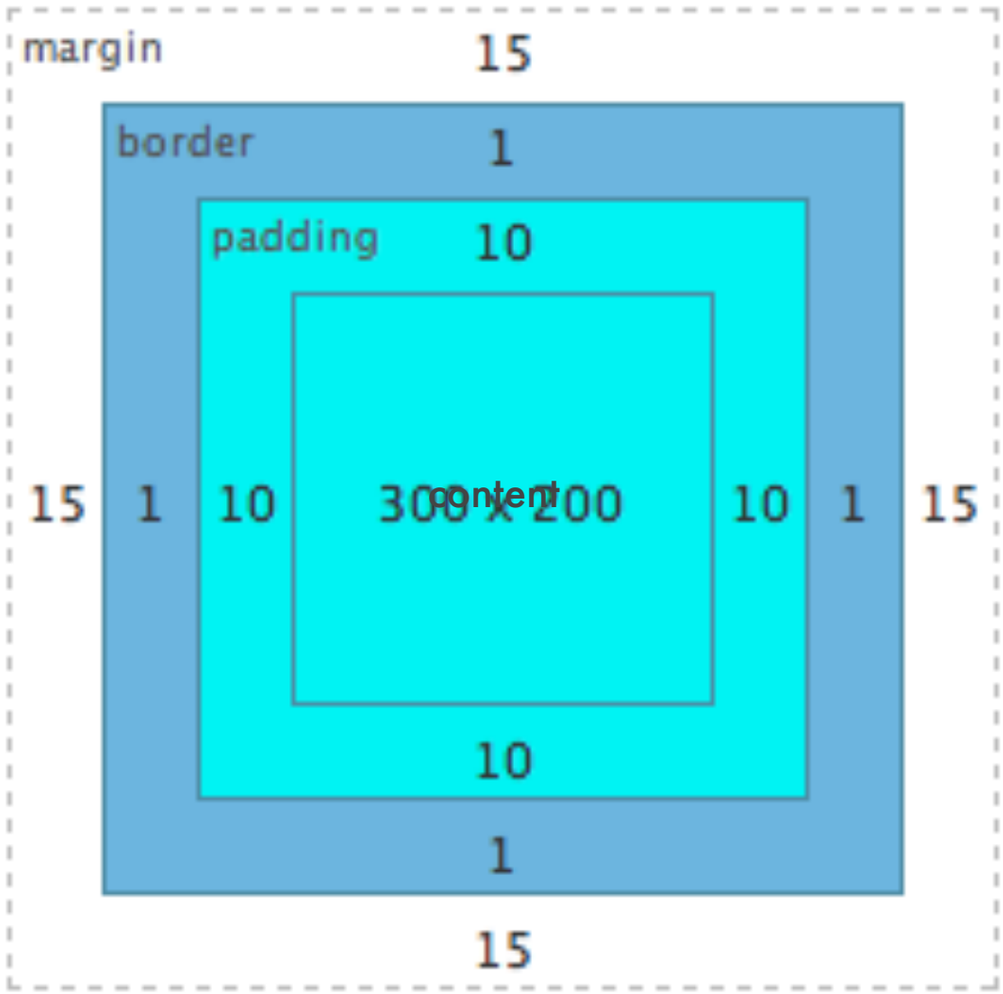
Similar to CSS, JS can be placed in an External File


Code View
html
head
script
body
h1, p
button
<!DOCTYPE html>
<html>
<head>
<script src="script.js"></script>
</head>
<body>
<h1>Demo Page</h1>
A Paragraph
Click the button to change the color and font style of this line.
<button onclick="show_topic()">Click this button!</button>
</body>
</html>

Abstraction

Ignore irrelevant details to focus on essential features to be synthesized into one solution or classification that works for multiple situations.

The Box Model



The “Box Model” is an abstraction that allows us to understand a web page and the elements embedded inside as a hierarchical structure of boxes (i.e. the DOM). Therefore, we can easily manipulate the HTML elements with same set of HTML, CSS, and JavaScript rules.

JavaScript functions that transform input into output through manipulation of DOM elements, CSS styling and events (mouse, keyboard, form, CSS, focus, window, etc.)

