



Australian  
National  
University

# COMP1710/6780

## Web Development and Design



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Dr Sabrina Caldwell  
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Professor Tom Gedeon  
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- COMP1710 Chief Tutor and lecturer:  
David Flores-Condezo  
([david.flores-condezo@anu.edu.au](mailto:david.flores-condezo@anu.edu.au)):  
... and lots of tutors we'll tell you about next week



We will **only** contact you via your [uxxxxxxx@anu.edu.au](mailto:uxxxxxxx@anu.edu.au) email



Week 2 - Part 1: HTML basics

A photograph of a man in a light blue shirt and dark trousers standing by a lake. In the background, the Australian National University's tower is visible on a hill under a blue sky with some clouds.

A 3D diagram of a cube divided into six faces. The top face contains four boxes labeled: "HTML basics", "Basic HTML page", "Attributes values & links", and "Webpage dev cycle". The bottom face contains four boxes labeled: "Demo site v2.1", "Demo site v2.2", "Demo site v2.3", and "Demo site v2.4". Each box has a small icon of a computer monitor with the letters "WWW" on it.

## Video lessons

## Associated lab activities

### Lab activity (id:1.3)

Lab activity:

- 1 JS Bin
- 2 Text editor

If you have never registered for JS Bin before, register now. Login and open the demo website for this part. Review the text editors discussed in the video lesson for this part, or others in which you may be interested, and choose your preferred text editor. Don't worry, you can change at any time.

Familiarise yourself with the layout and functionality of your text editor



JS Bin features »      Pro features »      Blog »      Donate to JS Bin ❤️      "Everyone should learn to program a computer because it teaches you how to think." Steve Jobs

New bin      Upgrade to pro now      File ▾      Add library      Share      HTML      CSS      JavaScript      Console      Output      Login or Register      Blog      Help

Run with JS      Auto-run JS

Using images in your website

Why use images      Choosing images      Using images

Why use images?

With very few exceptions, your web pages will be easier to understand and more visually appealing to your viewers if you include relevant images. For example:

- Where would a website about hybrid roses be without photos of roses?
- Can you imagine an online art gallery without images?
- Would you try a recipe from a cooking website without a picture of how the dish should look?

How to choose images

What should I consider when choosing images?

Images will bring your website to life. But there are a few things to consider when choosing your images.

Your images should:

- enhance your message
- be consistent with your style
- be of a good quality
- load quickly

Your images should not:

Supporter Rollbar: Real-time error monitoring, alerting, and analytics for JavaScript developers

Google Mozilla WinEdit 7 Caldwell T... Nichols2017 Doc1.docx

SabrinaBCaldwell



# Who am I?



## **Dr Sabrina Bleecker Caldwell**

School of Computing  
The Australian National University

BA(Hons)/BSc 2003

1<sup>st</sup> PhD @ College of Arts & Social Sciences ANU 2008

2<sup>nd</sup> PhD College of Engineering & Computer Science ANU 2017

**Information Technology Background in industry**

Digital Equipment Corporation, Jostens Learning Corp,  
Wizard Information Services

**Sector experience**

Private enterprise, community sector, government and academia

Weblog: <http://www.thephotographicalist.wordpress.com/>  
LinkedIn: <http://au.linkedin.com/in/SabrinaCaldwell>









Now I teach  
and research  
here



The Australian National University



## My Research & Teaching Areas

-----  
Software development management  
Web development and design  
Image credibility  
AI and affective reasoning  
Advances in higher education

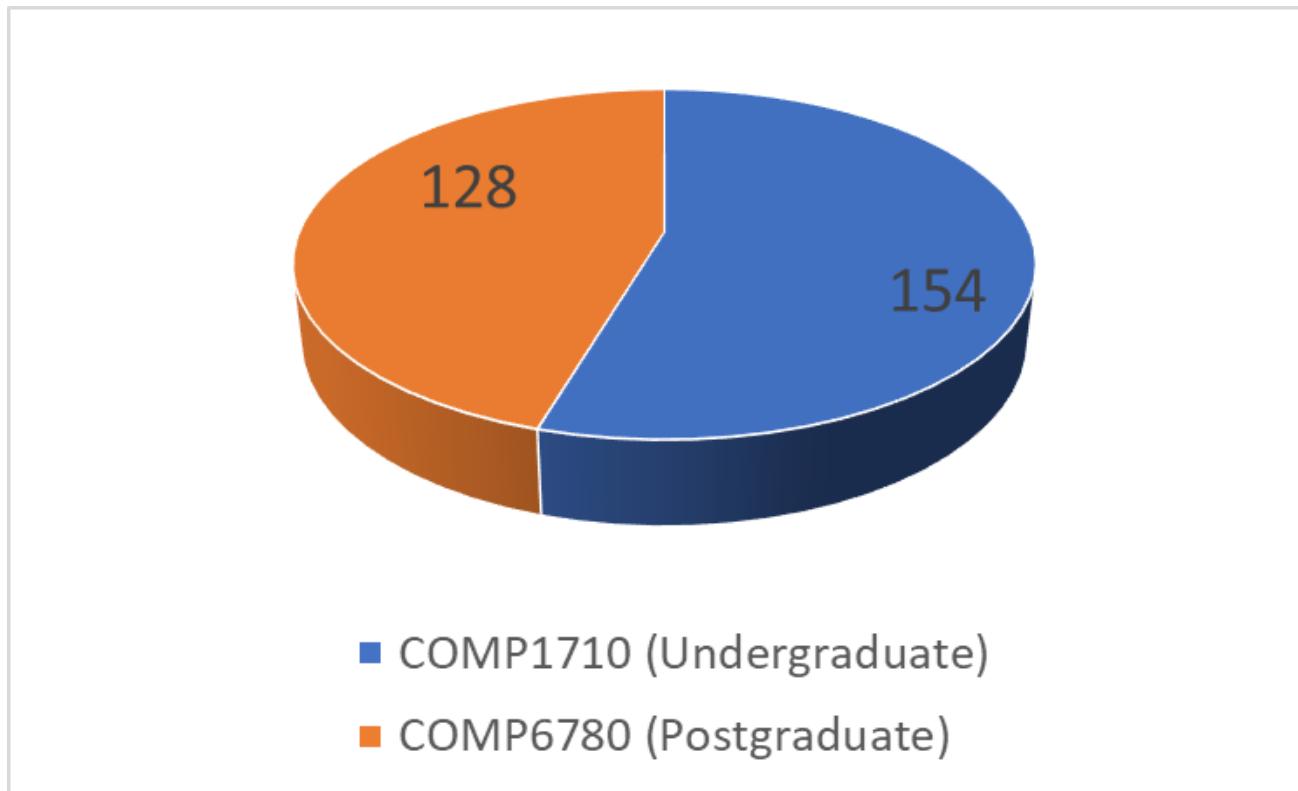


# Who are you?



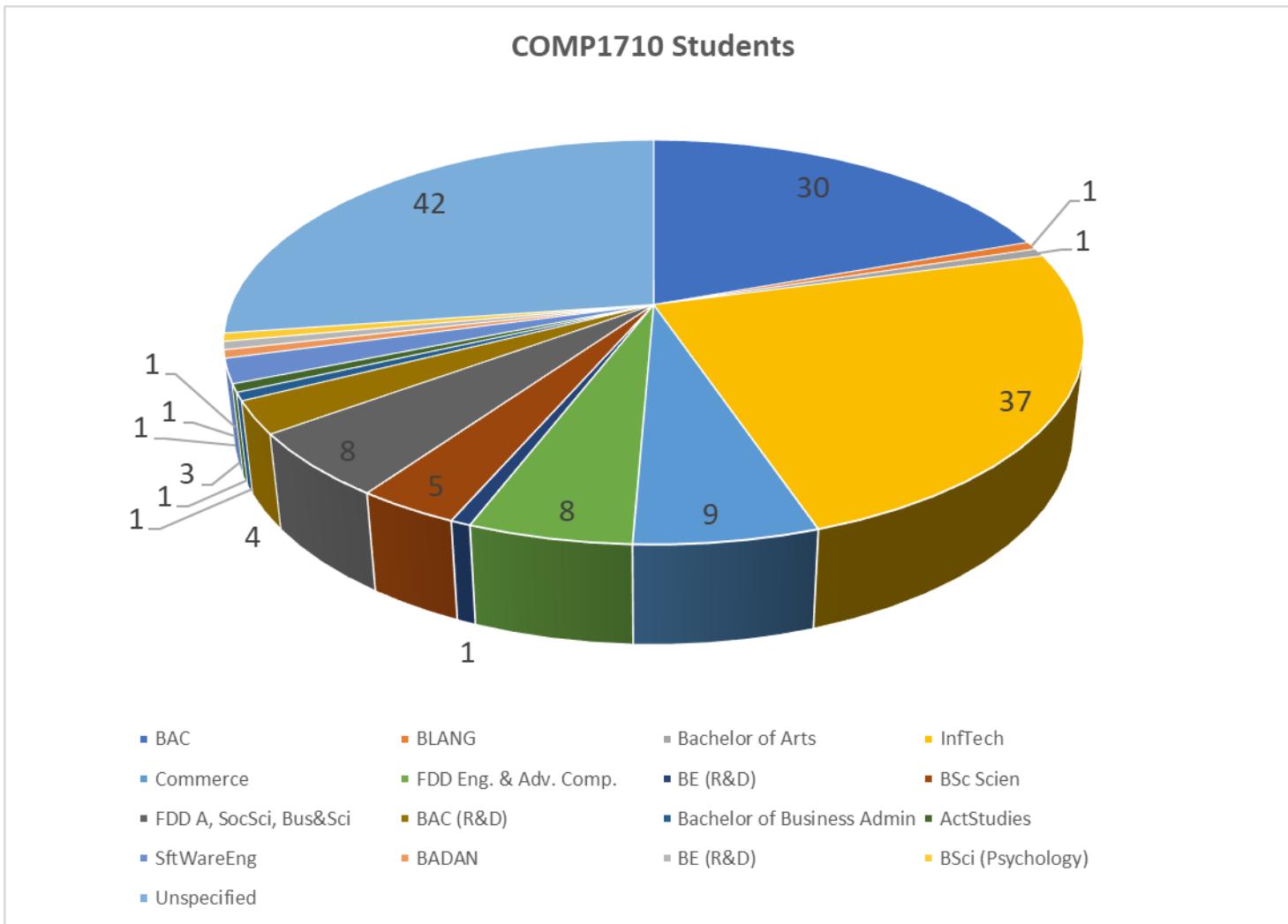


**COMP1710 / COMP6780 = 282 students**





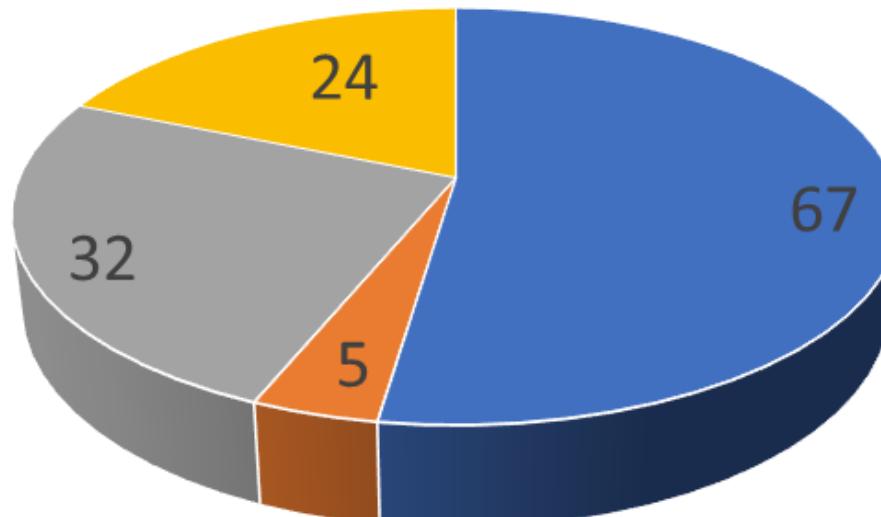
## COMP6780 = 154 students





**COMP6780 = 128 students**

## COMP6780 Students



■ MCOMP ■ MMLCV ■ MBIS ■ Unspecified



## More about you – a few poll questions

 **socrative**  
**CALDWELL8573**

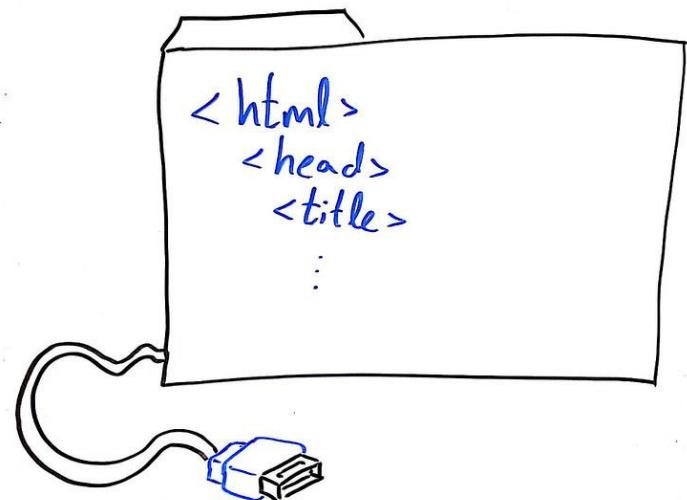


**What are we all here to do?**



## Learn and grow new/more skills!

- This course introduces the construction of web sites and web interface/interaction design.
- Web development + design





# Course Overview: Learning Outcomes

Upon successful completion of the course, you will be able to:

- Understand and be able to develop and design interactive web sites including multimedia content by applying current web design principles, guidelines and user-centered heuristics.
- Apply a user-centred focus to the design and development of web sites.
- Demonstrate knowledge of accessibility, compliance with standards, privacy concerns and personalisation for web sites.
- Understand and be able to separately control the content, the appearance and the behaviour of web sites.
- Understand and report on the nature and practice of human-computer interaction research in an ethical environment.



- Course delivery:  
Wattle, Echo360, Zoom, JSBin, Socrative
- Discussion, Q&A:  
Piazza



# Course Delivery: Lectures

- Lecture slot 1:  
Mondays 4pm-6pm - combination of in person and online
- Lecture slot 2:  
Tuesday 1pm-2pm – combination of in person and online
- In the first 6 weeks we will be delivering the MOOC version of the first half of the course material.
- Many aspects related to building a website will be discussed (copyright, image credibility, ethics, cybersecurity, etc.) throughout the semester. These are ALL important contexts within which web development must be considered.
- Please check the course-schedule in Wattle regularly.



# Course Delivery: Lab-tutes

- 9-10 weeks of schedule lab-tutes
- Labs start in week 2 (next week)
- Lab tutorials are of two types: fully online and hybrid.
- The change to hybrid on-campus / Zoom model allows for more enrolments in existing labs; we are awaiting changes from the School *My Timetabling* team.



## Please see the following ANU COVID advice (as of 21 June 2022):

- “Some of the most important things you can do to keep the community safe include:
- Wearing a mask indoors
- Keeping your vaccinations up to date
- Staying home and getting tested if you’re unwell
- Following any isolation requirements
- Appropriately reporting your result if you test positive to COVID-19 by:
  1. Registering your positive result with ACT Health using this [online form](#), or with the state/territory health authority where you are located;
  2. Alerting the University through this [online form](#) and;
  3. Informing your supervisor or course convenor.
- Washing or sanitising your hands frequently
- Maintain physical distance between yourself and others where possible
- Wiping down surfaces after use” <https://www.anu.edu.au/covid-19-advice>

If students are wearing their masks, the lecturer can remove her/his.  
We will move individual question time to the out-of-doors after the lecture.



- **Assignments (30%)**
  - Assignment 1 (10%)
  - Assignment 2 (10%)
  - Assignment 3 (10%)
- **Communications (25%)**
  - Active participation in Piazza forum (6%)
  - Active participation in a Continuous Improvement session (4%)
  - A report on participating in user-studies (15%)
- **Examinations (45%)**
  - 8 online quizzes (15%)
  - Final exam: (30%)



Task	Length (Max)/Workload	%	Due Date (Canberra time)	Marks/Feedback Returned
<b>Assignment 1 (30%)</b>				
Section 0: Topic Submission	3 preferred topics	0%	End of Week 2 (Friday 5 August 5pm)	End of Week 3 (Friday 12 September)
Assignment 1: Website Submission	5 Webpages minimum	10%	End of Week 6 (Friday 4 September 6pm)	TBA
Assignment 2: Website Submission	2 Webpages minimum	10%	End of Week 8 (Friday 2 October 5pm)	<b>TBA</b>
Assignment 3: Website Submission	Complete Website	10%	End of Week 12 (Friday 29 October 5pm)	TBA
<b>Communication and Participation + Report (30%) INDIVIDUAL</b>				
Piazza forum posting + Continuous improvement contribution	TBA	15%		N/A
Report	TBA	15%		
<b>Examination (45%) INDIVIDUAL</b>				
Online Quizlets		15%	End of every week	On submission
Final Exam		30%	<b>TBD</b>	<b>TBA</b>



## COMP1710/6780 Roadmap for Semester 2 2022 (Subject to change)

	Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Teaching Break	Teaching Break	Wk 7	Wk 8	Wk 9	Wk 10	Wk 11	Wk 12	Final Exam
Lectures	Intro to Course	Intro to web dev & design	Content types, learning styles, userreqs	Image credibility, perspective taking	HCI, Web dev in the industry	Video editing, Web dev tools			Good & bad webdesign	Cybersec & Phishing	Academic writing, Javascript	ePubs, Javascript	Front & backend	Exam hints & tips	
MOOC/ labs	MOOC1&2 Intro to labs & tools	MOOC3 & Creating HTML files	MOOC4 & HTML forms, source logs	MOOC5	MOOC6 & video editing			Assignment #2 assistance	Good & bad web design & phishing	TBC	ePubs & remedial	Assignment #3 assistance	TBC		
Assessment						Assign Pt 1			Assign Pt2			Assign Pt 3			
Others															Continuous Improvement – Attend a continuous improvement meeting Experiment Participation – Attend experiments totalling 2 hours offered by SONA or us. →



# Comp1710/6780

## Your website assignment



## **Assignment assessments: 10 + 10 + 10**

### **Assignment (in 3 parts) on Web site construction: 30 marks**

**Web site appearance design: 10 marks**

**Website is further developed: 10 marks**

**Full website with advanced components developed: 10 marks**

**The assignments are based on the labs, approximately every 3 labs is one assignment**



## Comp1710/6780 – Assignment Part 1

### Worth 1 mark

#### **From assignment.html Your *Me and My Passion***

Replace this line with your URL link to this element in your website. Notes:  
Provide any notes you may have about this element here.

#### **From Assignment Specification:**

Introduce yourself and/or your passion, interest or hobby etc. Write a mission statement or list of goals similar to the idea of a brief statement of the mission and list of goals in chapter 1 of the Unusually Useful Web Book. This section should probably take 200-400 words or so.

**What we will be looking for:** Thorough description, clear.



## Comp1710/6780 – Assignment Part 1

**Worth 1 mark for CSS**

**From assignment.html CSS**

Replace this line with your URL link to this element in your website.

Notes: Provide any notes you may have about this element here.

**From Assignment Spec:**

Create an external (separate) CSS file. Use at least 10 CSS rules. **Make sure your CSS includes comments that would be useful to someone taking over the maintenance of your site**, things like the purpose of each rule, exceptions to its use and the choice you made as to which selector you specified. If you create more than one CSS make sure they are deployed in a Cascading manner, i.e. there should be at least one default CSS that will be applied to all the pages in your site, with specialised CSS then being applied to specific pages of the web site.

**What we will be looking for:** As described in the assignment specifications



## Comp1710/6780 – Assignment Part 1

**Worth 1 mark**

### **From assignment.html Site Map**

Replace this line with your URL link to this element in your website.

Notes: Provide any notes you may have about this element here.

### **From Assignment Spec:**

This page should clearly depict the organisation/structure of the web site, possibly using a table or links (or both) or an image map. *Make sure you update the site map as you expand your web site in Parts 2 and 3.*

**What we will be looking for:** Well developed site map that is easy to understand and navigate.



## Comp1710/6780 – Assignment Part 1

**Worth 1 mark**

### **From assignment.html Source Log**

Replace this line with your URL link to this element in your website.

Notes: Provide any notes you may have about this element here.

### **From Assignment Spec:**

You will need to keep a log. A typical log describes the list of sources you used for your project and the modifications you applied to them. The origin of the source should be given in enough detail to ensure the marker can access the source whenever it is possible (URL, ISBN etc). *Make sure you update the source log as you expand your web site in Parts 2 and 3.*

**What we will be looking for:** Clear, comprehensive listing of all external sources with easy access (provide a link) to the source. Also note your own images, video, etc.



## Comp1710/6780 – Assignment Part 1

**Worth 1 mark**

### **From assignment.html Feedback Form**

Replace this line with your URL link to this element in your website.

Notes: Provide any notes you may have about this element here.

### **From Assignment Spec:**

Create a page which takes feedback from visitors to your site via a form.

**What we will be looking for:** Easy to use and understand, nice formatting, relevant to your website.



## Comp1710/6780 – Assignment Part 1

**Worth 1 mark**

### **Coherence**

We will be looking some sense of flow and unbroken links in your site. This is only part 1 so your site is still young, but you should have some colour scheme, some similar usage of fonts, your subject should be obvious and your pages should work together.

**What we will be looking for:** Well structured content in your site that ‘hangs together’ around your theme.



## Comp1710/6780 – Assignment Part 1

**Worth 1 mark**

### **Quality**

Even in a young site the elements can be visually appealing. We will be looking for appropriate colour schemes and font strategies, harmonious use of space, a few relevant and interesting images if appropriate for your site, etc..

**What we will be looking for:** Visually appealing, well-designed, excellent readability, no broken links,



## Comp1710/6780 – Assignment Part 1

**Worth 1 mark**

### **Coding**

We will be looking at your html and css coding. We want to see well structured, clear coding with appropriate use of indenting and especially good commenting.

**What we will be looking for:** Well structured code using white space and indenting, and excellent commenting.



## Comp1710/6780 – Assignment Part 1

**Worth 1 mark**

### **Creativity**

Although later (assignment part 3) we will be expecting to see good creativity in your website, even as a young site we expect to see some of the reason why you chose the subject you chose. We will look for your use of creativity in presenting the subject (so far) to us.

**What we will be looking for:** Creativity that displays thought and imagination.



## Comp1710/6780 – Assignment Part 1

**Worth 1 mark**

### **Submission**

Just submitting your assignment part 1 is an important achievement. If you have submitted your assignment properly (ie we don't find only a zip file or just your student directory with no index.html) and it is on time you will get this full mark.

**What we will be looking for:** Properly installed website.



# Forum Participation (4 marks)

**Worth 4 marks –  
2 posts with maximum  
of 2 marks each**

**From assignment.html   Student Forum Participation**  
**Replace this line with your URL linking to 1st of 3 nominated 'best posts.'**  
**Replace this line with your URL linking to 2nd of 3 nominated 'best posts.'**

The screenshot shows a Piazza forum for the course COMP 1710/6780. The interface includes a header with navigation icons, a search bar, and links for assignments, Q&A, and Resources. Below the header, there are sections for 'Updated', 'Unresolved', and 'Following'. A 'New Post' button and a search bar are also present. The main area displays three posts from 'YESTERDAY': 1. 'Monday Study Session' by a user, 2. 'About the recording of the lecture' by another user, and 3. 'Required experience for this class?' by a third user. Each post includes a timestamp, a green 'S' icon, and a small image of a person.

## From Assignment Spec:

Active Participation: Provide URL links to your three best Piazza posts.



# Assignment Part 2 (10 marks)

Comp1710/6780

Assignment Part 2



## Task 2.1: Image Map

**Worth 2.5 marks**

**From assignment.html**

Replace this line with your URL link to this element in your website.

Notes: Provide any notes you may have about this element here.

**From Assignment Spec:**

Create a page which displays one or more image maps. Make sure that there are at least 3 links, with proper labels in your image map.

**What we will be looking for:** Excellent imagemap with 3 or more well-formed links and proper labelling



## Task 2.2: Photo Gallery

**Worth 2.5 marks**

**From assignment.html**

Replace this line with your URL link to this element in your website.

Notes: Provide any notes you may have about this element here.

**From Assignment Spec:**

Take or select at least 10 relevant photographs. Convert the photographs to \*.png format. Use a template or a suitable tool like Galerie to present them with appropriate titles and any comments you wish to make. Your photo gallery should have the same look and feel as the rest of the web site. The easiest way to achieve this is to ensure it uses the same CSS. Or it may be appropriate for you to link to content stored elsewhere on the internet.

**What we will be looking for:** Excellent photo gallery with 10+ photographs - integrated into website look and feel – well labelled/commented



## Task 2.3: Storyboard

**Worth 2.5 marks**

**From assignment.html**

Replace this line with your URL link to this element in your website.

Notes: Provide any notes you may have about this element here.

**From Assignment Spec:**

Create a storyboard for your video as a comic (see the relevant lab). The key thing is to present your plan of how you intend your video (see 3.1) to look after editing.

The comic and the video (see next task) should represent the same story. It should be possible to understand the video by reading the comic, and understand the comic by watching the video.

**What we will be looking for:** Excellent storyboard that strongly supports the video



## Task 2.4: Video OR Javascript

**Worth 2.5 marks**

### **From assignment.html**

Replace this line with your URL link to this element in your website.

Notes: Provide any notes you may have about this element here.

### **From Assignment Spec:**

Shoot (or collect) and edit a video and present it on the website. The video (i.e. about your subject, its the same video) should contain at least one title and one transition. It will be inlined within a web page. Use your creativity and originality to do something interesting, useful or just funny. (More on this in Assignment and Report Specification)

**What we will be looking for:** Excellent inline creative video relevant to website with high quality titles/transitions



## Task 2.4: Video OR Javascript

**Worth 2.5 marks**

### **From assignment.html**

We will be looking for an excellent JS addition to your website that complements your theme. We expect you to speak with your tutor about your proposed JS element(s) so that you can determine whether your proposed JS addition is 'right-sized' for this assignment part.

### **From Assignment Spec:**

The javascript code needs to be functional, well structured, properly commented, and clearly indented.

**What we will be looking for:** We expect you to speak with your tutor about your proposed JS element(s) so that you can determine whether your proposed JS addition is 'right-sized' for this assignment part.



# Forum Participation (2 marks)

**Worth 2 marks –  
1 post with maximum  
of 2 marks**

**From assignment.html   Student Forum Participation**  
**Replace this line with your URL linking to your nominated 'best post.'**  
**(This of course excludes the two you chose before.)**

**From Assignment Spec:**  
Active Participation: Provide URL links to your best Piazza post.

The screenshot shows the Piazza forum interface for the course COMP 1710/6780. The top navigation bar includes links for assignment1, assignment2, continuous\_improvement, forum, and other. The main feed shows several posts:

- Instructor Post (2/27/19):** New lab slot available: Wed 5... (2 replies)
- Student Post (2/21/19):** Private Search for Teammates! (1 reply)
- Student Post (YESTERDAY):** Monday Study Session (6 replies)
- Student Post (11:56AM):** About the recording of the lecture (1 reply)
- Student Post (11:28AM):** Required experience for this class? (2 replies)

A sidebar on the right features a "Silicon Valley Tech Tour" section with a photo of a person jumping in front of a building.



# Comp1710/6780

## Assignment Part 3



**Worth 1.25 marks**

### **3.1 Reflections**

Replace this line with your URL link to this element in your website.

Notes: Provide any notes you may have about this element here.



### **3.1 Provide a reflective "About my site" page**

This should be a couple of paragraphs reflecting on what you have learnt about website design while actually doing it. E.g. are there things which if you had realised earlier you would have done different?

**What we will be looking for:** Excellent reflections that are clear and well-considered

Image: CC0 Public Domain

Pxhere 1278113 (<https://pxhere.com/en/photo/1278113>)

Photographer unknown



## Worth 1.25 marks

### 3.2 Alternative CSS

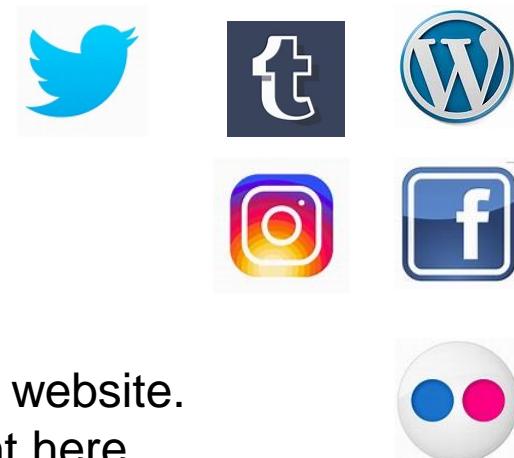
Replace this line with your URL link to this element in your website.

Notes: Provide any notes you may have about this element here.

### 3.2 Provide an alternative CSS page

Create at least one extra CSS page which transforms the appearance of your website, either in an interesting way or into a more printer-friendly format.

**What we will be looking for:** One or more excellent alternative CSS styles for 'look and feel' that transforms the site or that creates high quality print style or ?



**Worth 1.25 marks**

### 3.3 Social Networking Button(s)

Replace this line with your URL link to this element in your website.

Notes: Provide any notes you may have about this element here.

### 3.3 Provide a Social Networking button

Your site could do with more exposure, or at least once you release it into the wild beyond the ANU limited space of partch/liskov. Please provide a working button for a social networking or similar site such as done in the lab or lecture related to this topic. If your theme is such that none of this is relevant then please link to this from your assignment.html file, and of course mention why it was not relevant for you.

**What we will be looking for:** One or more well-placed, working (not just an href) social networking buttons in your site.



## Comp1710/6780 – Assignment Part 3

**Worth 1.25 marks**

### **3.4 Social Networking Feed**

Please provide a working social networking feed you have learnt about in the relevant lab.

If your theme is such that none of this is relevant then please email me and we may be able to negotiate the alternative (make sure you keep the email in which I agree to your alternative topic).

**What we will be looking for:** Relevance to your topic. Gracefully integrated into your website.



**Worth 1.25 marks**

**H T M L**

**C S S**



### **3.5 CSS and HTML Validation**

Replace this line with your URL link to this element in your website.

Notes: Provide any notes you may have about this element here.

### **3.5 Validate your CSS and your HTML pages**

Run your CSS and HTML pages through the W3C validation service. Create a page (or another photo gallery) showing some screenshots (if you're not sure how to take screenshots - google it) of the validation report. If you need to leave some validation errors to achieve the look you want, make a comment in your assignment.html file to explain.

**What we will be looking for:** Proof that you have validated your code, and explanation of any HTML or CSS that does not pass validation.



**Worth 1.25 marks**

## Originality

### **3.6 Something Original**

Replace this line with your URL link to this element in your website.

Notes: Provide any notes you may have about this element here.

### **3.6 Provide something original**

Get creative and add a component or content which differs from the tasks listed above. It might be an extra page presenting some interesting content you made or wrote yourself, or which provides links to sites you have found useful while making the site, or which are about related or relevant subjects. or it might be something made with a tool you have researched and learnt to use yourself. Don't get stressed - this is meant to allow you to be creative in some way, and get marks for it.

**What we will be looking for:** Excellent original element that is relevant to the theme of your website and well-integrated into your design.



**Worth 2.5 marks**

## **Overall Presentation of your website**

**What we will be looking for:** Overall the finished site is extensively developed, and reflects a high degree of excellence, attention to detail and superior design.

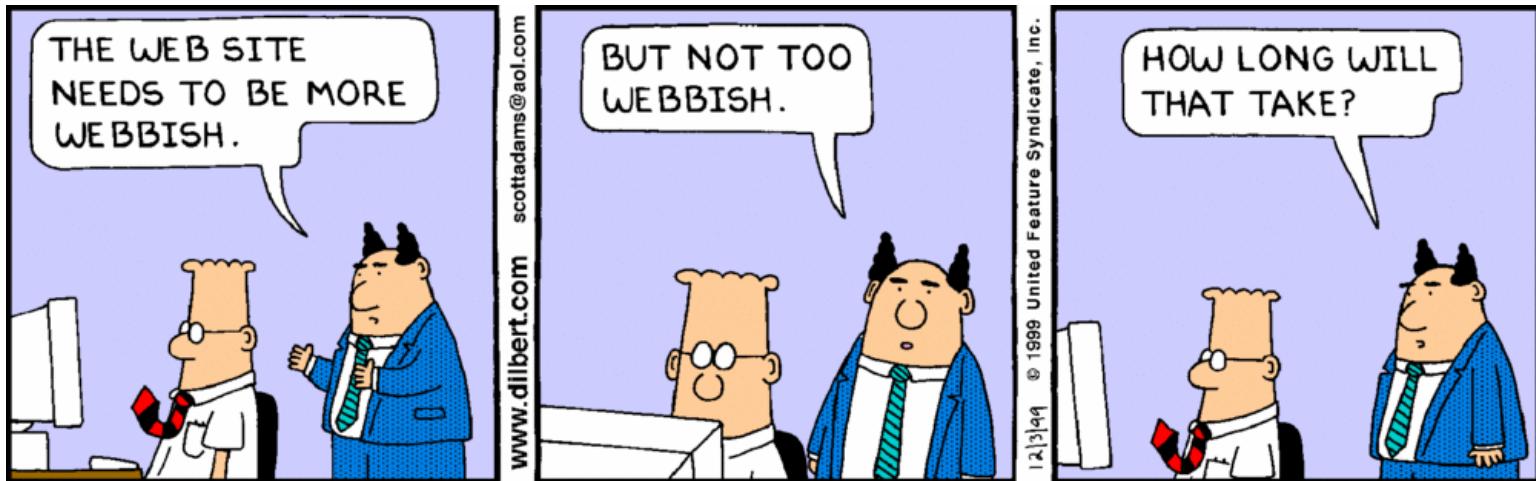


## This week...

No Tuesday lecture this week. Use this time to decide on your website topic.

Read the course outline

Consider getting a headstart by doing the 1<sup>st</sup> week of the online 'MOOC' lab materials – these will be available from tomorrow.



# COMP1710/6780

## Web Development and Design

Week 2 1-5 August 2022



## CECS Class Representatives

Class Student Representation is an important component of the teaching and learning quality assurance and quality improvement processes within the ANU College of Engineering and Computer Science (CECS).

The role of Class Representatives is to provide ongoing constructive feedback on behalf of the student cohort to Course Conveners and to Associate Directors (Education) for continuous improvements to the course.

### Roles and responsibilities:

- Act as the official liaison between your peers and convener.
- Be creative, available and proactive in gathering feedback from your classmates.
- Attend regular meetings, and provide reports on course feedback to your course convener
- Close the feedback loop by reporting back to the class the outcomes of your meetings.



## Why become a class representative?

- **Ensure students have a voice** to their course convener, lecturer, tutors, and College.
- **Develop skills sought by employers**, including interpersonal, dispute resolution, leadership and communication skills.
- **Become empowered**. Play an active role in determining the direction of your education.
- **Become more aware of issues influencing your University** and current issues in higher education.
- **Course design and delivery**. Help shape the delivery of your current courses as well as future improvements for following years.

Note: Class representatives will need to be comfortable with their contact details being made available via Wattle to all students in the class.

For more information regarding roles and responsibilities, contact:

ANUSA CECS representatives: [sa.cecs@anu.edu.au](mailto:sa.cecs@anu.edu.au)

PARSA CECS representatives: [parsa.cecs@anu.edu.au](mailto:parsa.cecs@anu.edu.au)



## **Want to be a class representative? Nominate today!**

Please nominate yourself to your course convener  
([sabrina.Caldwell@anu.edu.au](mailto:sabrina.Caldwell@anu.edu.au)) by **9 August 2022**.

You are free to nominate yourself whether you are currently on-campus or studying remotely.

**We need two: One for COMP1710 and one for COMP6780**



	Monday	Tuesday	Wednesday	Thursday	Friday
9am			In person: Joey/Bill Online: Adi <b>Hybrid tutorial</b> ComA 02		
10am			In person: Joey Online: Rahul <b>Hybrid tutorial</b> ComA 03	In person: Erika Online: Jiannan <b>Hybrid tutorial</b> ComA 05	
11am					Online: Jiannan Online: Jinjian ComA 09
12pm					Online: Manett Online: Bill ComA 07
1pm		Lecture B			
2pm				Online: Jinjian Online: Erika ComA 08	
3pm		In person :Rahul Online: Bill <b>Hybrid tutorial</b> ComA 01			
4pm	Lecture A		In person: David Online: Manett <b>Hybrid tutorial</b> ComA 04		In person: David Online: Zhiheng <b>Hybrid tutorial</b> ComA 06
5pm				Online: Adi Online: Joey (tutorial was 2-4)	
6pm					
<b>Legend</b>		Lecture			
<b>Hybrid tutorial</b>					
Fully online tutorial					

Hybrid tutorial means that you can attend in person in N112 or online via the Zoom link (check Piazza and Wattle for Zoom links) One tutor will be in the room and another will be on Zoom.



# Labs start this week!: ZOOM LINKS

Lab	Fully online Hybrid	Zoom link
<b>Tuesday 3-5 pm</b>	Hybrid	Topic: COMP1710/6780 3-5pm Tuesdays Tutorial Time: Aug 2, 2022 03:00 PM Canberra, Melbourne, Sydney Join Zoom Meeting <a href="https://anu.zoom.us/j/85172375644?pwd=ZTh2NFJncjlybU5DczR0Z1BqamtKQT09">https://anu.zoom.us/j/85172375644?pwd=ZTh2NFJncjlybU5DczR0Z1BqamtKQT09</a> Meeting ID: 851 7237 5644 Password: 383073
<b>Wednesday 9- 11am</b>	Hybrid	Topic: Comp1710/6780 9-11am Wednesdays tutorials Time: Aug 3, 2022 09:00 AM Canberra, Melbourne, Sydney Join Zoom Meeting <a href="https://anu.zoom.us/j/81513338863?pwd=L1UzTW9mUW94OGpneE8vaCt2ZndLZz09">https://anu.zoom.us/j/81513338863?pwd=L1UzTW9mUW94OGpneE8vaCt2ZndLZz09</a> Meeting ID: 815 1333 8863 Password: 953660
<b>Wednesday 11am-1pm</b>	Hybrid	Topic: COMP1710/6780 11am - 1pm Wednesdays Tutorials Time: Aug 3, 2022 11:00 AM Canberra, Melbourne, Sydney Join Zoom Meeting <a href="https://anu.zoom.us/j/83130081950?pwd=U0RzOG9XalNRYk1RNG11d08zVmoxZz09">https://anu.zoom.us/j/83130081950?pwd=U0RzOG9XalNRYk1RNG11d08zVmoxZz09</a> Meeting ID: 831 3008 1950 Password: 128637
<b>Wednesday 4- 6pm</b>	Hybrid	Topic: COMP1710/6780 4-6pm Wednesdays Tutorial Time: Aug 3, 2022 04:00 PM Canberra, Melbourne, Sydney Join Zoom Meeting <a href="https://anu.zoom.us/j/81096951712?pwd=eU9Fa2RobWo3WFpUSDdEMFB0NC9vdz09">https://anu.zoom.us/j/81096951712?pwd=eU9Fa2RobWo3WFpUSDdEMFB0NC9vdz09</a> Meeting ID: 810 9695 1712 Password: 863527
<b>Thursday 10am- 12pm</b>	Hybrid	Topic: COMP1710/6780 10am-12pm Thursdays Tutorials Time: Aug 4, 2022 10:00 AM Canberra, Melbourne, Sydney Join Zoom Meeting <a href="https://anu.zoom.us/j/82271548932?pwd=ZnhUaFhZOG1tWVo4MWcwYU15ZkZqUT09">https://anu.zoom.us/j/82271548932?pwd=ZnhUaFhZOG1tWVo4MWcwYU15ZkZqUT09</a> Meeting ID: 822 7154 8932 Password: 831490
<b>Thursday 2-4pm</b>	Fully online	Topic: COMP1710/6780 2-4pm Thursdays tutorials Time: Aug 4, 2022 02:00 PM Canberra, Melbourne, Sydney Join Zoom Meeting <a href="https://anu.zoom.us/j/89591790852?pwd=OVliZHY0MTdsNkQxTIVpTDJHWjlnZz09">https://anu.zoom.us/j/89591790852?pwd=OVliZHY0MTdsNkQxTIVpTDJHWjlnZz09</a> Meeting ID: 895 9179 0852 Password: 486083
<b>Thursday 4-6pm</b>	Hybrid	Topic: COMP1710/6780 4-6pm Thursdays tutorials Time: Aug 4, 2022 04:00 PM Canberra, Melbourne, Sydney Join Zoom Meeting <a href="https://anu.zoom.us/j/86847152111?pwd=T1VKRnhaYm5Tb3Z0OEEzZC9QUUFyZz09">https://anu.zoom.us/j/86847152111?pwd=T1VKRnhaYm5Tb3Z0OEEzZC9QUUFyZz09</a> Meeting ID: 868 4715 2111 Password: 944570
<b>Thursday 5-7pm</b>	Fully online	Topic: COMP1710/6780 5-7 Thursdays tutorials Time: Aug 4, 2022 05:00 PM Canberra, Melbourne, Sydney Join Zoom Meeting <a href="https://anu.zoom.us/j/86144613112?pwd=cHRYbFI2Uy9HOEw4eGU0b2FUc1VUQT09">https://anu.zoom.us/j/86144613112?pwd=cHRYbFI2Uy9HOEw4eGU0b2FUc1VUQT09</a> Meeting ID: 861 4461 3112 Password: 082773
<b>Friday 11am-1pm</b>	Fully online	Topic: COMP1710/6780 11am-1pm Fridays tutorials Time: Aug 5, 2022 11:00 AM Canberra, Melbourne, Sydney Join Zoom Meeting <a href="https://anu.zoom.us/j/88082873635?pwd=UXIYVTAxMWJxRnJrL09UYmdlcVhqZz09">https://anu.zoom.us/j/88082873635?pwd=UXIYVTAxMWJxRnJrL09UYmdlcVhqZz09</a> Meeting ID: 880 8287 3635 Password: 126878
<b>Friday 1pm-3pm</b>	Fully online	Topic: COMP1710/6780 1pm - 3pm Fridays tutorials Time: Aug 5, 2022 01:00 PM Canberra, Melbourne, Sydney Join Zoom Meeting <a href="https://anu.zoom.us/j/89663990950?pwd=Y2tWS1VmVDRtUkNseUtWSUo4eGNDdz09">https://anu.zoom.us/j/89663990950?pwd=Y2tWS1VmVDRtUkNseUtWSUo4eGNDdz09</a> Meeting ID: 896 6399 0950 Password: 626662



## What to expect in the lab (generally speaking)

Online means that the lab will take place on Zoom. Both tutors will be on the Zoom with you.

Hybrid lab means that you can attend in person in N112 or online via the Zoom link (check Piazza and Wattle for Zoom links) One tutor will be in the room and another will be on Zoom.

Tutors will walk you through your learning for the week, and help you individually with your particular web development and design questions and issues.

For those of you attending in person

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The lab machines are Linux, which for some of you will be completely familiar and for others not. If you aren't familiar with Linux (you use Windows or Mac) you will find it very easy to use and intuitive, so don't worry.

But you can also bring your own laptop if you want.

You might like to bring your headphones, earbuds or other personal listening devices for the times when you want to listen to the MOOC video materials.





## What to expect in the lab (this week)

The MOOC online learning for week 1 is still open this week.

MOOC online learning for week 2 is now open.

In addition, you will be:

- learning about how to load your files to the web server we use in this course: Partch.
- getting going participating on Piazza
- working with digital images
- using a Chrome browser to read WWW resources
- producing some art

Don't forget to do the quizlets!  
They are due  
Sunday, 7<sup>th</sup> August by 11:55pm



Last week's poll about the most important thing you want to learn in this course





## COMP1710/6780 Roadmap for Semester 2 2022 (Subject to change)

	Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Teaching Break	Teaching Break	Wk 7	Wk 8	Wk 9	Wk 10	Wk 11	Wk 12	Final Exam
Lectures	Intro to Course	Intro to web dev & design	Content types, learning styles, userreqs	Image credibility, perspective taking	HCI, Web dev in the industry	Video editing, Web dev tools	Good & bad web design	Cyber sec & Phishing	Academic writing, Javascript	ePubs, Javascript	Front & backend	Exam hints & tips			
MOOC/ labs	MOOC1	MOOC1&2 Intro to labs & tools	MOOC3 & Creating HTML files	MOOC4 & HTML forms, source logs	MOOC5	MOOC6 & video editing	Assignment #2 assistance	Good & bad web design & phishing	TBC	ePubs & remedial	Assignment #3 assistance	TBC			
Assessment				Assign Pt 1				Assign Pt2			Assign Pt3				
Others							Continuous Improvement – Attend a continuous improvement meeting Experiment Participation – Attend experiments totalling 2 hours offered by SONA or us. →								

We cover most of the topics requested.  
Will consider if we can include others and advise

Week and date	Subjects/Labs	Week and date	Subjects/Labs
Wk1 - 25/7/22	Introduction to course, MOOC1 available, no labs	12/9/22	Non-teaching week
Wk2 - 1/8/22	Introduction to webdev/design, MOOC2	Wk 7 - 19/9/22	Good and Bad web design, Assignpt2 assistance labs, also continuous improvement
Wk3 - 8/8/22	Content types and roles, User Reqs, Perspective taking, MOOC3	Wk 8 - 26/9/22	Cyber security and phishing, Good/bad web design + phishing lab, also CI
Wk4 - 15/8/22	Image/info credibility, User Reqs, Perspective taking, MOOC4	Wk 9 - 3/10/22	Report writing, Javascript, No labs?
Wk5 - 22/8/22	Human Computer Interaction, Webdev tools MOOC5	Wk 10 - 10/10/22	ePublications, Javascript, Remedial labs and ePubs
Wk6 - 29/8/22	Video editing, Webdev tools, MOOC6	Wk 11 - 17/10/22	Frontend and Backend, Assignpt3 assistance labs
5/9/22	Non-teaching week	Wk 12 - 24/10/22	Final exam tips (pre-recorded as I will be unavailable)



## Just a quick note about web development as a career...

According to Randstad Australia (global employment company):

- One of the most popular and growing professions in Australia
- Median average annual salary \$90,000; entry-level \$75,000 to experienced \$125,000
- Various types of web developer including: frontend developer, backend developer, Wordpress developer, mobile web developer, web security developer



Web development refers in general to the **tasks associated with developing websites for hosting** via intranet or internet. The web development process includes **web design, web content development, client-side/server-side scripting** and **network security configuration**, among other tasks.

In a broader sense, web development encompasses all the actions, updates, and operations required to build, maintain and manage a website to ensure its performance, user experience, and speed are optimal.

It might also, but not necessarily, include all those strategic actions needed to ensure its proper ranking on search engine results. Usually, those tasks pertain to a different specialization, namely search engine optimization (SEO)

Web development is also known as website development, while the professionals that maintain a website are called web developers or (more commonly) web devs.



## HTML ↔ CSS

Hypertext Markup Language

At its most basic, a website doesn't need anything but HTML!  
(But it will be very basic!)

Cascading Style Sheets

Cascading style sheets define how your content is presented on the user's browser.

## Front end

What your website visitors see on their desktop or device



## Back end

What goes on behind the scenes, especially data management



The most beautiful, interactive, well-designed website in the world will not be visited by anyone if there is no interesting, necessary, or otherwise valuable content!



 socrative  
**CALDWELL8573**

Did you know...



# Let's talk about Web design





# What is Web Design?

Web design is about how your content is presented. It is about the ‘look and feel’, which is created by your design choices: colour palette, fonts, backgrounds, etc. It is also about how your visitor can interact with your website, and their WIFM (What’s in it for me?)

The image shows the official website for Adidas. At the top left is the 'adidas' logo with three horizontal stripes. To the right are links for 'Keyword Search', 'Sign up & Save', 'My Account', 'Checkout' (with 0 items), and 'FREE SHIPPING'. Below the header is a navigation bar with categories: MEN, WOMEN, KIDS, SALE, CUSTOMIZE, ORIGINALS, BASKETBALL, RUNNING, FOOTBALL, SOCCER, TRAINING, and MORE. The main visual is a close-up photograph of a person's hands tying the laces of a grey and pink running shoe. Overlaid on the image is the large, bold text 'unleash your feet'. In the bottom right corner of the image area, there are three red rectangular buttons with white text: 'SHOP ADIPURE TRAINERS', 'SHOP NEW MEN'S SHOES', and 'SHOP NEW WOMEN'S SHOES'. At the very bottom of the page, there is a footer menu with sections for 'MOST POPULAR', 'Samba', 'Gazelle', 'Sandals', 'Socks', 'D. Rose', 'High Tops', 'Champions League', 'F50', and 'TECHFIT'.

**Adidas**— instantly recognisable in both brand and product

# Gates N Fences website

## How long would you spend on this website?



## New Media design principles – are they all that new? *“Form ever follows function”*

“It is the pervading law of all things organic and inorganic, of all things physical and metaphysical, of all things human, and all things super-human, of all true manifestations of the head, of the heart, of the soul, that the life is recognizable in its expression, that form ever follows function. *This is the law.*” (italics in original)

Lewis Sullivan (1856-1924) Architect



## Aesthetics



## Usability

“...aesthetics refers to the emotional components”

“The usability of an interface refers to its capacity to support task completion.”

“... by understanding how design factors affect users, it is possible to build systems targeted to certain effects and outcomes.”



## Design thinking...

“Design thinking is a human-centred approach to innovation that draws from the designer’s toolkit to integrate the needs of people, the possibilities of technology, and the requirements for business success.”

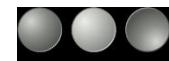
Tim Brown, president and CEO, IDEO



## Some elements of Design for New Media

### How the Information is presented / organized

- What buttons and functions are available to the user and when they are available to be used
- What the underlying behaviour of the system is
- What information and controls are available to other users, such as the admin. staff, super-users, supervisors, executive overview, editorial correspondent etc





## Some elements of Design for New Media

**How the Information is presented/organized (user side/internal organisation)**

**Don't forget hardcopies!**

The content and layout of standard printouts available from the system

The printed material accompanying the system (e.g. printed website, printable eBooks, CD covers)



# Why bother with careful, creative design?

*Because common sense is not always shared and because it saves money.*

## In Production

- It is good to know your client to satisfy their need
  - (NB. at least some of them!)
- Detailed Requirement Specification phase: so you know what you have to do
- Adaptation to future development



# Why bother with careful, creative design?

*Because common sense is not always shared and because it saves money.*

## In Marketing

- Quicker Adoption by users (e.g. Shareware)
- Source of differentiation from competitors

The screenshot shows the Ford website's homepage. At the top, there's a navigation bar with links like 'Go Further', 'Ford Social', 'Support', 'Locate a Dealer', 'En Español', 'My Saved Items', 'More Ford...', and a search bar. Below the navigation, there's a main menu with categories: CARS, CROSSOVERS & SUV's, TRUCKS, HYBRIDS & EV's, COMMERCIAL, ALL, TECHNOLOGY, and SHOPPING TOOLS. A 'close' button is also present. The main content area features a grid of five Ford car models: Fiesta, Focus, Fusion, Mustang, and Taurus. Each car has a small thumbnail image above its name. Below each name, there's a table with starting MSRP and seating information. For example, the Fiesta starts at \$13,200<sup>1</sup> for 5 people, while the Fusion starts at \$16,500<sup>1</sup> for 5 people. The Mustang starts at \$22,200<sup>1</sup> for 4 people. At the bottom of the page, there are sections for 'FUTURE VEHICLES' (2013 Focus ST and 2013 Fusion), a 'SEE VEHICLE LINE-UP' button, and a 'CERTIFIED PRE-OWNED' button.

<https://blog.hubspot.com/blog/tabid/6307/bid/33367/10-brands-with-website-designs-that-nail-both-form-and-function.aspx>



## Why bother with careful, creative design?

adidas

Keyword Search

Sign up & Save My Account

Checkout 0 items

FREE SHIPPING ▾

MEN WOMEN KIDS SALE CUSTOMIZE ORIGINALS BASKETBALL RUNNING FOOTBALL SOCCER TRAINING MORE

unleash your feet

SHOP ADIPURE TRAINERS

SHOP NEW MEN'S SHOES

SHOP NEW WOMEN'S SHOES

MOST POPULAR Samba Samoa Gazelle Sandals Socks D. Rose High Tops Champions League F50 TECHFIT

foursquare

Search people and places...

Activity Explore Lists Rachel

I'm looking for...

near   that

Explore

Powered by over 2,000,000,000 foursquare check-ins!

Adidas— instantly recognisable in both brand and product

Foursquare - NOT instantly recognisable, but function is obvious



## Why bother with careful, creative design?

*Because common sense is not always shared and because it saves money.*

### In Use

- Less support (Courses, Help Desks, etc)
  - N.B.: some companies make money from support / Real cost of a system
- More efficiency
- Fewer errors or undo-able interaction
- Improved Safety (submitting mail, booking plane)
- Make them return
  - Sticky web sites: users stay longer and return more frequently (!)



### The well designed website

1. Lets the users accomplish their goals
2. Makes its purpose clear
3. Follows conventions
4. Loads and updates quickly
5. Displays well in different environments
6. Has some style





## Text readability

A Matrix look and feel: green text on black background.

**Where does that come from?**

**From monochrome displays: green, orange, and sometime white on black background**

One of my colleagues says a lecturer (in Maths) used to explain to his students that after years of marking exams, he realised that statistically, exams written in black on a yellow background get better scores:-)

- Most readable color:
  - black text on white background
- Overall, there is a stronger preference for any combination containing black
- In every color combination surveyed, the darker text on a lighter background was rated more readable than its inverse



## Design and usability by Jacob Nielsen

- "Jakob's Law of the Internet User Experience: users spend most of their time on other websites."
- "users left websites after 1 minute and 49 seconds on average, concluding in that time that the website didn't fulfill their needs."

Mr Bottles website →





A useless (?) website: <http://www.superbad.com/>

## Gates N Fences website

Welcome To: Gates N Fences

L.A. Ornamental Corp  
310 N W 10th Street  
Miami, Florida 33147  
Phone: 305-696-0419  
LAOrnamental@aol.com

**Designed to Enhance the Entry of your home with Custom Ornamental Decorative Driveway Gates while bringing Safety, Security and convenience.**

If you're looking for Privacy with your driveway gates, Jarden Gates, or Walk Thru Gates, we offer a Solid Backing with your choice of Almondine, Steel, Pescion or Plastic. All solid backing are offered in many different colors to choose from. [Privacy Gates](#)

Although we offer a wide selection of Ornamental Designs or Decorative Designs, we can design and manufacture any style to accommodate our customers needs. A. L. Ornamental Corp has been in business for over 20 years. We have over 20 years experience in manufacturing and designing elegant, custom, or exotic [Driveway Gates](#) and [Fences](#), our past and future customers can have peace of mind that they are receiving quality workmanship. We are a Fence Company that gives our customers a quote please send us an email to [LAOornament@aol.com](mailto:LAOornament@aol.com)

**Top Brands of Gate Openers and Operators, Commercial, Residential, Industrial, Swing, Slide, Rack & Pinion, Barrier Railings**

- EAT Gate Openers
- PowerMaster Gate Openers
- Eagle Gate Operators
- Elite Gate Openers
- Chamberlain Gate Operators
- Doering Gate Openers
- Viking Gate Operators
- VACO Gate Operators
- LiftMaster Gate Operators
- Allstar Gate Operators
- GE Gate Operators
- FAAC Gate Operators
- Apollo Gate Operators
- MySecureBarriers/Honeywell Swing Slides

**Residential Sliding Gate Openers**

- Barrier Gate Vehicle Barrier Gates, Parking Gate, Barrier
- Chain Surge Protector - Transformers Revert

**RECEIVE CRIMES:** Take phone Entry Systems from Linear, Select Enterprises, American Access Systems, Sonnen, for Residential and Commercial Applications. A variety of Access Control Components, Includes: Decoders, Cards Readers, Proximity Card Reader, Key Pads, Wireless Key Pad, Wireless Telephone Entry Systems, Free Exit Loops, Safety Loop, Safety Photo Sensors, Multi-Code, L100Reader, LinearProximity Card, Remotes, Electric Magnetic Lock, Safety Locks, Exit Loops, Safety Sensors, Sensor Wire, Contact Safety Photo Cell, Garage Door Key Pads or Telephone Entry Systems. What ever your need are for Gate Access Control we have the Security systems.

## Penny Juice website

Who is Penny Juice?

People have alot to say about Penny Juice!

THE CHILDREN AT KID COLLEGE LOVE THE TASTE OF PENNY JUICE AND DRINK IT WITHOUT ANY MURKALITY FROM OUR TEACHERS. I DRINK PENNY JUICE FOR THAT REASD AND BECAUSE IT IS 100% JUICE FROM CONCENTRATE. CAROLYN PENNY - KID COLLEGE-BILLINGS, MT

"THANK YOU FOR THE OPPORTUNITY TO LET EVERYONE KNOW ABOUT YOUR TERRIFIC COMPANY! IT'S EASY TO STORE AND MIX AND WE RECEIVE GREAT SERVICE!" MARY CELIA - BLISS ACADEMY EARLY LEARNING CENTER-GREENWOOD VILLAGE, CO

I LOVE THE PRUMPTNESS OF SERVICE! EASY MIXING BOY! KIDS WORLD LEARNING CENTER - BROOKINGS, SD

I HAVE BEEN USING PENNY JUICE AT MY CHILDCARE CENTER FOR 2 YEARS. THE CHILDREN LOVE ALL THE FUN COLORS. I HAVE RECOMMENDED PENNY JUICE TO OTHER CHILDCARE DIRECTORS IN THE AREA. DANA HOENGSMIDT - KIDS COUNTRY CHILDCARE ST FRANCIS, MN

THEY OFFER A GREAT PRODUCT AT A REASONABLE PRICE. THEIR CUSTOMER SERVICE IS EXCELLENT. WE HAVE ENJOYED OUR EXPERIENCES WITH PENNY JUICE AND LOOK FORWARD TO MANY MORE YEARS OF DOING BUSINESS TOGETHER! LISA E. INGRAM - ANGEL'S NEST INC. COLORADO SPRINGS, CO

THANK YOU! WE ARE SO GRATEFUL TO HAVE FOUND PENNYJUICE. I AM 100% PLEASED WITH PENNY JUICE. KEEP UP THE GOOD WORK. ROSEMARY - LARAMIE COUNTY HEAD START/CHEYENNE, WY

I LOVE THE VARIETY OF THE FLAVORS AND THE FACT THAT OUR AUTOMATIC SHIPMENTS ARRIVE IN A TIMELY MANNER. THANKS SO MUCH GOD BLESS! DEBBIE MOORE, DIRECTOR - CHILDREN'S LEARNING CENTER-BOSIER CITY, LA

AS THE DIRECTOR OF A UNIVERSITY AFFILIATED, BUT PRIVATELY OWNED CHILD CARE FACILITY, THE QUALITY PRODUCTS THAT ARE ALSO BUDGET-FRIENDLY ARE ESSENTIAL. (ESPECIALLY LIKE THE EASE OF ORDERING ON-LINE OR BY PHONE, KNOWING THAT THE JUICE WILL BE PROMPTLY DELIVERED DIRECTLY TO THE CENTER. NO MORE HAVING SHOPPING CARTS FULL OF FROZEN JUICE CONCENTRATE FORM THE GROCERY STORE!) THANKS PENNY JUICE FOR SAVING ME TIME AND MONEY! KATHIE DAVIS, DIRECTOR/OWNER - UNIVERSITY CHILDREN'S CENTER-SUPERIOR, WI

PENNY JUICE HAS CERTAINLY BEEN AN ASSET TO OUR FOOD PROGRAM. I AM VERY HAPPY WITH SWITING TO PENNY JUICE AND WOULD RECOMMEND YOU IN A HEARTBEAT. YOU PROVIDE AN EXCELLENT PRODUCT, HASSLE FREE. IT DOESN'T GET ANY BETTER THAN THAT! BABE WALTON - CHILDREN'S ENRICHMENT CENTER-N. LITTLE ROCK, AR

<https://edit.co.uk/blog/top-10-worst-websites/>



## Candidate for a Pullet Surprise by Jerrold H. Zar, Northern Illinois University

I have a spelling checker,  
It came with my PC.  
It plane lee marks four my revue  
Miss steaks aye can knot sea.

Eye ran this poem threw it,  
Your sure reel glad two no.  
Its vary polished in it's weigh.  
My checker tolled me sew.

A checker is a bless sing,  
It freeze yew lodes of thyme.  
It helps me right awl stiles  
two reed,  
And aides me when eye rime.

Each frays come posed up on  
my screen  
Eye trussed too bee a joule.  
The checker pours o'er every word  
To cheque sum spelling rule.

Bee fore a veiling checker's  
Hour spelling mite decline,  
And if we're lacks oar have a laps,  
We wood bee maid too wine.

Butt now bee cause my spelling  
Is checked with such grate flare,  
Their are know fault's with in my cite,  
Of nun eye am a wear.

Now spelling does knot phase me,  
It does knot bring a tier.  
My pay purrs awl due glad den  
With wrapped word's fare as hear.

To rite with care is quite a feet  
Of witch won should bee proud,  
And wee mussed dew the best  
wee can,  
Sew flaw's are knot aloud.

Sow ewe can sea why aye dew prays  
Such soft wear four pea seas,  
And why eye brake in two averse  
Buy righting want too pleas.



## Usability Mistakes - Text

... and can your visitors spell?





## Common online writing mistakes:

Unless your website is an essay site, consider this:

Don't write walls of text

Use appropriately sized fonts

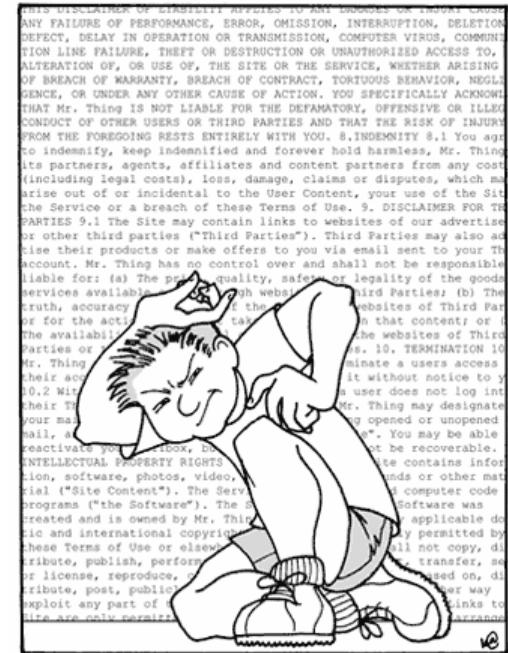
Use headings and sub-headings

Highlight key words

Tease out quotes

Write succinctly and clearly

Consider using downloadable pdf files for tomes



<https://www.nngroup.com/articles/top-10-mistakes-web-design/>



## Make your images work for you:

Use relevant images that highlight your message(s)

Use active, colourful images

Consider your user's download time/quotas and  
resize your images to display just well enough

Consider people who can't see images (or can't see  
them well) and use the Alt attribute

Don't start up your site with splash page that takes a  
long time to load then just says 'Enter site'

710K



77K





Bad file names for this image:

picture1.jpg  
DSCN00423

glasses&watch.jpg

collection of things.jpg

<https://designshack.net/articles/graphics/8-image-mistakes-to-avoid-on-your-website/>



Good file name for this image:  
glasses-and-watch-and-plant.jpg

<https://designshack.net/articles/graphics/8-image-mistakes-to-avoid-on-your-website/>



Horizontally stretched



Vertically stretched



Original



### **Things to think about when using video on your website:**

Is your video integrated into your site?

Are your most important messages ‘buried’ in your video?

Is your video entertaining/informative?

Is your video embedded in your site or else linked to a reputable video repository?

Is your video too long?

Do you have a ‘call to action’?



# Web Design Mistakes

- [Original Top Ten Mistakes in Web Design](#) (96)
- ["Top Ten Mistakes" Revisited Three Years Later](#) (99)
- [The Top Ten New Mistakes of Web Design](#) (99)
- [Top Ten Guidelines for Homepage Usability](#)
- [Top Ten Web-Design Mistakes of 2002](#)
- [Top Ten Web Design Mistakes of 2003](#)
- [Top Ten Web Design Mistakes of 2005](#)
- [Top Ten Web Design Mistakes of 2007](#)
- [Top Ten Web Design Mistakes – updated 2011](#)
- [Top 10 Enduring Web-Design Mistakes of 2016](#)
- [Variations on Practiced Patterns Cause Mistakes \(Dec 2017\)](#)



Lecture tomorrow (also in Kambri T2) will be reviewing the life cycle of a website.

Labs get underway

Be sure to do the quizlets associated with the MOOC learning materials. And do the MOOC learning materials!

If you haven't decided on and submitted your topic (so far only 78 of 304), please consider doing so this week. The sooner you decide, the sooner you can get going on your Assignment part 1.



# COMP1710/6780

## Web Development and Design

Week 2 1-5 August 2022



	Monday	Tuesday	Wednesday	Thursday	Friday
9am			In person: Joey/Bill Online: Adi <b>Hybrid tutorial</b> ComA 02		
10am			In person: Joey Online: Rahul <b>Hybrid tutorial</b> ComA 03	In person: Erika Online: Jiannan <b>Hybrid tutorial</b> ComA 05	
11am					Online: Jiannan Online: Jinjian ComA 09
12pm					Online: Manett Online: Bill ComA 07
1pm		Lecture B			
2pm				Online: Jinjian Online: Erika ComA 08	
3pm		In person :Rahul Online: Bill <b>Hybrid tutorial</b> ComA 01			
4pm	Lecture A		In person: David Online: Manett <b>Hybrid tutorial</b> ComA 04		In person: David Online: Zhiheng <b>Hybrid tutorial</b> ComA 06
5pm				Online: Adi Online: Joey (tutorial was 2-4)	
6pm					
<b>Legend</b>	Lecture				
	<b>Hybrid tutorial</b>				
	Fully online tutorial				

Hybrid tutorial means that you can attend in person in N112 or online via the Zoom link (check Piazza and Wattle for Zoom links) One tutor will be in the room and another will be on Zoom.



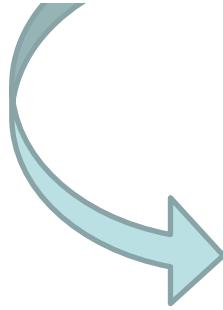
# Labs start this week!: ZOOM LINKS

Lab	Fully online Hybrid	Zoom link
<b>Tuesday 3-5 pm</b>	Hybrid	Topic: COMP1710/6780 3-5pm Tuesdays Tutorial Time: Aug 2, 2022 03:00 PM Canberra, Melbourne, Sydney Join Zoom Meeting <a href="https://anu.zoom.us/j/85172375644?pwd=ZTh2NFJncjlybU5DczR0Z1BqamtKQT09">https://anu.zoom.us/j/85172375644?pwd=ZTh2NFJncjlybU5DczR0Z1BqamtKQT09</a> Meeting ID: 851 7237 5644 Password: 383073
<b>Wednesday 9- 11am</b>	Hybrid	Topic: Comp1710/6780 9-11am Wednesdays tutorials Time: Aug 3, 2022 09:00 AM Canberra, Melbourne, Sydney Join Zoom Meeting <a href="https://anu.zoom.us/j/81513338863?pwd=L1UzTW9mUW94OGpneE8vaCt2ZndLZz09">https://anu.zoom.us/j/81513338863?pwd=L1UzTW9mUW94OGpneE8vaCt2ZndLZz09</a> Meeting ID: 815 1333 8863 Password: 953660
<b>Wednesday 11am-1pm</b>	Hybrid	Topic: COMP1710/6780 11am - 1pm Wednesdays Tutorials Time: Aug 3, 2022 11:00 AM Canberra, Melbourne, Sydney Join Zoom Meeting <a href="https://anu.zoom.us/j/83130081950?pwd=U0RzOG9XaiNRYk1RNG11d08zVmgxZz09">https://anu.zoom.us/j/83130081950?pwd=U0RzOG9XaiNRYk1RNG11d08zVmgxZz09</a> Meeting ID: 831 3008 1950 Password: 128637
<b>Wednesday 4- 6pm</b>	Hybrid	Topic: COMP1710/6780 4-6pm Wednesdays Tutorial Time: Aug 3, 2022 04:00 PM Canberra, Melbourne, Sydney Join Zoom Meeting <a href="https://anu.zoom.us/j/81096951712?pwd=eU9Fa2RobWo3WFpUSDdEMFB0NC9vdz09">https://anu.zoom.us/j/81096951712?pwd=eU9Fa2RobWo3WFpUSDdEMFB0NC9vdz09</a> Meeting ID: 810 9695 1712 Password: 863527
<b>Thursday 10am- 12pm</b>	Hybrid	Topic: COMP1710/6780 10am-12pm Thursdays Tutorials Time: Aug 4, 2022 10:00 AM Canberra, Melbourne, Sydney Join Zoom Meeting <a href="https://anu.zoom.us/j/82271548932?pwd=ZnhUaFhZOG1tWVo4MWcwYU15ZkZqUT09">https://anu.zoom.us/j/82271548932?pwd=ZnhUaFhZOG1tWVo4MWcwYU15ZkZqUT09</a> Meeting ID: 822 7154 8932 Password: 831490
<b>Thursday 2-4pm</b>	Fully online	Topic: COMP1710/6780 2-4pm Thursdays tutorials Time: Aug 4, 2022 02:00 PM Canberra, Melbourne, Sydney Join Zoom Meeting <a href="https://anu.zoom.us/j/89591790852?pwd=OViZHYZ0MTdsNkQxTIVpTDJHWjlnZz09">https://anu.zoom.us/j/89591790852?pwd=OViZHYZ0MTdsNkQxTIVpTDJHWjlnZz09</a> Meeting ID: 895 9179 0852 Password: 486083
<b>Thursday 4-6pm</b>	Hybrid	Topic: COMP1710/6780 4-6pm Thursdays tutorials Time: Aug 4, 2022 04:00 PM Canberra, Melbourne, Sydney Join Zoom Meeting <a href="https://anu.zoom.us/j/86847152111?pwd=T1VKRnhaYm5Tb3Z0OEEzZC9QUUFyZz09">https://anu.zoom.us/j/86847152111?pwd=T1VKRnhaYm5Tb3Z0OEEzZC9QUUFyZz09</a> Meeting ID: 868 4715 2111 Password: 944570
<b>Thursday 5-7pm</b>	Fully online	Topic: COMP1710/6780 5-7 Thursdays tutorials Time: Aug 4, 2022 05:00 PM Canberra, Melbourne, Sydney Join Zoom Meeting <a href="https://anu.zoom.us/j/86144613112?pwd=cHRYbFI2Uy9HOEw4eGU0b2FUc1VUQT09">https://anu.zoom.us/j/86144613112?pwd=cHRYbFI2Uy9HOEw4eGU0b2FUc1VUQT09</a> Meeting ID: 861 4461 3112 Password: 082773
<b>Friday 11am-1pm</b>	Fully online	Topic: COMP1710/6780 11am-1pm Fridays tutorials Time: Aug 5, 2022 11:00 AM Canberra, Melbourne, Sydney Join Zoom Meeting <a href="https://anu.zoom.us/j/88082873635?pwd=UXIYVTAxMWJxRnJrL09UYmdlcVhqZz09">https://anu.zoom.us/j/88082873635?pwd=UXIYVTAxMWJxRnJrL09UYmdlcVhqZz09</a> Meeting ID: 880 8287 3635 Password: 126878
<b>Friday 1pm-3pm</b>	Fully online	Topic: COMP1710/6780 1pm - 3pm Fridays tutorials Time: Aug 5, 2022 01:00 PM Canberra, Melbourne, Sydney Join Zoom Meeting <a href="https://anu.zoom.us/j/89663990950?pwd=Y2tWS1VmVDRtUkNseUtWSUo4eGNDdz09">https://anu.zoom.us/j/89663990950?pwd=Y2tWS1VmVDRtUkNseUtWSUo4eGNDdz09</a> Meeting ID: 896 6399 0950 Password: 626662



# Labs start this week!: ZOOM LINKS

Zoom links for both lectures and all labs pinned to the top of Piazza throughout the semester.



Sabrina Caldwell

https://piazza.com/class/l5uum2bv4ahkr?cid=44

80% Other Bookmarks

stop following 0 views

Getting Started

PIAZZA COMP 1710/6780 Q & A Resources Statistics Manage Class

PINNED

Instr. ALL ZOOM LINKS Hi all, Below are all the Zoom links for the lectures and labs. Please note that I decided to create a different Zoom

Private Search for Teammates! 7/21/22

YESTERDAY

Recommendation for text editor? 8/1/22

Hi, just wondering do we have a specific text editor to be used in the course, or any apps are ok? I'm also very

Generating your own Word Cloud 8/1/22

Word Cloud, we often see them in T-Shirts and coffee mugs. Today, I learned something new - generating your own word d

Text Spelling Recommendation Feature? 8/1/22

As mentioned in Page 32 of week 2. More specifically, I am curious what we need to do with the spelling/Test

What text editor are you using? 8/1/22

The week 1 MOOC asks you to pick a text editor for HTML and CSS. Comment and tell us which one you picked and if it'

Free website hosting options 8/1/22

Some good free options for website hosting are1. GitHub pages: a very basic and easy to setup hosting service, https://p

Private Look for a space for lab o... 8/1/22

Dear Sabrina, I am Chengwei, and my student number is 6342721. I didn't enrol the course COMP6780 last Friday!

Headset\_Reminder for in-person lab... 8/1/22

Hi all, based on WhatsApp this week's lab will need you to bring your own listening devices

Private Temporary lab change due... 8/1/22

Hello I currently have covid and I am isolating hence I am unable to attend the in-person lab I have chosen can I atten

Week 2 Lecture 8/1/22

Hi just want to double check is there any in person lecture in week 2? Thanks!

THIS WEEK

COMP1710 is full and can't allocate... 7/31/22

Dear Professor,I am a new graduate student majoring in Computer Science in the semester 2 2022 of ANU.I am currently talk

Will our website be assessed? 7/31/22

Hi I wonder if our website will be assessed and if so, how will you mark it? Should we contain more fancy or interactive

All labs are full 7/31/22

Hi Sabrina, I am a student in 1710. I cannot choose any of the labs because all of them are full. Can I choose the onli

Online workshop allocation 7/31/22

Hi Sabrina, I am a student who changed to the COMP6780 course in the first week. I want to choose the Thu 14:00 online w

Average Response Time: 1.4 hr Special Mentions:

Cong Yu answered Recommendation for text editor? in 28 min. 11 hours ago

Copyright © 2022 Piazza Technologies, Inc. All Rights Reserved. Privacy Policy Copyright Policy Terms of Use Blog Report Bug!

Online Now | This Week: 13 | 277

Website of Previous Students 7/31/22

ALL ZOOM LINKS

Hi all,

Below are all the Zoom links for the lectures and labs. Please note that I decided to create a different Zoom link for our Tuesday lectures to reduce confusion in the cloud recordings.

Cheers, Sabrina

Lectures

Mondays 4-6pm

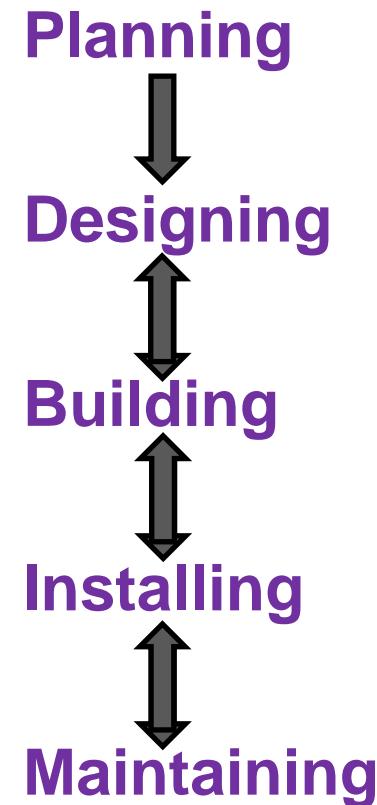
The Zoom link will be via <https://anu.zoom.us/j/88435500888?pwd=WH4by8yUlhjYW9ra2h4bWileE.mzd09>  
Meeting ID: 884 3550 0888  
Password: 895252

Tuesdays 1-2pm

The Zoom link will be via <https://anu.zoom.us/j/85161222558?pwd=eFNETk5NG10eGk0SiQ1Z0xmSjhQT09>  
Meeting ID: 851 6122 2558  
Password: 509562

Labs

Tuesday 3-5pm Hybrid Fully online Zoom link  
Topic: COMP1710/6780 3-5pm Tuesdays Tutorial  
Time: Aug 2, 2022 03:00 PM Canberra, Melbourne, Sydney  
Join Zoom Meeting  
<https://anu.zoom.us/j/85172376544?pwd=ZTh2NFJnqlybU5OzR0Z1BqamtKT09>  
Meeting ID: 851 7237 6544 Password: 383073  
Topic: Comp1710/6780 9-11am Wednesdays tutorials  
Time: Aug 3, 2022 09:00 AM Canberra, Melbourne, Sydney  
Join Zoom Meeting  
<https://anu.zoom.us/j/85113338863?pwd=L1UzTW9mUW94OGpnaEVvaCt2ZnLZz09>  
Meeting ID: 851 1333 863 Password: 95366  
Topic: COMP1710/6780 11am - 1pm Wednesdays Tutorials  
Time: Aug 3, 2022 11:00 AM Canberra, Melbourne, Sydney  
Join Zoom Meeting  
<https://anu.zoom.us/j/85130081950?pwd=U2RzOG9xaINRYk1RNQ11d0SzVmrxZz09>  
Meeting ID: 851 3008 1950 Password: 128837  
Topic: COMP1710/6780 4-6pm Wednesdays Tutorial  
Time: Aug 3, 2022 04:00 PM Canberra, Melbourne, Sydney  
Join Zoom Meeting  
<https://anu.zoom.us/j/81096951712?pwd=eUSFa2RobWo3WFpJSDdEMFB0NC9vdz09>  
Meeting ID: 810 9695 1712 Password: 833527  
Topic: COMP1710/6780 10am-12pm Thursdays Tutorials  
Time: Aug 4, 2022 10:00 AM Canberra, Melbourne, Sydney  
Join Zoom Meeting  
<https://anu.zoom.us/j/82271548932?pwd=ZnhuaFhZOG1IWVw4MWorYU15zQzU0T09>  
Meeting ID: 822 7154 8932 Password: 831490  
Topic: COMP1710/6780 2-4pm Thursdays tutorials  
Time: Aug 4, 2022 02:00 PM Canberra, Melbourne, Sydney





## Planning – some indicative questions to consider

- What is the topic?
- Scope
- Interest (who will care and why?)
- How will my site be different?
- Name / domain name
- What content elements will I use?
- What functionality will I implement?



## Designing – some indicative questions to consider

- Visual design – what will the ‘look and feel’ be like?
- Navigation
- How will I organize the content and interaction?
- What will my file structure look like?
- Usability
- ‘Stickiness’ – how do I make the experience so enjoyable/valuable that visitors will return?
- What technologies shall I incorporate (for example basic forms, animations, galleries, more)



## Building – some indicative questions to consider

- Prepare your ingredients elements (images video, text, decorative elements, etc.)
- Understand how to correctly link to files in different folders
- Consider how long pages will take to load
- Do I need a site map? (Probably, for you and your visitors)
- Evaluating and testing





## Installing – some indicative questions to consider

- Where will I host this site? (In this course it is in the private ANU space – Partch)
- Have I ensured that there is an index.html to ‘start’ the website so a browser can load it?
- Have I ensured I unzipped my zipped file?



## Maintaining – some indicative questions to consider

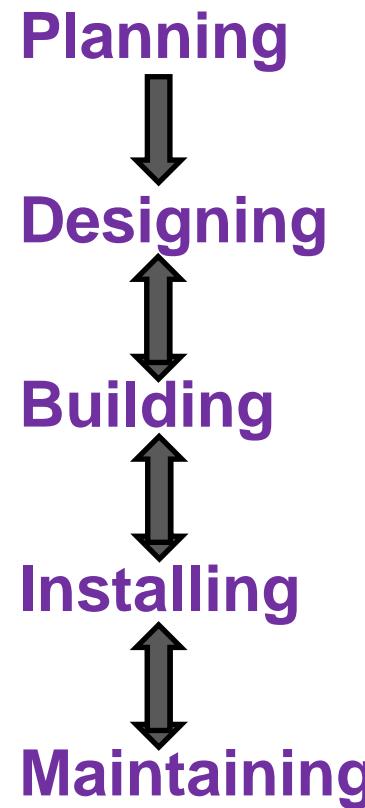
- Monitor your site – who is visiting? how many? how long do they stay?
- Consider Search Engine Optimization (SEO)
- Fix problems
- Keep fresh

A note about SEO “According to our research, 24 website characteristics came up as factors affecting any website’s [Google] ranking, with the most references mentioning quality and quantity of backlinks, social media support, keyword in title tag, website structure, website size, loading time, domain age, and keyword density.”

Ziakis, C.; Vlachopoulou, M.; Kyroudis, T.; Karagkiozidou, M. Important Factors for Improving Google Search Rank. *Future Internet* **2019**, *11*, 32. <https://doi.org/10.3390/fi11020032>

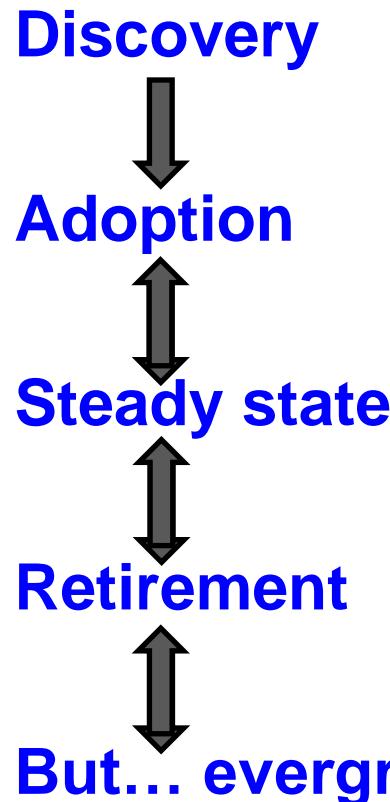


Then incrementally elevate your website by doing it all again!





# Website lifecycle on the internet



Life of a website on the internet





## Discovery – some indicative questions to consider

- Is my website discoverable?
- How can I use ‘word of mouth’?
- How can I improve my results on SERPs (Search Engine Results Pages)
- Attending to your early visitors



## Visitors adopt your site

- Content
- Content
- Calls to action
- Being looked after – offer contact, but don't abuse the privilege
- Visitor engagement – conversations, puzzles, competitions
- Social media networking
- SEO
- Did I mention content?



## Steady state – some indicative questions to consider

- Risks (competition, your interest, success, succession)
- Community
- Achievement of desired results
- Can't 'rest on your own laurels' – don't get complacent

**Average lifespan of a website is 2.7 years.**  
Forbes



## Retirement – some indicative questions to consider

- Retiring old site in favour of new?
- Digital cliff
- Graceful departure





## Evergreen content and ‘the long tail of the Internet’

Evergreen content is your website content that doesn’t age, or at least ages slowly. Can you think of some types of content that would last the distance?

If your site has evergreen content, your site will age gracefully and always be relevant. Evergreen content is not usually enough on its own, but it really helps.

“The Long Tail theory suggests that, as the Internet makes distribution easier — and uses state-of-the-art recommendation systems that allows consumers to become aware of more obscure products — demand will shift from the most popular products at the “head” of a demand curve — as charted on an xy axis — to the aggregate power of a long “tail” made up of demand for many different niche products.”



# Have fun in the labs and...

Don't get too stressed. There is a lot to learn but there is plenty of time to learn it, and you will definitely learn by doing.

Remember to submit your topic

Start assembling the content you think you'll want to use

Don't forget to complete MOOC 1&2 in the labs or in your own time but do complete them and remember the quizlets are part of your marks – they close on 7<sup>th</sup> August 11:55pm

... see you next week!



# COMP1710/6780

## Web Development and Design

Week 3 8-12 August 2022





## Want to be a class representative? Nominate today!

Please nominate yourself to your course convener ([sabrina.Caldwell@anu.edu.au](mailto:sabrina.Caldwell@anu.edu.au)) by **9 August 2022**.

You are free to nominate yourself whether you are currently on-campus or studying remotely.

Class Student Representation is an important component of the teaching and learning quality assurance and quality improvement processes within the ANU College of Engineering and Computer Science (CECS).

The role of Class Representatives is to provide ongoing constructive feedback on behalf of the student cohort to Course Conveners and to Associate Directors (Education) for continuous improvements to the course.

### Roles and responsibilities:

- Act as the official liaison between your peers and convener.
- Be creative, available and proactive in gathering feedback from your classmates.
- Attend regular meetings, and provide reports on course feedback to your course convener
- Close the feedback loop by reporting back to the class the outcomes of your meetings.

**We need two: One for COMP1710 and one for COMP6780**



## Content Types

## Visual Conventions

## Learning Styles

## User Requirements



# Content Types

Visual Conventions

Learning Styles

User Requirements



## Content Types

- Text**
- Images**
- Audio**
- Video**
- Animations**
- Icons**
- Decorative detail**
- Backgrounds**



## Text

Most precise form of communication.

Communicate exact details. Names, materials, prices, quantities, instructions, emails, phone numbers, etc.

But:

Many people have little patience for extended text

(Usually) writing needs to be succinct and lively

Unlike in a book, text must be considered as a visual element in a webpage.



## Images

File types you might use: .jpg, .png, .gif, .tiff

Considerations: lossy vs lossless, transparency vs opacity, animation



Whatever format you use, don't forget to optimise your images

Considerations: size to display, compression, linking to higher resolution images

Unoptimized images slow down websites = bad user experience, lower ranking in Google searches, less inquiries and customers.



## Audio

Usually .mp3 files, but may also use .wav, .aac, .WebM, or .ogg formats

Considerations: streaming vs streaming, file size, for example wav audio files are not compressed so tend to be big and load slow. Also licensing requirements may kick in for .mp3s at large scale (but not a problem in this course). Browser support can be variable.

### How to use:

- Podcasts
- Short audio clips
- Longer audio clips for download (recitations, original songs, etc.)

### How not to use:

- Background music
- Interface cues

Both of these uses get old quickly for users, who (generally speaking) dislike them



## Animations

Often like something in between an image and a video.

Can be small and simple or elaborate.

Remember size and consider whether it is worth it!

<http://clipart-library.com/free-gif-animation.html>



## Icons

There is an icon for every purpose – or you can make your own!

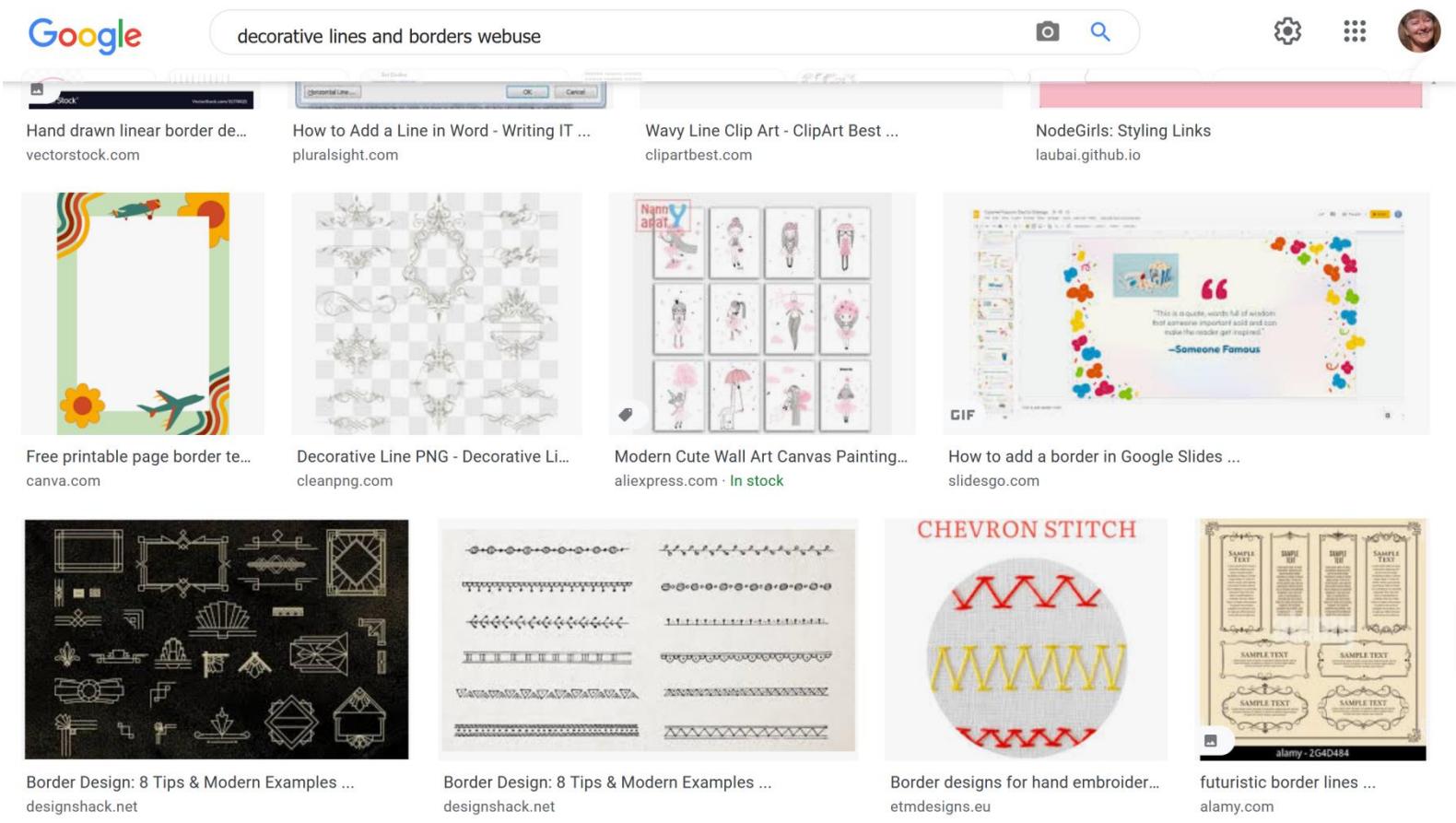
The screenshot shows a Google search results page with the query "icon". The results include:

- Wayfinding Icon Sets (164 Icons, PNG ...)** [smashingmagazine.com](http://smashingmagazine.com): A grid of 164 vector linear style icons for wayfinding, including symbols like arrows, people, and directional signs.
- Behance Icon Vector Art, Icons, and ...** [vecteezy.com](http://vecteezy.com): A grid of 48 social media and communication icons.
- Fortinet Product Icons Library** [fortinet.com](http://fortinet.com): A grid of 12 icons related to security and technology, such as a heart, gear, and biohazard symbol.
- Icon Archive - Search 735,802 free ...** [iconarchive.com](http://iconarchive.com): A collage of various icons including a rocket, owl, document, person with headset, umbrella, and barrier.
- Business Icons PNG Images, Free ...** [www.psdgraphics.com](http://www.psdgraphics.com): A grid of 24 colorful business-related icons.
- Flat icons - What is a flat web design ...** [www.flaticon.com](http://www.flaticon.com): A grid of 8 flat design icons.



## Decorative details

Often you will want to define certain areas of your website. Lines and borders can be a good option. Like icons, there are many of these available:



Google search results for "decorative lines and borders webuse". The results include various links and images related to decorative borders and lines.

- Hand drawn linear border de... vectorstock.com
- How to Add a Line in Word - Writing IT ... pluralsight.com
- Wavy Line Clip Art - ClipArt Best ... clipartbest.com
- NodeGirls: Styling Links laubai.github.io
- Free printable page border te... canva.com
- Decorative Line PNG - Decorative Li... cleanpng.com
- Modern Cute Wall Art Canvas Painting... aliexpress.com · In stock
- How to add a border in Google Slides ... slidesgo.com
- Border Design: 8 Tips & Modern Examples ... designshack.net
- Border Design: 8 Tips & Modern Examples ... designshack.net
- CHEVRON STITCH etmdesigns.eu
- Border designs for hand embroider... etmdesigns.eu
- futuristic border lines ... alamy.com



# Content Types

## Backgrounds

A background can create ambiance  
on your site

A background can create ambiance  
on your site

White texture backgrounds

But beware; they can  
have implications for  
your other content!

But beware; they can  
have implications for  
your other content!

Purple texture backgrounds



## Content Types

## Visual Conventions

## Learning Styles

## User Requirements



## Visual Conventions in our daily (offline) lives

When driving...



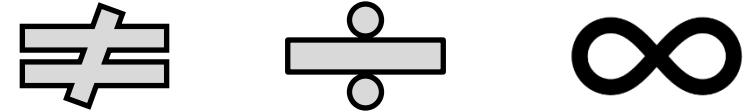
In public places...



In a comic book...

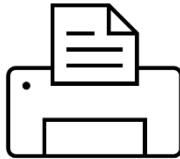


In math ...





## Visual Conventions in our daily online lives



Visitors to your site come with pre-existing knowledge



They know how to 'read' certain pictures



They have an expectation of how to navigate your site

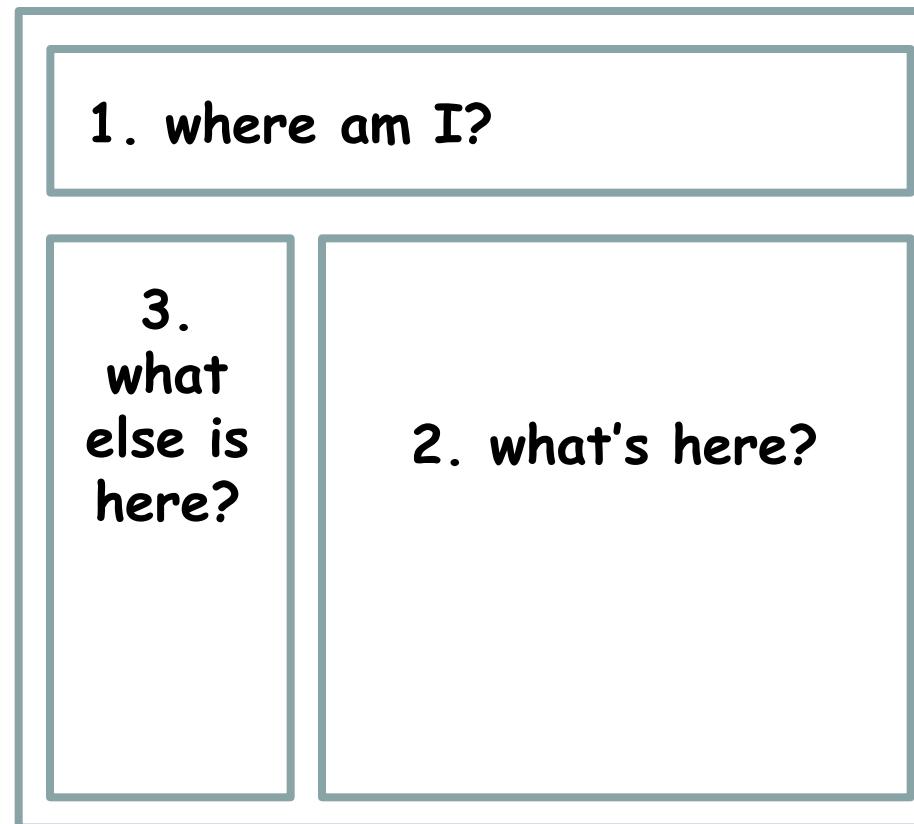
<http://clipart-library.com/free-gif-animation.html>

They expect this to  
be a link, not just an  
underline



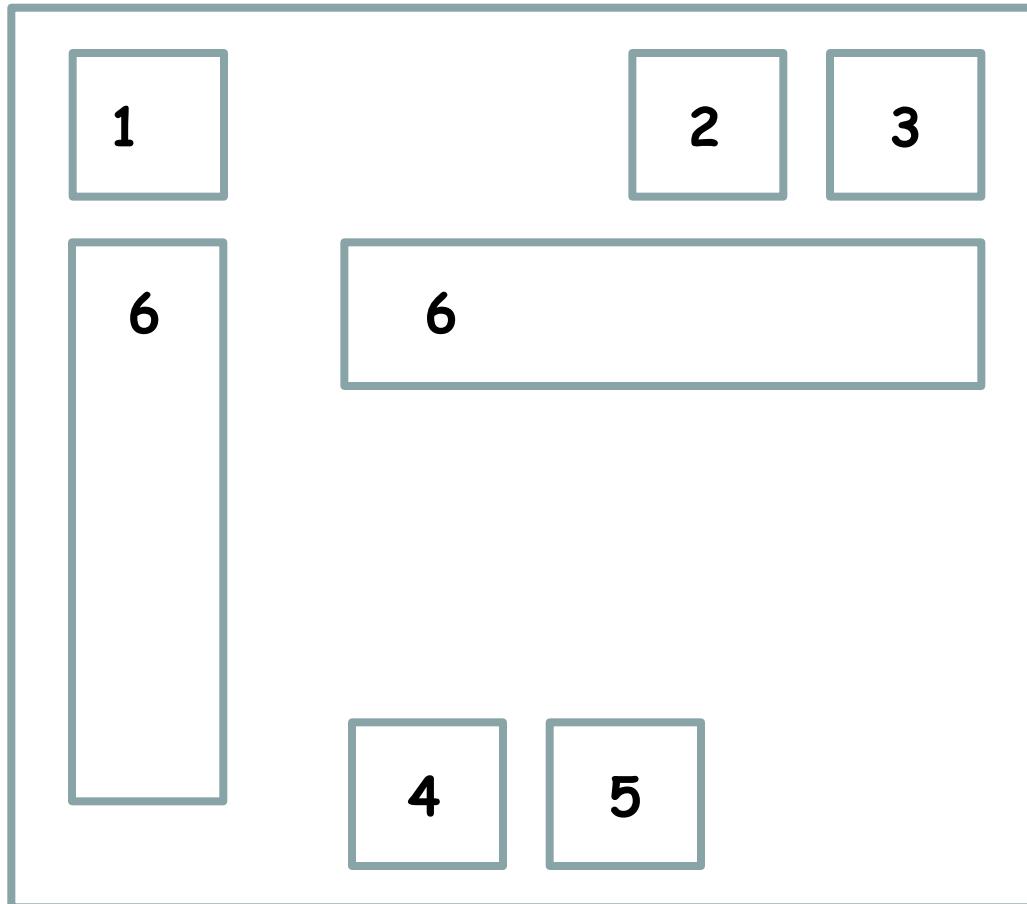


## Common website page layout





## Where visitors to your site expect things to be



1. Logo, leading back to front door
2. Shopping cart, leading to check-out
3. Help
4. About us
5. Contact us
6. Site navigation bars



## Content Types

## Visual Conventions

## Learning Styles

## User Requirements



**V      Visual**

**A      Aural/auditory**

**R      Read/write**

**K      Kinesthetic**

**.... and multi-modal**



Australian  
National  
University

# Who are you?



**CALDWELL8573**



## V Visual

Prefer:

Depiction of information in **maps, charts, graphs, flow charts, labelled diagrams**, and all the **symbolic arrows, circles, hierarchies and other devices**, that people use to represent what could have been presented in words.

It does **NOT** include still pictures or photographs of reality, movies, videos.

It does include **designs, whitespace, patterns, shapes** and the different formats that are used to **highlight and convey information**.



## V Visual

### To take in information:

- use pictures, videos, posters, slides where the emphasis is on the design (not the sound or the words or the content).
- use maps and free-drawn plans.
- use books with diagrams and pictures.
- use flowcharts, decision trees, family trees, organizational charts, graphs.
- turn tables of figures into graphs.
- read the words and convert them into your own-designed diagrams.
- use different fonts, UPPER and lowercase letters, underlining, **different colours**, and highlighting.
- use symbols @, #, & and white space; the extra spaces between text and diagrams.
- try different spatial arrangements on the page.



## V Visual

### To present information to others:

- Construct images in different ways. Try spatial arrangements.
- Draw things to show your ideas, using diagrams, symbols and graphs.
- Make complex processes and lists into flowcharts.
- Make each page look different.
- Be aware that others may NOT have a Visual preference like you. Respect their differences. Find the preferences of those you are presenting to, and learn to be multimodal and deliver something in their preferred modes.



## A Aural/auditory

Prefer information that is “*heard or spoken.*”

Learners who have this as their main preference report that they learn best from **lectures, group discussion, radio, email, using mobile phones, speaking, web-chat and talking things through.**

The Aural preference includes **talking out loud** as well as **talking to oneself.**

Often people with this preference want to sort things out by speaking first, rather than sorting out their ideas and then speaking. They may say again what has already been said, or ask an obvious and previously answered question. **They have need to say it themselves and they learn through saying it – their way.**



## A Aural/auditory

### To take in information:

- Join or set up discussion groups. Discuss topics with others. Argue your case.
- Comment on ideas as soon as you get an opportunity. Repeat information to others and use your voice to show your emphases.
- Explain new ideas to other people. Check out their ideas with yours.
- Listen to your own self-talk, have conversations with yourself.
- Use voice recorders, listen to podcasts.
- Shift any pictures and graphs into talk and chat.
- Pay attention when others are speaking. You sometimes pretend to listen while preparing your response.



## A Aural/auditory

### To present information to others:

- Listen and talk, but also learn the best times to do each of these.
- Find others who like to listen and talk.
- Join online chat and discussion groups and make your contributions; use email, blogs and Twitter to chat with others.
- Use your mobile phone for conversations.
- Realize that others can sometimes improve on what you say.
- Be aware that others may NOT have an Aural preference like you, so respect their differences. Find out the preferences of those you are presenting to, and learn to be multimodal and deliver something in their preferred modes.



## R    Read/write

Prefer information displayed as words.

Not surprisingly, many teachers and students have a strong preference for this mode. Being able to write well and read widely are attributes sought by employers of graduates.

This preference emphasizes text-based input and output – reading and writing in all its forms but especially manuals, reports, essays and assignments. People who prefer this modality are often drawn to lists, diaries, dictionaries, thesauri, quotations and words, words, words...



## R    Read/write

### To take in information:

- use lists (like this one!)
- use titles and headings that clearly explain what follows.
- use bullet points and numbered paragraphs.
- use dictionaries and glossaries, articles about trends in word usage.
- spell-check; correct written language errors.
- read handouts.
- read books that are dense with text, essays, manuals, reading lists.
- use definitions, constitutions, legal documents, minutes and rules.
- write notes (often verbatim).
- get information from people who use words well and have lots of information in their sentences.
- as you listen, sort out what they are saying into your own categories and lists.



## R Read/write

### To present information to others:

- Order things into priorities of importance, or categories, or schemas...
- Contribute in print to a variety of print media.
- Rewrite any ideas and principles in your own words.
- Be aware that others may not have a Read/Write preference like you, so respect their differences.