Basic Structure of a JavaScript Function

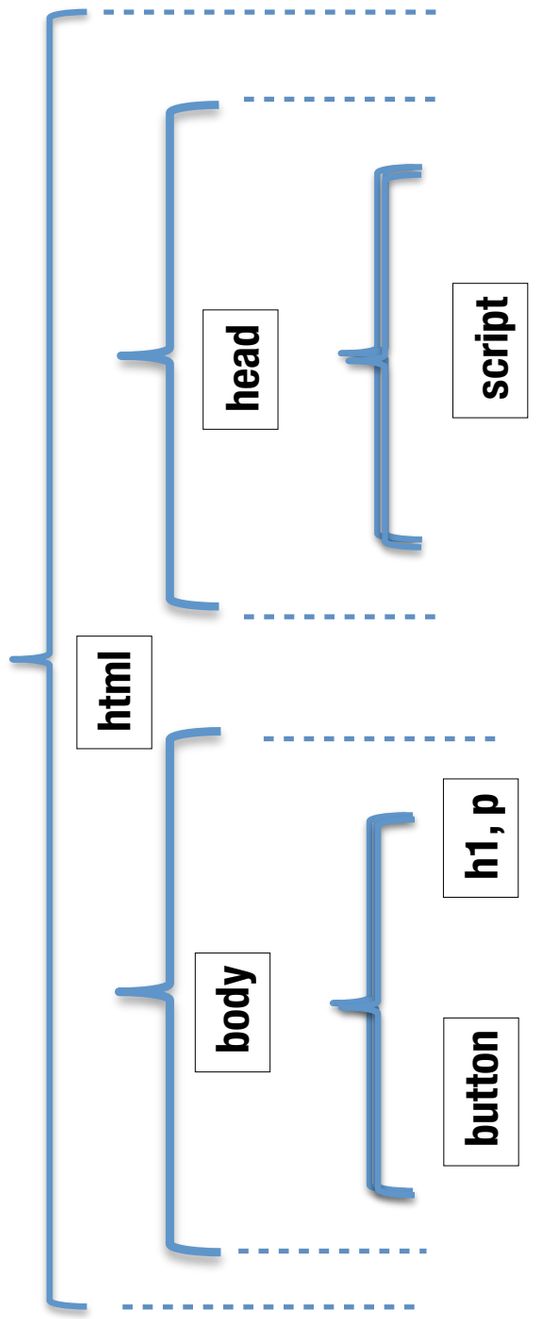
optional parameters

```
<head>
<script>
function function_name(parameter1, parameter 2…) {
```

Embed data type variables, input/output commands and logical and mathematical operators in the function to compute and return values.

```
}
</script>
</head>
```

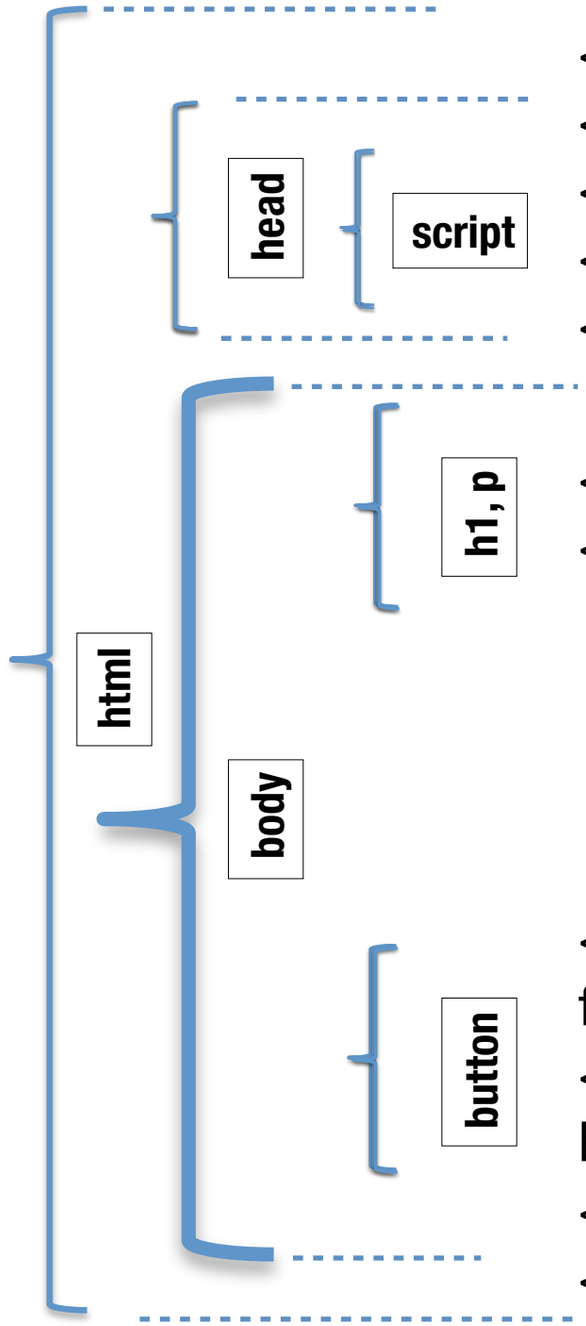
Code View




```
<!DOCTYPE html>
<html>
<head>
<script>
function show_topic() {
    var x = document.getElementById("demo");
    x.style.fontSize = "25px";
    x.style.color = "red";
}
</script>
</head>
<body>
<h1>Demo Page</h1>
<p id="demo">Click the button to change the color and font
style of this line.</p>
<button onclick="show_topic()">Click this button!</button>

</body>
</html>
```