## K Kinesthetic

This preference refers to the “**perceptual preference related to the use of experience and practice (simulated or real).**”

The key is that people who prefer this mode are connected to reality, “either through concrete personal experiences, examples, practice or simulation” [See Fleming & Mills, 1992, pp. 140-141].

It includes **demonstrations, simulations, videos and movies of “real” things, as well as case studies, practice and applications.**

People with this as a strong preference learn from the experience of doing something and they value their own background of experiences and less so, the experiences of others.

**Augmented reality, virtual reality, interactivity**



## K Kinesthetic

### To take in information:

- use all your senses – sight, touch, taste, smell, hearing...
- use hands-on approaches.
- read case studies.
- watch videos, especially those that show real things.
- look at exhibits, samples, photographs....
- attend laboratory and practical sessions.
- use surveys, field trips and interviews.
- use recipes and solutions to problems.
- take notice of real-life examples and personal stories.
- look for examples of principles.
- learn by trial and error.
- look for opportunities to apply what you have learned.
- use actions to help your understanding.



## K Kinesthetic

### To present information to others:

- Focus on the “*real*” things that happened; reality is what is important.
- Use plenty of examples when you talk, discuss, present or write.
- Use your previous experience as the basis for any decision-making.
- Use case studies and applications to help with difficult principles and abstract concepts.
- Get others to focus on the detail. Use detail to argue against principles or abstract ideas.
- Stay in *this world* and in *this time*. **Now** is where you want to be.
- Be aware that others may NOT have a Kinesthetic preference like you, so respect their differences. Find the preferences of those you are presenting to, and learn to be multimodal and deliver something in their preferred modes.



## MM Multimodality

### VARK Type One – content specific preferences

Flexible in their communication preferences and switch from mode to mode depending on what they are working with. They are context specific. may have two, three or four almost-equal preferences in their VARK scores

### VARK Type Two – require information input/output in all their preferred modes

Not satisfied until they have had input (or output) in all of their preferred modes. Take longer to gather information from each mode and, as a result, they often have a deeper and broader understanding. They may be seen as procrastinators or slow-deliverers but some may be merely gathering all the information before acting – and **their decision making and learning may be better because of that breadth of understanding.**

### VARK Transition – somewhere between the two above



## Content Types

## Visual Conventions

## Learning Styles

## User Requirements

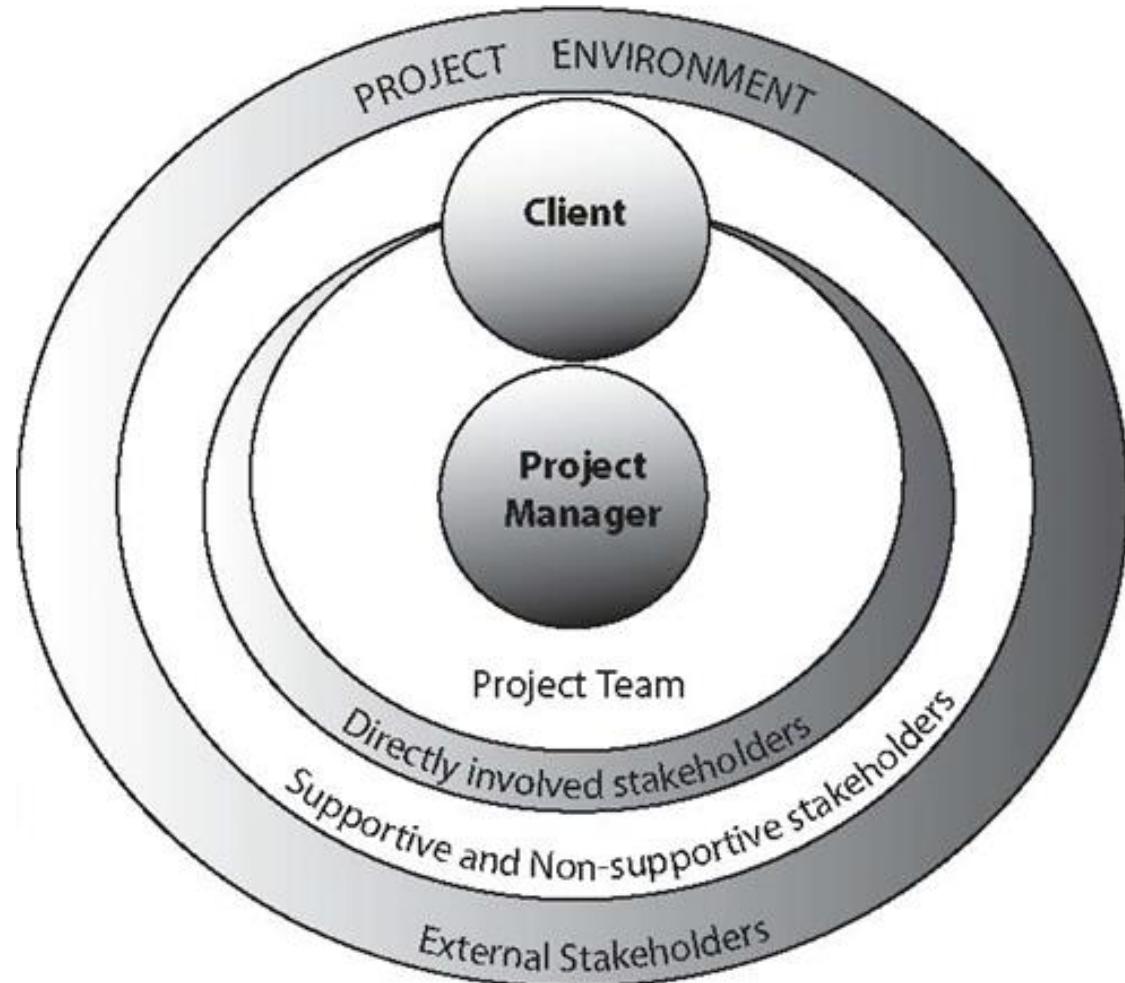


# User requirements

Q: What does the term 'stakeholder' mean?

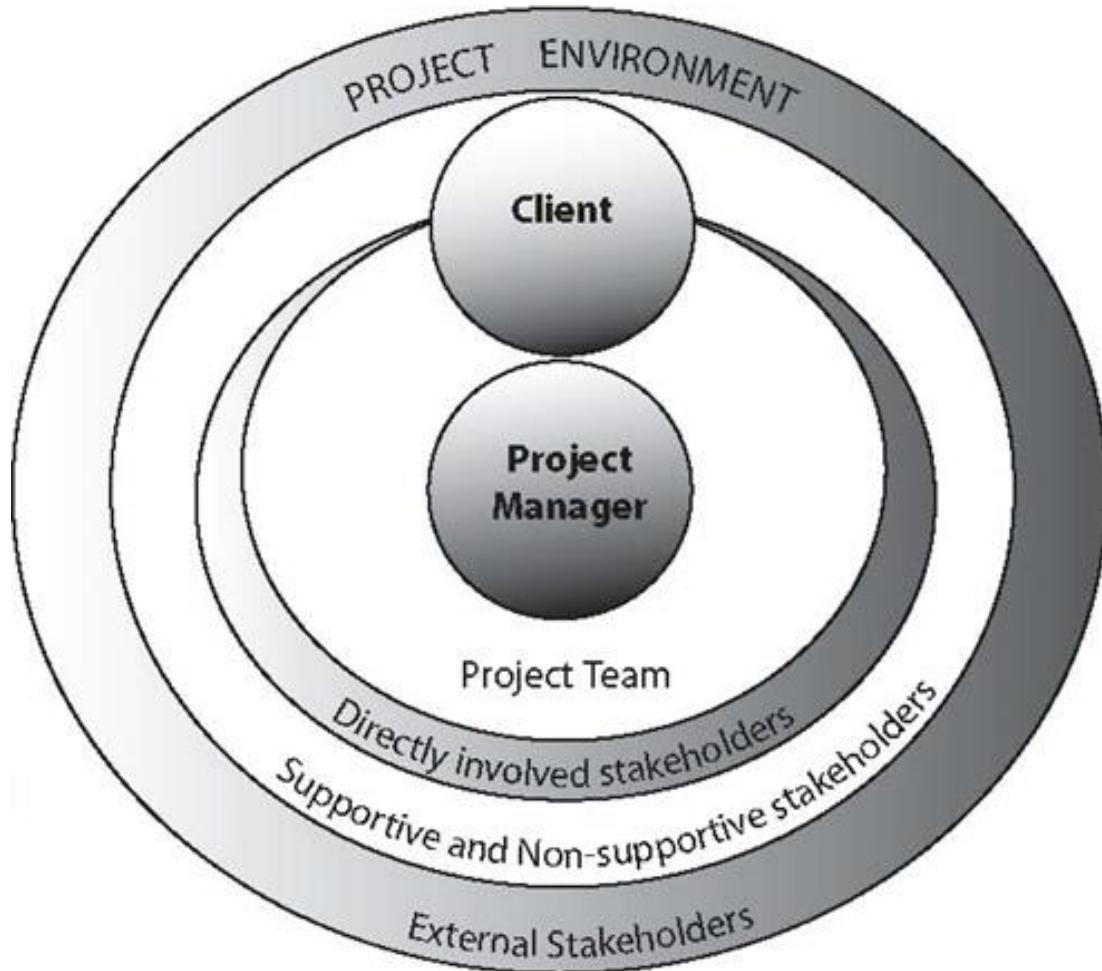
Directly involved:

- Originator
- Owner
- Sponsor
- Functional managers
- Contracts
- Suppliers
- Support companies
- Users
- Customers





# User requirements



## External Stakeholders

(who may not be directly involved)

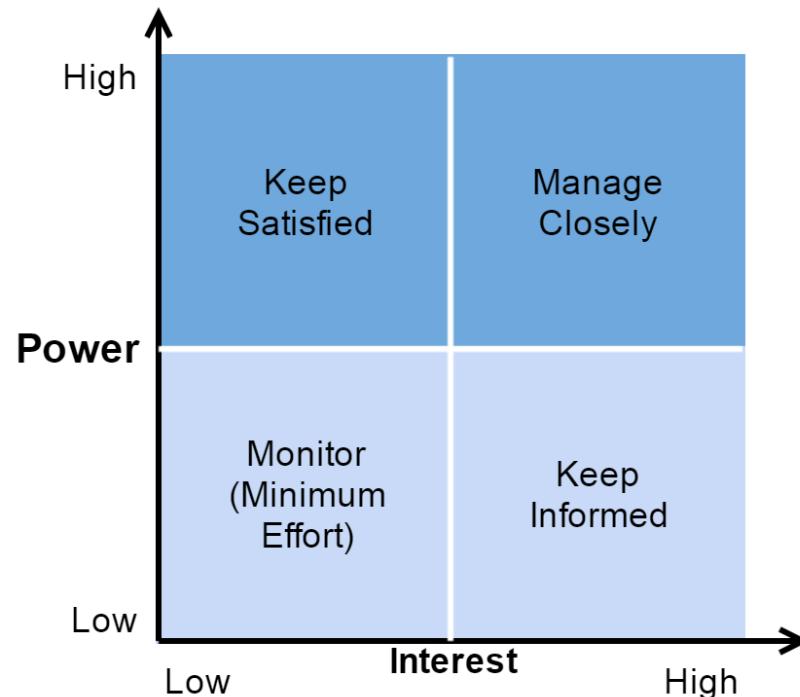
- Regulatory authorities
- Unions
- Special interest groups – society at large
- Lobby groups
- Government agencies and media outlets
- Individual citizens



## Communicating with users and stakeholders matters!

**High power, interested people:**  
these are the people you must fully engage and make the greatest efforts to satisfy.

**High power, less interested people:** put enough work in with these people to keep them satisfied, but not so much that they become bored with your message.

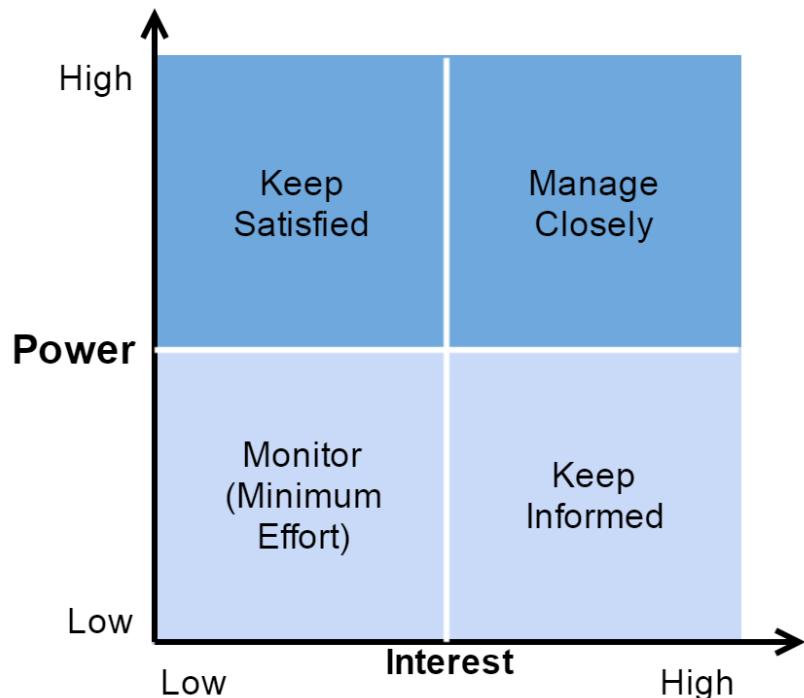




# User requirements

**Low power, interested people:** keep these people adequately informed, and talk to them to ensure that no major issues are arising. These people can often be very helpful with the detail of your project.

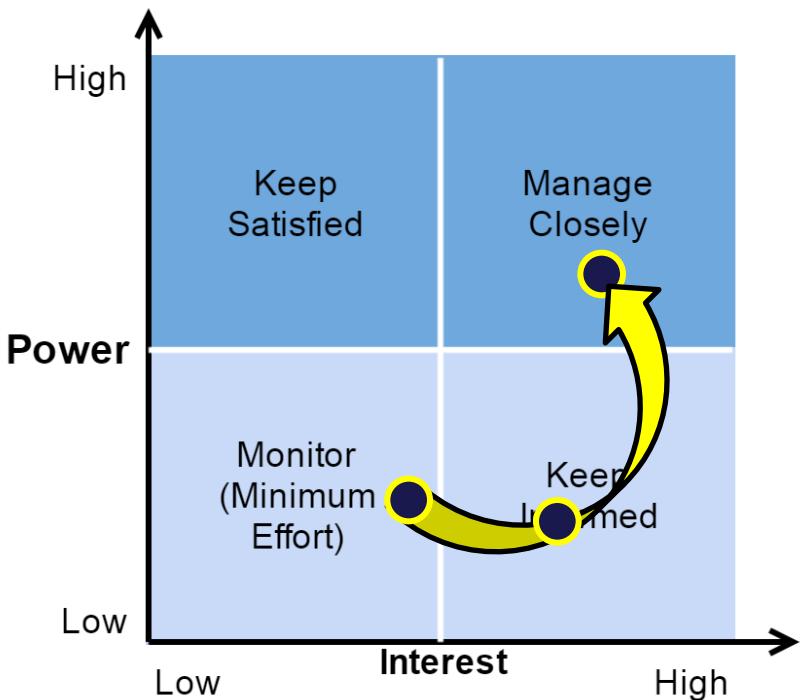
**Low power, less interested people:** again, monitor these people, but do not bore them with excessive communication





# User requirements

Don't forget that people can move between quadrants during your project!





# Have fun in the labs and...

Remember to submit your topic

Start assembling the content you think you'll want to use

Don't forget to complete MOOC 3 in the labs or in your own time but do complete them and remember the quizlets are part of your marks – this week they close on 14<sup>th</sup> August 11:55pm

... see you tomorrow!



# COMP1710/6780

## Web Development and Design

Week 3 8-12 August 2022

### User Requirements and Usability





# User requirements

User requirements arise the moment the decision is taken to create a website.

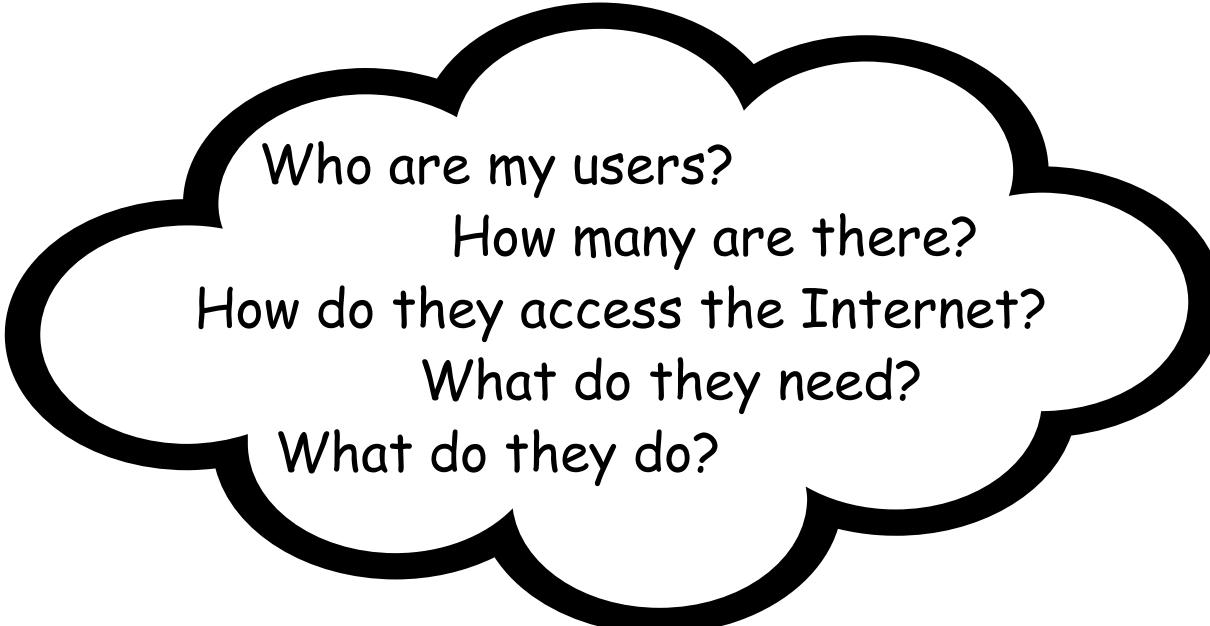
BUT ... managing input from different users and stakeholders is like herding cats: very difficult!



You need a PLAN to capture these requirements and resolve conflicting needs.

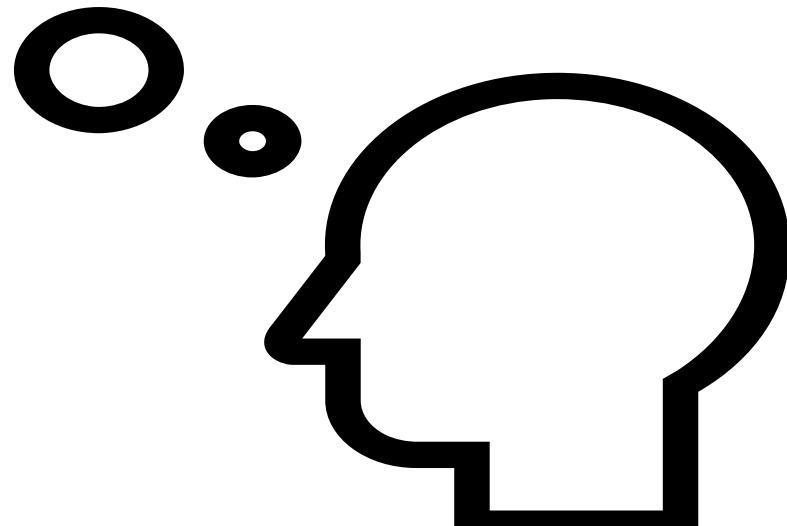


# User requirements



Who are my users?  
How many are there?  
How do they access the Internet?  
What do they need?  
What do they do?

**5 Key questions  
to know about your users**





## Who are my users?

Identify who, specifically, they are  
age range, gender, profession, education, cultural factors,  
income, marital status, etc.

Build a picture of your typical user(s); consider creating a  
sample persona

Remember, you are not your user!

**“You are not your audience. You don’t see things like they do, know what they know, want what they want, or work how they work.”**

*Mike Kuniavsky, author of Observing the User Experience*



## Sample persona (for an equestrian shopping website): Happy Hacker Hannah



Hannah is 38, married and has 2 young children. She lives with her family in a semi-detached house in the suburbs and works full-time in an office in the city.

Hannah keeps her horse, Barney on a small DIY yard, which is about 5 miles from her house, and tends to him twice a day, before and after work.

Barney is a 16.1hh, 15 year old Irish Draught X who used to compete regularly in his younger years. Hannah has owned Barney for 5 years but uses him solely for hacking, and the occasional local show.

Hannah rides at the weekends and occasionally in the evenings during summer if she has time after work. She does very little schooling with Barney as she doesn't have the use of a school but likes to jump the cross country jumps, which have been set up on a couple of her hacking routes.

When buying things for Barney, functionality and affordability are very important to Hannah. She tends to use things until they are no longer repairable before buying new.

She chooses things that are built to last and doesn't mind spending a little more if she knows that the quality is good, and that it will last her a very long time. Hannah is not interested in the latest fashions and trends, and tends to stick to traditional colours.



## How many are there?

If you don't have any idea how many users you will have, you won't know how to predict:

Predicted costs to create and maintain your site

Predicted revenue (if you are building a commercial site)

Specifications for the backend

### ***But how do you figure out this number?***

It is easy to overestimate – not everyone will be as excited about your subject as you, and of the ones that are, they have a lot of other sites competing for their attention.

Apply what logic you can from what you know about your users.



## How many are there?

*But how do you figure out this number?*

For example, if your target audience is caravanning retirees in Australia, you could say

Fact: 27 million Australians, of which

Fact: 4.2 million are aged 65 and older

Fact: About 650,000 registered caravans

Guess: About 2/3 of caravans are owned by older Australians = ~ 430,000

Guess: My site is wildly popular and I get 10% of my target audience

= user community of about 43,000 people



## How do they access the Internet?

How long have they been online?

How frequently do they go online and how long do they stay online in a typical session?

Where do they access the Internet from? Work? Home? School? The park?

What part of the day/week/year are they online?

Do they have good bandwidth or poor bandwidth?

What type of computer? Newer? Older?

What browser do they use?

What monitor? Three desktop monitors or a smartphone screen?



## What do they need?

This is a very important question. If your users have a real need, and your site solves this need for them, they will be attracted to it and return to it.

Three ways to figure this out (use all of them)

Having worked out who they are, **consider** what their interests, needs, 'pain points,' affordances are.

**Watch** what they do – what do they visit on your site? How long do they stay, what's popular, what's not?

**Asking** users what they think – focus groups, short polls, longer surveys. But keep in mind that people don't always do/think what they say they do/think.



## What do they do?

This is really the most important question. You want your users to interact with your website in such a way that you or the organisation you are building the website for receives a return on their investment.

### How to understand user behaviour

**Traffic analysis** – can tell you a lot about how the user arrived at your site, how long they stayed, where they clicked etc.

**Usability testing** – your chance to interact with people using your site. You can observe what they do, when they look confused, what they explore, etc. And importantly, you can ask them questions about their behaviour and choices.



**Once you have feedback from your users, you can develop your user requirements.**

**Specific** – if the requirement is vague, it isn't well thought out yet

**Singular** (don't have two different requirements fused together)

**Purposeful** – why is it needed? and not conjugate two distinct requirements

**Complete** – the requirement should be standalone (not dependent on other statements of requirement to be understood)

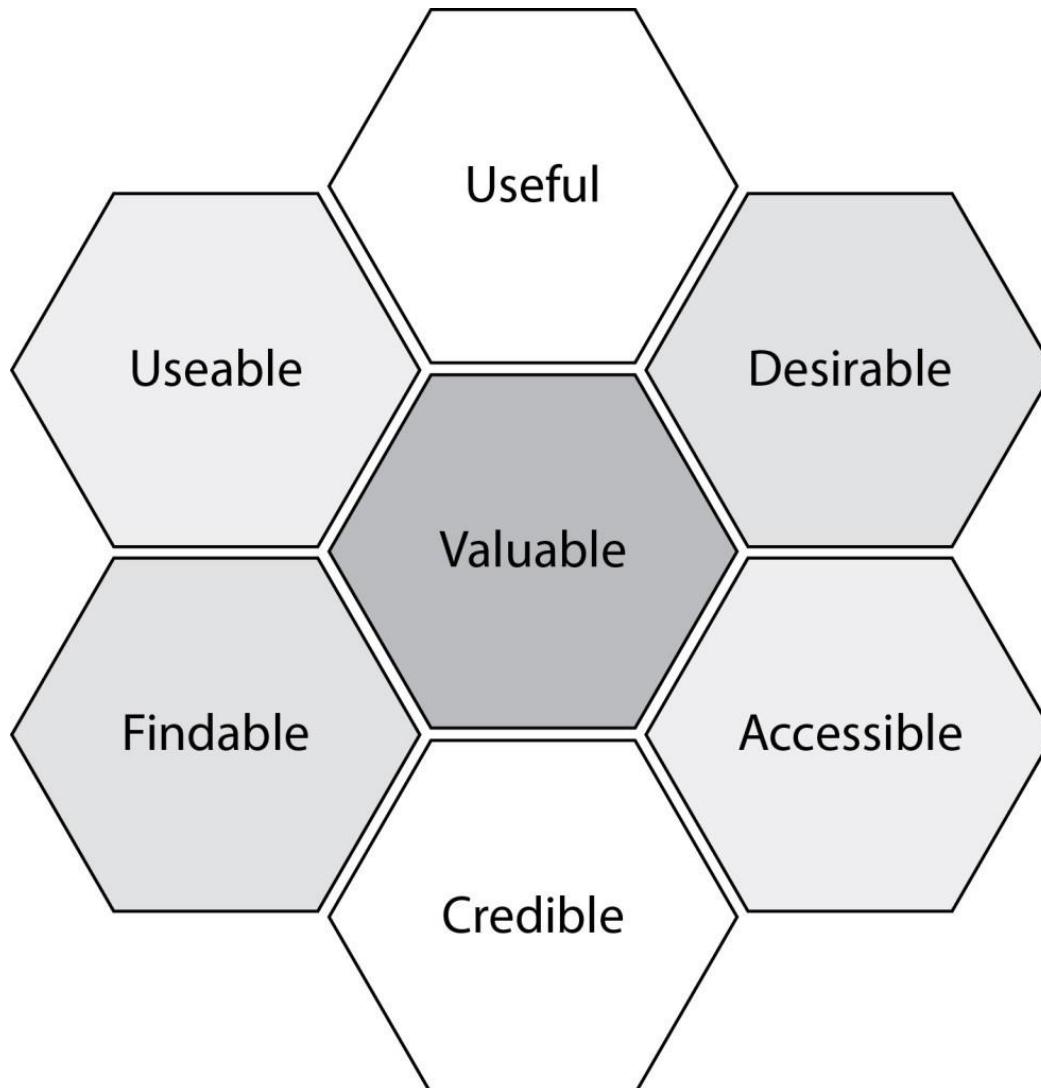
**Consistent** with the goals of the proposed website

**Actionable**

**Prioritised** in importance

**Testable**

**Clear connection to project success**

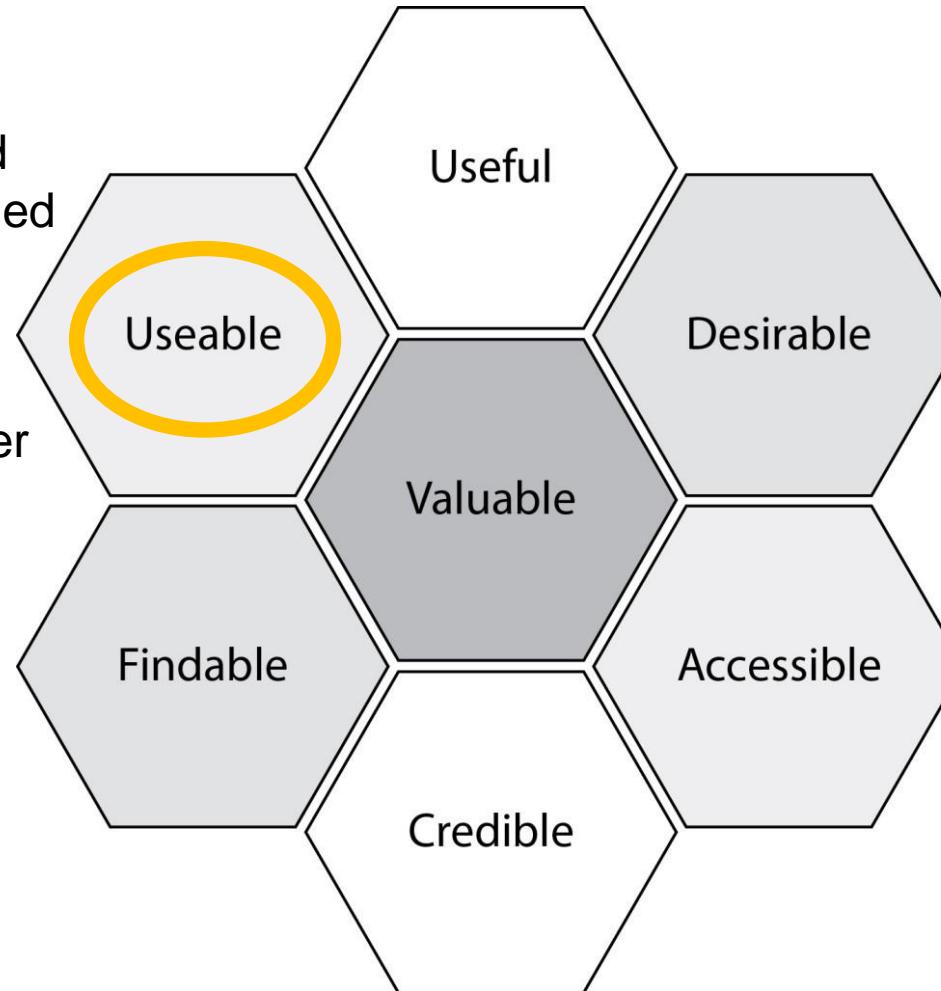


## Peter Morville's Usability Honeycomb

Peter Morville is an experienced designer and information architect who has been working in this field since 1994. He has held positions at top companies like Google and Gopher.

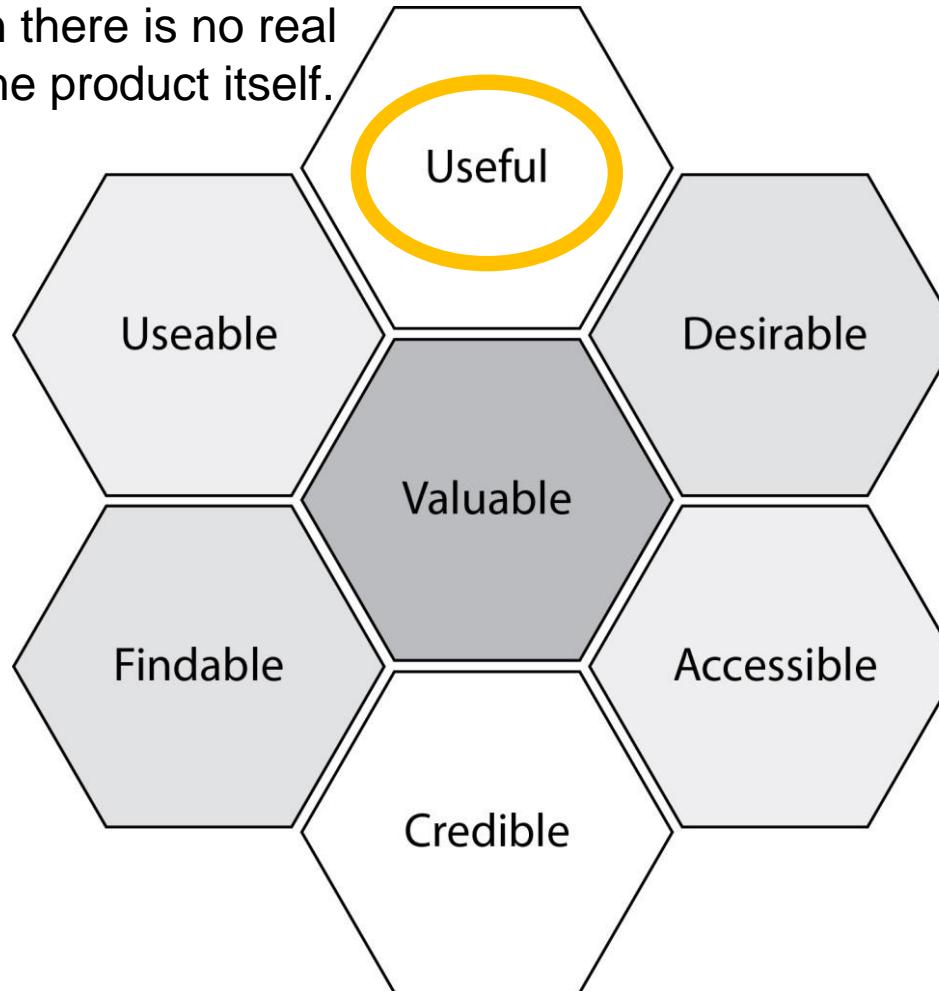


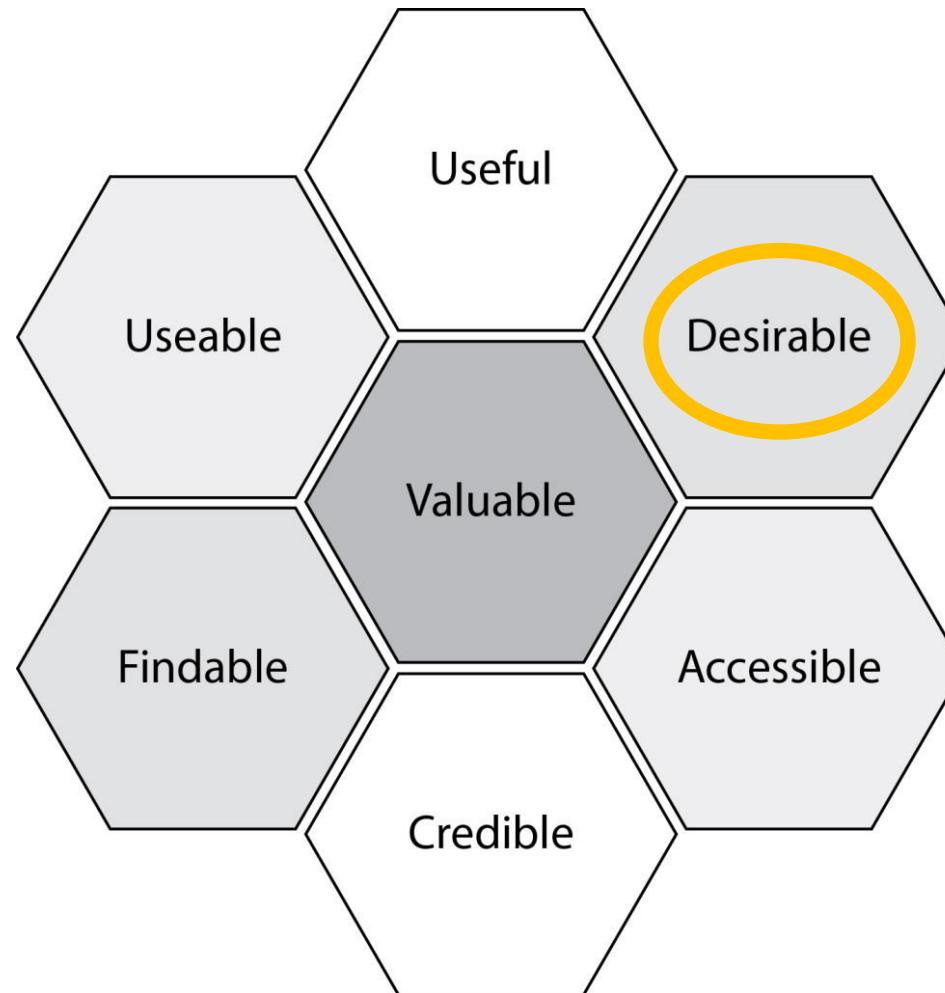
**Usable:** Simple and easy to use. Designed in a way that is familiar and easy to understand. The learning curve a user must go through should be as short and painless as possible.



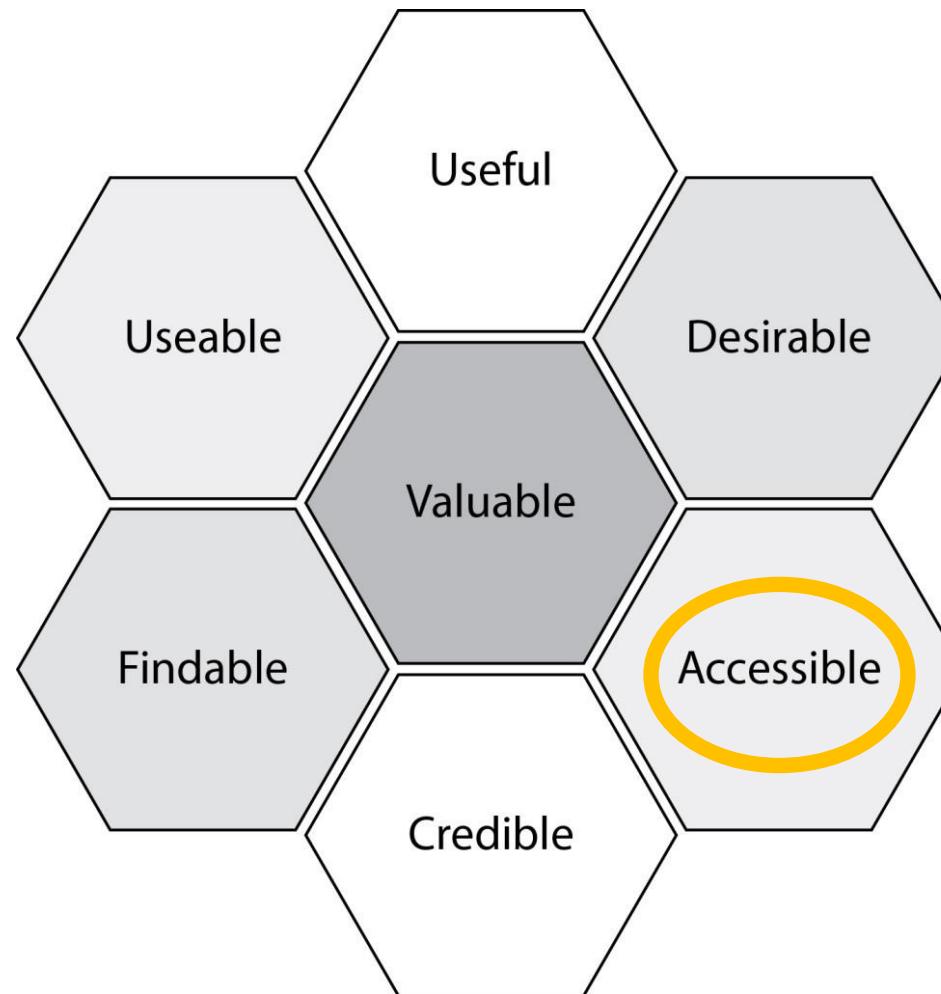


**Useful:** If the product or service is not useful or fulfilling user's wants or needs then there is no real purpose for the product itself.

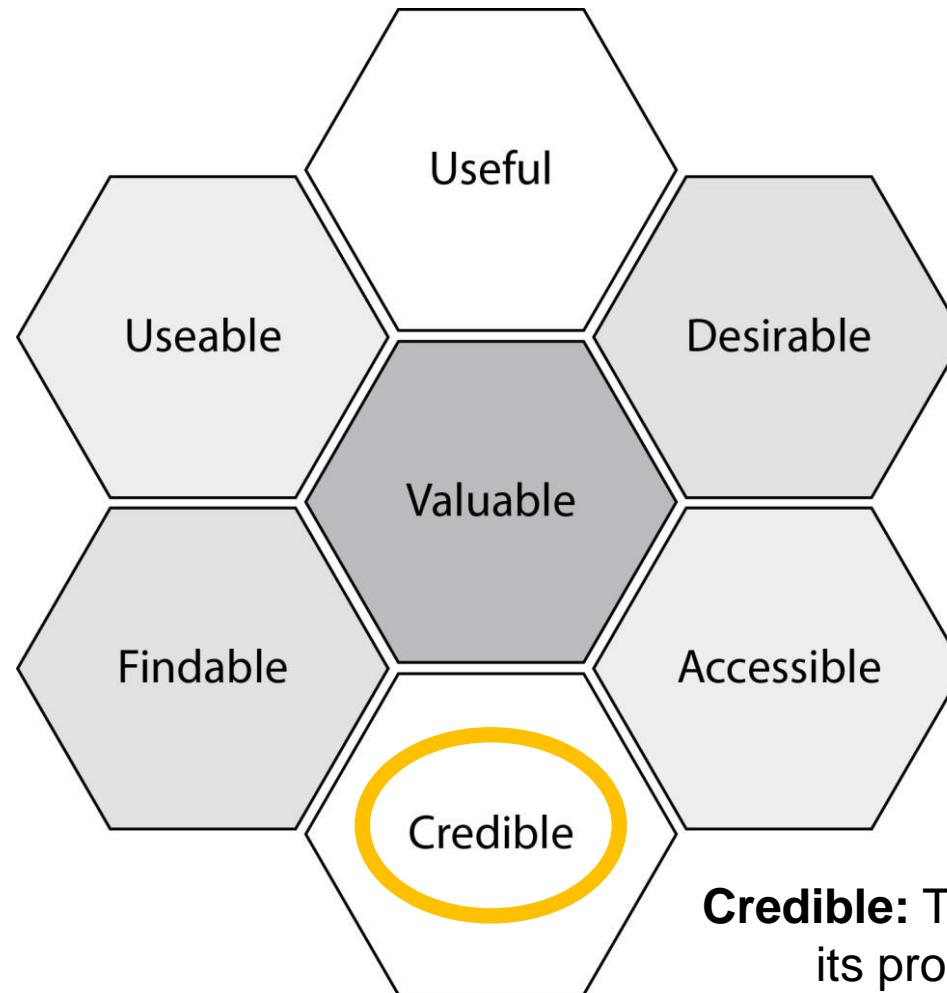




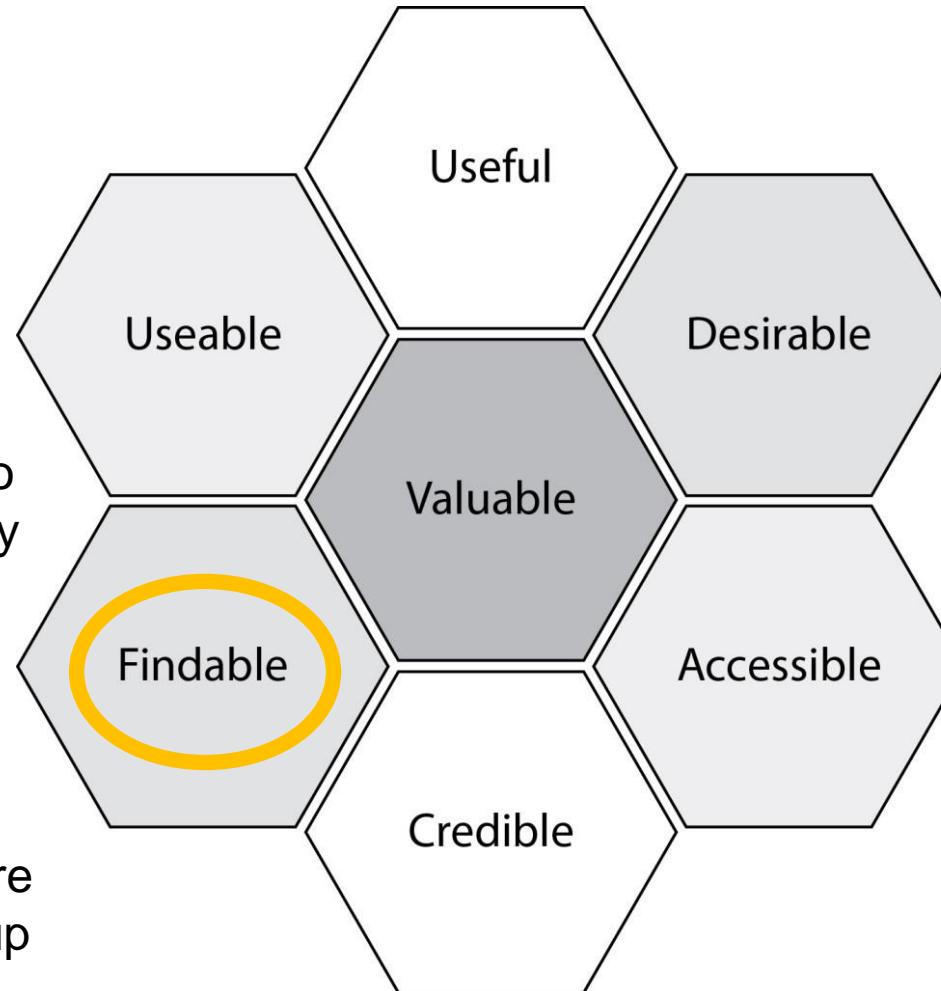
**Desirable:** The visual aesthetics need to be attractive and easy to translate. Design should be minimal and to the point.



**Accessible:** Designed so that even users with a disabilities can have the same user experience as others.

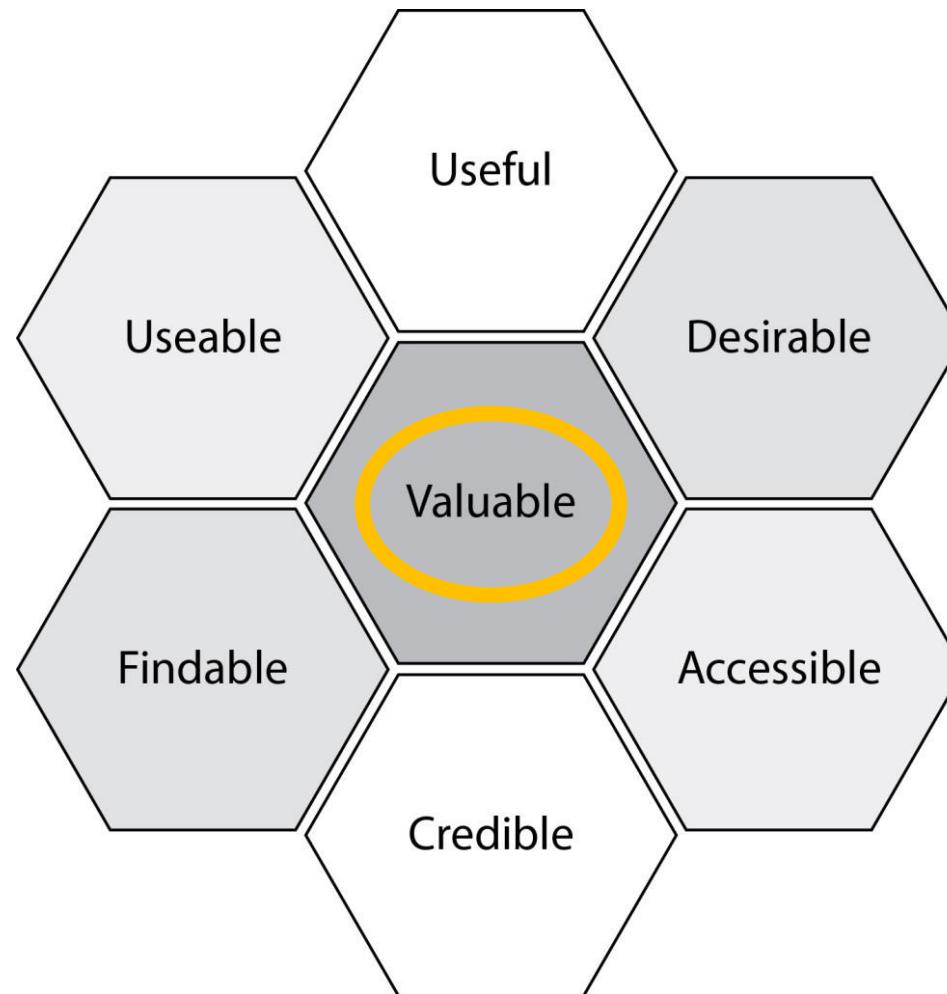


**Credible:** The company and its products or services need to be trustworthy.



## Findable:

Information needs to be findable and easy to navigate. If the user has a problem they should be able to quickly find a solution. The navigational structure should also be set up in a way that makes sense.





# Have fun in the labs and...

Remember to submit your topic

Start assembling the content you think you'll want to use

Start your website!

Don't forget to complete MOOC 3 in the labs or in your own time but do complete them and remember the quizlets are part of your marks – this week they close on 14<sup>th</sup> August 11:55pm

... see you tomorrow!

## Understanding and Managing Image Credibility for Image Editors



**(That means all of us!)**

Eric Kessels “24 Hours of Flickr” Used in accordance with ‘fair use’ provisions of copyright law.

*COMP1710/6780 – Web Development and Design  
Image Credibility and Creative Commons, 15 March 2022*

**Dr Sabrina Caldwell**  
Human Centred Computing  
Research School of Computer Science  
The Australian National University



# Class Representatives

**Our class representatives are:**

COMP1710 - Brinda Murlikrishna and Ishi Patel

COMP6780 - ???

# Agenda

**Introduction**

**Image credibility**

**Image interference and its implications**

**Creative Commons**

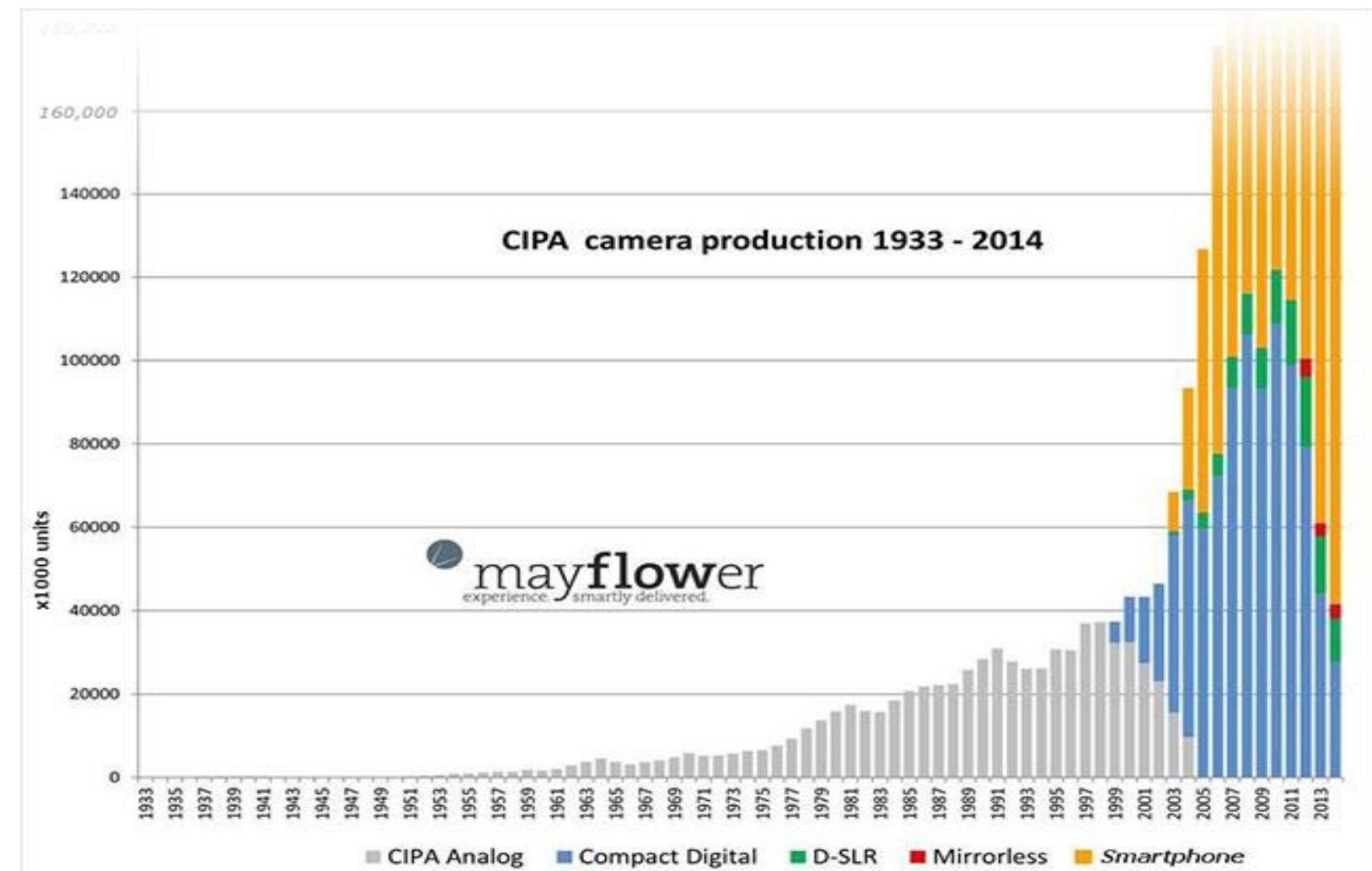


**Log into Socrative!** <http://www.socrative.com> CALDWELL8573

**Q1-4**



Over 160 million cameras  
produced every year  
(includes smartphones)  
[2]





**24 Hours of Flickr**, 2013, Erik Kessels, Foam, Amsterdam

A few other sites

---

**Daily:**

Snapchat - 210 million 'snaps' [3]

Facebook – 350 million [4]

Instagram – 95 million [5]

Flickr now – 4 million [6]



## Real or Fake?





Ford ‘doctors’ photos of  
Shelby 1000 lifting off  
ground 



## Real or Fake?





Ford 'doctors' photos of  
Shelby 1000 lifting off  
ground X



## Real or Fake?



Brookesia micra, Madagascar





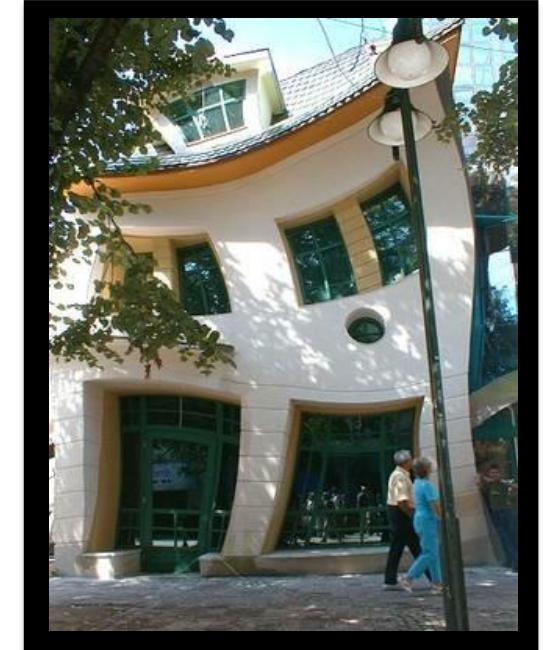
Ford 'doctors' photos of  
Shelby 1000 lifting off  
ground X



✓ White shark and kayak,  
photo by Thomas Peschak



Brookesia micra, Madagascar





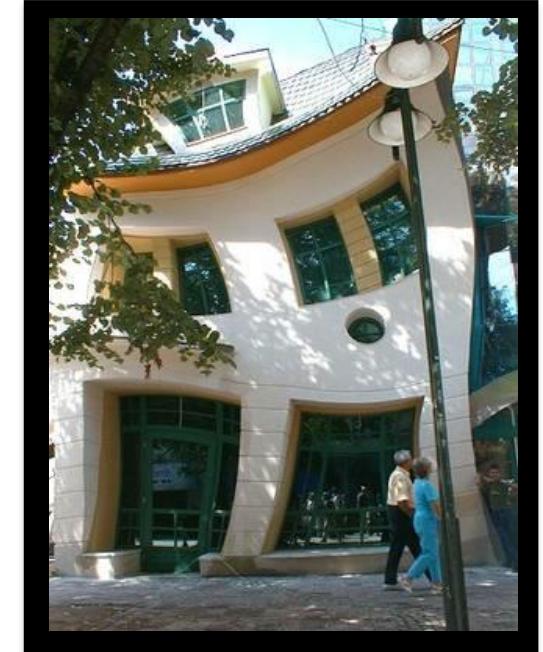
Ford 'doctors' photos of  
Shelby 1000 lifting off  
ground X



✓ White shark and kayak,  
photo by Thomas Peschak



✗  
Photoart  
by  
Erik Johansson,  
Sweden





Ford 'doctors' photos of  
Shelby 1000 lifting off  
ground X



✓ White shark and kayak,  
photo by Thomas Peschak



✗  
Photoart  
by  
Erik Johansson,  
Sweden



Brookesia micra, Madagascar



Kryzywka Domek,  
Poland ✓



# A note on Knowledge Credibility



Climate Change  
Denial

Brexit

Anti-vaccine  
propaganda

International 'hacking'  
of domestic affairs

In his presidency, Donald Trump made over 13,000 false public claims.

- Washington Post, 21 Jan 2019 [1]







Image manipulation available to anyone with image editing software...

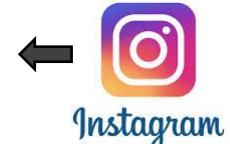
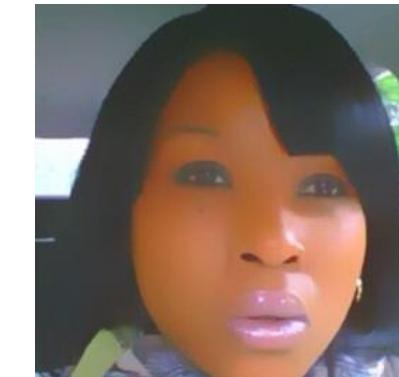


Photoshop  
Elements



MS Windows  
Paint

Or even just a modern digital camera or smartphone ...





Fading Away by Henry Peach Robinson (1869) – one of the earliest composite images made with 5 photographs

"Photos have always been manipulated. Look at Henry Peach Robinson's photo "Fading Away" or the posed American Civil War photos of Mathew Brady."

"Any photograph is subjective from the moment the photographer frames it up in her viewfinder."

"Come on Sabrina, what is reality, anyway?"



Manipulating images is fun, but photographs have an important role to play in society too...



Young man on motorbike, 1951, Shanghai



Moonwalk 1967

## History



9/11 terrorist attack on US world trade center



1985 'Feed the World' concert

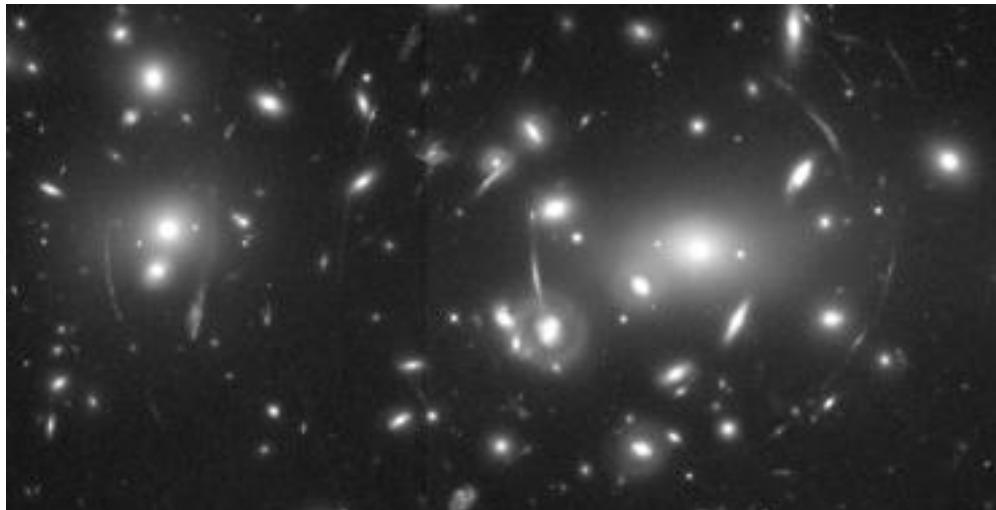


Ancient Xi'an terracotta soldiers

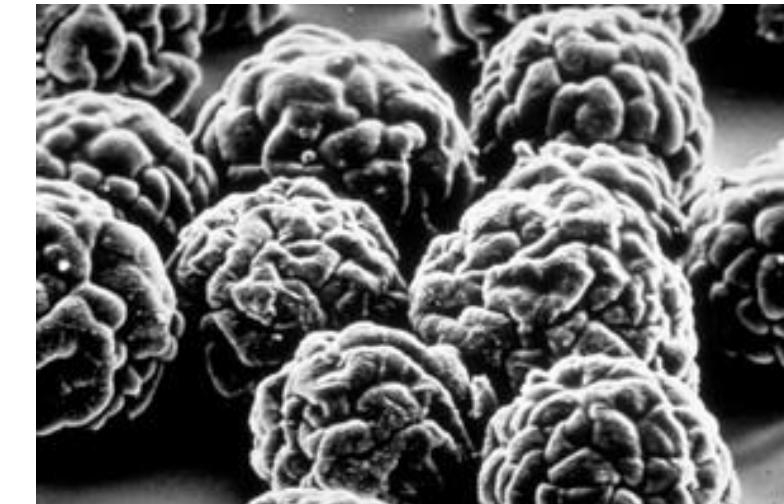


Manipulating images is fun, but photographs have an important role to play in society too...

### *Science and medicine*



Abell 2218, Hubble telescope ([Couch, 1995](#))



Wild poliovirus photographed through microscope  
([Global Polio Eradication Initiative, 2010](#))



April 2012 – Russian Patriarch from the Moscow Patriarchate - case of the disappearing watch. Watch may have been an expensive, \$30,000 Breuget watch

*Sometimes people manipulate photos to influence our opinions, feelings and thoughts. That is acceptable when we know we are viewing art, but...*



Arrest mug shot of O.J. Simpson 6/94 used 'as is' on Newsweek cover, altered on Time cover.



"Smoke billows from burning buildings destroyed during an overnight Israeli air raid on Beirut's suburbs August 5, 2006. Many buildings were flattened during the attack. REUTERS/Adnan Hajj"

"Qinghai-Tibet Railway opening green passageway for wild animals" Liu Weiqing  
Photograph manipulated to imply antelopes living in harmony with the new rail system.

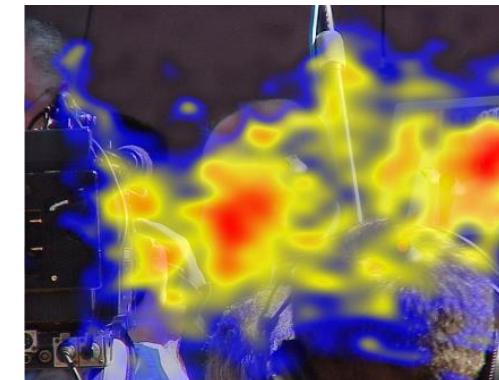
## Imperfect understandings: a grounded theory and eye gaze investigation of human perceptions of manipulated and unmanipulated digital images



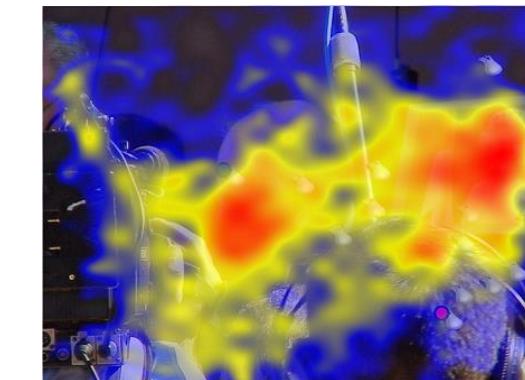
- We focus on salient features of an image to discern its meaning<sup>5</sup>, and
- Some characteristics of images, especially luminance attract our eye gaze.<sup>6</sup>
- But can we tell if the image we are looking at is manipulated or unmanipulated?



**A**



**B**



**C**

Key: Red - most viewed, yellow - less viewed, blue - least viewed.

A) Image 11 as presented in manipulated form B) Participants stating: unmanipulated C) Participants stating: manipulated.

Image	n	Stated: manipulated (correct)					Stated: unmanipulated (incorrect)					Sig (p<.05)	
		(total)	Mean Fixa-tion	SD	Mean $\Sigma$ Duration (secs)	SD	n	Mean Fixa-tion	SD	Mean $\Sigma$ Duration (secs)	SD	n	Fixa-tion
3	63	63.4	24.43	15.39	8.29	42	56.7	25.64	15.14	8.32	21	0.329	0.908
8	67	27.0	18.07	7.66	6.08	39	28.6	23.10	8.11	6.43	28	0.765	0.772
9	67	30.2	20.72	9.60	7.56	54	29.0	17.42	8.76	6.45	13	0.837	0.689
10	20	9.3	4.35	7.75	6.68	7	3.1	2.42	2.32	2.49	13	0.009	0.002
→ 11	37	38.5	19.09	8.34	4.77	21	25.1	12.03	5.45	3.67	16	0.014	0.045
12	35	54.5	18.82	13.02	6.65	25	32.1	15.21	6.91	5.11	10	0.001	0.008
13	34	30.1	19.32	8.24	5.97	13	30.6	18.17	8.69	5.92	21	0.941	0.836
14	36	17.0	9.40	7.54	7.93	12	12.3	6.64	4.28	2.79	24	0.143	0.192



## Logic

Participants often used their pre-existing experience and beliefs about the subject matter of the image – sometimes the logic was good, sometimes not...



- ✗ There aren't any lizards that small
- ✗ The lizard couldn't have been on the match when it burnt or would have been killed
- ✗ Matches aren't black



- ✓ The girl in the front isn't smiling like the others
- ✓ The lighting on the girl in the front is wrong



- ✗ The cow must have been cold
- ✓ I'm from a farm; I know how much a cow weighs
- ✗ In Russia we can train them to do that

---

Lack of confidence often expressed as **overt guessing**, or the use of words like '**perhaps**,' '**maybe**' '**I think**,' '**I believe**,' '**not sure**,' '**doesn't look right**.' etc.

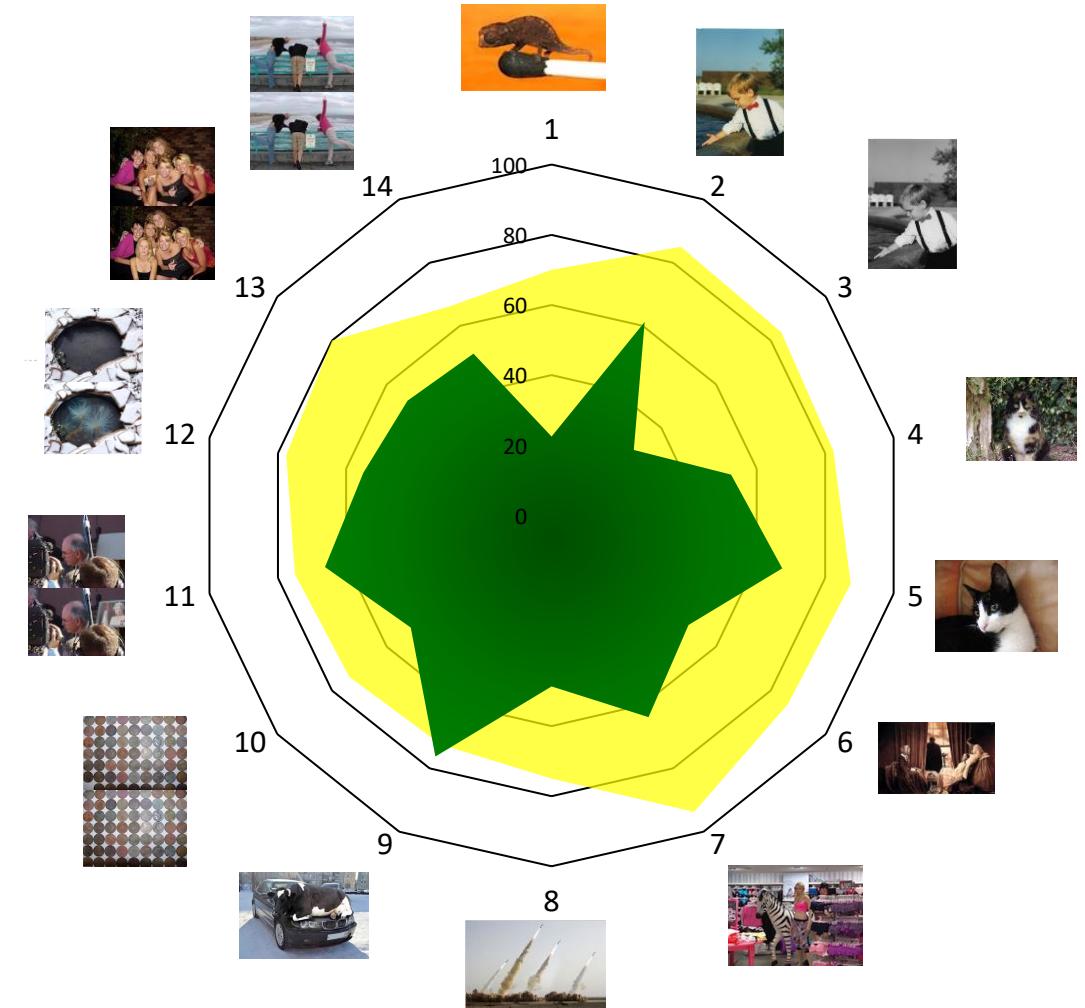


Can we tell if an image is real?

Are we confident in our decision?

Are we right?

Yellow area = confidence  
Green area = accuracy





## La edad oscura digital



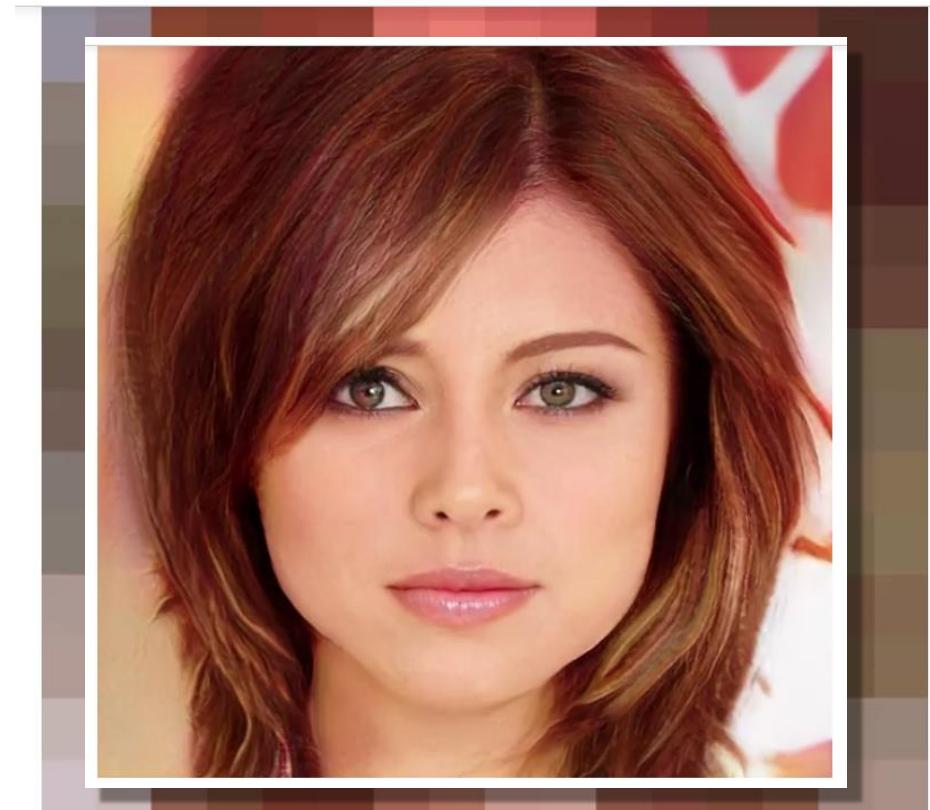
We don't have enough information to tell if the photos we are seeing are representative or created or somewhere in between.

"[dark ages...](#)" by [hans s](#) is licensed under CC BY-ND 2.0

<https://search.creativecommons.org/photos/9a7234d1-ffc3-43df-bd3e-c162b8611405>

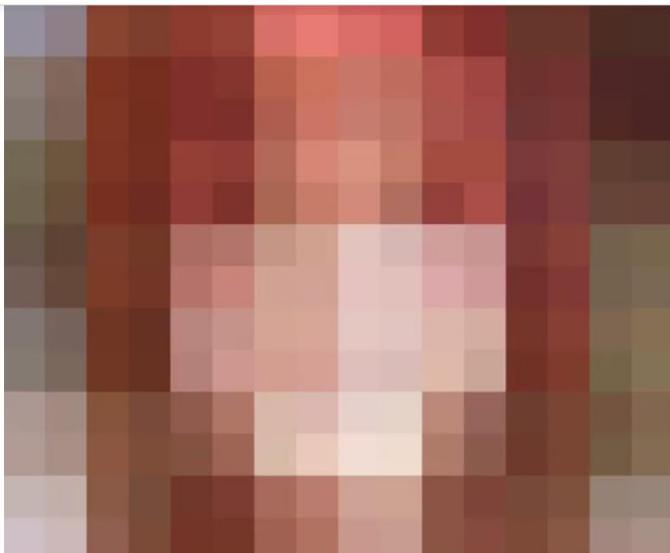


**At what point do we  
have to start  
*proactively asserting*  
the veracity of our  
images?**





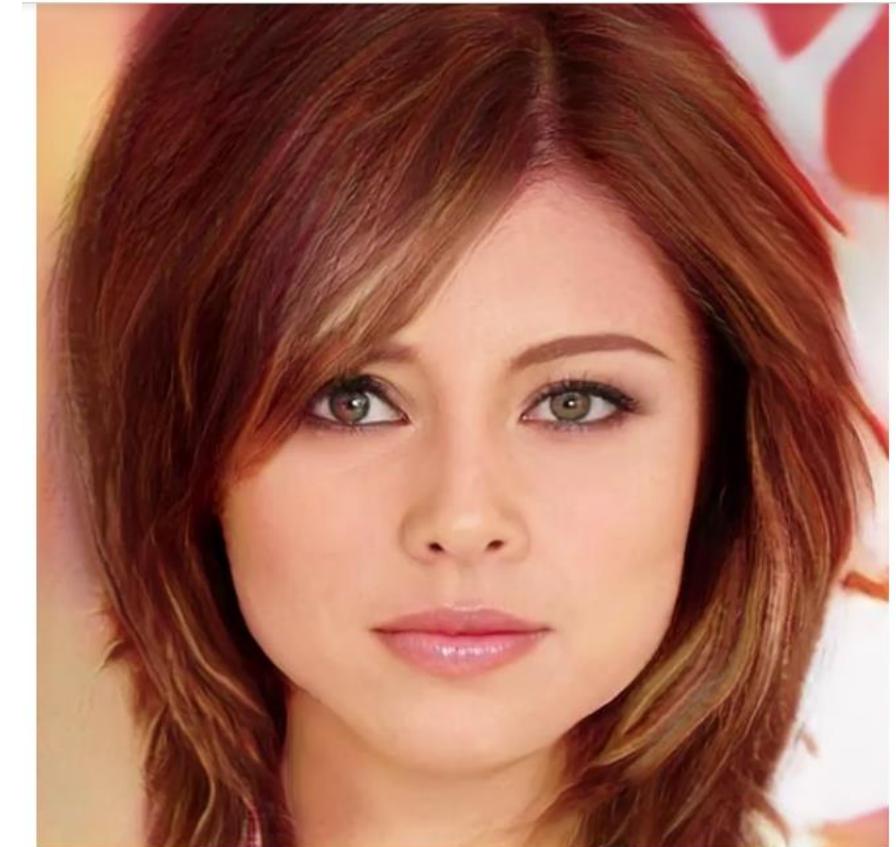
# Artificial Intelligence and Fabricated Photos



To create the final image in this set, the system generated 10 million revisions over 18 days.

Nvidia  
A large blue arrow pointing from left to right, indicating a process or flow.

GANs  
10 million revisions  
18 days



To create the final image in this set, the system generated 10 million revisions over 18 days.



**THE VOTE BUSINESS WORLD TECH & MEDIA THINK SPORTS**

**FIGHTING FAKES**  
VIDEOS MADE WITH ARTIFICIAL INTELLIGENCE EASY TO MAKE AND DIFFICULT TO SPOT

# Artificial Intelligence and 'Deep Fake' videos

Hollywood Director Jordan Peele puppets Former US President Barack Obama

**NBC NEWS** SECTIONS NIGHTLY NEWS MSNBC MEET THE PRESS DATELINE TODAY

**FIGHTING FAKES**  
"DEEP FAKE" APPS GIVE USERS ABILITY TO MATCH SOMEONE'S FACE WITH SOMEONE ELSE'S BODY

**MSNBC**



# Assert the veracity of your images

What does it take to assert the veracity of our images?

At present there are no prominent tools / social media sites for this.

However, we can assert this in writing near our images.

But watch this space! This issue will be heating up in the near future.

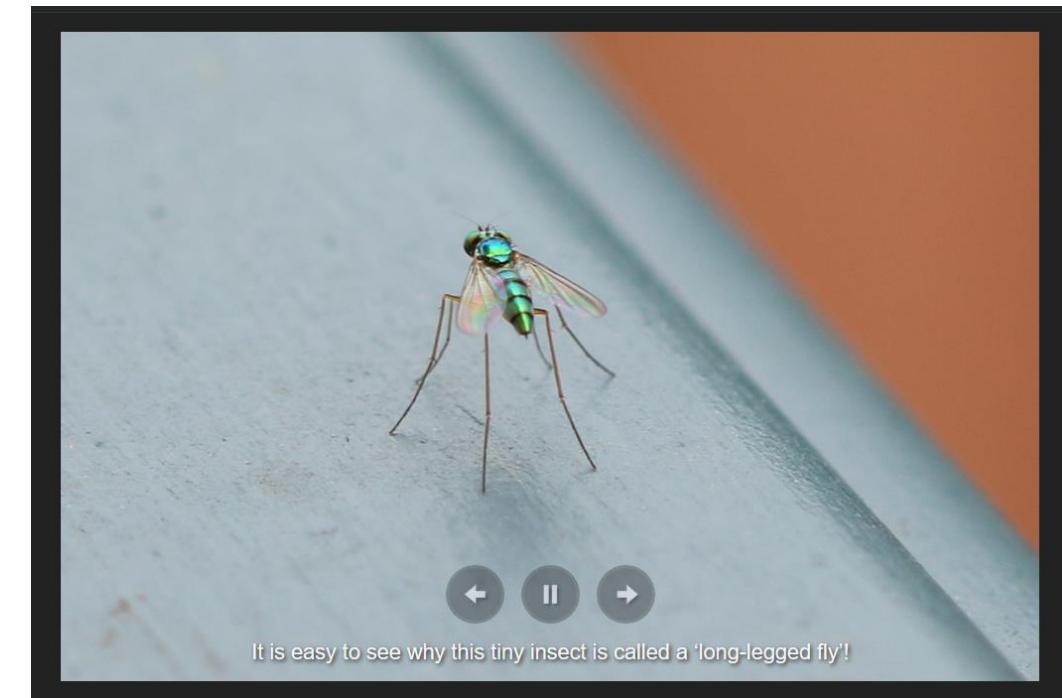
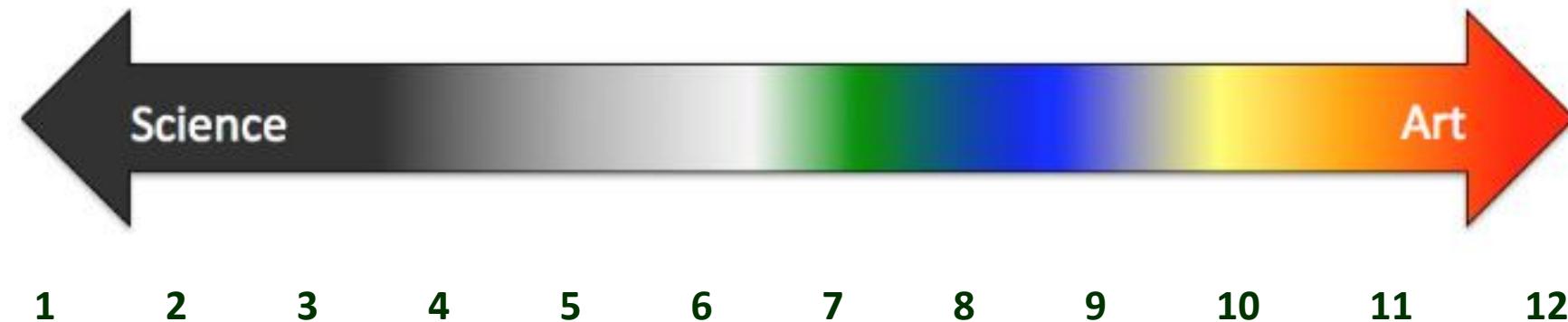


Photo by Sabrina Caldwell. Resized for web use; no other changes made.



An experiment with perspectives on the impact of editing techniques on image credibility



Re-sizing

Adding elements

Cropping

Deleting elements

Photo Montage

Brightness adjustment

Colour adjustment

Rotation

Red-eye reduction

'Airbrushing'



Australian  
National  
University

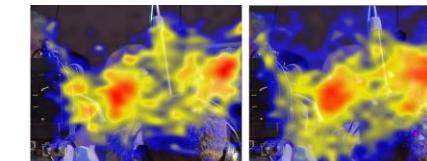
# Finding solutions for the problem with images

Wow, this is a really big problem! Who is trying to solve it?

CBC Radio-Canada

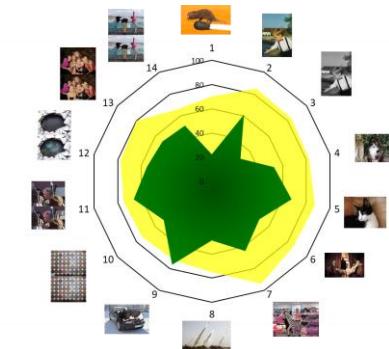


CC-BY-NC-ND



Eye gaze of experiment participants who said the photo is not altered  
Eye gaze of experiment participants who said the photo is altered

Researchers



FIRST DRAFT

WITNESS  
SEE IT FILM IT CHANGE IT

JPEG Stake in 'Fake Media'

The New York Times



Truepic

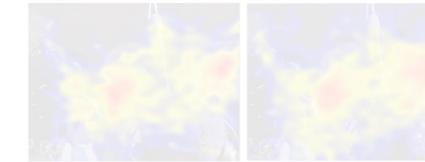
Content  
Authenticity  
Initiative



## Wow, this is a really big problem! Who is trying to solve it?



CC-BY-NC-ND



Eye gaze of experiment participants who said the photo is not altered

Eye gaze of experiment participants who said the photo is altered

Researchers



### JPEG Stake in 'Fake Media'

The New York Times





During their 88th meeting (July 2020), the JPEG committee formed an Ad Hoc working group to begin creating a new JPEG format to deal with fake media.

The mission of the group is to:

Compile use cases and requirements in respect of fake media

Consult with industry and government

Engage with interested parties

Define a plan of action.

You can join the [JPEG Fake Media mailing list](#) and download the media release:

[“Fake Media: the JPEG Stake”](#).

## Image Credibility, Sabrina Caldwell, ANU

Como historiador familiar

Quiero publicar mis fotos en la naturaleza con etiquetado y seguridad para que

Sé que las generaciones actuales y futuras pueden confiar y aprender de mi trabajo.

Como ornitólogo aficionado

Quiero que mis fotos se consideren auténticas, etiquetadas y conectadas conmigo para que

Puedo ser un colaborador de investigación de campo confiable.

Como institución de la memoria

Quiero que todos los detalles de nuestra organización, incluidas las licencias, viajen de manera visible con las imágenes que producimos para el público para que no se usan indebidamente ni se apropiaran.

Como artista fotográfico

Quiero que las declaraciones de mi artista y mi nombre se adjunten de manera segura y visible a mis imágenes para que mi público entienda mi arte en contexto.



## Is metadata the answer? Partially

Blue-eyed-echidna\_IMG\_1336.jpg Properties

X

General Security Details Previous Versions

Property	Value
Authors	Sabrina Caldwell
Date taken	7/14/2020 4:19 PM
Program name	
Date acquired	
Copyright	CC-BY-NC-ND
Image	
Image ID	
Dimensions	6000 x 4000
Width	6000 pixels
Height	4000 pixels
Horizontal resolution	72 dpi
Vertical resolution	72 dpi
Bit depth	24
Compression	
Resolution unit	2
Color representation	sRGB
Compressed bits/pixel	

[Remove Properties and Personal Information](#)

OK Cancel Apply



Echidna, photo by Sabrina Caldwell  
CC-BY-NC-ND

We also need

- Visible metadata
- New file formats
- Networks of trust
- Ways of doing things



CC-BY

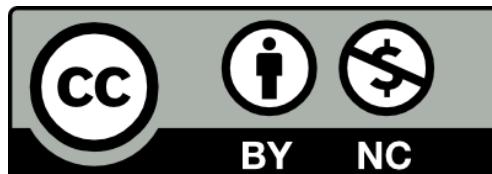
Dominio público



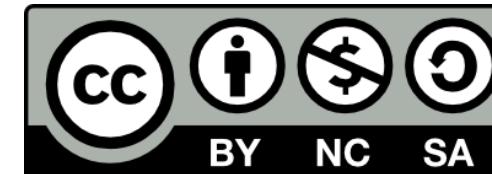
CC-BY-SA



CC-BY-ND



CC-BY-NC



CC-BY-NC-SA



CC-BY-NC-ND



CC0 - Dominio público



Not-for-profit organisation

Established by Lawrence Lessig and Aaron Swartz (who later founded Reddit)

The word ‘Commons’ is key

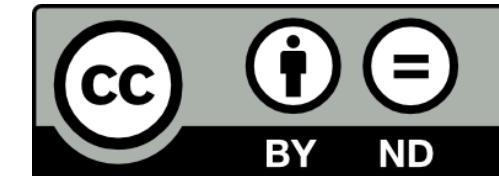
Creative Commons offers licenses that clarify what we can do with other people’s work

Internationally recognized

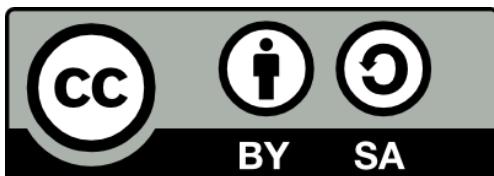
Licenses rest on 3 legs – ‘legalise’ , human-understandable descriptions, metadata



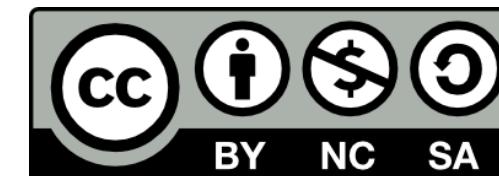
CC-BY



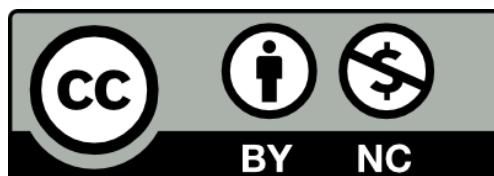
CC-BY-ND



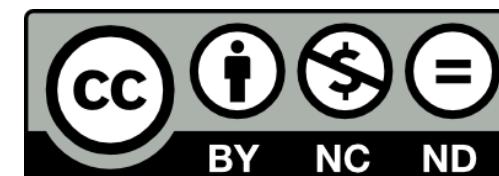
CC-BY-SA



CC-BY-NC-SA



CC-BY-NC



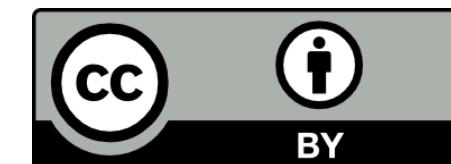
CC-BY-NC-ND



CC0 - Public Domain – all rights waived



["Santiago Island Geology"](#) by [A.Davey](#) is licensed under [CC BY 2.0](#)



## CC-BY-2.0

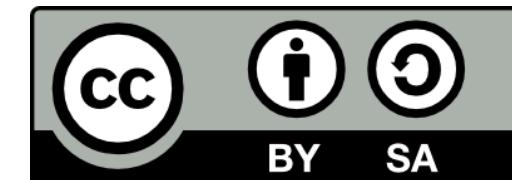
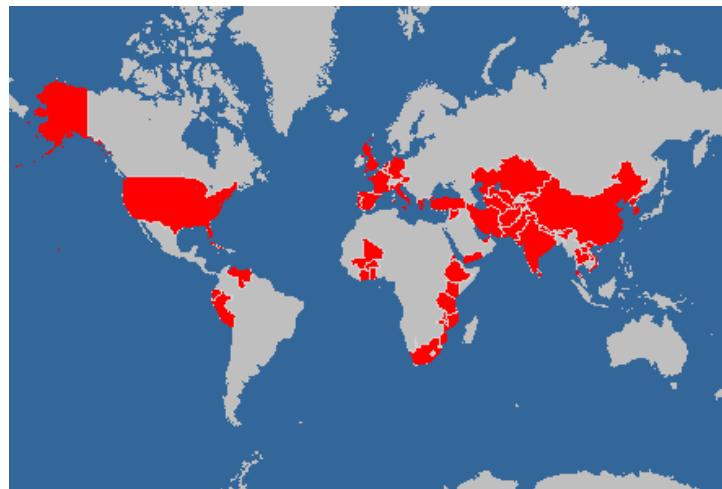
- Must attribute
- Can create derivatives
- Can use commercially
- Do not have to offer new image under a CC licence

["B&W Chemistry"](#) by [blondyimp](#) is licensed under [CC BY 2.0](#)





["Countries I've visited"](#) by Marjolein Katsma is  
licensed under [CC BY-SA 2.0](#)



### CC-BY-SA-2.0

Must attribute

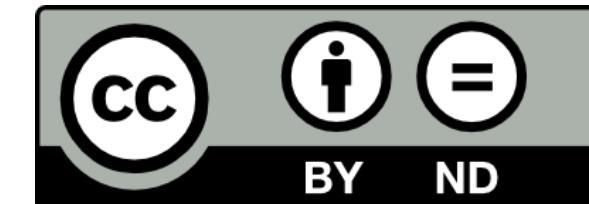
Can create derivatives

Can use commercially

Must offer new image  
under same CC licence



"[Gaudi Building, Barcelona](#) by Miguel Picado is licensed under [CC BY-NC 2.0](#)



**CC-BY-ND-2.0**

Must attribute

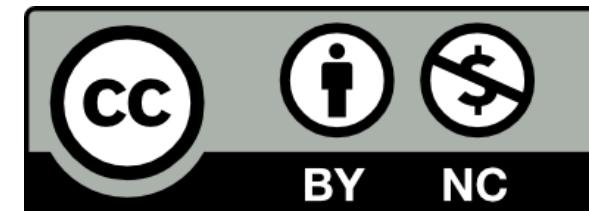
Can **NOT** create derivatives

Can use commercially

Do not have to offer new  
image under same CC  
licence



["Le soleil de La Haye sur le sirop"](#) by [Roel Wijnants](#) is licensed under [CC BY-NC 2.0](#)



## CC-BY-NC-2.0

Must attribute

Can create derivatives

Can **NOT** use commercially

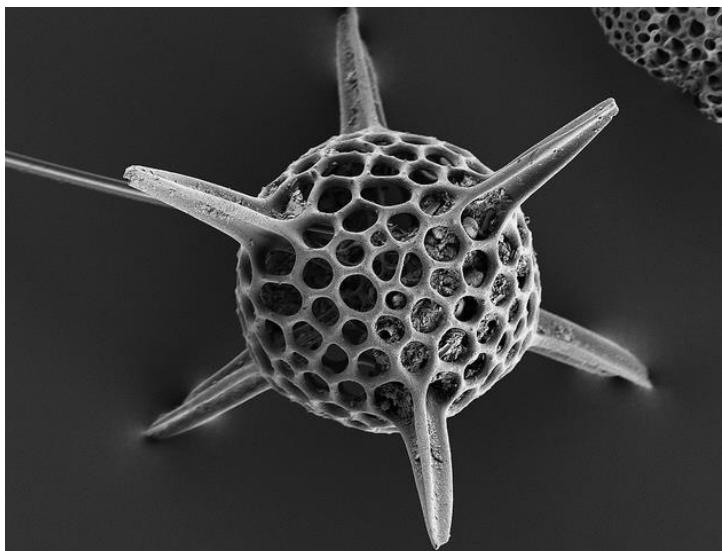
Do not have to offer new image under a CC licence

["Sonatus zonatus Brailovsky"](#) by [Laurence Livermore](#) is licensed under [CC BY-NC 2.0](#)





"[Radiolaria](#)" by Zeiss Microscopy is licensed under [CC BY-NC-ND 2.0](#)



### CC-BY-NC-ND-2.0

Must attribute

Can **NOT** create derivatives

Can **NOT** use commercially

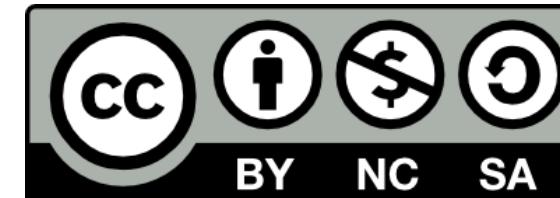
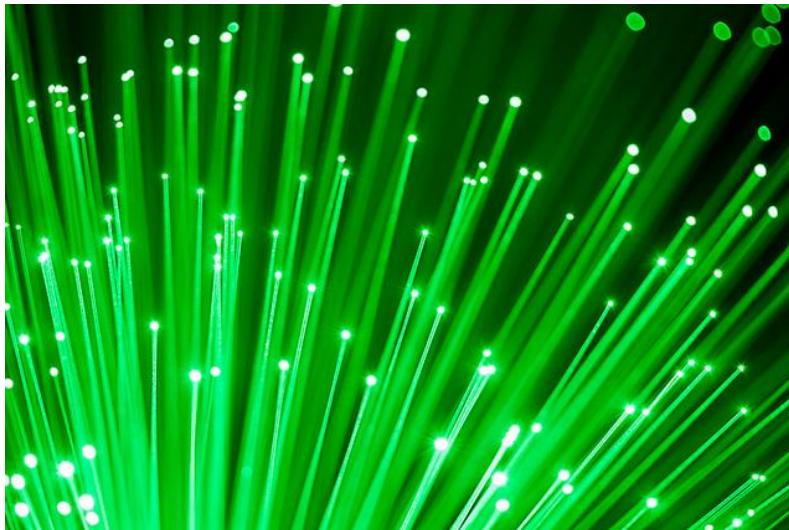
Do not have to offer new image under same CC licence

"[OH HAI FOLKZ, MAH NAYM IZ COCOA](#)" by [Stratman2\(2 Many Pics\)](#) is licensed under [CC BY-NC-ND 2.0](#)





"Green Fiber Explosion" by [Ben Felton](#) is licensed under  
[CC BY-NC-SA 2.0](#)



## CC-BY-NC-SA-2.0

Must attribute

Can create derivatives

Can **NOT** use commercially

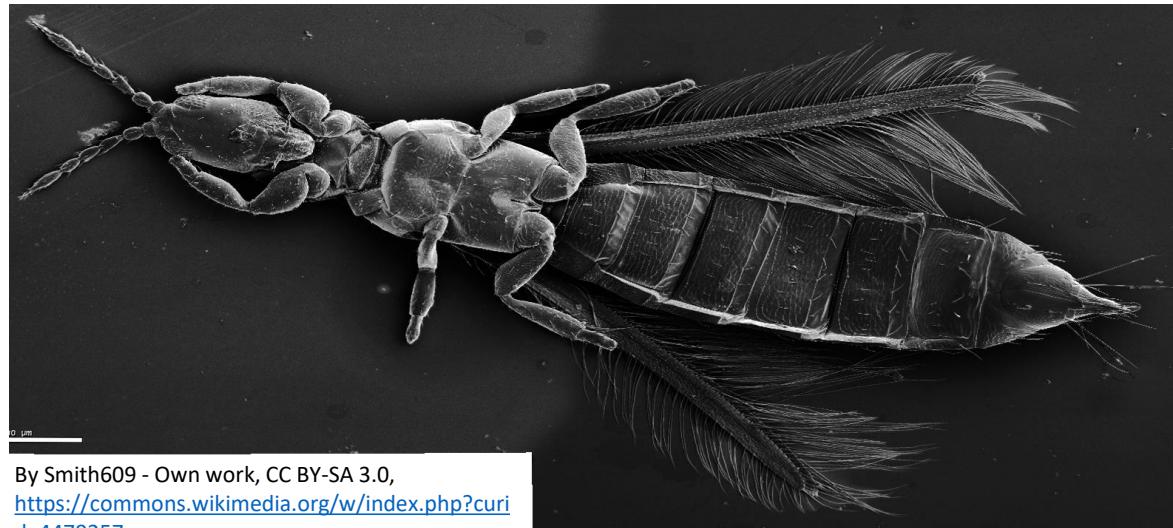
Must offer new image  
under same CC licence

"Forum Social Mundial" by Midia Ninja is licensed  
under [CC BY-NC-SA 2.0](#)





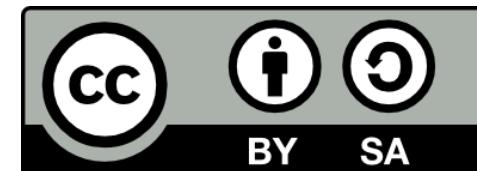
# Perfectly legal, but perfectly right?



By Smith609 - Own work, CC BY-SA 3.0,  
<https://commons.wikimedia.org/w/index.php?curid=4479257>



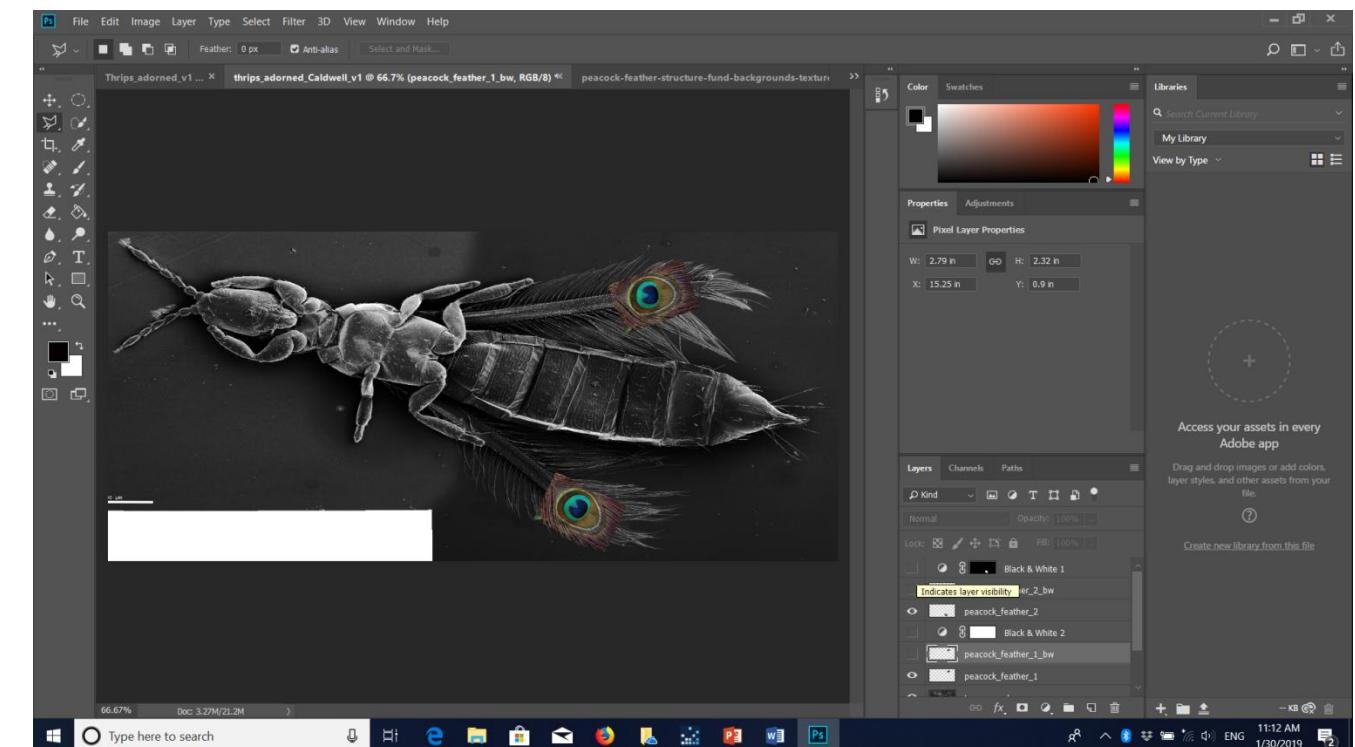
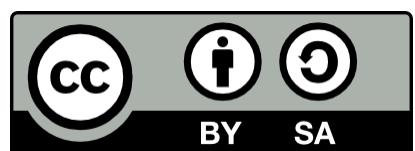
By Smith609 - Own work, CC BY-SA 3.0,  
<https://commons.wikimedia.org/w/index.php?curid=4479257> – Edited by Sabrina Caldwell





Australian  
National  
University

# Perfectly legal, but perfectly right?



## References

- [1] Washington Post Fact Checker (20 Jan 2019) [https://www.washingtonpost.com/graphics/politics/trump-claims-database/?noredirect=on&utm\\_term=.f6860f0e5e8d](https://www.washingtonpost.com/graphics/politics/trump-claims-database/?noredirect=on&utm_term=.f6860f0e5e8d)
- [2] Michael Zhang, 2015 <http://petapixel.com/2015/04/09/this-is-what-the-history-of-camera-sales-looks-like-with-smartphones-included/>
- [3] <https://expandedramblings.com/index.php/snapchat-statistics/>
- [4] <https://zephoria.com/top-15-valuable-facebook-statistics/>
- [5] <https://www.wordstream.com/blog/ws/2017/04/20/instagram-statistics>
- [6] <https://expandedramblings.com/index.php/flickr-stats/>

## Additional resource

Differences in Creative Commons license versions - [https://wiki.creativecommons.org/wiki/License Versions](https://wiki.creativecommons.org/wiki/License_Versions)



**Any questions about image credibility or Creative Commons?**

[Sabrina.Caldwell@anu.edu.au](mailto:Sabrina.Caldwell@anu.edu.au).