Code View

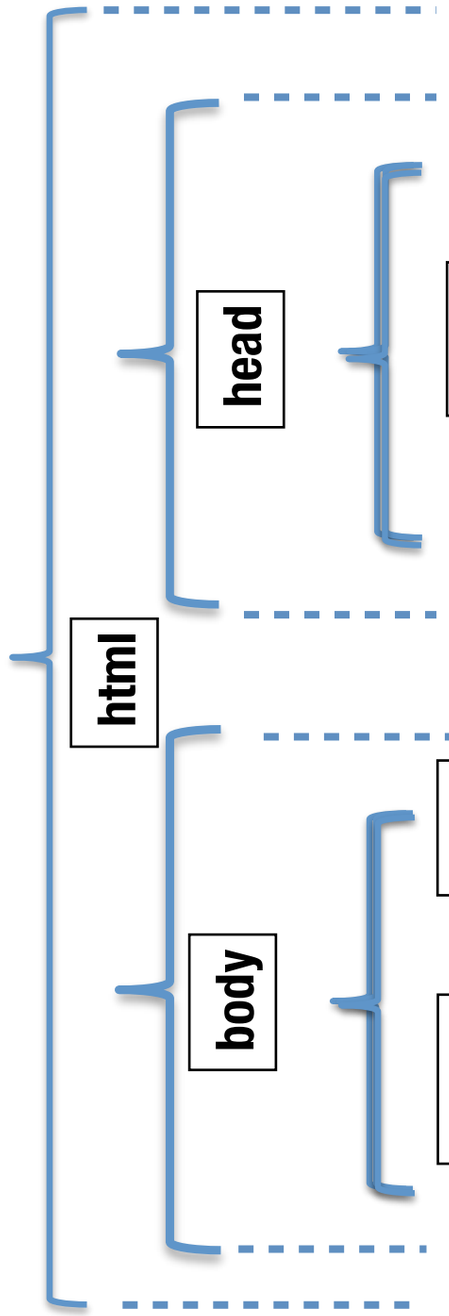



```
<!DOCTYPE html>
<html>
<head>
<script src="script.js"></script>
</head>
<body>

<h1>Demo Page</h1>
<p id="topic">A Paragraph</p>

<p id="demo">Click the button to change the color and
font style of this line.</p>
<button onclick="show_topic()">Click this button!</
button>
</body>
</html>
```

Code View




```
<!DOCTYPE html>
<html>
<head>
<script>
function show_topic() {
    var x = document.getElementById("demo");
    x.style.fontSize = "25px";
    x.style.color = "red";
}
</script>
</head>
<body>
<h1>Demo Page</h1>
<p id="demo">Click the button to change the color and
font style of this line.</p>
<button onclick="show_topic()">Click this button!</
button>

</body>
</html>
```

Basic Structure of a JavaScript Function

```
<!DOCTYPE html>
<html>
<head><script>
function addition(a, b) {
    var a = parseInt(a);
    var b = parseInt(b);
    var c = a + b;
    var return c;
}
function get_values() {
    var a = prompt("Enter first number:");
    var b = prompt("Enter second number:");
    var z = addition(a,b);
    alert("The answer is:" + z);
}
</script></head>
<body>
<button onclick="get_values();">Click here</button>
</body>
</html>
```

Input/Output Commands without Pop-up

- **Entering a variable values through HTML form - e.g.**

```
<script>
function guessInteger() {
        guess = document. forms[‘guessForm’][‘guessValue'].value;
        if (guess == ‘’) {
              document.getElementById(‘demo’).innerHTML = “Empty!”;
              return;
        } else {
              guess_int = parseInt(guess);
          if (guess_int) == 20)
              {document.getElementById(‘demo’).innerHTML = “Right!”;} else
              {document.getElementById(‘demo’).innerHTML = “Wrong!”;}
       return;
 }
</script>
<body>
<form name=‘guessForm’>
        <input name = “guessValue” class=“inputField”>
</form>
<button class=‘button’ onclick=‘guessInteger()'>Guess an Integer</button>
<div id=‘demo’></div>
</body>
```

Algorithm

An algorithm is a set of step-by-step sequence of instructions designed to perform a specific task.