Research

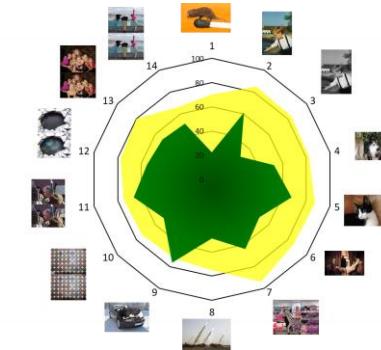
**Introduction**

**Image credibility**

**Image interference and its implications**

**Creative Commons**

**Creative Commons  
and  
JPEG Stake in ‘Fake Media’**



# Tomorrow

**Experiments and Reports**  
**Perspective-Taking**



# Perspective Taking

Week 4 15-19 August 2022

"Superman is the best superhero."





**But first...      Lectures next week**

**Lectures next week will be entirely online  
Zoom only**



## But first... Experiments and Report

From Wattle assessment information:

Communication skills 25%

Active participation 10%

Forum 6%

Continuous improvement 4%

A report on user centred design 15%

Based on participation in human centred computing experiments

Experiment participation as submitted in the report is a hurdle assessment



## Report

From Assignment and Report specification document:

The Report task involves COMP1710 students taking part in **two or more Human-Computer Interaction research experiments which add up to 2 hours**, and then **writing a report on their experiences as experiment participants**. In this report the students will (i) describe the purpose of each experiment and their personal experience of taking part in the experiment, (ii) compare their experiences across the different experiments and (iii) write what they have learned about the relevance of participant-focused experiments like these to the overall process of designing and building a set of web pages.

For most students, it's **easier to write the report *after* having participated in the experiments**. Participation in experiments / is a hurdle assessment. We will use the **Research School of Psychology's experiment management software (SONA)** for you to participate in experiments.



## SONA – Experiment selection platform

The screenshot shows the Australian National University SONA platform. At the top left is the university's crest and name. To the right is a banner for the "Research School of Psychology Psychology Research Participation Scheme". Below the banner is a photograph of a modern building under a blue sky. A navigation bar at the top includes links for "Studies", "My Schedule/Credits", "My Profile", and "Logout". The main content area displays a message for "Sabrina Caldwell (Participant)". Below this, a section titled "Currently Viewing: All Studies" shows two study entries. Each entry has a "Available?" column with a checked checkbox labeled "Timeslots Available", a "Study Information" column with a brief description and link, and an "Eligibility" column with specific requirements.

Available?	Study Information	Eligibility
<input checked="" type="checkbox"/> Timeslots Available	<b>Inner speech and the N400 brain response</b> (2 Credits) This project will use an electroencephalogram (EEG) to measure brain activity while participants produce inner speech – the silent production of words in one's mind.	
<input checked="" type="checkbox"/> Timeslots Available	<b>!!(\$10 OR .75 CREDIT) Emotion and Attention In-Person Lab Study - warning: contains graphic images</b> (0.75 Credits) Warning: Study description contains graphic language, and study itself contains graphic images. Please do NOT continue reading if you may be triggered	18-40 years old; born and raised in western country; english first language; normal or corrected-to-normal vision (wearing glasses or contact lenses is fine); no diagnosis of ADD/ADHD, Autism, Schizophrenia.



## What is perspective taking?

Broadly speaking, perspective taking is understanding and accommodating the perspectives of others, not just ourselves.

“The ability to understand how a situation appears to another person and how that person is reacting cognitively and emotionally to the situation.”

– Gehlbach, 2004



## Why should we care about perspective taking?

Remember this quote from last week?

**“You are not your audience. You don’t see things like they do, know what they know, want what they want, or work how they work.”**

*Mike Kuniavsky, author of Observing the User Experience*

Perspective taking helps you:

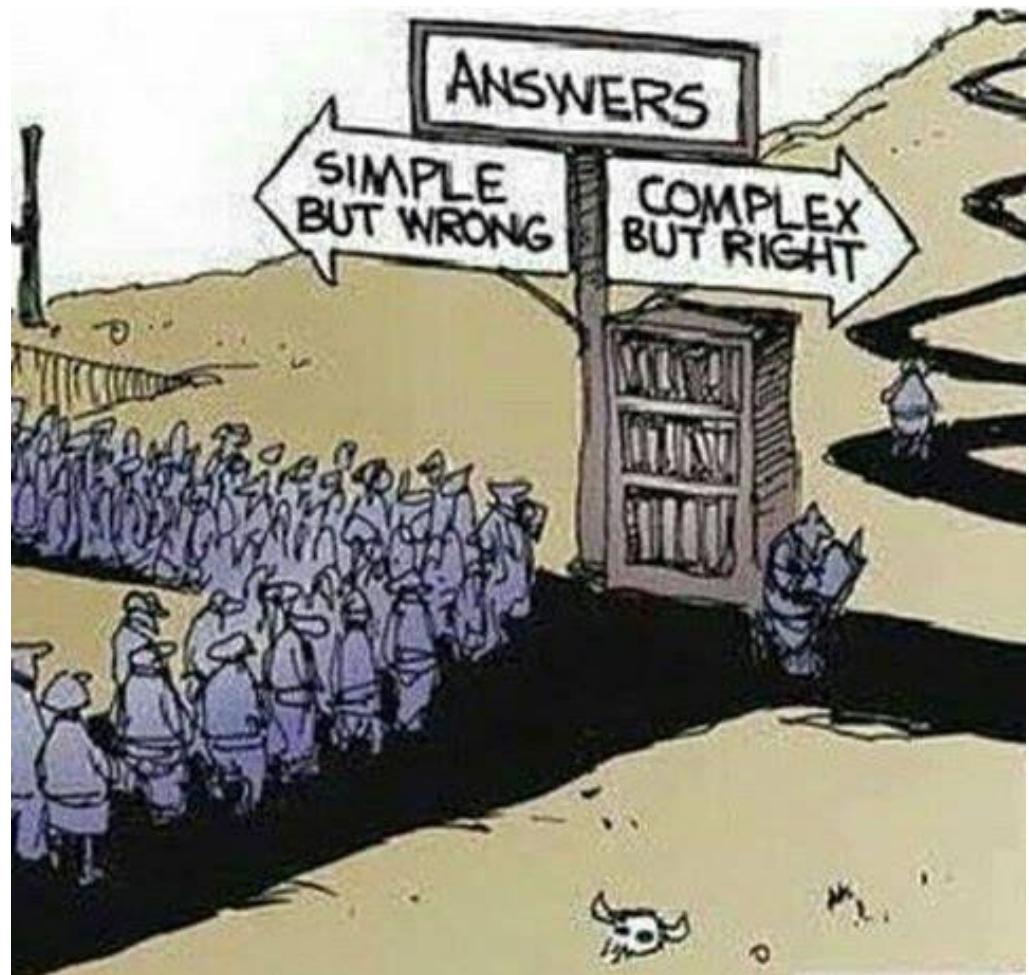
- Understand your audience's needs and wants
- Understand why what you thought would work doesn't
- Expands your knowledge about your topic
- Gives you more credibility as a nuanced authority in your field
- Increases your ability to resolve conflict
- Be a good leader

Perspective taking helps you avoid:

- “My way or the highway”
- Misunderstandings
- Perpetuating stereotypes
- Being biased (and making biased statements in your website)
- Being exclusive of others rather than inclusive

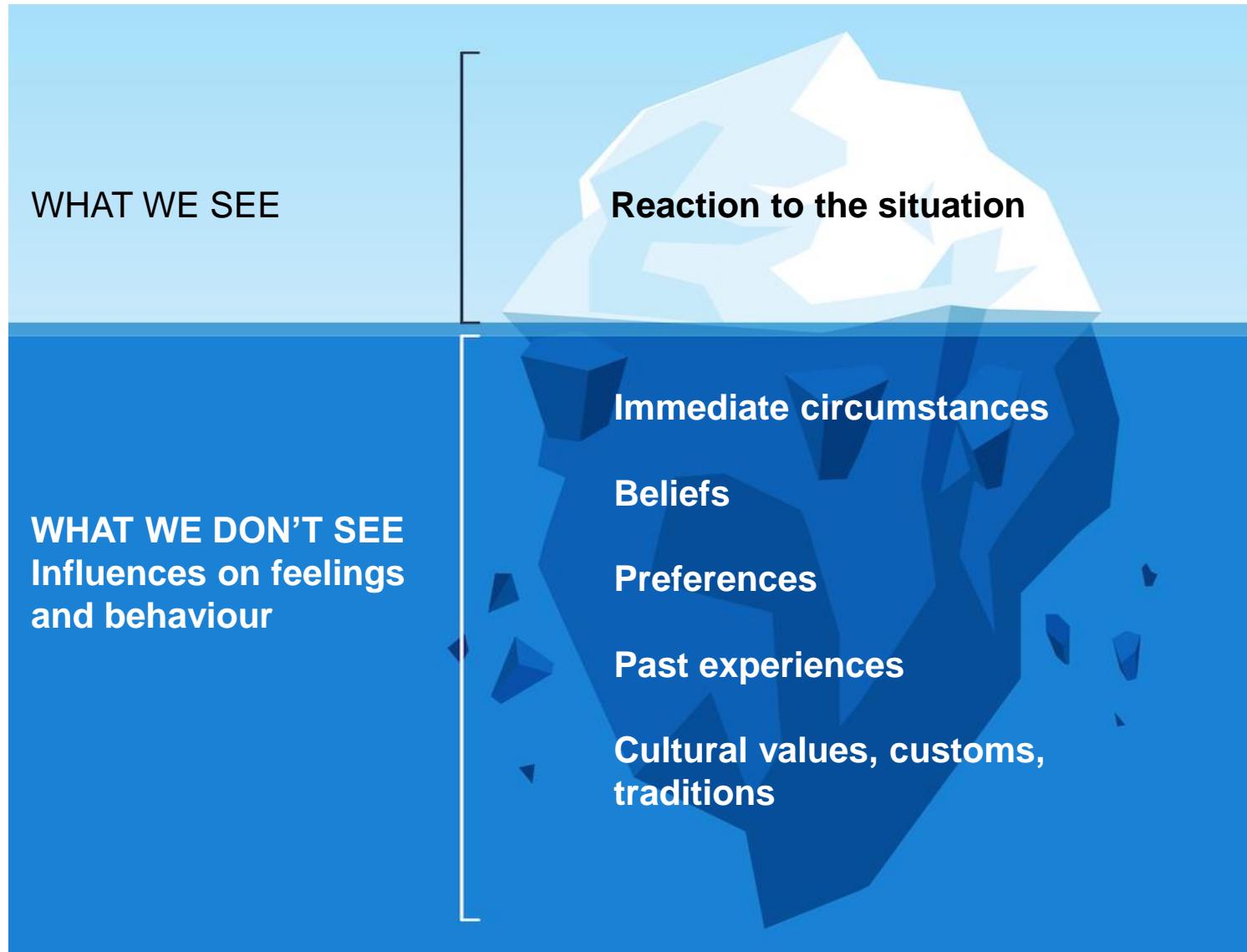


Perspective taking  
is challenging



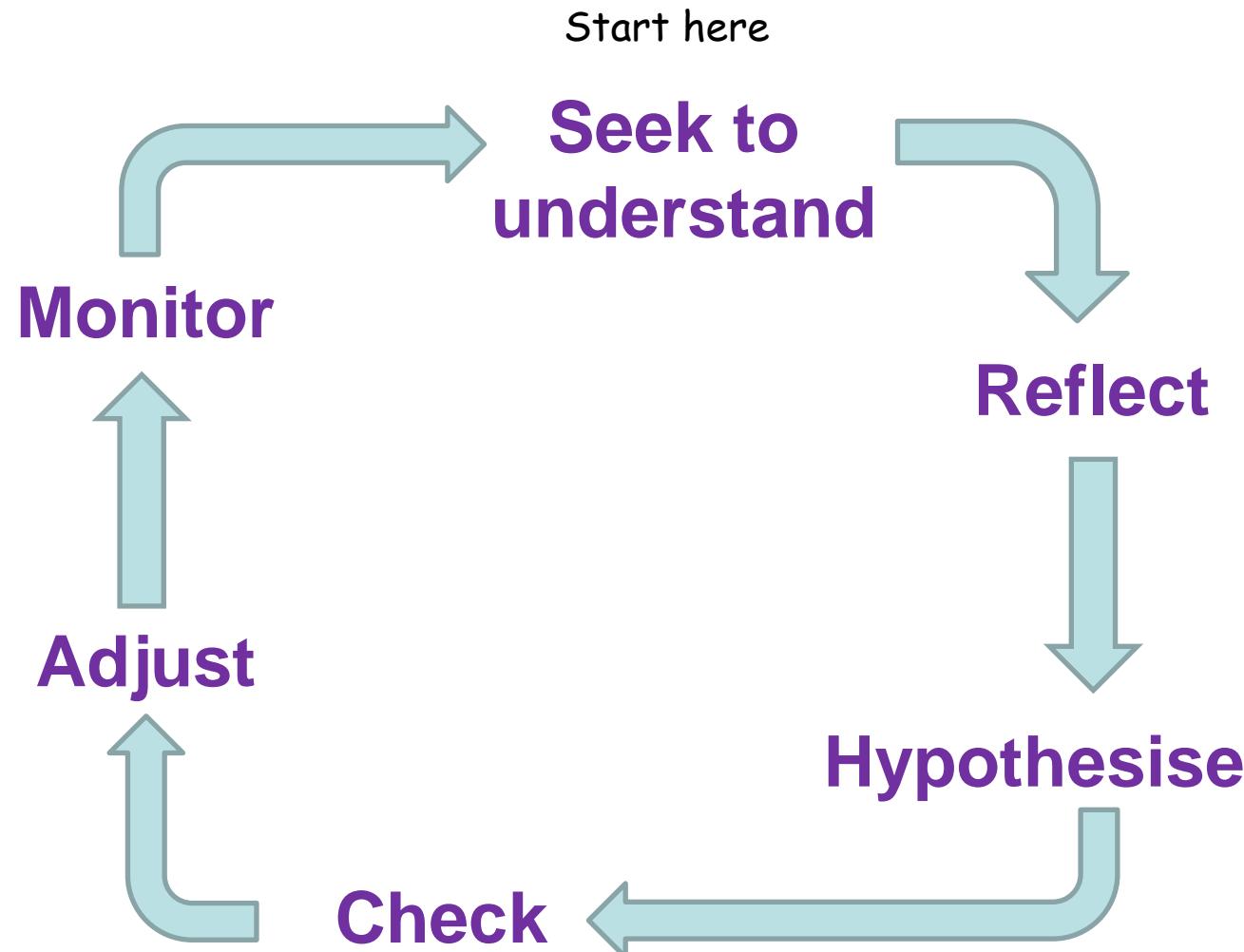


# Perspective Taking





## How do we start?

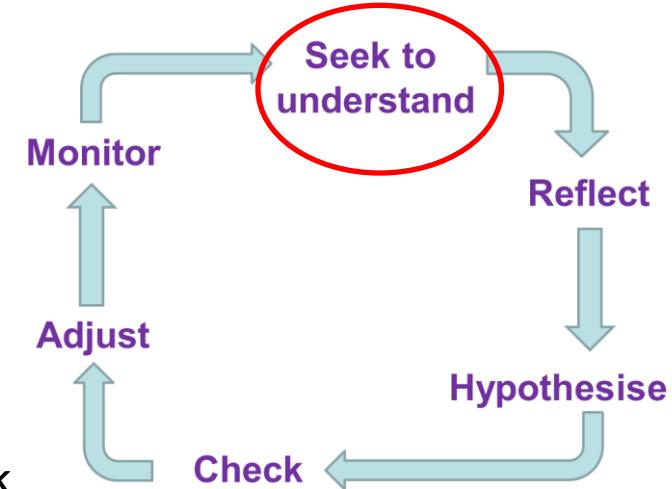




## Seek to understand

### Listen to others

- Put your feelings and ego aside when listening.
- Give others your full attention when they speak
- Pay attention to non-verbal cues
- Don't be preparing what you're going to say next instead of listening
- Be open to new information
- Don't immediately reject ideas that conflict with your own



### Research & investigate

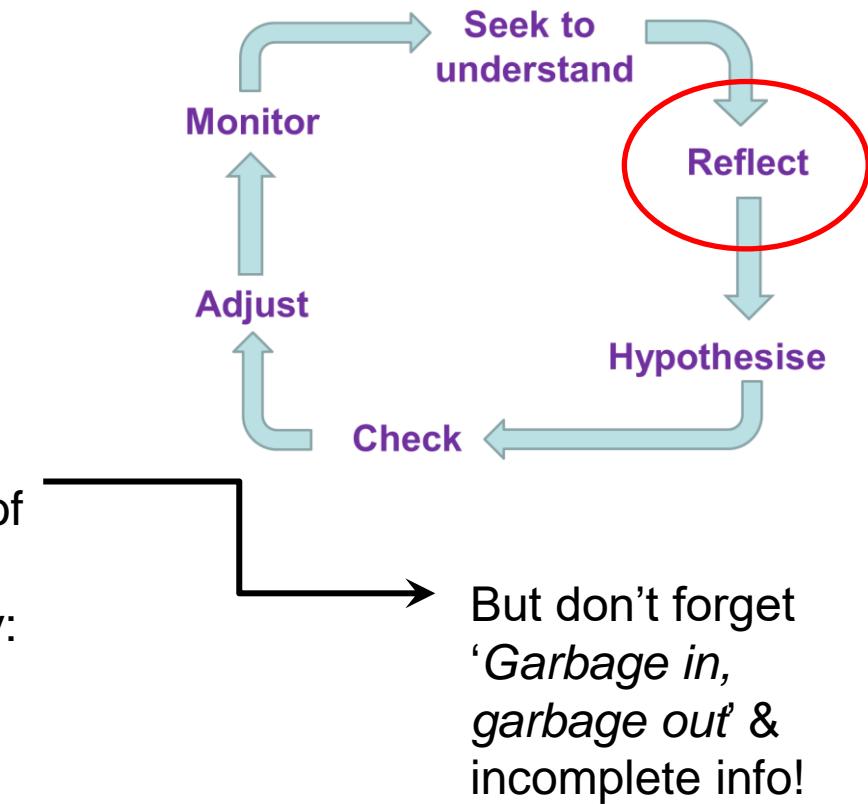
- Read papers, essays by thinkers in the field,
- Seek data and evidence
- Consider assembling your own data: running polls and surveys



## Reflect

**Spend uninterrupted time considering what you have learned**

- Think deeply about new information, especially when it conflicts with your previously held beliefs
- Don't forget that emotional responses of others are valid and powerful
- Approach your reflections with curiosity: "What is it that makes them feel/think/act this way?"



**Integrate the new perspectives into your understanding**

- Be willing to change your mind
- Be willing to hold opposing views simultaneously
- Notice when your views are confirmed but don't favour a small group of people telling you what you want to hear over experts in the field



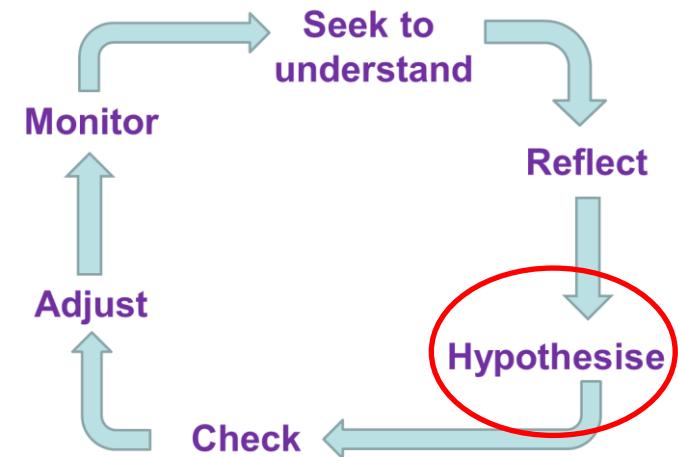
## Hypothesise

### Consider what you may have to change

You now have new information about the world / your audience / yourself. Are there any changes you might consider taking? What are they? What outcomes do you expect from your changes?

### Be methodical

Writing down notes at this point would be very useful to help you assess outcomes of your next steps.





## Check

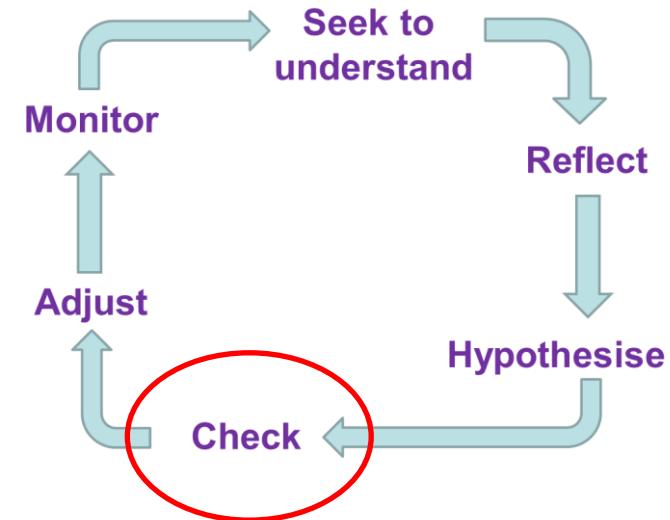
**Do you know someone / can find someone to run your new ideas past?**

Use open ended questions to help draw out thoughts not possible with yes/no questions.

You now have new information about the world / your audience / yourself. Are there any changes you might consider taking? What are they?

## Write an action plan

Add to your previous notes with specific actions you want to trial.

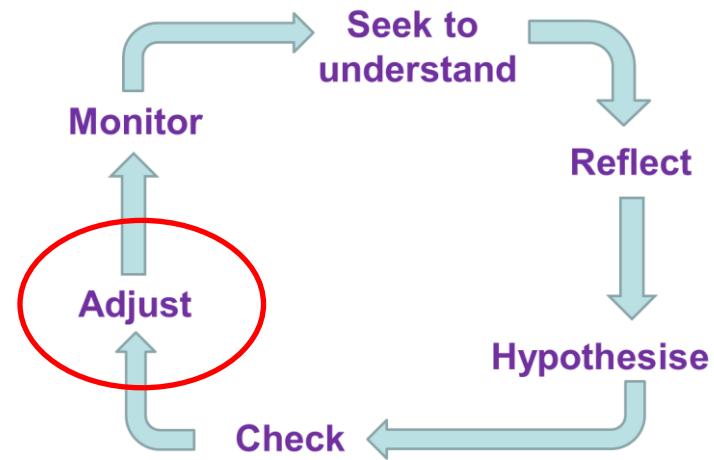




## Adjust

### Take action as appropriate

- Review your website in light of your action plan
- Review your future strategies
- Be mindful of your communications



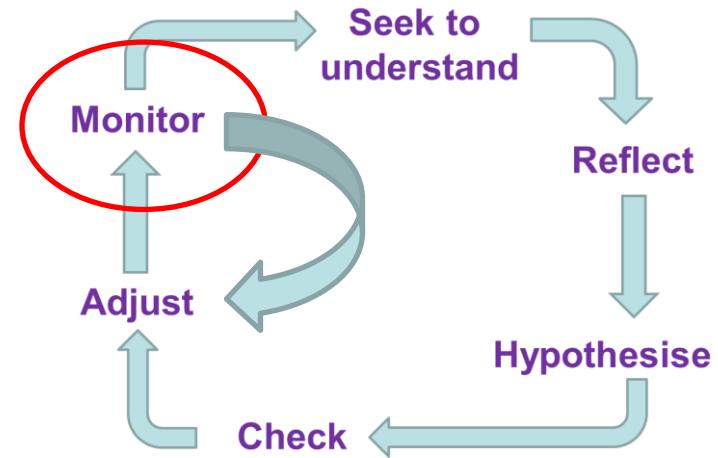
**Do keep your own position and goals in the picture!**



## Monitor

**Changed responses may be swift or slow**

- Pay attention to whether the outcomes you expected eventuated
- Be ready to respond to any adverse reactions
- Identify any responses that indicate your course of action should be adjusted



**Then... start again at the beginning with seeking to understand!**



# Have a great learning week!

**Why not put some of your new understanding of perspective taking into practice?**

**Don't forget – Zoom only lectures next week.**



# COMP1710/6780

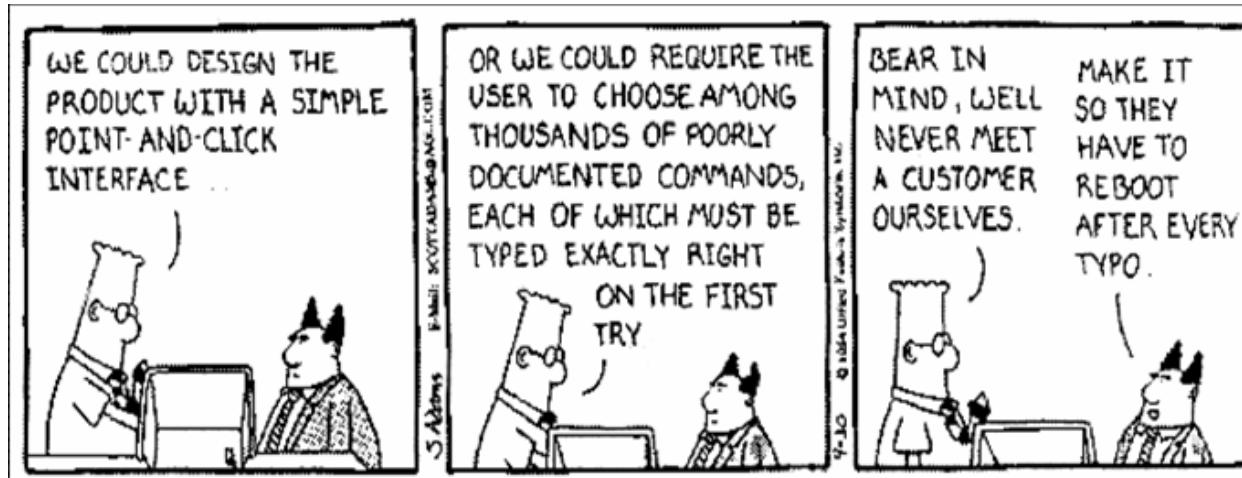
## Web Development and Design

The Zoom link will be  
via <https://anu.zoom.us/j/88435500888?pwd=WHJ4by8yUlhjYW9ra2h4bWlieEJmdz09>

Meeting ID: 884 3550 0888  
Password: 895252



## Human-Computer Interaction



*But first, reminder about experiment bookings (SONA) and a review of what you need to do to get a good mark on your Assignment Pt1*



## SONA – Experiment selection platform

The screenshot shows the Australian National University SONA platform. At the top left is the university's crest and name. To the right is a banner for the "Research School of Psychology Psychology Research Participation Scheme". Below the banner is a photograph of a modern building under a blue sky. A navigation bar at the top includes links for "Studies", "My Schedule/Credits", "My Profile", and "Logout". The main content area displays a message "Currently Viewing: All Studies". Below this is a search bar with the placeholder "View studies with available timeslots on :" followed by a date "Wednesday, 17 August 2022" and a "GO" button. A table lists two study entries:

Available?	Study Information	Eligibility
<input checked="" type="checkbox"/> Timeslots Available	<b>Inner speech and the N400 brain response</b> (2 Credits) This project will use an electroencephalogram (EEG) to measure brain activity while participants produce inner speech – the silent production of words in one's mind.	
<input checked="" type="checkbox"/> Timeslots Available	<b>!!(\$10 OR .75 CREDIT) Emotion and Attention In-Person Lab Study - warning: contains graphic images</b> (0.75 Credits) Warning: Study description contains graphic language, and study itself contains graphic images. Please do NOT continue reading if you may be triggered	18-40 years old; born and raised in western country; english first language; normal or corrected-to-normal vision (wearing glasses or contact lenses is fine); no diagnosis of ADD/ADHD, Autism, Schizophrenia.

<https://anupsych.sona-systems.com>



# Assignment Part 1 (10 marks)

WHEN ALL ELSE  
FAILS,  
READ  
THE  
INSTRUCTIONS

No matter how fancy your site is already, you won't get a good mark if you don't:

- ✓ include the assignment specification elements clearly described in Part 1 items 1.1 – 1.10
- ✓ have an index.html to enter your site
- ✓ have an assignment.html for your marker to find your elements
- ✓ submit it on time

You can do *great* if you just ***meet the brief!***



# Comp1710/6780 – Assignment Part 1

## Worth 1 mark

### **From assignment.html Your *Me and My Passion***

Replace this line with your URL link to this element in your website. Notes: Provide any notes you may have about this element here.

### **From Assignment Specification:**

Introduce yourself and/or your passion, interest or hobby etc. Write a mission statement or list of goals similar to the idea of a brief statement of the mission and list of goals in chapter 1 of the Unusually Useful Web Book. This section should probably take 200-400 words or so.

## **What we will be looking for...**

Introduction: We will be looking for a thorough, clear and succinct (not too rambling) summary. This would be worth 1 mark. A good but not entirely clear or thorough introduction is .75 mark, too verbose or too short or not a clear connection to your topic would be .50 mark, mostly irrelevant to the topic is .25.



# Comp1710/6780 – Assignment Part 1

## Worth 1 mark for CSS

### From assignment.html CSS

Replace this line with your URL link to this element in your website.

Notes: Provide any notes you may have about this element here.

### From Assignment Spec:

Create an external (separate) CSS file. Use at least 10 CSS rules. **Make sure your CSS includes comments that would be useful to someone taking over the maintenance of your site**, things like the purpose of each rule, exceptions to its use and the choice you made as to which selector you specified. If you create more than one CSS make sure they are deployed in a Cascading manner, i.e. there should be at least one default CSS that will be applied to all the pages in your site, with specialised CSS then being applied to specific pages of the web site.

### What we will be looking for...

Thorough and clear and well commented CSS with 10 or more rules will get 1 mark. Good CSS with commenting and 10 or more rules will get .75 mark, a range of faults will receive .50 marks, too few rules will normally receive .25. Please note that we have to use our judgement here a bit as sometimes we see one selector with 10 grouped rules, which isn't really meeting the intent of this element. We expect you to have at least 3-4 selectors with 1 or more rules each (that add up to 10 or more rules). It isn't hard at all to get up to 10 rules across a range of selectors, and we will look at that.



## Comp1710/6780 – Assignment Part 1

### Worth 1 mark

#### **From assignment.html Site Map**

Replace this line with your URL link to this element in your website.

Notes: Provide any notes you may have about this element here.

#### **From Assignment Spec:**

This page should clearly depict the organisation/structure of the web site, possibly using a table or links (or both) or an image map. *Make sure you update the site map as you expand your web site in Parts 2 and 3.*

### **What we will be looking for...**

A clear and easy to navigate site map will usually get a full mark. A good or somewhat less than good sitemap will usually receive .75 or .50 depending on the problems, and a difficult to follow sitemap may receive .25.



## Comp1710/6780 – Assignment Part 1

### Worth 1 mark

#### **From assignment.html Source Log**

Replace this line with your URL link to this element in your website.

Notes: Provide any notes you may have about this element here.

#### **From Assignment Spec:**

You will need to keep a log. A typical log describes the list of sources you used for your project and the modifications you applied to them. The origin of the source should be given in enough detail to ensure the marker can access the source whenever it is possible (URL, ISBN etc). *Make sure you update the source log as you expand your web site in Parts 2 and 3.*

#### **What we will be looking for...**

A clear source log with complete information and easy to find sources (with links as appropriate) is usually given a full mark. As the source log becomes less complete and/or more difficult to follow, it receives less.



## Comp1710/6780 – Assignment Part 1

**Worth 1 mark**

### **From assignment.html Feedback Form**

Replace this line with your URL link to this element in your website.

Notes: Provide any notes you may have about this element here.

### **From Assignment Spec:**

Create a page which takes feedback from visitors to your site via a form.

### **What we will be looking for:**

For a full mark, we'll be looking for a working feedback form that is easy to use and understand, has a few sensible fields, and has some CSS formatting. As the form becomes sparse or difficult to use, the marks decrease.



## Comp1710/6780 – Assignment Part 1

**Worth 1 mark**

### **Coherence**

We will be looking some sense of flow and unbroken links in your site. This is only part 1 so your site is still young, but you should have some colour scheme, some similar usage of fonts, your subject should be obvious and your pages should work together.

### **What we will be looking for:**

This is where we judge how your website hangs together. We'll look for a well structured website about a clear subject for full marks. If your site is well structured but your subject needs better definition, or it is only reasonably coherent, or it is not coherent but more fragmented, you will get less of a mark. If you have a website at all, you will get .25 of a mark.



## Comp1710/6780 – Assignment Part 1

### **Worth 1 mark**

#### **Quality**

Even in a young site the elements can be visually appealing. We will be looking for appropriate colour schemes and font strategies, harmonious use of space, a few relevant and interesting images if appropriate for your site, etc..

#### **What we will be looking for:**

Visually appealing, with a good amount of content and well-designed with excellent readability will be a full mark, and as the quality goes down from this there will be less of a mark.



## Comp1710/6780 – Assignment Part 1

**Worth 1 mark**

### **Coding**

We will be looking at your html and css coding. We want to see well structured, clear coding with appropriate use of indenting and especially good commenting.

### **What we will be looking for:**

You all know that we have emphasised the need to have well structured code with good comments and indents and white space. That is what we will be looking for, along with a good quantity of code having been written, for full marks.



## Comp1710/6780 – Assignment Part 1

**Worth 1 mark**

### **Creativity**

Although later (assignment part 3) we will be expecting to see good creativity in your website, even as a young site we expect to see some of the reason why you chose the subject you chose. We will look for your use of creativity in presenting the subject (so far) to us.

### **What we will be looking for:**

We will be looking to see that you have given your website some thought, and used your imagination and creativity to create some content that expresses your subject well and interestingly.



## Comp1710/6780 – Assignment Part 1

**Worth 1 mark**

### **Submission**

Just submitting your assignment part 1 is an important achievement. If you have submitted your assignment properly (ie we don't find only a zip file or just your student directory with no index.html) and it is on time you will get this full mark.

### **What we will be looking for:**

If your website is loaded correctly into your Partch space, with at least an index.html and an assignment.html, and the permissions are set properly so that we can see your files, then you'll get this mark.



# Forum Participation (4 marks)

**Worth 4 marks –  
2 posts with maximum  
of 2 marks each**

**From assignment.html   Student Forum Participation**  
**Replace this line with your URL linking to 1st of 3 nominated 'best posts.'**  
**Replace this line with your URL linking to 2nd of 3 nominated 'best posts.'**

**From Assignment Spec:**

Active Participation: Provide URL links to your three best Piazza posts. (2 due now and 1 due with Assignment Pt2 later).

The screenshot shows the Piazza platform interface. At the top, there are navigation icons (back, forward, refresh, home) and a URL bar displaying <https://piazza.com/class/jse71unqdna9r>. Below the URL bar, the word "piazza" is displayed in a large font, followed by "COMP 1710/6780" with a red notification badge showing '1'. To the right are links for "Q & A" and "Resources". The main area shows a list of posts under the heading "PENNED". A post from "Instr" dated "2/27/19" is highlighted, reading: "New lab slot available: Wed 5... 5pm-7pm in Gould 113) Feel free to swap to". Below this, a post from "Monday Study Session" dated "10:04PM" reads: "Hey Everyone, I've done web development for a few years and would like to make a study session for students to learn". Another post from "About the recording of the lecture" dated "11:56AM" reads: "Hello, I recently enrolled in this course and... online but I can't". A third post from "Required experience for this class?" dated "11:28AM" reads: "I'm noticing that a lot of people have started to work on their website assignments with the skills they already hav... An instructor thinks this is a good question". On the right side of the interface, there is a sidebar with a "piazza Silicon Valley Tech Tour" section featuring a photo of a person jumping.



## Human Computer Interaction

### 'Computer'

- Large scale computing systems
- Tablets,
- PCs,
- Smart phone

### Interaction

- Mission: transactions, information searches
- Technique: interface devices (mouse, electronic pencil, fingerprint, hand gestures)
- Mental models...
- ... and much much more!

### Human

- Individuals
- Groups (In-person, virtual, hybrid)



## Human Computer Interaction

HCI focusses on:

- **People** as the overriding element of the HCI nexus
- Enabling tools and techniques
- Create efficient and safe interaction modes
- Understanding the factors that impact upon humans' use of technologies



## Human Computer Interaction

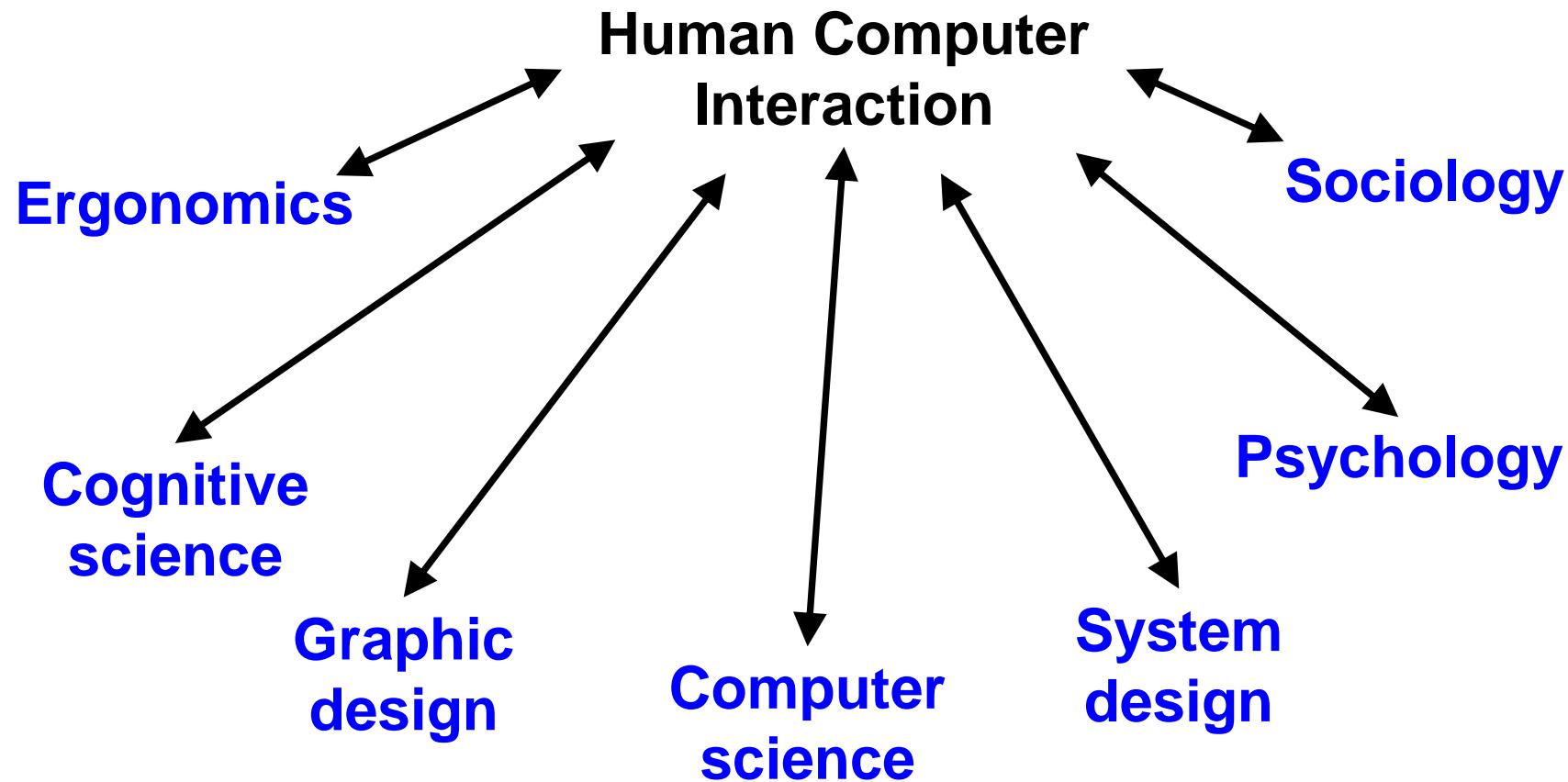
Usability as seen through the HCI lens:

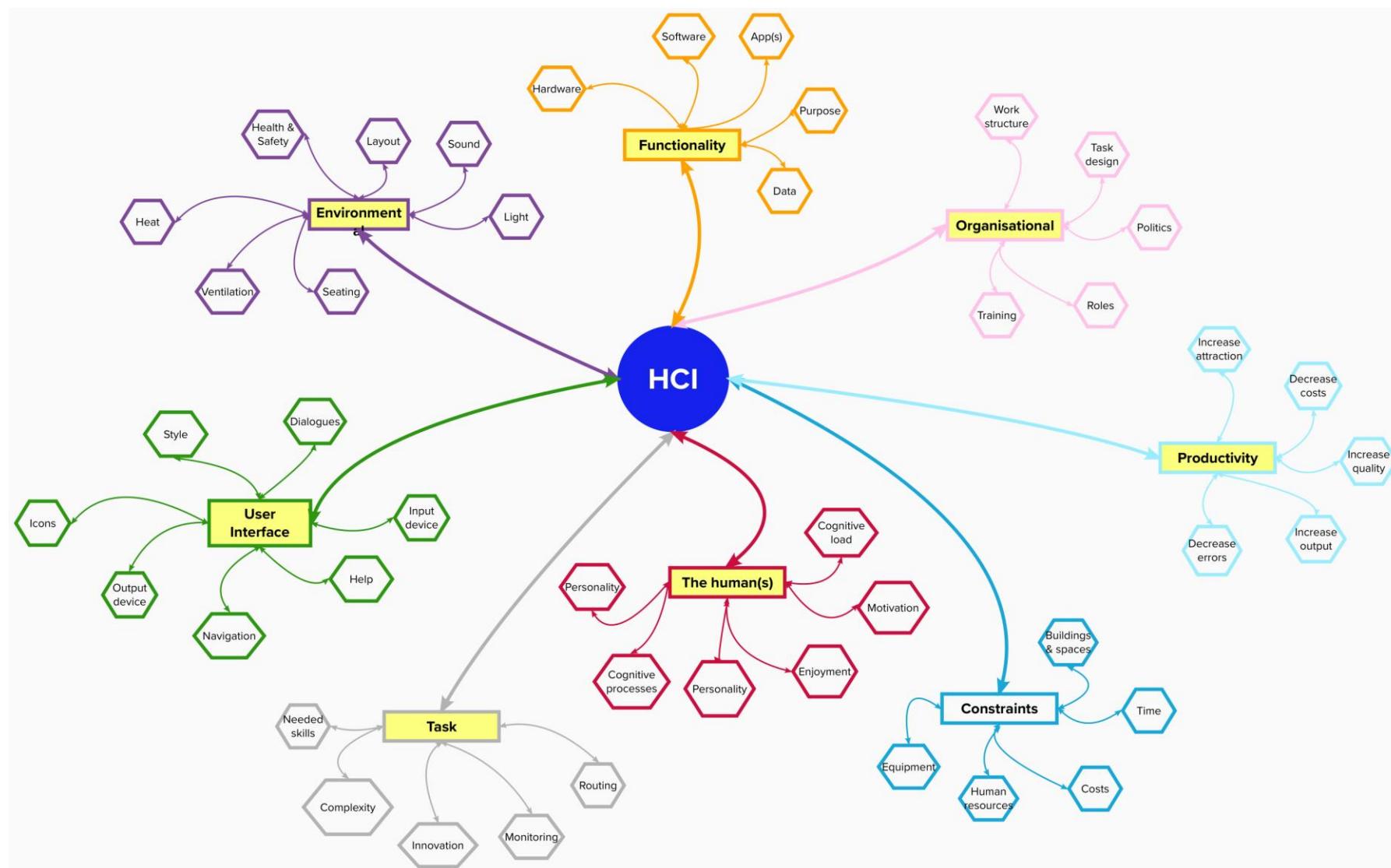
- Easy to learn to use
- Easy to remember how to use
- Effective to use
- Efficient to use
- Safe to use
- Enjoyable to use

If your website doesn't meet these usability criteria, your visitors may be few and seldom.



HCI informed by many disciplines







# Can we learn from other projects?

UNIVERSITY OF LOUISIANA LAFAYETTE

A – Z | Events | Maps | Library | ULink | Moodle |  Future Students • Current Students • Faculty & Staff • Alumni & Donors

About Us	Admissions	Academics	Campus Life	Athletics	Research
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Calendars	Paying for College	Online Programs	Campus Traditions	Athletics Calendar	Funding Opportunities
What Makes Us Unique	First-Time Freshmen	Honors Programs	Fun Around Campus	Athletic Foundation	Centers & Laboratories
Mission, Values, Vision	Re-Entry Students	Colleges & Departments	Student Services	(RCAF)	Research Park
Rankings & Recognition	Transfer Students	Majors & Degrees	Clubs & Organizations	Athletic Network	For Researchers
Strategic Plan	Graduate School	Courses & Schedules	Campus Diversity	Ragin' Cajuns Fans	
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Administration & Offices	International Students	Academic Calendar	Recreational & Club Sports	Buy Gear	
History	Non-Degree Programs	Academic Support Services	Greek Life	Buy Tickets	
Lafayette & Acadia	Veterans	Academic Affairs	Student Union	Ragin' Cajuns Store	
Employment Opportunities		Awards & Recognition			
Contact Information		Continuing Education			

Get the latest information about UL Lafayette's continuing response to the COVID-19 pandemic.

**Treasuring Learning Regin'**

Students at UL Lafayette have the greatest classroom in the world for learning about wetland ecosystems and management—Cypress Lake.

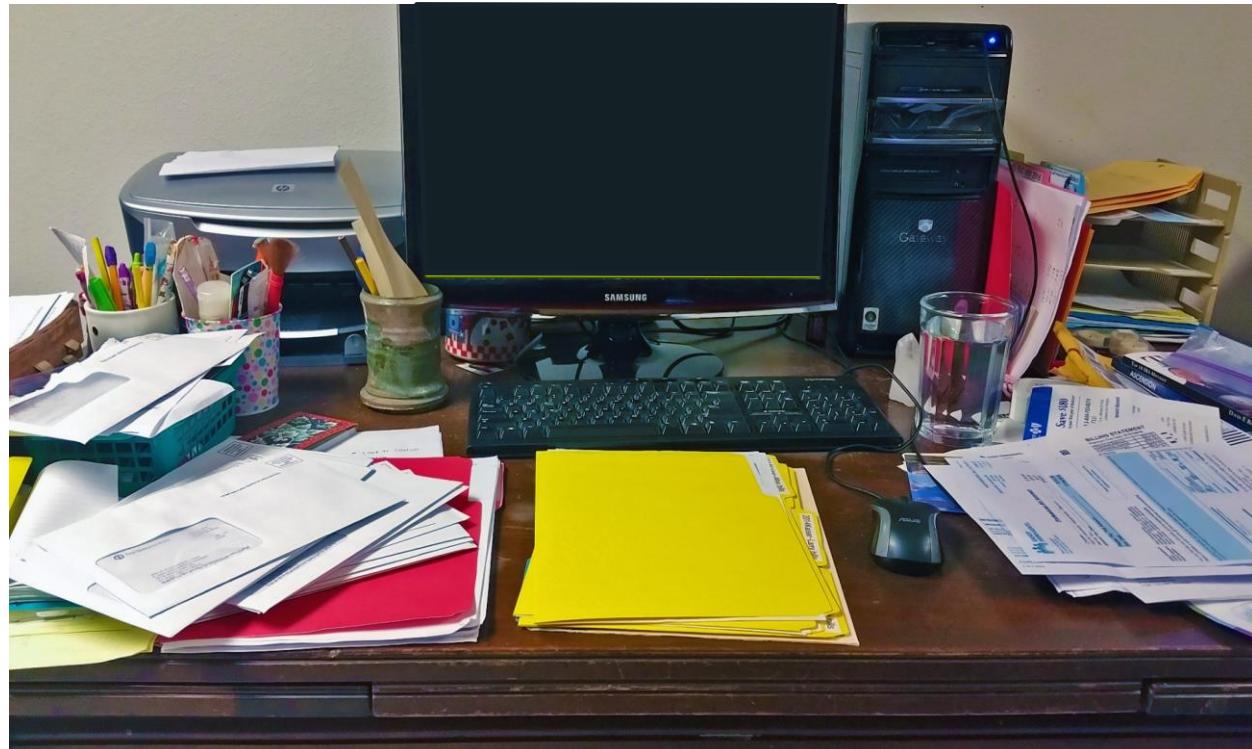
By observing, examining, and engaging with this environment, students understand the balance of nature and what humans can do to protect it—and help it thrive.

66  
dropdown  
menu  
items!



## Learning from example:

Why do  
computer mice  
use RF  
instead of IR?



Flash Alexander, Public Domain Pictures.net



# Learning from example

Think of the worst website that you have used recently.  
Ask yourself:

- Why was my experience of that website so bad?
- How did I react?

Use the zoom chat to type in a short comment to one or both of these questions.

[We will look at the zoom chat for a few minutes]



# Worst website

Some common reactions:

- Why was my experience of that website so bad?
  - Could not find what I wanted/do what I wanted to do
  - The actions were too complicated
  - Too much unnecessary or irrelevant information
  - The website did not make sense to me
- How did I react?
  - Frustration, anger, ...
  - Laughter at the website/at the web designer
  - Destructive criticism



# Worst website

Possible reasons:

- Why was my experience of that website so bad?
  - Multiple target audiences (for example, ANU websites serve students, who consume teaching products, academics, who create those products and administrators, who manage the campus)
  - Web designer did not understand what the users want
  - Design focuses on internal workings (“prod site”) instead of how the users want to see the processes
  - Website not evaluated with real data or real users [Wattle’editing on’ example]
  - Nobody with any authority cares about the quality of the website, or there are not enough resources to maintain that quality.



# Worst website

- How did I react?
  - It is easy to have strong personal reactions to a bad website, but those reactions are about you.  
Interactive design (websites, software, ...) is never about you, the designer/developer; it is always about the intended users.
  - Therefore, your reaction needs to become:  
What might be the cause of these problems and, if I were the designer/developer, how would I fix them?
  - This leads to the concept of “critique” or “constructive criticism”.  
Just imagine if you were the developer and someone was directing harsh judgements at you.
  - “Soft” ethical behaviour. You are dealing with humans – colleagues, people you study or interview for requirements, participants in evaluations of the system you are developing



# Requirements

**Verbal and written requirements from the client and users are just the start of the conversation because:**

Users sometimes don't know what they want until they see what they don't want.

What they say and what they think may not be the same thing.

What they say and what you understand may not be the same thing.

There may be a lot of assumptions that are not communicated.

**To address this:**

- Clarify everything you don't understand.
- Understand the content
- Create sketches and/or prototypes of what you propose – it is easier to change a drawing than a complex aspect of the website!



# Design principles

A design principle is a rule or guide that you plan to use in your website development. Design principles can apply to **function** and to **appearance**. There are many standard design principles. Don't forget they should be tailored to suit your project!



## Function

- Describe the design situation
- State what you will do
- State why you will do it
- Any variations to accommodate anomalies

## Appearance

- Balance
- Movement
- Contrast
- Pattern
- Consistency
- Emphasis



# Evaluating your website

*'Evaluation' in its broadest sense refers to any systematic process to judge merit, worth or significance by combining evidence and values.*

You are only one person, with your own pre-existing assumptions.

To learn if your website works for others, you need to evaluate it.

freshspectrum.com

- When you gather requirements you can summarise what you think the requirements are and present them back to your target users, using words, pictures, storyboards, mockups, early-stage prototypes.
- You can build simple prototypes of parts of those requirements and let your target users experience what they had said they wanted.

I can't tell you  
how valuable  
your program is

I can



Researcher



Evaluator



# Evaluating your website

You are only one person, with your own pre-existing assumptions.  
To learn if your website works for others, you need to evaluate it.

- When you have implemented important parts of the system you can isolate them and make a working version that your target users can evaluate, preferably with real data.
- When you have a version of your system that can do useful work, you can arrange for selected users to work with it in their workplace
- When you release version 1.0 of your system you can track its use over the following months.

[freshspectrum.com](http://freshspectrum.com)

I can't tell you  
how valuable  
your program is



Researcher



Evaluator

I can

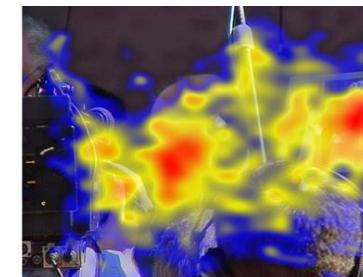


# Advanced HCI

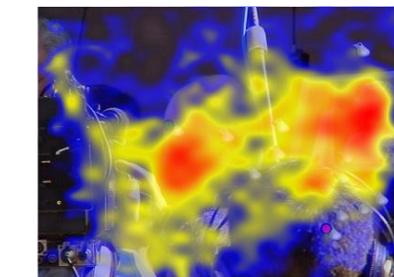
Remember this?



**A**



**B**



**C**

Key: Red - most viewed, yellow - less viewed, blue - least viewed.

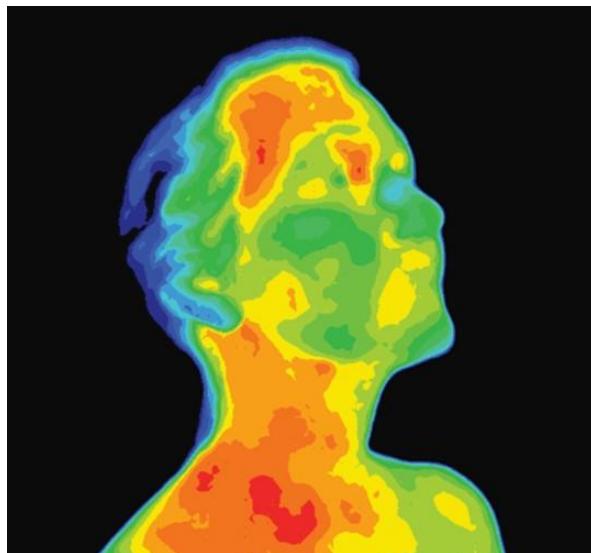
While we can learn a lot from people's conscious expression of their thoughts, we can also learn from their non-conscious expressions. These non-conscious expressions are captured through physiological signal tracking

In this case, the physiological signals being captured are eye movements and fixations, called eye-gaze tracking. But wait there's more!



# Advanced HCI

While we can learn a lot from people's conscious expression of their thoughts, we can also learn from their non-conscious expressions. These non-conscious expressions are captured through physiological signal tracking.



Thermal variations



Heartbeat  
Blood volume pulse  
Skin conductance



## Last but definitely not least: 'end-to-end experience'

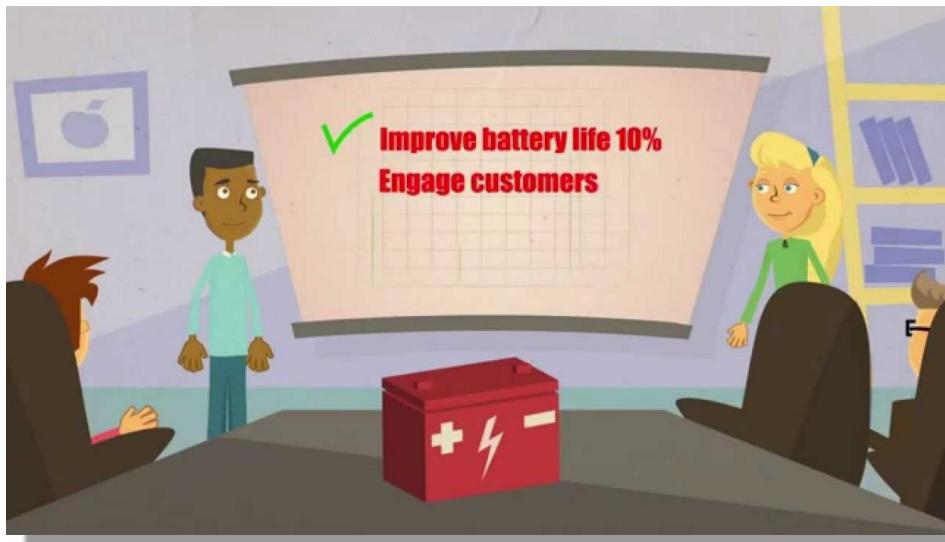


© marketoonist.com



### Plan end-to-end **experiences** NOT features

Engineers and software developers think in features but customers/clients and users do not. Users/customers/clients don't care about technology. All they want is a smooth seamless solution.



**End-to-end experience is what the customer sees, feels, and does when he or she uses your product, device, or service in a real-life situation - from the very beginning to the very end.**



As with today, tomorrow's lecture will be fully live online.

Tuesday lecture (tomorrow) will be by David Flores-Condezo. David will be speaking on the topic of web dev tools.

The Zoom link will be via

<https://anu.zoom.us/j/85161222556?pwd=eFNETk5rNG10eGk0SIQ1Z0xmSjhYQT09>

Meeting ID: 851 6122 2556

Password: 509562



## Also note:

MOOC Wk 5 is available; quizlets due by Sunday 28<sup>th</sup> August 11:55pm (23:55) AEST

Finish and submit your Assignment Part1 – due by Monday 29<sup>nd</sup> August 11:00am (11:00) AEST



# COMP1710/6780

Web Development and Design

**Video editing and storyboarding**



**COMP6780 Class Representative:**

**Ben Cusack**

and don't forget your

**COMP1710 Class Representatives** are:

**Brinda Murlikrishna**

and

**Ishi Patel**

Email links to your class representatives are on the front page of Wattle



## From assignment specifications:

In the second part of your assignment you will add content and possibly enhance your design.

### **2.1 Provide an Image Map (2.5 marks)**

Create a page which displays one or more image maps. Make sure that there are at least 3 links, with proper labels in your image map.

### **2.2 Provide a Photo Gallery (2.5 marks)**

Take or select at least 10 relevant photographs. Convert the photographs to \*.png format. Use a template or a suitable tool like Galerie to present them with appropriate titles and any comments you wish to make.

Your photo gallery should have the same look and feel as the rest of the web site. The easiest way to achieve this is to ensure it uses the same CSS. Or it may be appropriate for you to link to content stored elsewhere on the internet.

placed here for accessibility; use with Wattle materials



From assignment specifications:

## **2.3 & 2.4 Videos OR Javascript (5.0 marks across two parts)**

For 2.3 and 2.4, you can choose either to develop a storyboard (2.3a) and a video (2.4a), or write some javascript to add interactivity (2.3b and 2.4b).

Please note that you **WILL NOT** get extra marks if you do both so please indicate which components you would like us to assess.



## Javascript modules:

Xuanying Zhu

Note: Most of you will do the video element

Javascript option was added as a result of requests in previous years from (mainly) COMP6780 students.

However, if you aren't familiar with javascript, then I would suggest you look at it now, and consider waiting until we cover it in lectures later in the semester and include it if you want in Assignment Pt3.

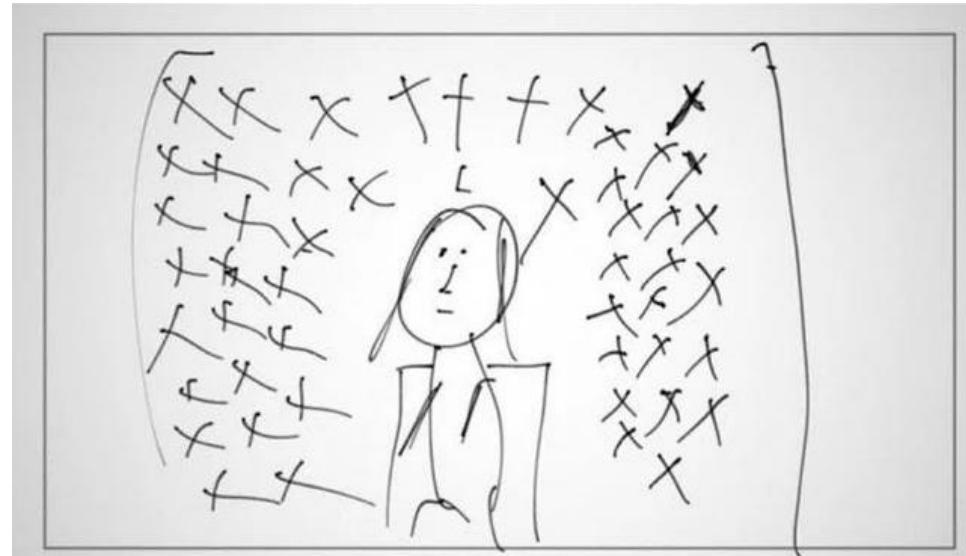
You do not have to do javascript at all in this course if you don't wish to.



## 2.3a Develop a Storyboard (for your video)

Create a storyboard for your video as a comic (see the relevant lab). The key thing is to present your plan of how you intend your video (see 3.1) to look after editing.

The comic and the video (see next task) should represent the same story. It should be possible to understand the video by reading the comic, and understand the comic by watching the video.



Movie: *Knives Out*  
written by Rian Johnson



## 2.4a Make an edited, inline video

Shoot (or collect) and edit a video and present it on the website. The video (i.e. about your subject, its the same video) **should contain at least one title and one transition**. It will **be inlined within a web page**. Use your creativity and originality to do something interesting, useful or just funny.

For video cameras and especially digital still cameras with movie mode, don't forget to use a tripod or video stabilisation. Keep in mind that video cameras are not the only source of video. For example, many modern digital cameras in movie mode will produce video recording which are fine for web delivery. Then there is video capture from a running program, and so on.

Last year almost everyone had access to a video camera or digital still camera with movie mode from family / friends / church / work / etc. If you end up unable to find someone with one, please e-mail me and I will try and help.

I suggest **5 minutes absolute max for the final video**. You should also provide a few words on your site describing what the video is about and/or trying to achieve.



## 2.3a Develop a Storyboard (for your video)

Create a storyboard for your video as a comic (see the relevant lab). The key thing is to present your plan of how you intend your video (see 3.1) to look after editing.

The comic and the video (see next task) should represent the same story. It should be possible to understand the video by reading the comic, and understand the comic by watching the video.



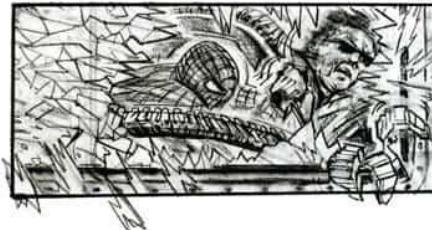
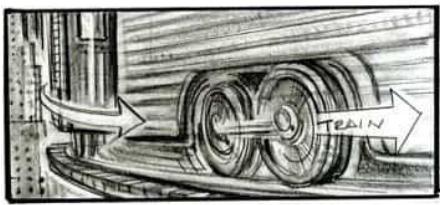
Movie: *Knives Out*  
written by Rian Johnson

### What is storyboarding?

Definition from Cambridge Dictionary: “*a series of drawings or images showing the planned order of images.*”

### Why storyboard?

- Vehicle for your own creative ideas. Makes you think about the stories you want to tell, not just rehashing what others have done/are doing.
- While it **may** be optional in a very small project, it is **NOT** optional in anything larger.



Spiderman 2



The Sound of Music





## Why would storyboarding be important for video projects?

Improves narrative flow and storytelling

Decreases costs

Helps avoid failure of project

Easy to refine ideas

Facilitates organisation

Enables resourcing and supply

Decreases time needed

Identify and solve problems in advance



## What tools can I use to create a storyboard?



Pencil  
and  
Paper

Specialised  
software

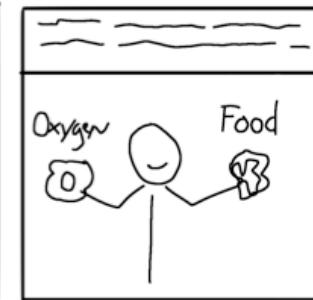
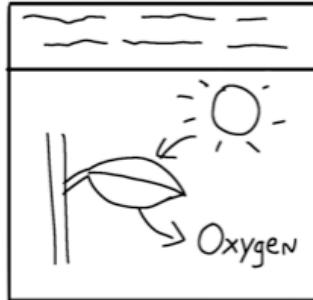
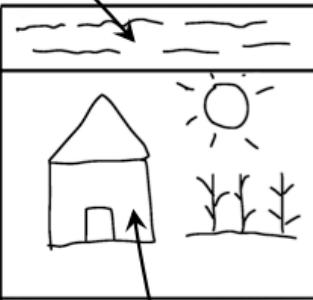
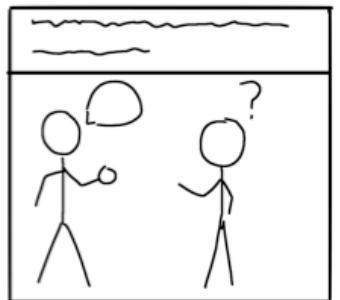


Word (maybe using a table)

Powerpoint (maybe using clipart)



Script



If you can't draw (that's most of us!):

Basic  
Sketches

Don't worry!

Text-based

Ref	Text/script	Interaction/list items	Dev notes
T1S1	<p><b>Talk bubble 1:</b> In this session we're looking at three topics.</p> <p><b>Talk bubble 2:</b> We'll start with Hygiene. Let's head to the staff room and talk to Suzie about personal grooming. Click the forward arrow.</p>	<p>Menu items:</p> <ul style="list-style-type: none"><li>• Hygiene</li><li>• Cleaning</li><li>• Pests and waste</li></ul>	<p>Type: Animated slide with nav bar</p> <p>Images: Commercial kitchen background</p> <p>Iso head chef pointing to right</p> <p>Icon set for menu bullets and nav bar</p> <p>Animations:</p> <ol style="list-style-type: none"><li>1. Display head chef on left</li><li>2. Slide in menu from top, position screen right, also slide in text "On the menu" from right</li><li>3. Fade in Talk bubble 1</li><li>4. Display each menu item sequentially and its icon</li></ol>



People have short attention spans for (slow-moving) entertainment.

Video editing allows you to:

- Tell your story the way you want
- Manage/compress action and important elements of your story
- Shorten time needed to tell the story

But be careful about maintaining integrity and continuity in your storytelling.



Main lecture on video editing is on Wattle:

## **Video Glue of Editing video lecture:**

Ché Baker (*Blue World Order*, The Hobbit – an unexpected journey, music videos)

Introduced by Prof Tom Gedeon

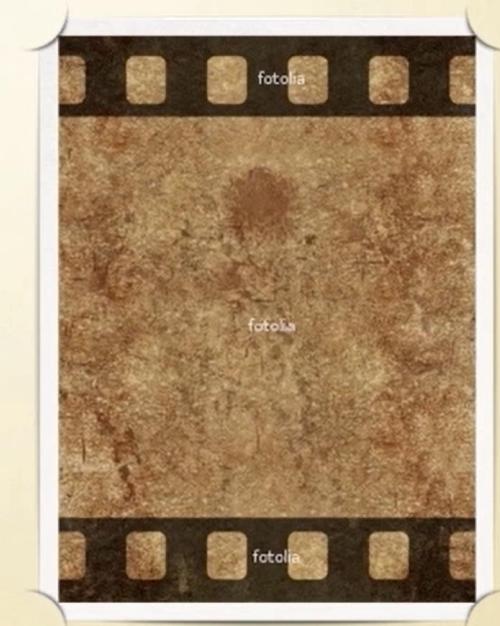
Note especially the ‘fake news’ about 6 minutes into the lecture



Video editing involves:

## EDITING INVOLVES... (AN EDITOR NEEDS TO

- Logging and capturing
- Cuts
- Dissolves
- Other transitions
- Effects
- Compositing





# Determining Video Length

YouTube AU

Search



How to Tie Your Shoes

Length: 1:05

Tip: Look online for videos on your topic and check how long they are.

How long should online videos be?

A YouTube video thumbnail featuring a portrait of Jane Austen and text related to a close reading analysis of her novel Sense and Sensibility. The text includes "CLOSE READING with Dr Octavia Cox" and "#DrOctaviaCox #UnfamiliarReadings #CloseReadingClassicLiterature". The video player interface shows a timestamp of 0:05 / 14:26.

#DrOctaviaCox #UnfamiliarReadings #CloseReadingClassicLiterature

Jane Austen novel SENSE AND SENSIBILITY analysis | Elinor and Marianne Dashwood (Engagements & Hair)

Length: 14:26



## What tools can I use to edit video?



<https://www.openshot.org/download/>



Lots of others!

<https://www.apple.com/au/imovie/>



## What tools can I use to edit video?

The image shows a screenshot of the Windows Photo app. On the left, there is a large thumbnail of a black cockatoo perched on a branch with green leaves and orange flowers. To the right of the thumbnail, the app's interface includes a title bar "Photos", a navigation bar with "Photos" and a back arrow, and a message "Access this album from the cloud on any device." Below the title bar is a "Save" button. The main area is titled "Sleuths" with a camera icon, and it says "Created on 11/01/2021 - 28 items". Above the storyboard, there is a "Project library" section showing a grid of smaller thumbnail images. To the right of the storyboard, there is a preview window showing a frame from a video of the same bird in the tree. Below the storyboard, there is a "Storyboard" section with five frames, each with a duration of 2.0 seconds. A yellow arrow points from the large thumbnail on the left towards the storyboard on the right. In the bottom right corner of the main image, there is a yellow circle around a "Edit" button.

The image shows a screenshot of a video editor application. At the top, there is a toolbar with icons for "Photos", "Video Editor", "Sleuths", and a pencil icon. Below the toolbar is a "Project library" section showing a grid of small thumbnail images. To the right of the project library is a preview window showing a frame from a video of a bird in a tree. Below the preview window is a "Storyboard" section with five frames, each labeled with a duration of 2.0 seconds. A yellow arrow points from the storyboard towards the "Edit" button in the bottom right corner of the main image. The bottom right corner of the main image also features a yellow circle around the "Edit" button.



What are video formats for?

Delivering the maximum definition for the lowest size.

You can think of video codecs as being of two types:  
acquisition and delivery

Acquisition – highest definition at acceptable speed/storage to capture  
Delivery – best compression without losing too much detail

Some common formats: **MP4** **MOV** **WMV** **FLV** **AVI** **AVCHD** **WebM** **MKV**



## MP4

Probably most commonly used video file format

Most players play mp4 files easily

Developed by Apple

Delivers high-quality video with relatively smaller size

Lossless

Supported by YouTube, Facebook etc.



## MOV

Also developed by Apple

Format for Quicktime video player

High quality

Costly in size / larger than mp4 files

Playable on Apples and Windows via Quicktime and Quicktime for Windows respectively.



## AVI

One of the oldest video file formats still used.

Developed by Microsoft in 1992

AVI files support a wide range codecs (coder/decoders)

Larger in size

Not a good choice for internet, but a great choice for personal video storage due to high quality of video.



# Quick word about accessibility



Hearing



Vision



Cognitive  
processing



Manual  
dexterity



Speech  
commands

As W3C notes,  
“Accessible media is **essential for people with disabilities**, and is **useful for everyone**.”

Tuesday lecture (tomorrow) will be in person by David Flores-Condezo. David will be giving the second half of his lecture on the topic of web dev tools.

The Zoom link will be via

<https://anu.zoom.us/j/85161222556?pwd=eFNETk5rNG10eGk0SIQ1Z0xmSjhYQT09>

Meeting ID: 851 6122 2556

Password: 509562



## Also note:

MOOC Wk 6 is available; quizlets due by Sunday 4<sup>th</sup> September 11:55pm (23:55) AEST

Watch the Video glue of editing video by Ché Baker (in Wattle Week 6)

# WEB DEVELOPMENT TOOLS IN THE INDUSTRY

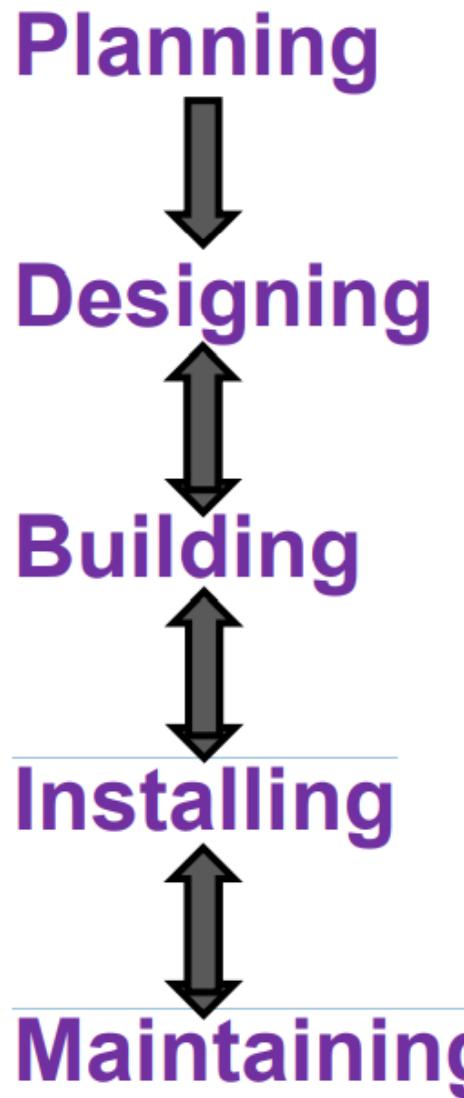




# ABOUT ME

- **David Flores-Condezo**
- Chief tutor and a lecturer of COMP1710/6780
- 6+ Years experience developing website in the public and private sector.
- **Interests:** Human Computer Interaction (HCI), Web content delivery.
- **Email:** [David.flores-condezo@anu.edu.au](mailto:David.flores-condezo@anu.edu.au)

# WEB DEVELOPMENT LIFECYCLE



RECAP WEEKS 2 - 4



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# CMS, CRM, INTRANET, SAAS, PAAS AND OTHER BUZZ WORDS



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# CONTENT MANAGEMENT SYSTEMS (CMS)

- Foundation of an industry standard website
- CMS is a software application that allows users to collaborate in the creation, editing, and production of digital content: web pages, blog posts, etc.
- Facilitate content editing
- Not just HTML and CSS, variety of different technologies



# POPULAR CMS



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# POPULAR CMS

- Wordpress
- Drupal
- Wix
- Squiz
- Adobe Experience and more

---

# SOFTWARE AS A SERVICE (SASS)

- Software as a service (or SaaS) is a way of delivering applications over the Internet—as a service. Instead of installing and maintaining software, you simply access it via the Internet, freeing yourself from complex software and hardware management.
- SaaS applications are sometimes called Web-based software, on-demand software, or hosted software. Whatever the name, SaaS applications run on a SaaS provider's servers. The provider manages access to the application, including security, availability, and performance.

---

# PLATFORM AS A SERVICE (PaaS)

- In the Platform-as-a-Service (PaaS) model, developers essentially rent everything they need to build an application, relying on a cloud provider for development tools, infrastructure, and operating systems.
- PaaS vastly simplifies web application development; from the developer's perspective, all backend management takes place behind the scenes.

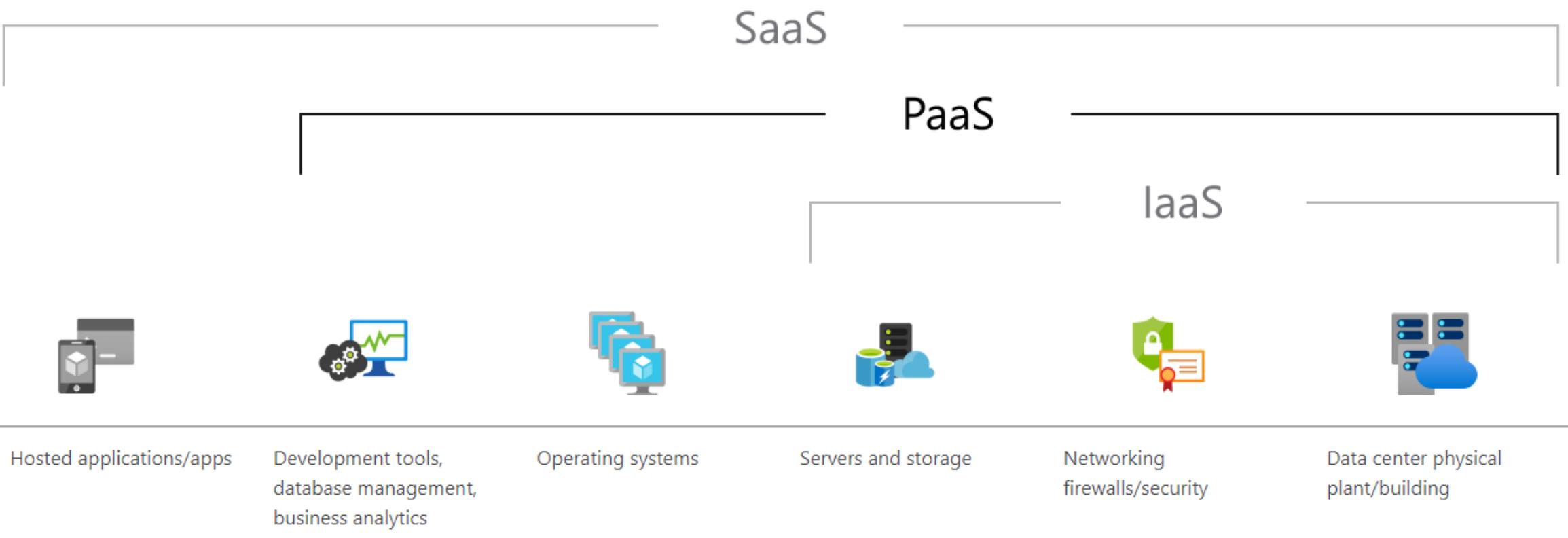


Image from Microsoft Azure dictionary



# SAAS VS PaaS

- If a SaaS customer is like someone renting a house, then a PaaS customer is like someone renting all the heavy equipment and power tools necessary to rapidly build a house, if the tools and equipment were continually maintained and repaired by their owner. -- *Cloudflare*



# HOSTING

- Where your website lives, where all the files of your website are located.
- PARTCH is a hosting platform

# HOSTING



Google Cloud

platform.sh 



Microsoft  
Azure

# Acquia



GoDaddy™



# DEVELOPING FOR CMS





# Welcome to the world's most popular website builder.

43% of the web is built on WordPress. More bloggers, small businesses, and Fortune 500 companies use WordPress than all other options combined. Join the millions of people that call WordPress.com home.

[Start your website](#)

The image displays three mobile devices side-by-side, each showing a different website built on WordPress:

- Left Device:** Shows a website for "KELSEY ART MONTGOMERY". A woman is pointing at a colorful mural on a building. The text "5 Story NYC Mural" is visible.
- Middle Device:** Shows a podcast episode page for "RESUMIDO" by Bruno Natal. The title is "#43 Transparente". It features a photo of a man with a beard speaking into a microphone. Below the title, there is a summary of the episode content.
- Right Device:** Shows a news article from "ALIS". The headline is "Making Room for Variation" by Yesenia Perez-Cruz. The date "DECEMBER 12, 2019" is also visible.

A screenshot of a web browser showing the Drupal.org download page. The URL in the address bar is <https://www.drupal.org/download>. The page features a blue header with the Drupal logo and navigation links: Why Drupal?, Build, Solutions, Services, Community, Resources, Give, Events, Try Drupal, a search icon, and a user profile icon. A green banner at the top right encourages registration for DrupalCon Prague. Below the banner, a large blue heading reads: "Drupal allows you to create a unique space in a world of cookie-cutter solutions". A section titled "Get Drupal with Composer" provides instructions and command-line examples for using Composer to install Drupal.

Drupal allows you to create a unique  
space in a world of cookie-cutter  
solutions

### Get Drupal with Composer

You need [php](#) and [composer](#). Run these two commands:

```
composer create-project drupal/recommended-project drupal
cd drupal && php -d memory_limit=256M web/core/scripts/drupal quick-start demo_umami
```

More options in [the quickstart docs](#), and on [how to start your site using composer](#).

#### Want to download Drupal without Composer?

Composer is the recommended method for using Drupal, but you can download Drupal directly and use it with Composer later.

[Download Drupal | zip](#)

[Download Drupal | tar.gz](#)

[read release notes](#)

Looking for Drupal hosting?

[Try a hosted demo](#)

[Explore Hosting](#)



DRUPAL





# THEMES

- The look and feel of your website
- Not just CSS
- Design
- Content Layout
- Sometimes Content specifics (PDFS, MEDIA, ETC..)



# MODULES

- The functionality of your website
- Can choose from existing or create your own
- Javascript, Python, PHP...

---

# WORKFLOWS AND PERMISSIONS

- Different types users
- Multiple permissions to set
- Not every user needs access to everything



**DEPLOYMENT\***





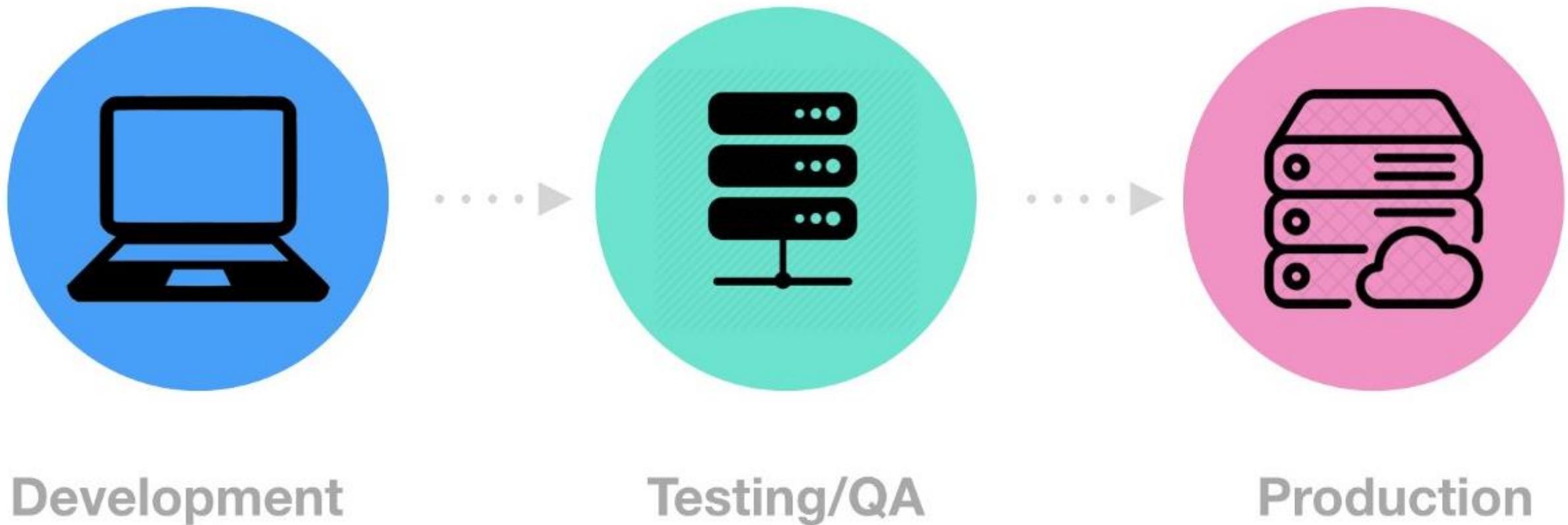
**WAS UPLOADING TO PARTCH COMPLICATED?**





IT'S COMPLICATED

# ENVIRONMENTS

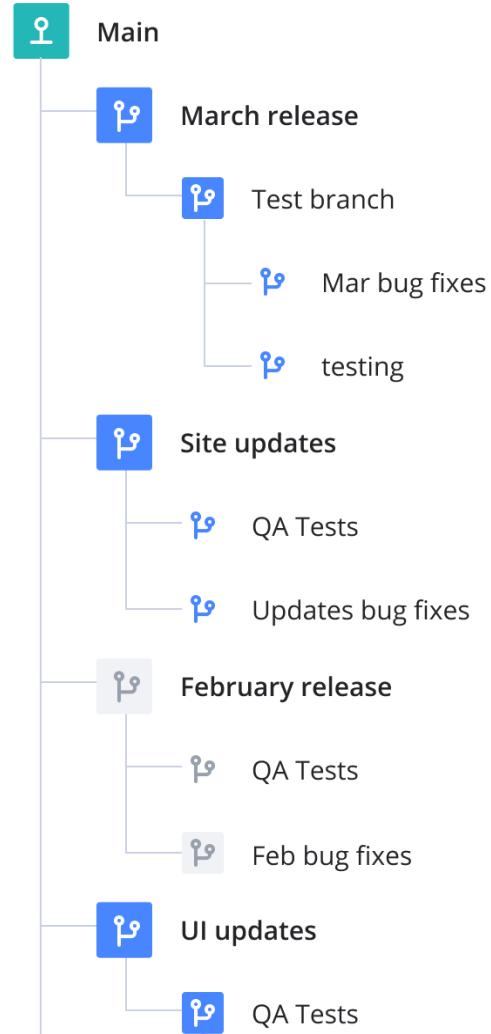


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# ENVIRONMENTS + CMS

- Scalable
- Multiple databases
- Easy to get out of sync
- Needs management

## Environments



Search

Filter



- |  |             |
|--|-------------|
|  | 5 mins ago  |
|  | 1 day ago   |
|  | 5 mins ago  |
|  | 3 days ago  |
|  | 3 days ago  |
|  | 2 days ago  |
|  | 10 mins ago |
|  | 1 day ago   |
|  | 3 days ago  |
|  | 1 hr ago    |
|  | 2 days ago  |
|  | 4 days ago  |
|  | 10 mins ago |

# ENVIRONMENTS

+

# CMS EXAMPLE

# VERSION CONTROL

# VERSION CONTROL

- GIT VERSION CONTROL
- Accountability
- Reverting to previous versions
- Commit history
- Collaboration



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# ENVIRONMENTS + CMS + VERSION CONTROL

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# ENVIRONMENTS + CMS + VERSION CONTROL



# CASE STUDY: AUSTRALIAN WAR MEMORIAL

The screenshot shows the homepage of the Australian War Memorial's website. At the top right, there is a navigation bar with links for 'COLLECTION & RECORDS', 'VISIT', 'LEARN', 'COMMEMORATE', and 'SHOP'. Below the navigation is a large photograph of two young children standing in front of a wall covered in red poppies. To the left of the main content area is a sidebar with the 'AUSTRALIAN WAR MEMORIAL' logo, a 'VISIT' button, and a 'IN THIS SECTION' dropdown menu.

**Entry**  
Free entry, [book your ticket](#)

**Opening hours**  
**Galleries:** 10 am to 4 pm daily (closed Christmas Day)  
**Last Post Ceremony:** Entry at 4:20 pm Ceremony commences at 4:45 pm

**Where to find us**  
Access to the Memorial Entrance and Visitor Carpark is via:  
Fairbairn Ave  
Campbell ACT 2612  
Australia

 **VISIT THE MEMORIAL**  
Plan your visit  
All visitors require a free timed ticket to enter the Memorial Galleries and attend the Last Post Ceremony. Visitors are advised to book their free ticket in advance to guarantee entry.

---

# CASE STUDY: AUSTRALIAN WAR MEMORIAL

- Redevelopment
- Discovery
- Requirements
- Design
- Development
- UAT and Remediation
- Deployment
- Training and Documentation

# RECAP

- Importance of CMS
- SAAS and PAAS
- Developing in a CMS
- Hosting
- Deployment

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# Q&A





# Web Design Principles and Problems

**... and more about accessibility**



# Outcomes of Assignment Pt 1

## Assignment Pt 1 results

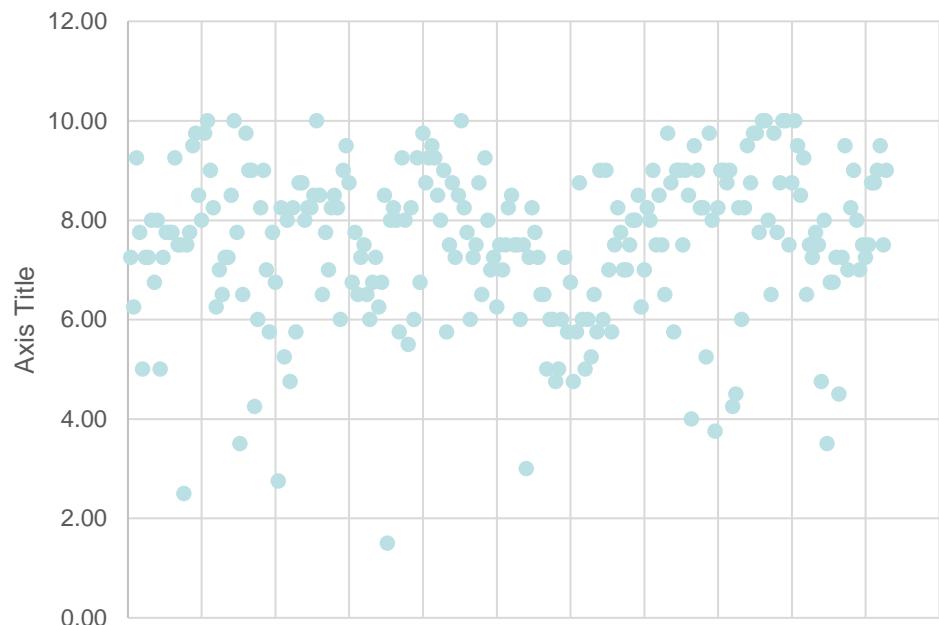
Assignment Pt 1 mean: 7.53

Assignment Pt 1 stdev: 1.56



Forum post 1 average: 1.44  
Forum post 2 average: 1.29

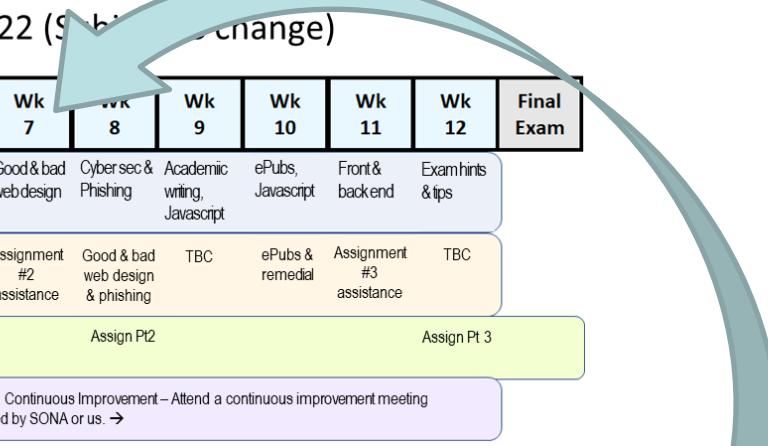
Student marks Assignment Pt 1





## COMP1710/6780 Roadmap for Semester 2 2022 (Subject to change)

	Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Teaching Break	Teaching Break	Wk 7	Wk 8	Wk 9	Wk 10	Wk 11	Wk 12	Final Exam
Lectures	Intro to Course & design	Intro to web dev Content types, learning styles, perspective taking	Image credibility, HCI, Web dev in the industry	Video editing, Web dev tools	Good & bad web design	Cyber sec & Phishing	Academic writing, Javascript	ePubs, Javascript	Front & backend	Exam hints & tips					
MOOC/labs	MOOC1&2 Intro to labs & tools	MOOC3 & Creating HTML files	MOOC4 & HTML forms, source logs	MOOC5	MOOC6 & video editing	Assignment #2 assistance	Good & bad web design & phishing	TBC	ePubs & remedial	Assignment #3 assistance	TBC				
Assessment				Assign Pt 1			Assign Pt2			Assign Pt 3					
Others															



Continuous Improvement – Attend a continuous improvement meeting

Experiment Participation – Attend experiments totalling 2 hours offered by SONA or us. →

Week and date	Subjects/Labs	Week and date	Subjects/Labs
Wk1 - 25/7/22	Introduction to course, MOOC1 available, no labs	12/9/22	Non-teaching week
Wk2 - 1/8/22	Introduction to webdev/design, MOOC2	Wk 7 - 19/9/22	Good and Bad web design, Assign pt2 assistance labs
Wk3 - 8/8/22	Content types and roles, User Reqs, Perspective taking, MOOC3	Wk 8 - 26/9/22	Cyber security and phishing, Good/bad web design + phishing lab, also CI
Wk4 - 15/8/22	Image/info credibility, User Reqs, Perspective taking, MOOC4	Wk 9 - 3/10/22	Report writing, Javascript, No labs?
Wk5 - 22/8/22	Human Computer Interaction, Webdev tools MOOC5	Wk 10 - 10/10/22	ePublications, Javascript, Remedial labs and ePubs
Wk6 - 29/8/22	Video editing, Webdev tools, MOOC6	Wk 11 - 17/10/22	Frontend and Backend, Assignpt3 assistance labs
5/9/22	Non-teaching week	Wk 12 - 24/10/22	Final exam tips



# Where are we up to?

Week and date	Subjects/Labs	Week and date	Subjects/Labs
Wk1 - 25/7/22	Introduction to course, MOOC1 available, no labs	12/9/22	Non-teaching week
Wk2 - 1/8/22	Introduction to webdev/design, MOOC2	Wk 7 - 19/9/22	Design and accessibility, Assign pt2 assistance labs
Wk3 - 8/8/22	Content types and roles, User Reqs, Perspective taking, MOOC3	Wk 8 - 26/9/22	Cyber security and phishing, Good/bad web design + phishing lab, also CI
Wk4 - 15/8/22	Image/info credibility, User Reqs, Perspective taking, MOOC4	Wk 9 - 3/10/22	Report writing, Javascript, No tabs?
Wk5 - 22/8/22	Human Computer Interaction, Webdev tools MOOC5	Wk 10 - 10/10/22	ePublications, Javascript, Remedial labs and ePubs
Wk6 - 29/8/22	Video editing, Webdev tools, MOOC6	Wk 11 - 17/10/22	Frontend and Backend, Assignpt3 assistance labs
5/9/22	Non-teaching week	Wk 12 - 24/10/22	Final exam tips

**Wk9**  
**Australian Labour Day**  
**Public holiday**



**25% / 100%**

Assessment items behind us, assessment items in front of us

Task		%	Due Date (AEST/AEDT)	Marks/Feedback Returned
<b>Assignment (30%) INDIVIDUAL</b>				
Section 0: Topic Submission	Preferred topic	0%	End of Week 2 (Friday 12 August 5pm but there is leeway)	End of Week 4 (extended deadline to 21 August) Note that 'no news is good news'; we will only contact students with problematic topics
Assignment 1: Website Submission	5 Webpages minimum	10%	Assignment Pt1 Due Monday 29 August 11:00am AEST	Second week of teaching break
Assignment 2: Website Submission	2 Webpages minimum	10%	Assignment Pt2 Due Monday 26 September 11:00am AEST	Week 9
Assignment 3: Website Submission	Complete Website	10%	Assignment Pt3 Due Monday 24 October 11:00am AEDT	Within fortnight following the end of course
<b>Communication and Participation + Report (25%) INDIVIDUAL</b>				
Piazza forum posting + CI) contribution	<b>4/6</b>	6% posts; 4% CI	Posts as for Assign 1 and 2; CI as completed in 2 <sup>nd</sup> half semester	Posts as for Assign 1 and 2; CI as completed in 2 <sup>nd</sup> half semester
Report		15%	Report due Sunday 30/10/2022 AEDT	Within fortnight following the end of course
<b>Examined Material (45%) INDIVIDUAL</b>				
Online Quizlets	<b>11/15</b>	15%	End of every week	On submission
Final Exam		30%		



## Aesthetics



## Usability

“...aesthetics refers to the emotional components”

“The usability of an interface refers to its capacity to support task completion.”

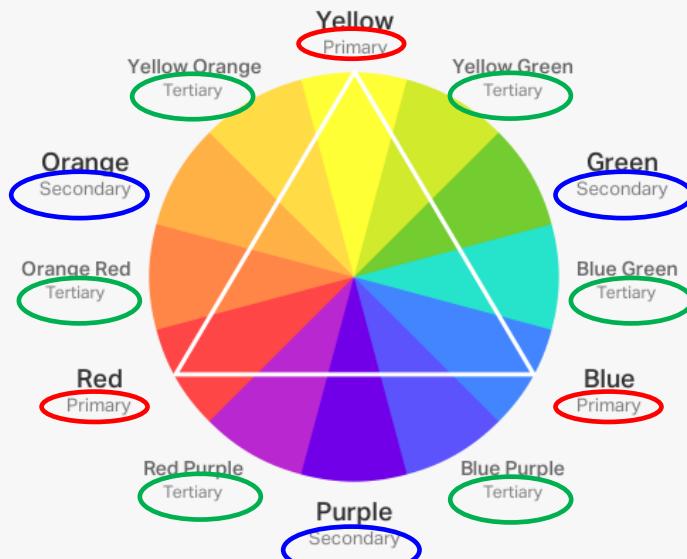
“... by understanding how design factors affect users, it is possible to build systems targeted to certain effects and outcomes.”

**Note:** We discussed design and usability in detail in Weeks 3&4



## Colour has its own theory!





## Primary colours

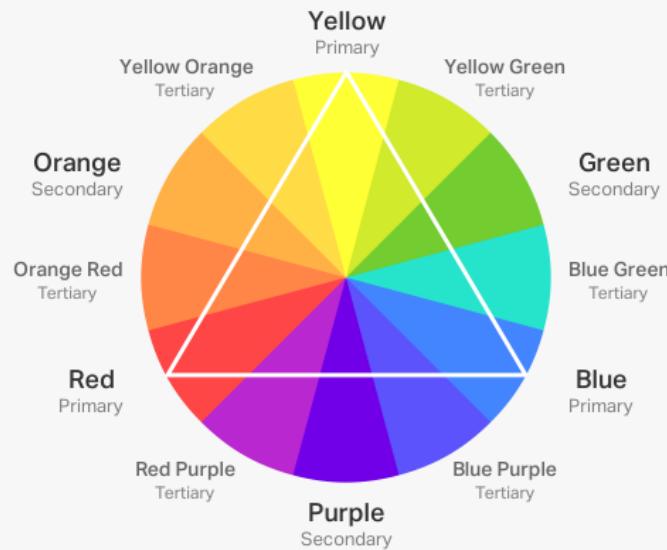
There are three primary colours: yellow, red and blue (though we tend to seem them as magenta, cyan and yellow)

## Secondary colours

When we merge the primary colours we get secondary colours: orange, purple, green

## Tertiary colours

When we merge the primary colours we get secondary colours: orange, purple, green



Complementary is great for high contrast  
Analogous is great for continuous colour

## Colour schemes - 4 main types

**Monochrome** – different saturations of the same colour

**Complementary** – Two colours from opposite sides of the colour wheel

**Analogous** – three colours next to each other on the colour wheel

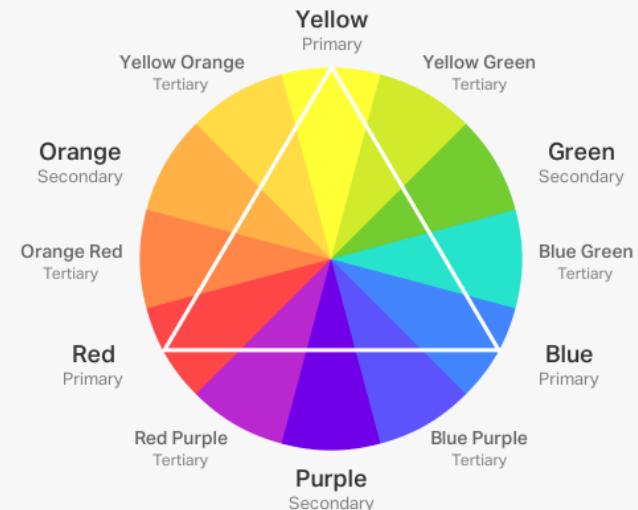
**Triadic** – three colours at points of a triangle drawn in the wheel

Why should I care?



## Why should you care?

- Colour has a huge effect on your visitors and sets the context of your content
- If your development is big, you will have a designer who selects the colours and tells you what they are
- If your development is small, you will have to select the colours
- Knowing what colours (including the specific code) will make your life a lot easier.



This colour **patented** by a catfood manufacturer, hex colour is 751A80 RGB is 117,26,96



Commercial sites need to pay attention to colour

- Research shows that the visual representations on a website may play a factor in up to 96% of purchase decision.

## Warm Colors

- Colour plays a significant role in helping customer to navigate the site – where to visit next, buttons to push, attention focus.
- Branding – companies have logos and colour design standards; these need to be used to help visitors orient themselves in online spaces

## Cool Colors

Other aspects of colour to consider:

*Contrast* – emphasizes key point

*Warm vs Cool* – creates moods. Warm is comforting / happy but can be too energetic in reds especially. Cool is peaceful but can become too formal or cold. Colours can be *shaded* by adding black and *lightened* by adding white but remain within your colour palette.



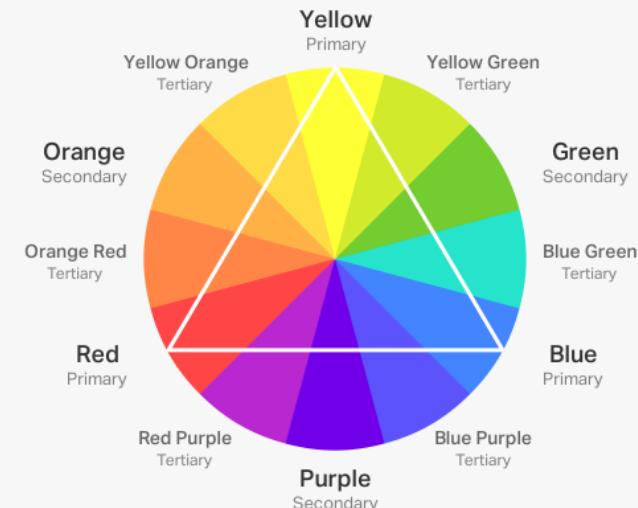
## HTML

color: #f751A80;

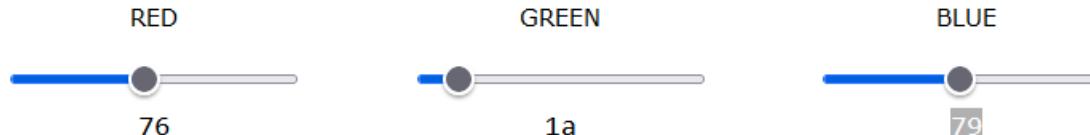
But of course usually you'll use CSS, and  
rgb colour is a bit more intuitive + alpha

## CSS

rgb(red, green, blue) OR  
rgba(*red, green, blue, alpha*)

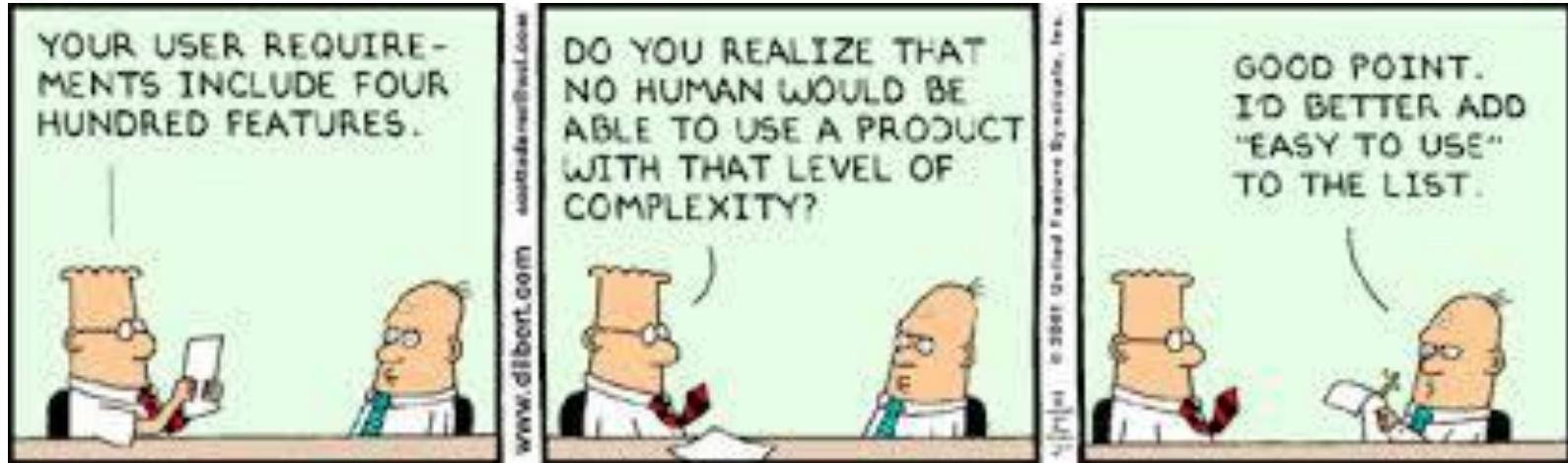


You might like  
to try this W3  
Schools tool



(This hex code closest  
W3 tool allows to 751A80)

[https://www.w3schools.com/css/css\\_colors\\_hex.asp](https://www.w3schools.com/css/css_colors_hex.asp)



There are many issues to be considered in accessibility!