A programming function or combination of functions designed to solve a problem can be understood as an implementation of an algorithm.

$$Y = f(a,b)$$

“Ending Number” e.g.
b= 200

“Starting Number” e.g.
a=1

Compute next lower number from the top and next higher number from the bottom.
200->199->198->197….
1->2->3->4….
Sum the results

Sum of
a + b where
a = next lower number from the top and b = next higher from the bottom

“You may need a loop to complete this function.“

Functions in Programming (including JavaScript)

- You can look at a function as a mini-system.
- A function is designed to transform input into output.
- You can execute a function within another function.
- A program can be viewed as a collection of functions decomposed into hierarchy of functions to get things done.
- Good programmer looks for patterns in job to be done and abstract common parameters, algorithms, and outcomes to be placed inside a function for code reuse.

Automation and Evaluation

Automation enables integration of functions and programs into a system without or with minimum human intervention.

Before that can happen, individual function or program has to be fully tested as a separate unit and as combined structure for deployment readiness evaluation.

The Grammar of JavaScript

- JavaScript is a programming language that can be used to write functions placed inside html or an external file.
- JavaScript can be placed between the <script> and </script> tags inside the <head> section or link to an external file through the script src link.
- JavaScript codes can be understood as a collection of functions that respond to events triggered by internal browser activities and external user interactions.
- JavaScript can be used to manipulate HTML elements and CSS styles.

Plugins | Contribute | Events | Support | JS Foundation

jQuery
write less, do more.

Your donations help fund the continued development and growth of **jQuery.**

SUPPORT THE PROJECT

Download | API Documentation | Blog | Plugins | Browser Support | Search

Lightweight Footprint

Only 30kB minified and gzipped. Can also be included as an AMD module

CSS3 Compliant

Supports CSS3 selectors to find elements as well as in style property manipulation

Cross-Browser

Chrome, Edge, Firefox, IE, Safari, Android, iOS, and more

Download jQuery
v3.3.1
The 1.x and 2.x branches no longer receive patches.

View Source on GitHub →
How jQuery Works →

What is jQuery?

jQuery is a fast, small, and feature-rich JavaScript library. It makes things like HTML document traversal and manipulation, event handling, animation, and Ajax much simpler with an easy-to-use API that works across a multitude of browsers. With a combination of versatility and extensibility, jQuery has changed the way that millions of people write JavaScript.

Other Related Projects

jQuery user interface | jQuery mobile | QUnit js unit testing | Sizzle css selector engine

Resources

- jQuery Core API Documentation
- jQuery Learning Center
- jQuery Blog
- Contribute to jQuery
- About the jQuery Foundation
- Browse or Submit jQuery Bugs

A Brief Look

JQuery Example

STANLEY

WORK CHART TABLE MAP MAP 2 TIMELINE CONTACT

jQuery + SQL Aggregation Demo

Aggregation Count of Items From Product Table

You an check out the product table from the menu. The red "Get Data" button below will let you aggregate the items by product category.

Visualization Demo

January 11, 2018

Welcome to try out these simple visualization demos which utilize several popular Javascript/JQuery libraries for presenting data.

January 11, 2018

These libraries include StorymapJS, TimelineJS, JQuery DatatableJS, Leaflet, and D3C3.

https://suenlabs.com/dataviz_demo/

Basic jQuery Structure & Syntax

This means:

When the HTML document (i.e. DOM) is loaded, add the following jQuery functions (in orange) to your javascripts

```
$(document).ready(function() {
    Your jQuery functions go inside here.
});
```

The following code demonstrates the basic structure of a jQuery function. The selector and method are two ingredients used to define a jQuery function:

```
$("<selector>").<method>('event',function(){
        The actual script goes here.
 });
```

Example:

```
$("button#hide_h2").on('click',function(){
                $("h2").hide();
});
```