Coding web apps, auditing web pages for accessibility, designing interfaces to meet the needs of people with disabilities, convincing and reporting to website owners, advocating for accessibility.

BTW, you can do a free online course (and get a certificate) in accessibility 16-20 hours at <https://www.w3.org/WAI/courses/foundations-course/> but we'll just touch on a few accessibility issues today.



Hearing



Vision



Cognitive  
processing



Manual  
dexterity



## Deaf and hard-of-hearing

Textual alternatives are needed – captioning of videos, transcripts for audio content

Text simplification to overcome language deprivation

Visual representations of audio material – graphs, figures



Image demonstrating how to wear masks and hearing aid

430 million people worldwide have disabling hearing problems

<https://www.who.int/en/news-room/fact-sheets/detail/deafness-and-hearing-loss>



# Accessibility - vision

Red-green colour blindness affects up to 8% of males (0.4% females)

Normal vision vs. protanopia



Other vision conditions: blindness, low-level vision

How to assist in your webdev practices:

Provide alternative text for any important visual elements (including images)

e.g. `src="https://imagesite/imageofsurfboards.png" alt="Image of surfboards lined up on a sidewalk in full colour and altered colour to show how a person with red-green blindness might see them."`

Understand screenreaders (some built in screen readers are *VoiceOver* for Macs, *Narrator* for Windows, *TalkBack* for Android but there are many others)

Your visitors may also use screen magnifiers, which may reduce their coverage of your content, especially around the edges

WHO estimates that 285 million people worldwide are estimated to be blind or have low vision.

<https://www.who.int/en/news-room/fact-sheets/detail/blindness-and-visual-impairment>



## Cognitive impairments

Intellectual disabilities, age-related thinking and remembering  
Mental health problems including depression  
Dyslexia  
ADHD  
...and more



## Cognitive accessibility

- Multiple modes of delivering content: text-to-speech, video
- Plain language text
- Prioritising content
- Minimise distractions
- Use mainstream interaction conventions like double-click to open, changing link colour when already visited etc.
- Give extra attention to website authentication
- Make forms easy to use
- Error capture and management



## Manual dexterity problems

Some people can have temporary or permanent manual dexterity disabilities: arthritis, amputation, broken hands/wrists, tremors, etc.

Keyboard functions are important for this group (but be careful of shortcut keys to avoid conflicts with assistive device shortcuts)

Logical tab orders in forms will help people using speech to text





Accessibility should be **built into the design from the start**, not something to do when you get to it.

This is particularly true if your content targets these audiences!!!

You may find yourself working on a website (especially corporate and government websites) that is legally required to meet accessibility regulations.

A commonly used standard is WCAG 2.0 AA

Remember

As W3C notes,  
**“Accessible media is essential for people with disabilities, and is useful for everyone.”**



# Cybersecurity and Phishing



*Web Development and Design*  
Comp1710/6780  
Week 7, Monday 19 August 2022

**Dr Sabrina Caldwell**  
Human Centred Computing  
The Australian National University,  
Research School of Computer Science



# Why is online security important?



2007

United Nations website  
hacked to appear to be  
protesting US and  
Israeli policies in the  
Middle East.

HACKED BY KEREM125 MOSTED  
AND GSY THAT IS CYBERPROTEST  
HEY YSRAIL AND USA DON'T KILL  
CHILDREN AND OTHER PEOPLE  
PEACE FOR EVER NO WAR

# INTEGRITY

Arabic 中文 English Français Русский Español

UNITED NATIONS

Secretary-General  
Ban Ki-moon

Home  
Secretary-General  
Ban Ki-moon  
Biography  
On the job  
Daily schedule  
All statements  
Major speeches  
"Off the Cuff"  
Remarks  
Reports/articles  
Ethical standards  
Travel  
The Team  
Deputy Secretary-General  
Management group  
Representatives & envoys

I feel honoured and very humbled when I think of all our founding fathers wise enough and courageous enough to save this world from the scourge of war who have negotiated, drafted and finally signed the Charter of the United Nations, which has shaped the future of the whole international community.

Secretary-General Ban Ki-moon in [remarks](#) at San Francisco War Memorial - 26 July 2007

Secretary General Ban Ki-Moon [speaks](#) on the stage of the Herbst Theater, San Francisco, where the Charter of the United Nations was signed on 26 June 1945. William Luek, President of the UNA-USA stands in background - 26 July 2007.

LATEST HEADLINES

Ban Ki-moon hails Security Council resolution on strengthened UN role in Iraq  
10 August 2007 – Secretary-General Ban Ki-moon said today that a new Security Council resolution on

Latest speeches

- HACKED BY KEREM125 MOSTED AND GSY THAT IS CYBERPROTEST HEY YSRAIL AND USA DONT KILL CHILDREN AND OTHER PEOPLE PEACE FOR EVER NO WAR
- HACKED BY KEREM125 MOSTED AND GSY THAT IS CYBERPROTEST HEY YSRAIL AND USA DONT KILL CHILDREN AND OTHER PEOPLE PEACE FOR EVER NO WAR

## Biggest data breach known so far

**Date:** 2013-14

**Impact:** 3 billion user accounts



### Reported 2016: 'State-sponsored actor' steals data of 500M users

**Details:** In September 2016, the once dominant Internet giant, while in negotiations to sell itself to Verizon, announced it had been the victim of the biggest data breach in history, likely by "a state-sponsored actor," in 2014. The attack compromised the real names, email addresses, dates of birth and telephone numbers of **500 million** users. The company said the "vast majority" of the passwords involved had been hashed using the robust bcrypt algorithm.

### Reported 2017: 'State-sponsored actor' actually stole data of ALL Yahoo! Users – 3Bn

**Details:** A couple of months later, in December, it buried that earlier record with the disclosure that a breach in 2013, by a different group of hackers had compromised **1 billion** accounts. Besides names, dates of birth, email addresses and passwords that were not as well protected as those involved in 2014, security questions and answers were also compromised. In October of 2017, Yahoo revised that estimate, saying that, in fact, **all 3 billion user accounts** had been compromised.



## 2018: > 87 million Facebook users' data improperly shared

Aleksandr Kogan harvested the data for use of Cambridge Analytica, who used it for psychographic profiles of users to deploy targeted political ads during the 2016 US presidential election (Trump's chief strategist was VP of Cambridge Analytica)

Kogan now admits what he did wasn't right.

Facebook banned Cambridge Analytica in March.

## Facebook boss Mark Zuckerberg says his own data was shared with Cambridge Analytica

Updated 12 Apr 2018, 1:56pm



VIDEO: Mr Zuckerberg admits his data was improperly used (Photo: AP/Andrew Harnik) (ABC News)

**Facebook CEO Mark Zuckerberg has revealed during a second day of sparring with US politicians over privacy concerns that he was among the 87 million users whose data was improperly shared.**

**RELATED STORY:** Facebook is in an AI 'arms race' with Russia, Zuckerberg tells US senators

**RELATED STORY:** Use Facebook? Here's how to check right now if Cambridge Analytica got your data

**RELATED STORY:** Australia is looking into the breach of 300,000 Facebook users' data



## Threat environment (\$\$\$)

Cyber security is considered a global challenge and a matter of national priority

The Australian Crime Commission (ACC) estimates that **cyber crime costs Australia \$1 billion annually**

In 2016 Australian Government launched a new Cyber Security strategy investing more than \$230 million over four years. Active cybersecurity departments are now embedded in many government organisations



## Symantec Internet Security Threat Report 2016

In **2019** the strongest trend in cyber attacks was malicious **Powershell\*** script attacks up 1,000%

\*Powershell is a Windows scripting language for running admin tasks

IN 2015...



**429M**  
Online identities exposed



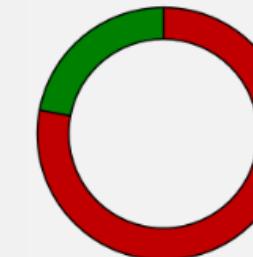
**1 in 220**  
Emails contained malware



**431M**  
New malware variants identified



**1.1M**  
Web attacks blocked daily



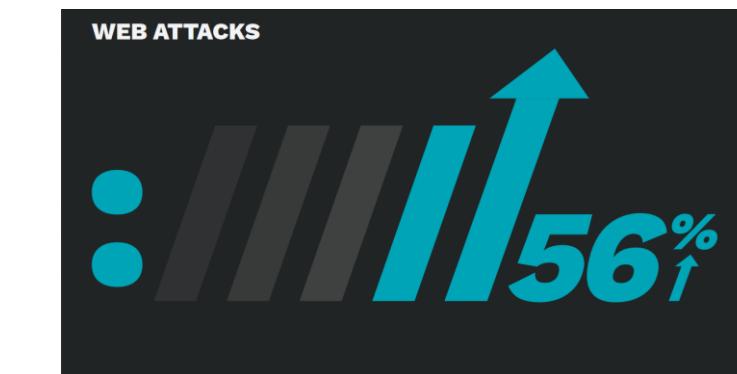
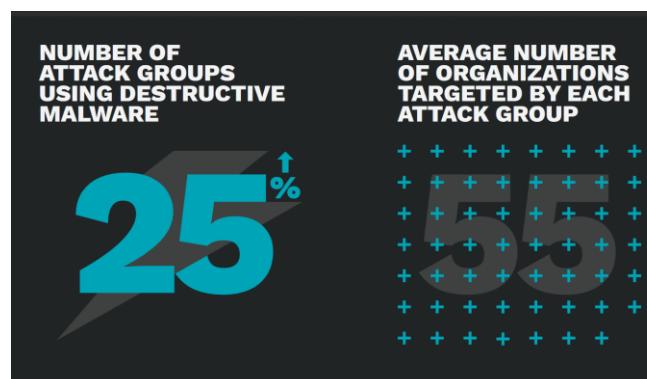
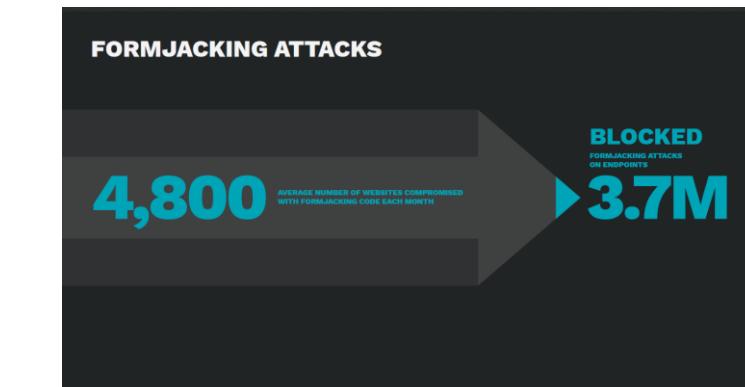
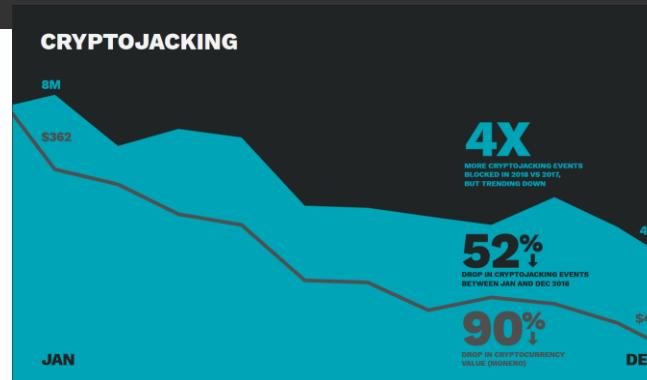
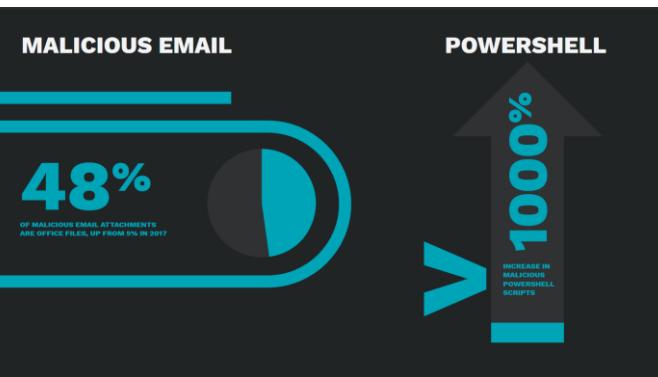
**78%**  
Websites contained vulnerabilities



**1 in 3172**  
Websites hosted malware



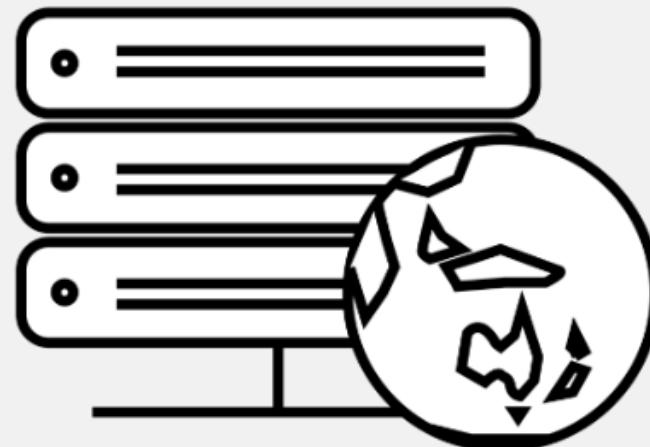
in 2019 ...





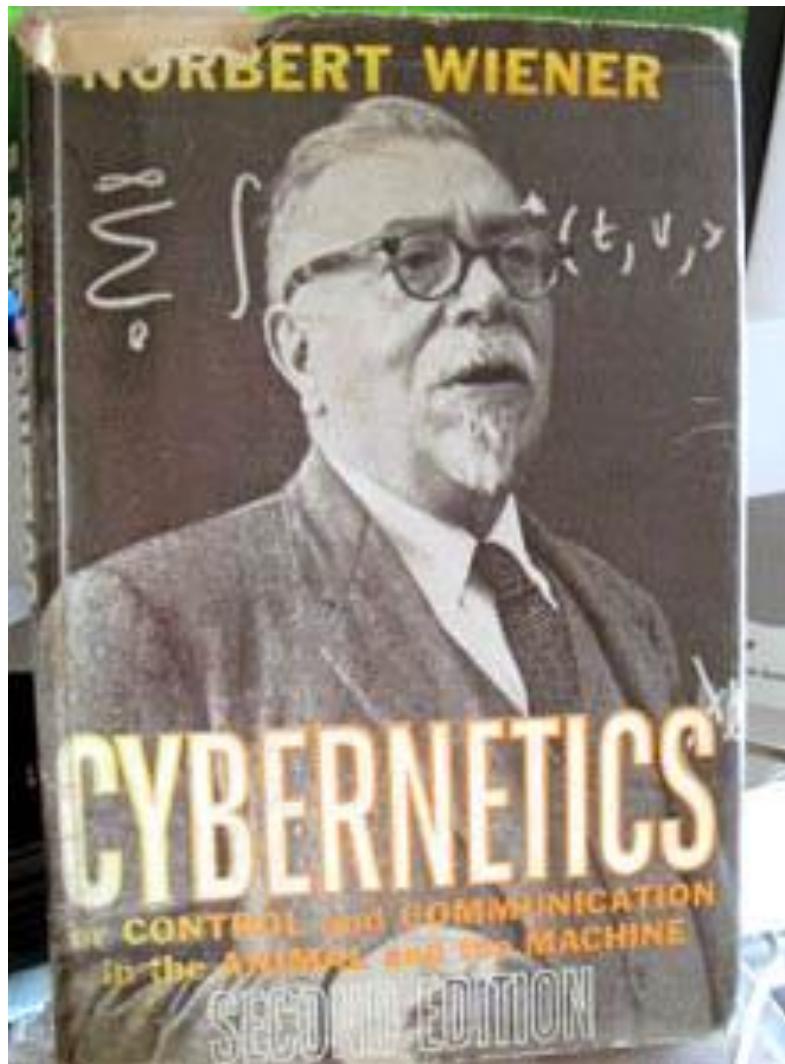
## BUT LOCALLY...

Web sites and applications  
are particularly vulnerable



Users themselves are also  
targeted





<http://laroucheplanet.info/pmwiki/pmwiki.php?n=Library.WienerWorld>

# What is cyber security anyway?

## 1940s Cybernetics

Study of communication and control systems  
in living beings and machines

Oxford dictionary: Cybernetics is from Greek word  
*kubernētēs* (κυβερνήτης), steersman, from *kubernan* 'to steer'

## 1960s – 1990s cyber- and cyb-

Cybernetics shortened to form new words  
(cyberfriend, cyberspace, cyborg, cyberbullying)

**Gartner, 2013:** "Cybersecurity encompasses a broad range of practices, tools and concepts related closely to those of information and operational technology security. Cybersecurity is distinctive in its inclusion of the offensive use of information technology to attack adversaries."

# Why is online security important?

**Confidentiality**

Ensuring user privacy

**Availability**

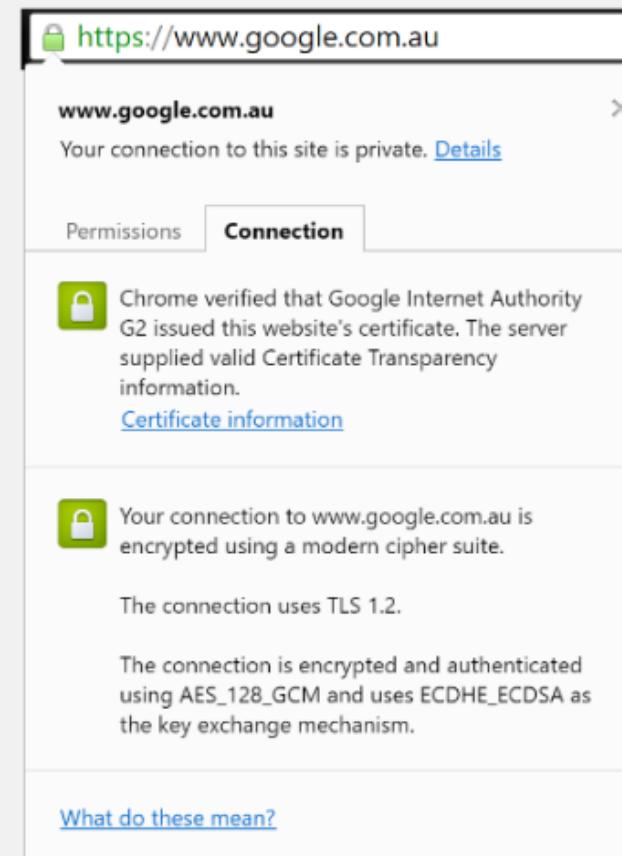
Ensuring the service is available to users

**Integrity**

Protecting branding against defacement



# CONFIDENTIALITY & Non-repudiation



aka 'Trust'



January 2018

Residents of Hawaii terrified by live warning of incoming ballistic missiles.

Took 38 minutes before alert was retracted.

Create Public Message

Templates

Selected Template: Earthquake Warning LIVE

Save New Template    Update Temp

\*TEST TEMPLATES

- Earthquake TEST
- EAS RWT TEST
- Hospital Evacuation TEST
- Tsunami Warning TEST

LIVE TEMPLATES

Earthquake Warning LIVE

Message Settings

Major design failure:  
USA FEMA-approved  
AlertSense software  
developer designs  
software that's easy to  
get really wrong.

## Why should I care?

Security is everyone's problem

New vulnerabilities are discovered daily

As web developers, you must be aware of these issues and build security into your website and applications



## vulnerabilities

A vulnerability is a weakness in an application that may allow a malicious entity to cause harm

Vulnerabilities are generally caused by a design flaw or implementation bug

Again: new vulnerabilities are discovered daily!



Evelyn Simak / Gap in fence



# Common web attacks

*An attack is a technique used to exploit a vulnerability*

**Brute forcing** (hit and try until you crack password or find hidden pages/content)

**Injections** (attacker puts malevolent code in query string of an HTTP request)

**SQL Injection** (attacker injects malevolent code in data driven websites)

**XSS** (cross site scripting injects malicious scripts into trusted websites that then forwards the input)

**Spoofing** (attacker supplies content to a web application; can shift user to fake site)

**Denial of Service** (flooding a site with requests to stop legitimate users)

**CSRF** (cross-site request forgery – forcing/tricking users into performing tasks (like transferring funds or changing their email))

**Man-in-the-middle** (intercept and interfere with communications between user and legitimate server)

**Social engineering** (psychological manipulation to trick users into making security mistakes or giving away information)

## What can you do?

Learn and understand

Code securely; be aware of security implications

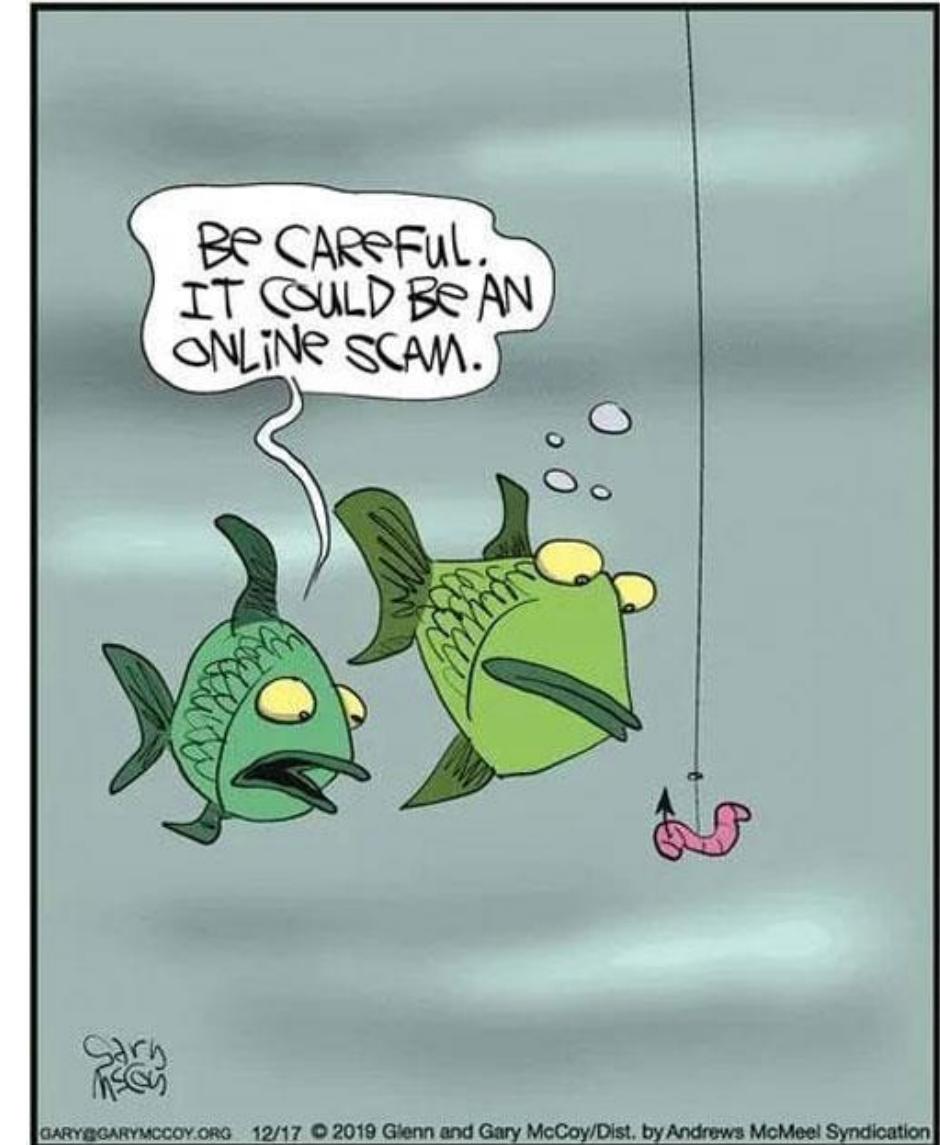
Test your code as part of the web development process

... more on this next week.



# COMP1710/6780

## Cybersecurity and Phishing and Report writing



# Some initial details regarding final exam

- Draft time scheduled is Thursday 10/11/2022 at 2:50pm
- The exam will be undertaken within Proctorio
- 15 minutes reading time, 2 hours writing time
- You can bring one A4 page with notes on both sides
- You can also bring an unannotated paper-based dictionary (no approval required)

All material taught in the course is examinable. You will not be called upon to write code in the exam, though you may be asked to describe what provided code will do.

I will provide a quiz (with questions unrelated to the course) as a practice for ensuring you understand how to answer the types of questions in the exam, and provide more information about Proctorio use in coming weeks.

This information is accurate as at 26/9/22 but may change. I'm providing the information to help you start to plan but it is your responsibility to check timetabling as we get nearer to the end of semester and prior to the exam for final details.



In the news this week – Optus data breach:

9.8 million Australians  
(over 6 million current customers  
and over 3 million customers reaching back to 2017)

Data stolen (that we know so far) up to and including:

name, email, date of birth, passport info, drivers license info

We know it was sophisticated, there are rumours human error was also involved. It is not clear if it was hackers or a state sponsored attack, but it has been stated in the news that it was from overseas.



## vulnerabilities

A vulnerability is a weakness in an application that may allow a malicious entity to cause harm

Vulnerabilities are generally caused by a design flaw or implementation bug

Again: new vulnerabilities are discovered daily!



Evelyn Simak / Gap in fence



## Common web attacks

*An attack is a technique used to exploit a vulnerability*

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## What can you do?

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Code securely; be aware of security implications

Test your code as part of the web development process

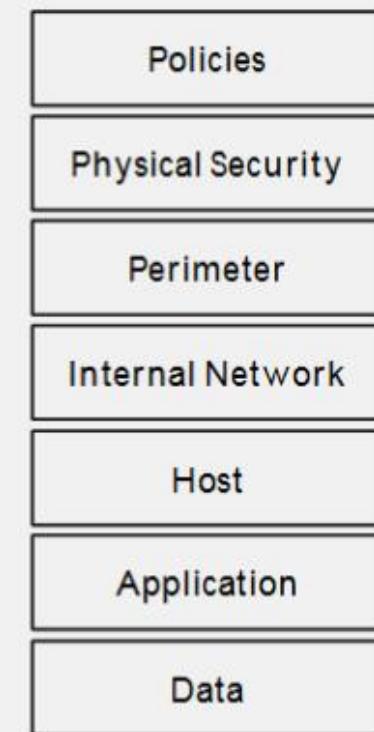


# Defence in depth

Take a layered defence-in-depth approach



- Set strong security policies and procedures, raise user education and awareness, and plan ahead
- Implement physical doors and locks
- Set effective firewall rules and router configurations
- Segment your network and use intrusion detection systems
- Update your operating system and use virus protection
- Update your applications and develop security in
- Use encryption and strong passwords





# Testing

Find as many vulnerabilities as possible in a short period of time

Test the organisation's ability to detect and respond. Try to find a 'way in' as quietly as possible.

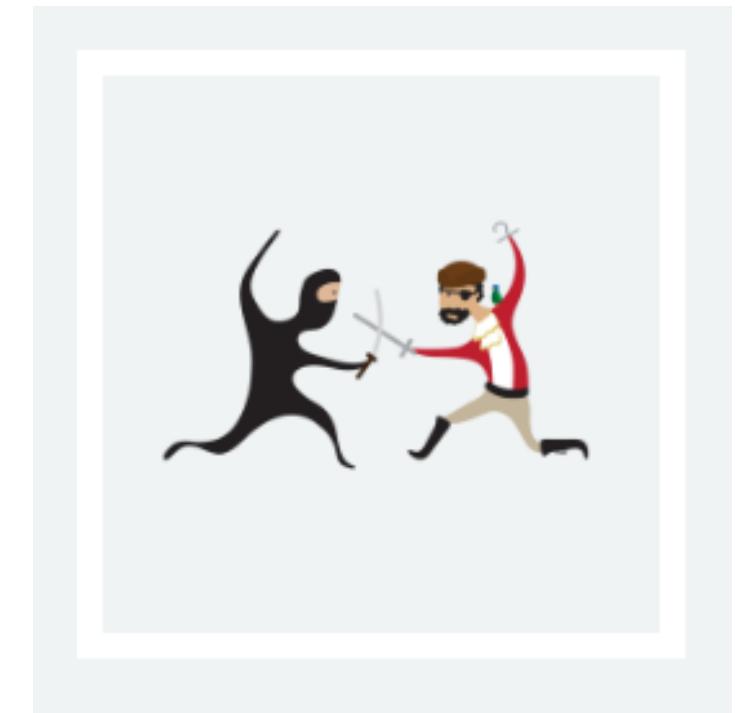
**Penetration testing and Red team testing**  
(pirates vs ninjas)

## Vulnerability assessment

Any mistakes or weakness in system security, design or implementation  
– can hackers get in?

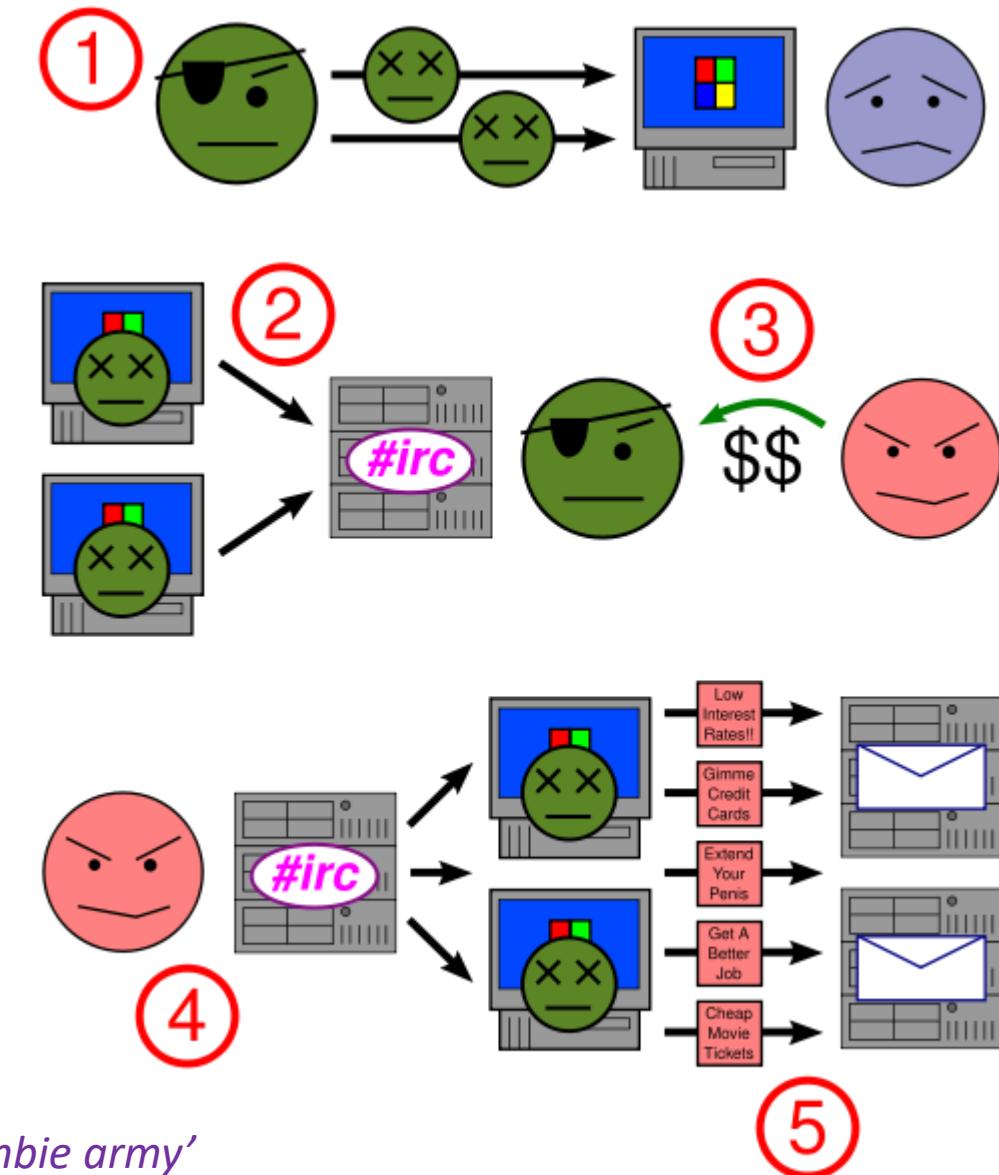
## Secure code reviews

Audit your source code and ensure proper security controls are in place;  
use automated tools, knowledgeable developers





1. A botnet operator sends out viruses or worms, infecting ordinary users' computers, whose payload is a malicious application – the bot.
2. The bot on the infected PC logs into a particular Internet Relay Chat (IRC) server (or in some cases a web server). That server is known as the command-and-control server (C&C).
3. A spammer purchases access to the botnet from the operator.
4. The spammer sends instructions via the IRC server to the infected PCs, ...
5. ... causing them to send out spam messages to mail servers.



*A bot is sometimes called a 'zombie' and a botnet a 'zombie army'*



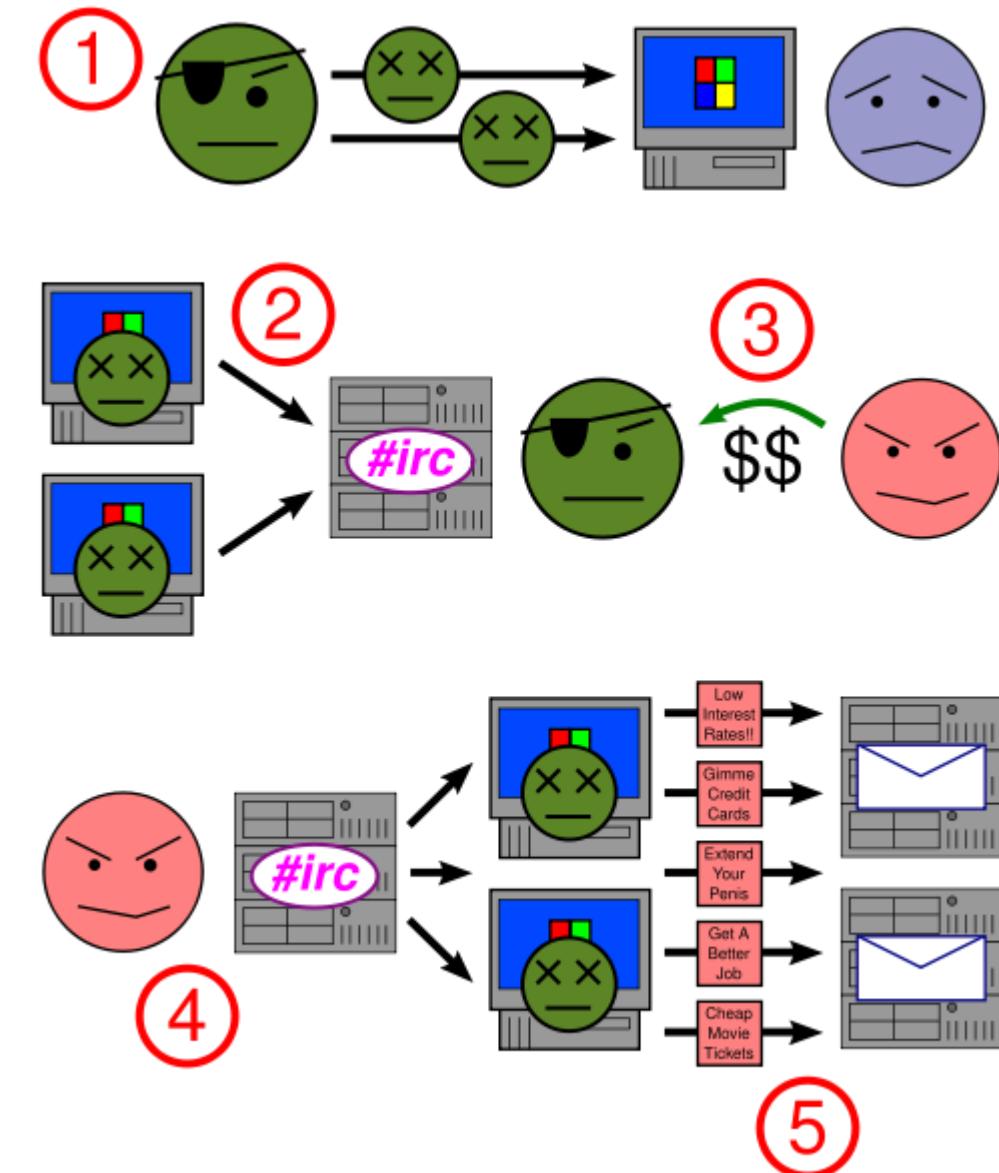
## Uses of a botnet

Botnets are exploited for various purposes, including:

- denial-of-service attacks,
- creation or misuse of SMTP mail relays for spam (see Spambot),
- click fraud,
- spamdexing and
- the theft of application serial numbers, login IDs, and financial information such as credit card numbers

Simple Mail Transfer Protocol

Filling index.html files with words and links to manipulate search engine recognition





## Uses of a botnet

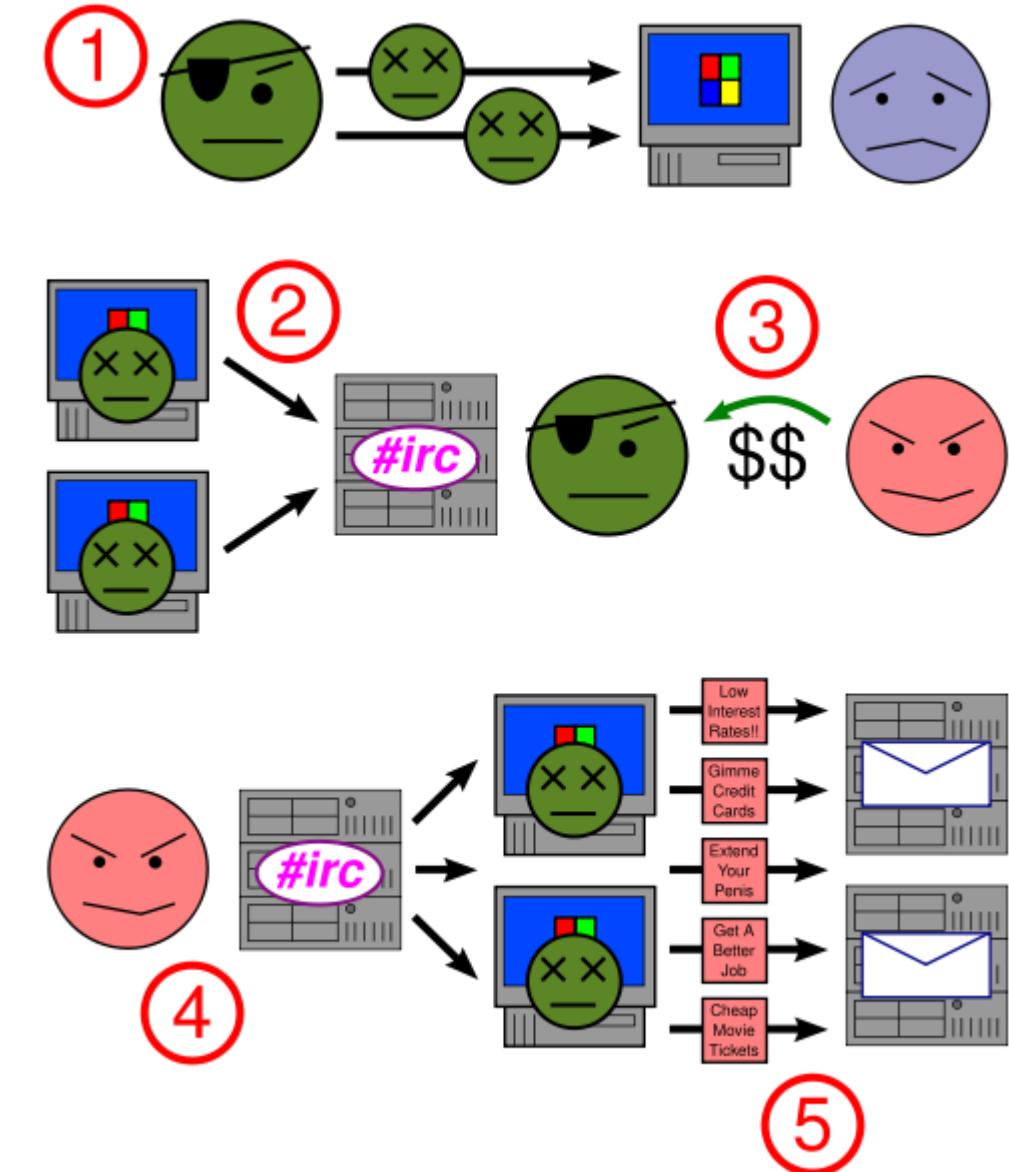
*Denial-of-service* attack where multiple systems autonomously access a single Internet system or service in a way that appears legit, but much more frequently than normal use and cause the system to become busy.

*Adware* exists to advertise some commercial entity actively and without the user's permission or awareness.

*Spyware* is software which sends information to its creators about a user's activities.

*E-mail spam* are e-mail messages disguised as messages from people, but are either advertising, annoying, or malicious in nature.

*Click fraud* is the user's computer visiting websites without the user's awareness to create false web traffic for the purpose of personal or commercial gain.





## What is tracking? Beyond 'cookies'

When people think of tracking, they think of 'cookies'.

Cookies are little strings of data (value pairs) that are passed along as you browse, and can be shared by ad networks. And ad networks are sharing their cookie information with each other.

You can clear your cookies

But there are many (and often sneaky) trackers 1,100+ identified trackers

Google Analytics tracking coverage is an estimated 46% of the web, they track Users by a ClientID, Bounce Rate, Sessions, Session Durations, etc.

Dual purpose widgets – Facebook 'likes' are tracking you! Skype, Twitter, etc.





# Are you being tracked?

## Example: My Desktop

Test	Result
Is your browser blocking tracking ads?	X no
Is your browser blocking invisible trackers?	X no
Does your browser unblock 3rd parties that promise to honor <b>Do Not Track</b> ?	X no
Does your browser protect from <b>fingerprinting</b> ?	X your browser has a unique fingerprint

Note: because tracking techniques are complex, subtle, and constantly evolving, Panopticlick does not measure all forms of tracking and protection.

Your browser fingerprint **appears to be unique** among the 211,059 tested in the past 45 days.

Currently, we estimate that your browser has a fingerprint that conveys **at least 17.69 bits of identifying information**.

The measurements we used to obtain this result are listed below. You can [read more about our methodology, statistical results, and some defenses against fingerprinting here](#).

## Example: My Laptop

Test	Result
Is your browser blocking tracking ads?	✓ yes
Is your browser blocking invisible trackers?	✓ yes
Does your blocker stop trackers that are included in the so-called " <b>acceptable ads</b> " whitelist?	✓ yes
Does your browser unblock 3rd parties that promise to honor <b>Do Not Track</b> ?	✓ yes
Does your browser protect from <b>fingerprinting</b> ?	X your browser has a unique fingerprint

Note: because tracking techniques are complex, subtle, and constantly evolving, Panopticlick does not measure all forms of tracking and protection.

Your browser fingerprint **appears to be unique** among the 211,468 tested in the past 45 days.

Currently, we estimate that your browser has a fingerprint that conveys **at least 17.69 bits of identifying information**.

The measurements we used to obtain this result are listed below. You can [read more about our methodology, statistical results, and some defenses against fingerprinting here](#).



Mainstream browsers with an anti-tracking policy



Mozilla Firefox



Apple Safari

Mainstream browsers with no anti-tracking policy



Google Chrome



Microsoft  
Internet Explorer

Defences against tracking, public positions against them

## So now what?

‘Rinse and Repeat’

Security landscape is always evolving

Security testing is just one snapshot in time; you must constantly monitor and adapt to new threats



## Social Engineering

SPAM

Users are the weakest link

Social engineering is the attempt to **gain information**, **access**, or **introduce unauthorised software** into the system through the manipulation of end users

Phishing

Social engineering remains one of the biggest threats

Technical safeguards and layers are great but they are **meaningless if users forcibly override them** or intentionally ignore them



The screenshot shows a Medium article page titled "Video generation". The page includes social sharing icons (2.3K views, etc.), a "Get started" button, and a "Become a member" link. A prominent message box displays the following text:

This embedded content is from a site that does not comply with the Do Not Track (DNT) setting now enabled on your browser.

Please note, if you click through and view it anyway, you may be tracked by the website hosting the embed.

[Learn More about Medium's DNT policy](#)

[SHOW EMBED](#)

## Netscape Browser message:

*This embedded content is from a site that does not comply with the Do Not Track (DNT) setting now enabled in your browser.*

*Please note, if you click through and view it anyway, you may be tracked by the website hosting the content.*



## Spam and scams



Email dominates digital communication, presenting huge opportunity for circulating spam

- Can be harmless, but unsolicited or unwanted
- Often more malicious and serious
- Email based threats, malware, and phishing

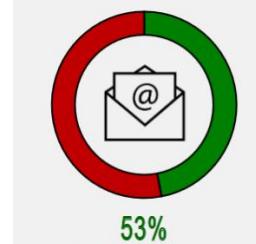


## Spam and scams

### YOU SHOULD NEVER SPAM!

#### What is Spam?

Spam is a generic term used to describe electronic ‘junk mail’ – unwanted messages sent to your email account or mobile phone. These messages vary, but are essentially commercial and often annoying in their sheer volume. They may try to persuade you to buy a product or service, or visit a website where you can make purchases; or **they may attempt to trick you into divulging your bank account or credit card details.**



In Australia, spam is defined as ‘unsolicited commercial electronic messaging’. New Australian legislation relating to spam – the Spam Act 2003 – came into effect on 10 April 2004. This consumer guide outlines the new law; it also offers practical advice on how you can reduce the amount of spam you receive, and suggestions on what to do when you receive spam

#### Unsolicited mail

**SPAM = Stupid Pointless Annoying Messages (this is a *backronym*)**

**or SPAM = Seriously Pernicious and Malicious (my backronym)**



Spam according to the Australian Law: Spam Act 2003 – came into effect on 10 April 2004.

To comply with Australia's spam laws, a commercial electronic message must meet the following conditions. Any message sent to you that doesn't meet all three of these conditions is defined as spam:

- **Consent** - it must be sent with your consent. You may give express consent, or consent may be inferred from your conduct and 'existing business or other relationships'
- **Identify** - it must contain accurate information about the person or organisation that authorised the sending of the message
- **Unsubscribe** - it must contain a functional 'unsubscribe' facility to allow you to opt out from receiving messages from that source in the future

A spam message is not necessarily sent out in 'bulk' to numerous addresses – under Australian law, a single electronic message can also be considered spam.

## Exemptions

Electronic messages from certain sources are exempted from the legislation. These include messages from: government bodies, registered political parties, charities, religious organizations, educational institutions (sent to attending and former students and their households).

See *Australian Communications and Media Authority* for more

## Spam and scams





## What is Phishing?

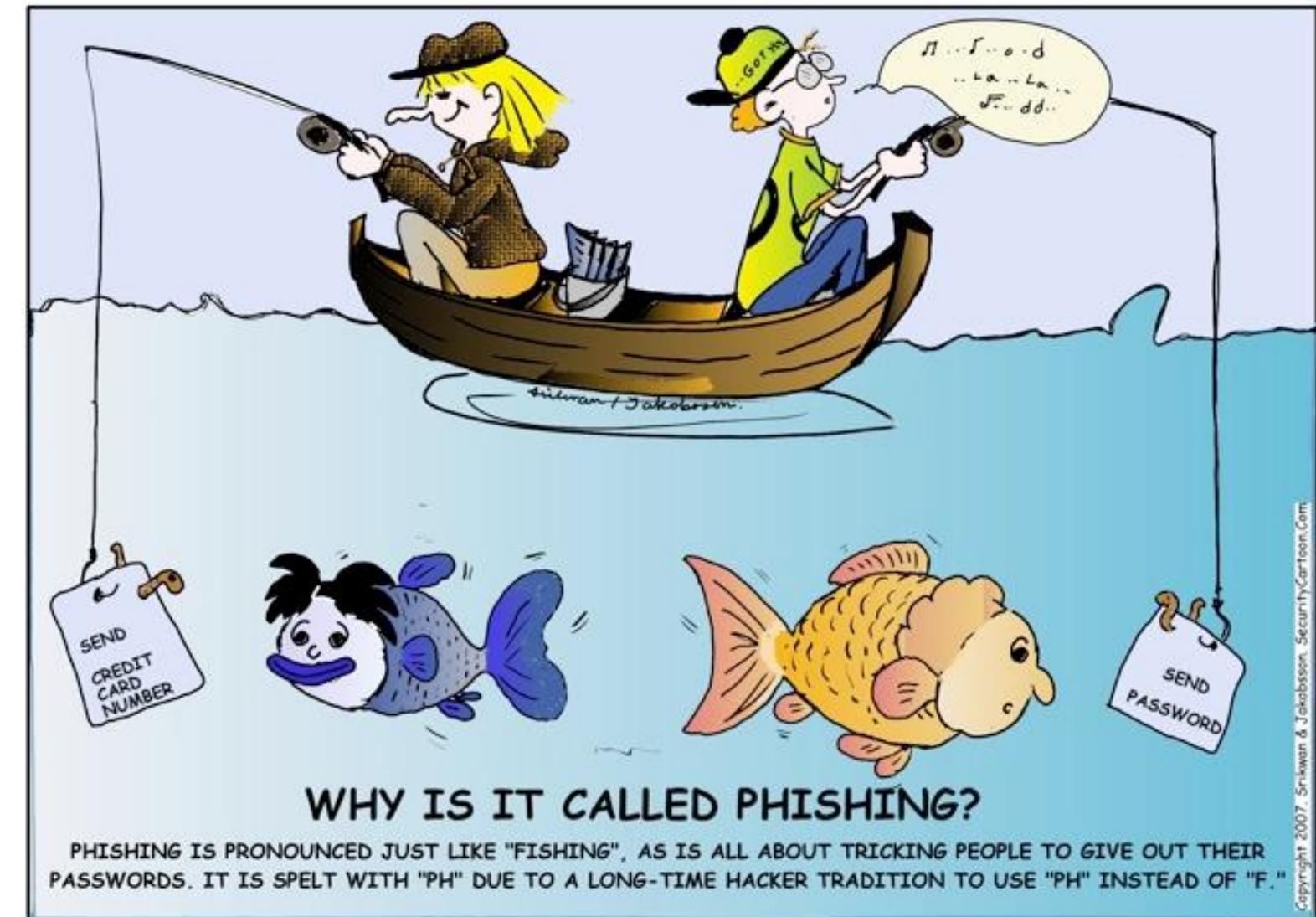
Phishing attacks use both social engineering and technical subterfuge to steal consumers' personal identity data and financial account credentials

### Anti-phishing Working Group

The total number of phishing attacks in **2016** was **1,220,523**, a 65% increase over 2015.