ADJECTIVE

CSS

Base

Selector Declaration Declaration

body { color:purple; font-size:12px; }

Property Value Property Value

ADJECTIVE

CSS

Custom (e.g. class or id)
Selector

Declaration Declaration

.box #nav { color:blue; font-size:12px; }

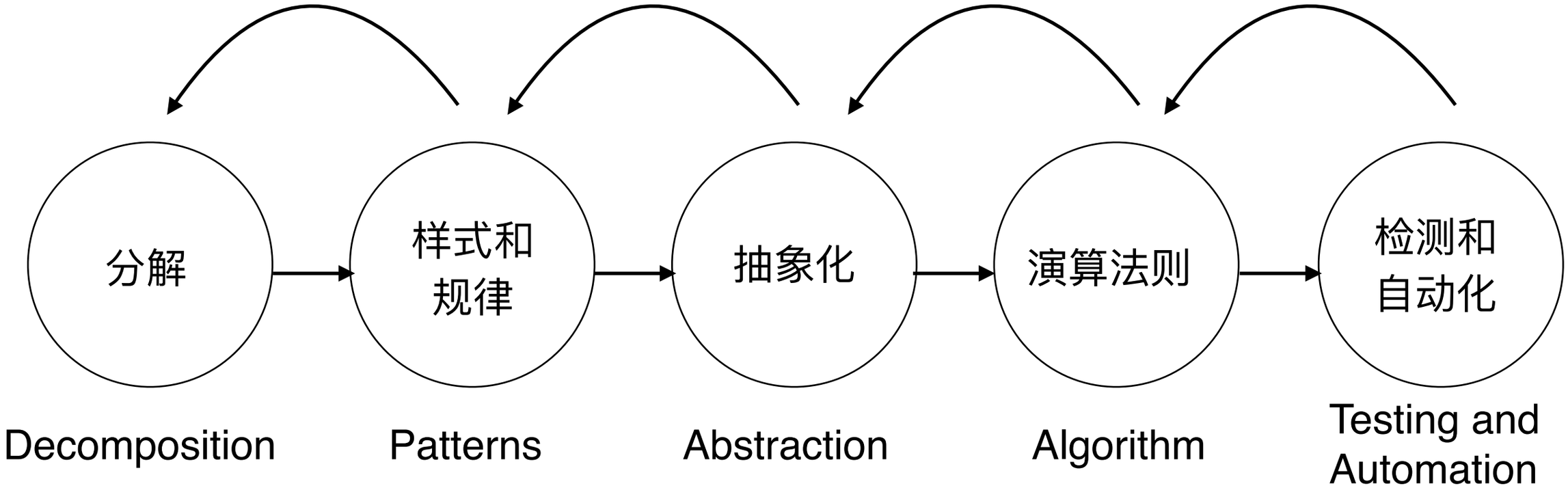
class id Property Value Property Value

Putting Everything Together

```
$(document).ready(function() {
        $(“button#hide_h2”).on(‘click’,function(){
                        $("h2").hide();
        });
        $(“button#show_h2”).on(‘click’,function(){
                        $(“h2").show();
                        $(“h2”).css(“color”,”blue”);
                        $(“h2”).html(“You clicked me.”);
});  });
```

Problem Set #4

Write a JavaScript program to create a word or math puzzle game. Ask the player to input values through HTML form and display the result inside a box (with an ID selector) positioned inside the browser.


分解
样式和
规律
抽象化
演算法则
检测和
自动化
Decomposition
Patterns
Abstraction
Algorithm
Testing and
Automation

設計思維 Design Thinking	用户體驗 UX Elements	運算思維 Computational Thinking	數據發掘 CRISP-DM	內容重點 Description
同理心 Empathy	策畧 Strategy	分解 Decomposition	商業理解 Business Understanding	Collect stories from stakeholders for framing and decomposing the problem into smaller parts.
界定問題 Definition	範圍 Scope	模式 Patterns	數據理解 Data Understanding	Define the conditions for causing the problem and collect data for grouping observations and defining requirements.
創意發想 Ideation	結構 Structure	抽像化 Abstraction	準備數據 Data Preparation	Design solutions for producing desirable outcome and develop required dataset for validation and evaluation.
開展原型 Prototyping	骨架 Skeleton	算法 Algorithm	建立模型 Modeling	Prototype the solutions through physical and software models.
重複測試 Testing	表面 Surface	自動化/評估 Automation/ Evaluation	評估 Evaluation	Evaluate outcome through testing, integration, and automation, ready for deployment and opperation.

Thank You!