In **2019** phishing in social media **doubled**.

In the second quarter of 2022, there were 1,097,811 attacks observed, so est. **~4 million** phishing attacks for **2022**





## What is Phishing (continued)?

Social engineering aspects:

- Sending spoofed e-mails

- Building confidence between a phisher and a victim

- Upsetting or exciting statements - must react immediately

- Ask for information such as username, passwords, credit card numbers, social security numbers, etc.

- Emails are typically NOT personalized

Technical aspects:

- Spyware

- Pharming - DNS poisoning

- Spoof web pages

- Masked links: e.g., go to

- <https://www.my.commbank.com.au/netbank/Logon/Logon.aspx>, OR

- <https://www.my.commbank.com.au/netbank/Logon/Logon.aspx>



## Masked URL

Subj: Your Bank of Oklahoma Account could be Suspended  
Date: 10/31/2005 9:17:23 PM W. Europe Standard Time  
From: [department@bankofoklahoma.com](mailto:department@bankofoklahoma.com)  
To: [rsutton603@aol.com](mailto:rsutton603@aol.com)  
*Sent from the Internet ([Details](#))*



### Security Alert

Please note that Your Bank of Oklahoma Online Account is about to expire, or there is a problem with your information. In order for it to remain active, and update your information, please use the link below to proceed and Verify Your Account:

<http://secure.bankofoklahoma.com/cgi-bin/dll87443/update/default.asp>

**Bank of Oklahoma Security Department**  
Thank you.

*Please Note: Bank of Oklahoma always contacts its costumers about account expiration. That is how we show our *quality* and *respect* to our clients. However your information are 100% safe in our 128-ssl database.*

Subj: Your Bank of Oklahoma Account could be Suspended  
Date: 10/31/2005 9:17:23 PM W. Europe Standard Time  
From: [department@bankofoklahoma.com](mailto:department@bankofoklahoma.com)  
To: [rsutton603@aol.com](mailto:rsutton603@aol.com)  
*Sent from the Internet ([Details](#))*



### Security Alert

Actually links to  
<http://212.45.13.185/bank/index.php>

Please note that Your B  
there is a problem with y  
your information, please use t  
our account.

<http://secure.bankofoklahoma.com/cgi-bin/dll87443/update/default.asp>

**Bank of Oklahoma Security Department**  
Thank you.

*Please Note: Bank of Oklahoma always contacts its costumers about account expiration. That is how we show our *quality* and *respect* to our clients. However your information are 100% safe in our 128-ssl database.*



# Spoofing

REAL SITE

http://www.mastercard.com

there are some things money can't buy, for everything else there's MasterCard.

United States - English

LOOKING FOR A STUDENT CARD?

Click Here

0% INTRO APR & no annual fee

APPLY NOW

SPOOFED SITE

http://www.mistercard.com

there are some things money can't buy, for everything else there's MasterCard.

United States - English

LOOKING FOR A STUDENT CARD?

Click Here

0% INTRO APR & no annual fee

APPLY NOW

WEB PAGE SPOOFING IS EASY, BOSS. I JUST CUT AND PASTE THE TEXT AND THE IMAGES. THE RESULT?  
...PRICELESS!

Copyright 2007. Srikanth & Jakobsson, SecurityCartoon.com



The screenshot shows a Google security alert email. At the top left is the Google logo, and at the top right is a red circular icon with a white shield. The main message is displayed on a red background with white text: "Someone has your password". Below this, the recipient's name "Hi William" is shown. The text continues: "Someone just used your password to try to sign in to your Google Account [REDACTED] @gmail.com". A section titled "Details:" provides specific information: "Tuesday, 22 March, 14:9:25 UTC", "IP Address: 134.249.139.239", and "Location: Ukraine". A note below states: "Google stopped this sign-in attempt. You should change your password immediately." A large blue button labeled "CHANGE PASSWORD" is centered. At the bottom, the message concludes with "Best," followed by "The Gmail Team".

Google

Someone has your password

Hi William

Someone just used your password to try to sign in to your Google Account  
[REDACTED] @gmail.com

Details:

Tuesday, 22 March, 14:9:25 UTC  
IP Address: 134.249.139.239  
Location: Ukraine

Google stopped this sign-in attempt. You should change your password immediately.

CHANGE PASSWORD

Best,  
The Gmail Team



## Detecting

Do you really know who is sending you the email?

Do you recognise the sender? Their email address?

Is the tone consistent with what you would expect from the sender?

Are you expecting an email from them?

Is the content of the email relevant to you?

Does the email ask you to access a website or open an attachment?

Is the web address relevant to the content, and accurate?

Is the email suspiciously written?

Have you received the same email twice?

Does the email ask you for your personal details?

[SPAM WARNING] Email Account Suspension

K... Sent: Wed 18/04/2018 8:23 AM To: Sabrina Caldwell

# Account Update

## Your account will be closed at 04/18/2018

Dear [sabrina.caldwell@anu.edu.au](mailto:sabrina.caldwell@anu.edu.au)

This message is being sent to you to inform you that your account will be closed at 04/18/2018

If you wish to continue using this account please upgrade to our services. Ignoring this message that will cause the account to be closed

**Update your account**

Note: This upgrade is required immediately after receiving this message

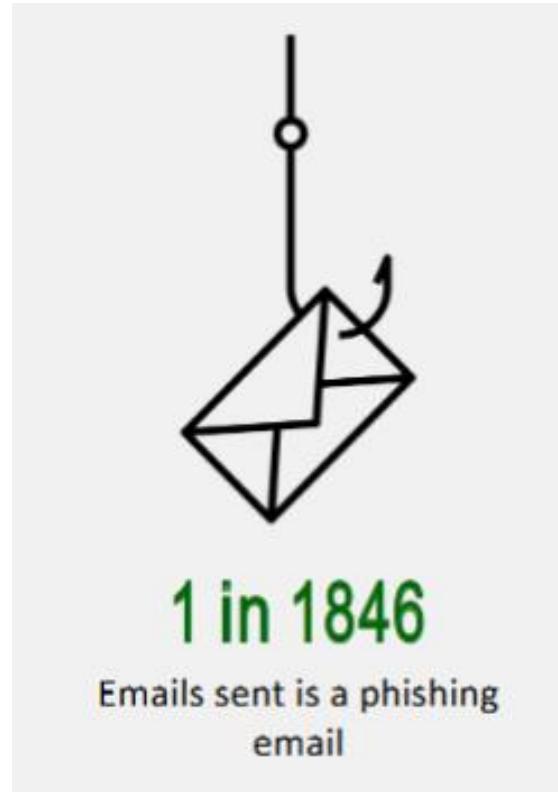
Thank you.

Microsoft respects your privacy. Review our online Privacy Statement





# Phishing



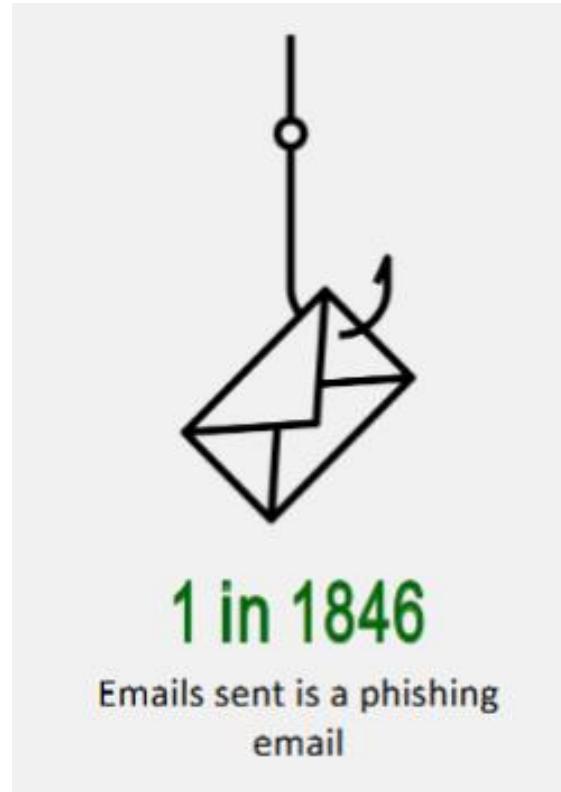
Phishing is misrepresentation where criminals use social engineering to appear as a trusted identity. They leverage the trust to gain valuable information

- Still a huge problem
- Victim isn't clearly identified (anyone will do!)
  - Users
  - Organisations misrepresented

Results? Identify theft, installation of malware, financial loss, reputation loss



# Phishing



## Consequences of (successful) Phishing

### **Customers:**

Financial consequences ? stolen financial information

Trust and effective communication can suffer

### **Service providers (banks, retailers...)**

Diminishes value of a brand

Customer loss

Could affect stakeholders



## Spear Phishing



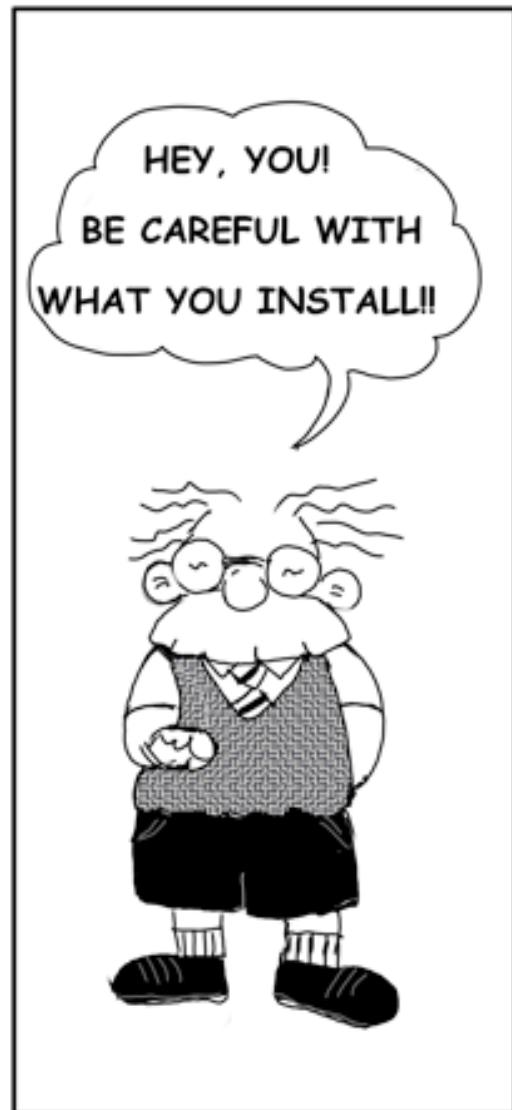
- Highly sophisticated
- Very targeted at certain people / organisations
- Much more difficult to spot

Example:

Phisher gets an e-mail address of an administrator or colleague

Spoofed e-mail asks employees to log on to a corporate network

A key getLogger application records passwords  
Phisher can access corporate information!



## Trusting the Internet Blindly

(Think before you install!)



# Protecting

- Technical controls
  - Attachment filtering
  - Body filtering
  - Domain authentication
  - Sandboxing
  - Whitelisting
  - Etc.
- User education



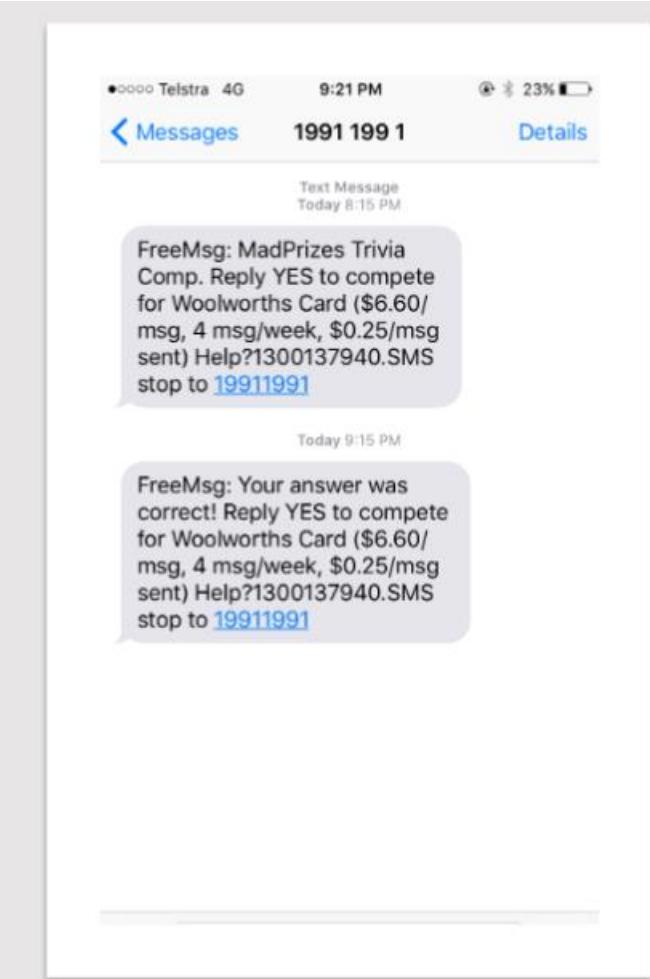
Ideally, all of these  
in conjunction

Realistically,  
some combination



# Mobile phishing

- Real or fake?
- No links or attachments, how much harm could it be?
- What happens if I replied?





## Emerging trends

Cyber security is a vast and complicated problem

Many cybercriminals and malicious entities are moving toward social media and instant messaging platforms

Threats are becoming more complex and sophisticated

## Always Update

Known security vulnerabilities are patched in security updates

Keep all software up to date

Always use the latest versions when developing



## Reporting

Many organisations allow  
forwarding/attaching of spam emails to  
their IT Security teams

Individuals can report to the Australian  
Cybercrime Online Reporting Network  
(ACORN)





## Resources

Open Web Application Security Project (OWASP)

Mozilla Developer Network

W3C Security Resources

Australian Signals Directorate (ASD)  
and Australian Cyber Security Centre (ACSC)

A wide variety of security consultancies and organisations and  
international standards



# COMP1710/6780

## Report writing



- not!



Your report should contain these components:

A title and your name.

Abstract: This will typically be one paragraph that says what the report is, why it was written and what it is about. Write this abstract last so that it actually matches what is in the report.

Introduction: This will be slightly more detailed than the Abstract. It will explain what the report is about, it will list the experiments in which you took part and it will summarise the contents of the report. Proof-read this introduction when you have finished writing the report to make sure it actually matches what is in the report.



First Experiment: This has three sub-sections.

- ***Summarise the experiment.*** Here you describe the purpose of the experiment and describe what you were asked to do. Refer to the Information Sheet that the experimenters will have given you.
- ***Describe your experience of taking part in the experiment.*** Were you asked to do mechanical tasks or were you asked to be an intelligent participant? Did you enjoy taking part in the experiment? Did you find the experiment difficult or easy? Did you understand what you were asked to do?
- ***Comment on what you thought were the strengths and weaknesses of the experiment.*** Did you think that the experiment actually met the aims that were stated in the Information Sheet? Was the experiment well-conducted or was it chaotic and confusing? Did you think that the data the experimenters were gathering was reliable?

Second Experiment: *Also three sub-sections, like the first experiment.*



Comparison of the two Experiments: ***Describe in what ways the two experiments (and your participation in them) were similar or different.*** Compare how you felt about taking part in each of the experiments. Compare how well you thought the two experiments were run.

Relevance of user-participation experiments to web design and development: ***Discuss what your experience of taking part in these experiments implies for the relevance of user-participation experiments in web design.*** The broad computer science area of Human-Computer Interaction (HCI) includes web design and user-evaluation experiments (similar to the experiments in which you took part) are really important in the HCI development process. You might like to look for material about user-evaluation in HCI on the web or in text books and include it in this discussion. Be sure to cite any material that you refer to and include that material in your reference list in the last section of your report.

References: In this section you list any documents or web pages that you referred to in the body of the report. Be sure to list every item that you refer to (including the Information Sheets that the experimenters give you) and be sure to refer in your report to every item in this list of references.

## 4.2 Layout and size of your report

Your report will typically be 3-4 A4 pages, using a 12-point font and approximately 2 centimetre margins. Use headings and sub-headings to give visual structure to the report. Break your text into paragraphs, where each paragraph focuses on a particular item or concept. Put page numbers in the footer of your report.

There are more details in the Assignment Specification and Report document on Wattle.

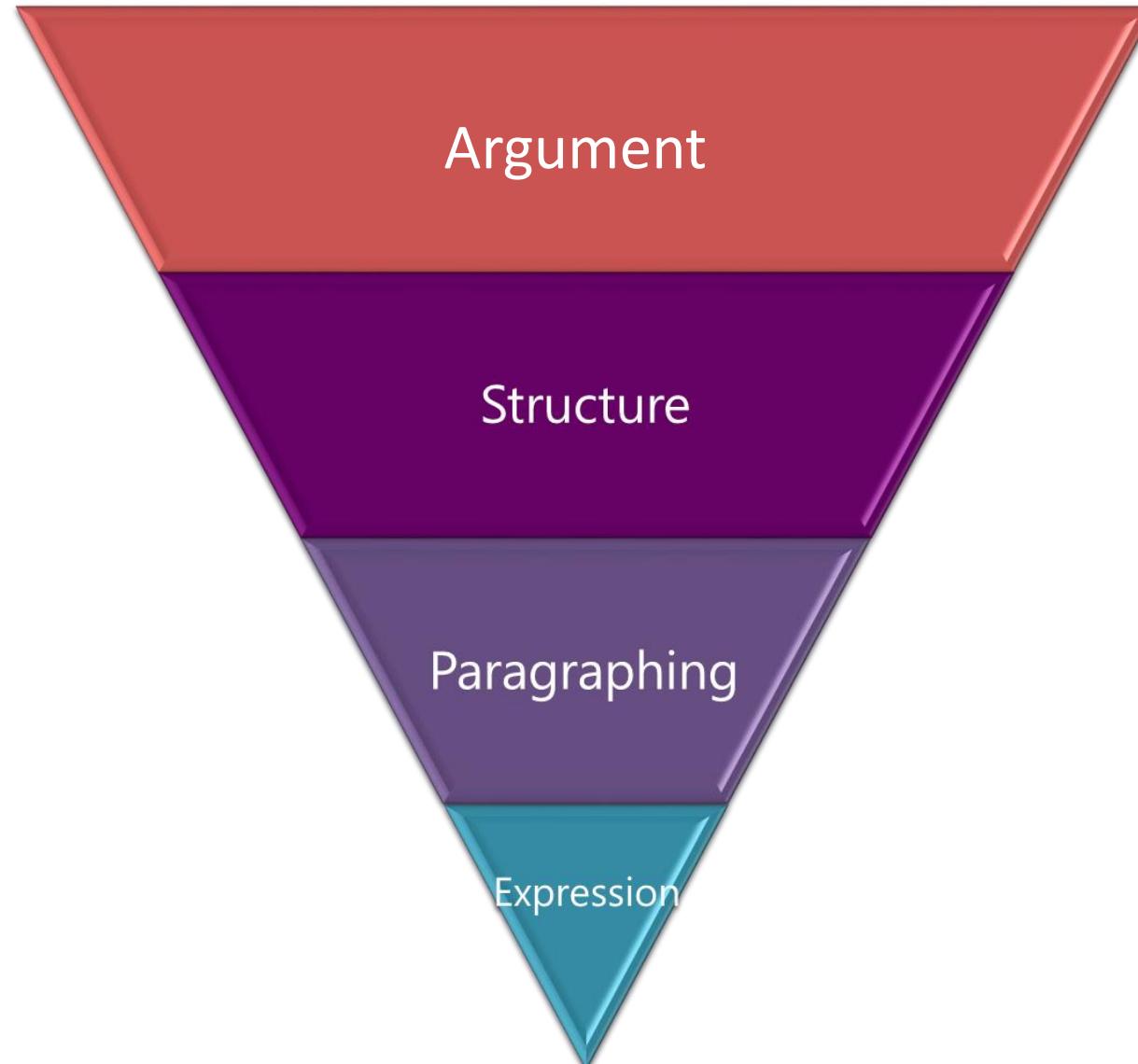
*But suffice it to say, you will do better in this assignment and in your career if you can write reports well! So let's see what that means.*



Australian  
National  
University

# Academic Skills – based discussion of COMP1710/6780 Report Assignment

ANU Library Academic Skills





# Writing a report about others' work

- Be constructive
- Be specific
- Be respectful





# To be constructive when describing any problems

- indicate both the problem and the solution
- identify substantive issues
- consider the emotions of the recipient

Positive comments are also important.



# Writing tips and strategies



When your review of your experiment participation is positive, highlight

- key strengths
- useful insights – what you learned
- convincing and persuasive analysis – why?

When your review is negative, highlight

- weaknesses/limitations
- what's missing and why this is a problem

# Positive experience of experiment

The experiment experience from my perspective

- has strengths in ...
- is structured logically to ...
- provides key insights into ...



# Suggesting areas for improvement

- The experiment could draw a better connection between X and Y by ...
- In addition, X could better reflect ...



Introduction

Conclusion

Message = the same?  
Reasoning = the same?



Main idea and argument

Analysis and evidence

Relate back to thesis and transition



# Cohesion: order and logic

First/second/third	Last/finally	Beyond X ...
After that	Next	Afterwards
Prior to ...	Now	Meanwhile
Previously	Currently	Earlier

So	Since this is so	Therefore
Consequently	Hence	As a result...
Due to	Because of this	If X is the case ...
It follows that	For	

# Cohesion: contrast and clarify

In contrast

Although

Alternatively

Yet

Conversely

Even so

However

Whereas ...

But

On the other hand

Nevertheless

Unlike

For example

..., including

For instance

..., such as

To illustrate

One explanation  
for this is...



# Cohesion: add and conclude

Furthermore	In addition	As well
Moreover	Also	Similarly
Another reason/ factor/ point is	Besides	Additionally

In summary	To summarise	It can be concluded that
It can be inferred that	In conclusion	Overall
This suggests / indicates	Ultimately, ...	This demonstrates / establishes



## ANU Academic Skills

### Helping you to achieve academic success!



#### Peer Writers

- Ask us a quick question
- 10-15 min drop-ins
- Face-to-face or via Zoom
- During semester, Mon-Fri  
11am to 1pm

#### Writing Coaches

- Check you're on the right track
- 30 min booked appointments
- Face-to-face or via Zoom
- Written feedback also offered
- During semester, Mon - Fri  
10am to 4pm

#### Learning Advisers

- Excel in your research writing
- 45 min booked appointments
- Face-to-face or via Zoom
- Written feedback also offered
- Throughout the year, Mon - Fri  
10am to 5pm



# JAVASCRIPT FUNDAMENTALS + ADVANCED





# ABOUT ME

- **David Flores-Condezo**
- Chief tutor and a lecturer of COMP1710/6780
- 6+ Years experience developing website in the public and private sector.
- **Interests:** Human Computer Interaction (HCI), Web content delivery.
- **Email:** [David.flores-condezo@anu.edu.au](mailto:David.flores-condezo@anu.edu.au)



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WEB DEVELOPMENT UP TILL NOW

# WHAT IS JAVASCRIPT (RECAP)

- JavaScript is a widely used scripting language
- Can be used to develop
  - Web applications
  - Networking applications
  - Games

# APPLICATIONS OF JAVASCRIPT

- JavaScript lets us write client-side code (Although not always)
  - Doesn't have to go all the way out and contact the server
  - Highly interactive
- Dynamically updating content

# FUNCTIONS OF JAVASCRIPT

- Event Listeners
  - Mouseclicks
  - Scrolling
  - Browsing
- Operations
- Storing values



## BROWSER APIs

# BROWSER APIs

- Document Object Model (DOM)
  - Mouse clicks
  - Scrolling
  - Browsing
- Geolocation API
- Canvas
- Third party APIs



# HOW IT WORKS

- Web page loads in your browser
- Code runs (HTML, CSS and JavaScript) inside environment
- Code is executed in the order it appears on the page
  - JavaScript should be the final code loaded

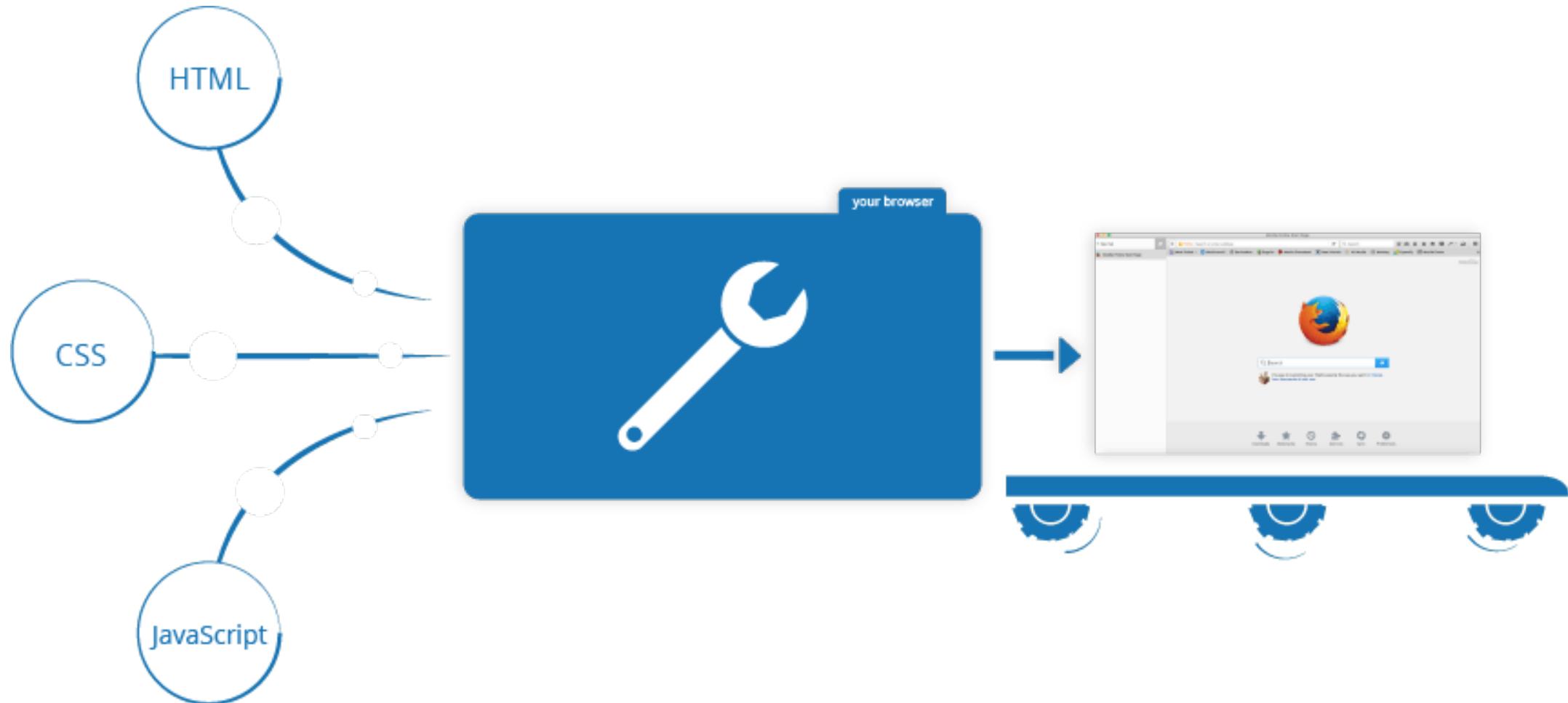


Image from Mozilla Developer Docs

---

# ADDING JAVASCRIPT TO YOUR WEBSITE

Using inline JS

```
<script>  
  // Code goes here  
</script>
```

---

# ADDING JAVASCRIPT TO YOUR WEBSITE

Using a separate JS File

```
<script src="js/script.js"></script>
```



# POPULAR CMS



# JAVASCRIPT EXAMPLE

```
function pictureChange() {  
    document.getElementById("thelimage").src="image2.png";  
}  
  
<html>  
  
<input type="button" id="theButton" value="click me!" onclick="pictureChange()"></p>
```

# JAVASCRIPT EXAMPLES

- Interactive Experiences
- Examples
  - [COBAYES : Animal research, let's get into it!](#)
  - [The Boat | SBS](#)



# JAVASCRIPT FRAMEWORKS

- A collection of pre-defined classes and functions
- Frameworks provide a structure (like a skeleton, or a scaffolding...or a framework) to base your entire project around. This structure is created through page templates (provided by the framework) with specific areas set aside for inserting framework code (versus the library format, where the developer decides where to implement library code).

---

# POPULAR FRAMEWORKS

- REACT
- ANGULAR
- VUE
- METEOR
- ETC

# REACT

- Popular
- Component based
  - Everything is a component of the web page, divided into small components to create a views.
- Virtual DOM
  - It creates a virtual copy of the original DOM and is a representation of a DOM object.
- Declarative
  - Creates interactive and dynamic UI for websites and mobile applications. Declarative views make the code readable and easy to debug.
- Performance

# VUE

- Data Binding
  - This feature facilitates the manipulation or assignment of values to HTML attributes.
- Virtual DOM
  - It creates a virtual copy of the original DOM and is a representation of a DOM object.
- Templating
  - Vue provides HTML-based templates that bind the DOM with the Vue.js instance data. The templates are compiled into Virtual DOM Render functions.

# WEBSITES USING VUE

- Netflix
- Adobe
- Grammarly
- Nintendo
- Gitlab

# VUE EXAMPLE

```
<script>
export default {
  data() {
    return {
      count: 0
    }
  }
}

</script>

<template>
  {{ count }}
  <button
    @click="count++">Count</button>
</template>
```

# CASE STUDY: AUSTRALIAN WAR MEMORIAL

The screenshot shows the homepage of the Australian War Memorial's website. At the top right, there is a navigation bar with links for 'COLLECTION & RECORDS', 'VISIT', 'LEARN', 'COMMEMORATE', and a 'SHOP' button. The main content area features a large blue banner with the 'AUSTRALIAN WAR MEMORIAL' logo at the top left. A prominent blue button labeled 'VISIT' is centered on the banner. Below the banner, a dark horizontal bar contains the text 'IN THIS SECTION' and a dropdown arrow icon. To the right of the banner, there is a photograph of a woman in a red dress and a man in a grey hoodie walking with two young children in front of a wall covered in red poppies. Below this image, there are three columns of information: 'Entry' (free entry, book your ticket), 'Opening hours' (Galleries: 10 am to 4 pm daily, closed Christmas Day), and 'Where to find us' (Fairbairn Ave, Campbell ACT 2612, Australia). At the bottom, there is a blue call-to-action box with the text 'VISIT THE MEMORIAL Plan your visit' and a note about timed tickets.

AUSTRALIAN WAR MEMORIAL

VISIT

IN THIS SECTION

Entry

Free entry, [book your ticket](#)

Opening hours

Galleries: 10 am to 4 pm daily  
(closed Christmas Day)

Last Post Ceremony: Entry at 4:20 pm Ceremony commences at 4:45 pm

Where to find us

Access to the Memorial Entrance and Visitor Carpark is via:

Fairbairn Ave  
Campbell ACT 2612  
Australia

VISIT THE MEMORIAL

Plan your visit

All visitors require a free timed ticket to enter the Memorial Galleries and attend the Last Post Ceremony. Visitors are advised to book their free ticket in advance to guarantee entry.

---

# CASE STUDY: AUSTRALIAN WAR MEMORIAL

- Online shop
  - Stock inventory update
  - Image update
  - Filters
  - Sorting
  - Page Counts
  - One application



# RECAP

- Importance of JavaScript
- How JavaScript works
- Using JavaScript
- JavaScript frameworks
- Using JavaScript frameworks

---

---

---

# Q&A





# COMP1710/6780

## Web Development and Design

Week 10 10-14 October 2022



**Agenda**  
**Why ePubs**  
**What are ePubs**  
**ePub tools**  
**This week's lab**



CI sessions were very valuable, thank you to all who participated; we've been able to make some of the changes and will provide a summary next week. In the meantime, CI marks are continuing to be populated

Problems with Partch delayed some marking:

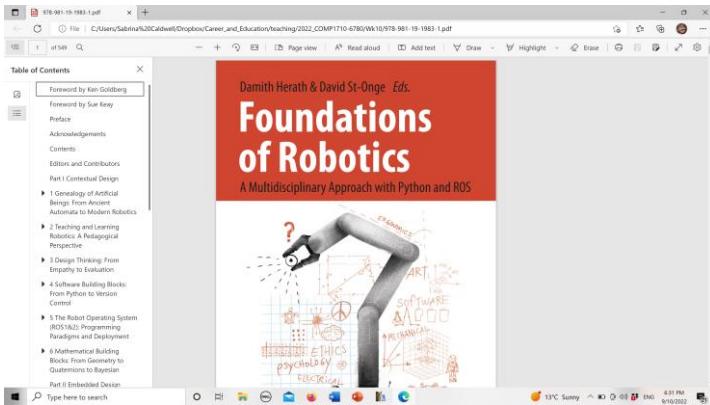
- Assignment Pt2 marks – mark finalisation underway now
- Most but not all Assignment Pt1 review requests are done and will be complete in the next couple days.

There is a quiz this week opening tomorrow – due a week from Sunday to give you plenty of time for this last quiz.

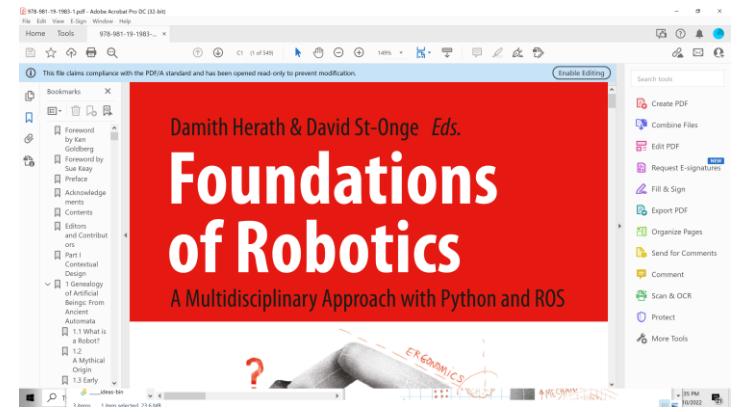


# Why not just a pdf?

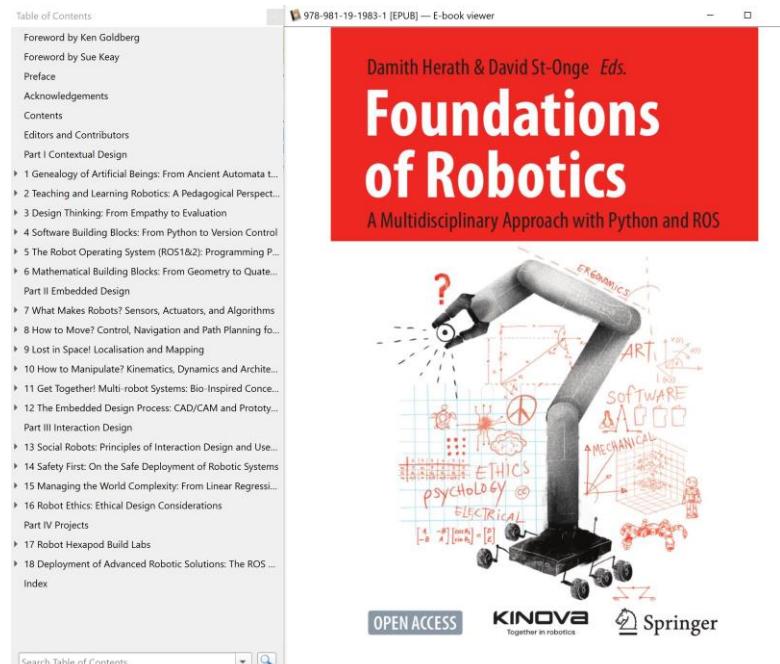
## Foundation of Robotics book views



...in browser



...in Acrobat



In Calibre eBook viewer  
Cross-platform: ~40  
different devices,  
operating systems,  
online viewers  
Easy navigation



## Foundation of Robotics book views

### Edit css files to change styling

The screenshot shows the Calibre 6.6.1 software interface. On the left, the 'File browser' pane lists files for the book 'Foundations of Robotics'. It includes files like 'index\_split\_000.html', 'index\_split\_001.html', and 'cover.jpeg'. The main area displays the content of 'titlepage.xhtml'. The code is as follows:

```
<?xml version='1.0' encoding='utf-8'?>
<html xmlns="http://www.w3.org/1999/xhtml" xml:lang="en">
    <head>
        <meta http-equiv="Content-Type" content="text/html; charset=UTF-8"/>
        <meta name="calibre:cover" content="true"/>
        <title>Cover</title>
        <style type="text/css" title="override_css">
            @page {padding: 0pt; margin:0pt}
            body { text-align: center; padding:0pt; margin: 0pt; }
        </style>
    </head>
    <body>
        <div>
            <img alt="Robot arm holding a pen over a sketch of a robot and various scientific fields like Ergonomics, Art, Software, Mechanical, Electrical, Psychology, and Ethics." data-bbox="100 100 800 800"/>
        </div>
    </body>
</html>
```

The right side of the interface shows a preview of the book cover. The cover features a red background with the title 'Foundations of Robotics' in large white letters. Below it, it says 'A Multidisciplinary Approach with Python and ROS'. The cover art includes a robotic arm holding a pen, drawing on a grid with various scientific and technical terms like 'ERGONOMICS', 'ART', 'SOFTWARE', 'MECHANICAL', 'ELECTRICAL', 'PSYCHOLOGY', and 'ETHICS'.



## State of ePublications (USA Study) [1]

72% of U.S. adults have read a book in the last year.

37% of adults read only print books.

28% of adults read both print and digital (ePubs & audio books)

7% adults read only digital books

Formats people have used for reading in the last year:

65% have read a print book (down 8%)

25% have read an ePub (up 11%)

20% hae read an audiobook (up 14%)

[1] Thomas a. Dodson. (2022) Ebooks & Accessibility. Portland State University Online Northwest



## State of ePublications (USA Study) - devices used by eReaders - changes since 2016:

Smartphones **+13%**



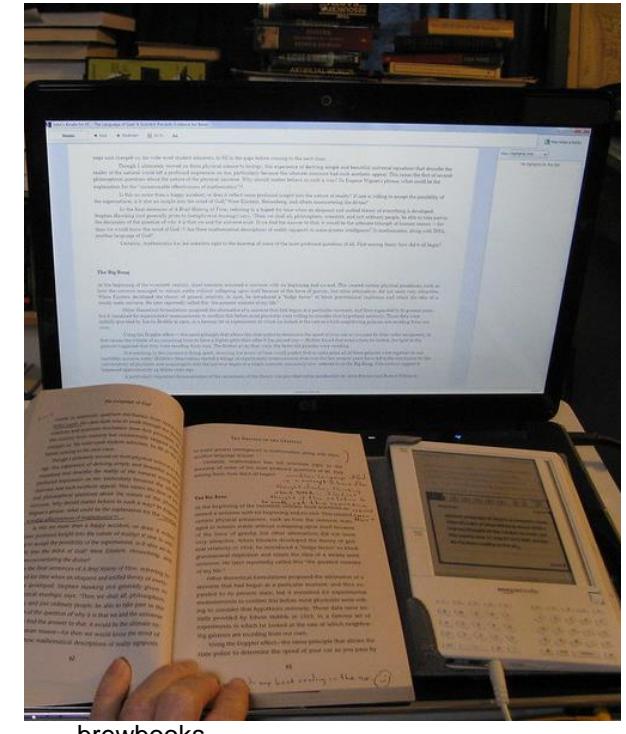
Tony Alter,  
<https://www.flickr.com/photos/78428166@N00/8050816442/in/photostream/>

Tablets **+15%**



osde8info  
<https://www.flickr.com/photos/8764442@N07/8686288543>

PC/laptops **+11%**



brewbooks  
<https://www.flickr.com/photos/93452909@N00/4575290954>

Dedicated devices like Kindle reducing in popularity



From the **user perspective**, an ePub is an online book.

The text is reflowable – displays fluidly on different devices from smartphone to PC monitor

Reader controls font style and size

Usually swipe or arrow for page turns (depending on device/environment)

Images can be difficult to display adjacent to desired text



(From the **user perspective**, an ePub is an online book.)

From a **webdev perspective**, an ePub is a file with the extension **.ePub**, a container file format that holds multiple files of potentially many different types.

ePub is the open standard for e-books created by the International Digital Publishing Forum (IDPF) created November 2014: ePub3 ISO/IEC TS 30135

As at May 2019, EPUB 3.2 consists of 4 open standards covering 1) semantics, 2) structure, 3) containerisation, and 4) media overlays for syncing text and audio.



## What you need to know about ePubs

### If you are not doing an ePub in your website

Then you really just need a basic understanding, for example what ePubs are, how they are different to other formats like pdfs, how users use them.

### If you are doing an ePub in your website

You will need to know the above plus how to create and edit them to create your ePub content in your website.



In practice, EPUB 3 is slowly being adopted with less device and tool support so in many cases you will be better off with version 2 because it is more broadly supported, but there are reasons to use version 3:

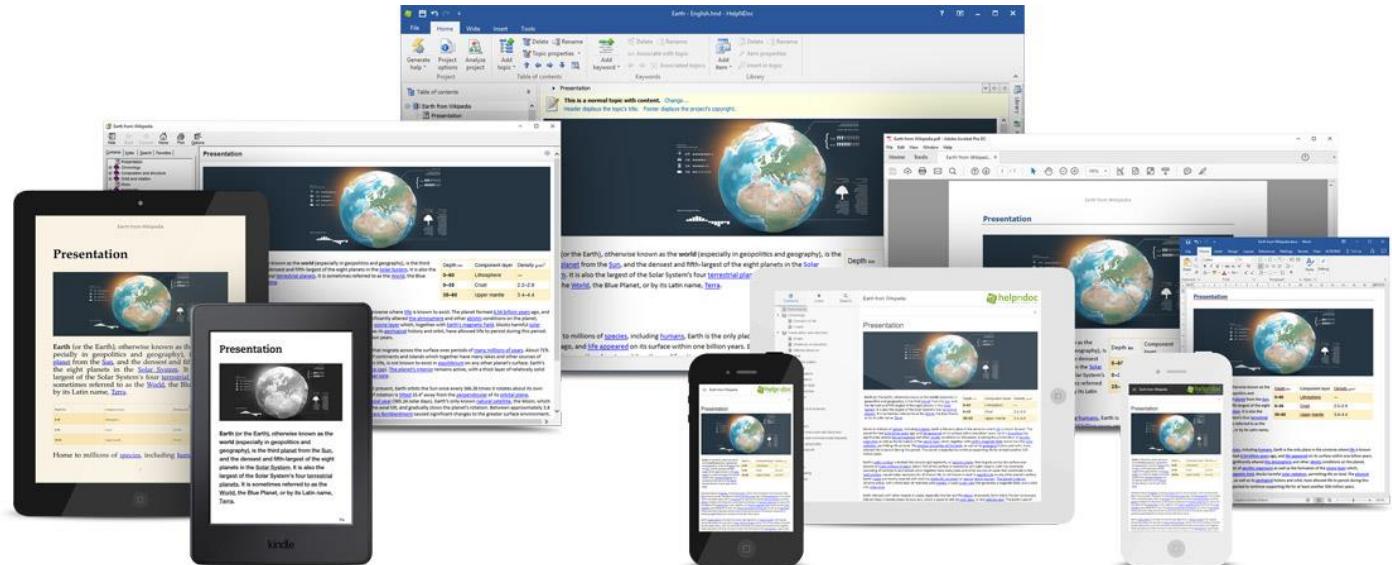
- Version 2 is unsuitable for precise layouts, for example comics
- Version 2 lacks ability to include math equations
- Version 2 can still be error-prone in respect of hyperlinks and annotations; you can learn more about this by visiting <http://epubtest.org>



Creating an ePub file is usually a lengthy and error prone process. It involves following [strict specification rules](#) which can be summarized as follows

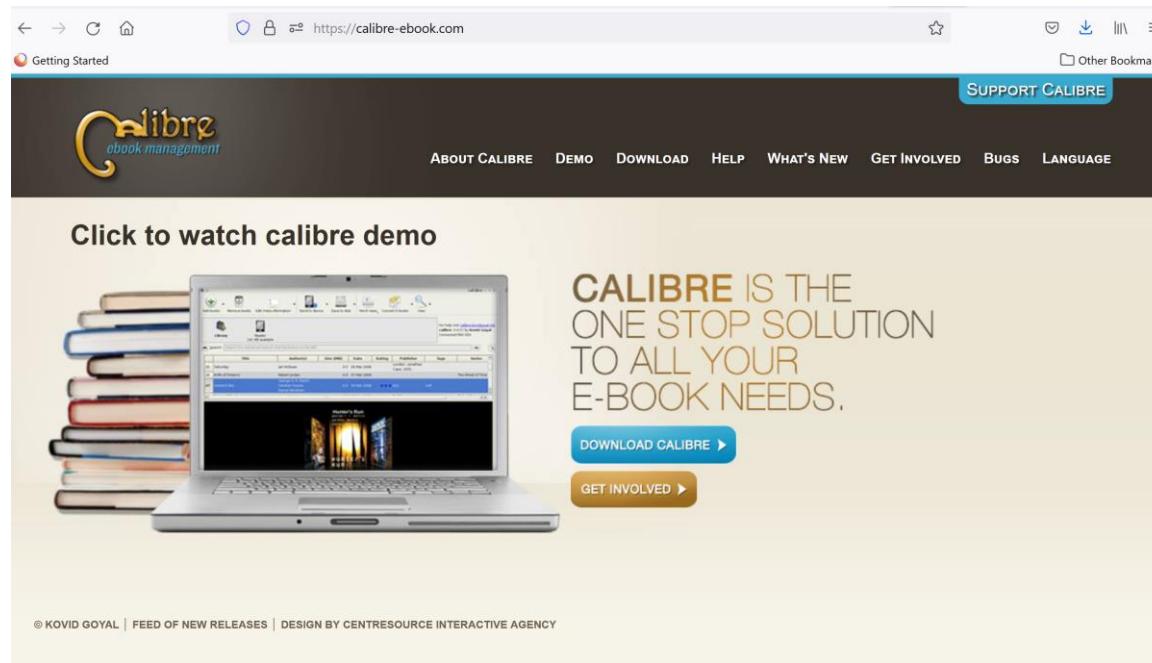
- *Code and write multiple XHTML files, one per chapter*
- *Link to external pictures, videos*
- *Handle complex configuration XML files to order chapters*
- *Package the content correctly so its widely compatible*

eBook authoring tools reduce the time and effort needed  
(This example software, HelpNDoc, is free for personal use  
[Windows only])



Microsoft has a ‘help’ format that has been around for a long time (since 1996!), and can be used to create eBooks: [Microsoft Compiled HTML Help](#) otherwise known as CHM.

However, there are more prominent eBook tools available. The one we’ll be talking about today and suggesting you use in labs is Calibre.



<https://calibre-ebook.com/>



## Apple .ibook format

iBooks author is free on Mac, but may not be as easy as Calibre

Apple's free iBooks program can read epubs well

Format	Opens In	Available tools
iBooks		iBooks can <b>only</b> be read in iBooks. Full annotation tools as part of iBooks
ePub		ePub is a generic format for something that can be read on an iPad, Kindle, Nook, etc. Full annotation tools are available.
PDF	 	PDF can be opened but NOT annotated in iBooks. PDF can be opened and annotated in PaperDesk, Paperport Notes, Good Reader, ScreenChomp, etc. However, there is NO speak selection.



## Creating epubs in week 10 Lab

We'll use the free Calibre and Sigil programs

The lab is under specified – its an advanced lab so we've provided a very quick way to get to an epub

- But to make it better will require digging around
- Provided some links, beyond that, search engines are your friend
- Perhaps you should use your print css (if you did that) and convert from the pdf?



## Minimal epub

- .epub: The epub file is just a zipped version of the directory structure.
- mimetype: contains only "application/epub+zip"
- container.xml points to the root file "minimal.opf"
- cover.xhtml is the cover image shown by ePub readers
- -div.xhtml: your content
- .opf: list of all resources, this keeps the "book" together.  
See also [OPF specs](#).
- .ncx: table of contents

```
minimal-epub
├── META-INF
│   └── container.xml
└── OEBPS
    ├── cover.xhtml
    ├── images
    ├── minimal-div.xhtml
    ├── minimal.opf
    ├── nav.xhtml
    ├── styles
    │   ├── minimal-defaults.css
    │   ├── minimal-images.css
    │   └── minimal-styles.css
    └── toc.ncx
└── mimetype
```



## XML: container.xml

- META-INF/container.xml locates content.opf

```
<?xml version="1.0"?>
<container version="1.0" xmlns=
    "urn:oasis:names:tc:opendocument:xmlns:container">
    <rootfiles>
        <rootfile full-path="OPS/content.opf" media-type=
            "application/oebps-package+xml"/>
    </rootfiles>
</container>
```

- Can include other files, e.g.

```
<rootfile full-path="pdf/tomfile.pdf" media-type=
    "application/pdf"/>
```



## XML file content.opf

- Describes and organises the content elements:

```
<?xml version='1.0' encoding='UTF-8'?>
<package ...>
    <metadata>...</metadata>    ++ title, identifier, language
    <manifest>                    the list of contents
        <item href="..." id="def" mediatype="...">
        <item href="..." id="abc" mediatype="...">
        <item href="..." id="ghi" mediatype="...">
    </manifest>
    <spine>                      the order to show them
        <itemref idref="abc"/>
        <itemref idref="def"/>
    </spine>
    <guide/>
```



# Create an ePub from a Word document

## Word to pdf to ePub

The screenshot shows the homepage of the Calibre eBook management website at https://calibre-ebook.com. The page features a navigation bar with links for Getting Started, SUPPORT CALIBRE, ABOUT CALIBRE, DEMO, DOWNLOAD, HELP, WHAT'S NEW, GET INVOLVED, BUGS, and LANGUAGE. Below the navigation, there's a call-to-action button labeled "Click to watch calibre demo". The main content area includes a large image of a laptop displaying a bookshelf interface, with the text "Let's make a simple one..." overlaid. To the right, there's a section titled "CALIBRE IS THE ONE STOP SOLUTION TO ALL YOUR E-BOOK NEEDS." with two buttons: "DOWNLOAD CALIBRE" and "GET INVOLVED". At the bottom left, there's a small copyright notice: "© KOVID GOYAL | FEED OF NEW RELEASES | DESIGN BY CENTRESOURCE INTERACTIVE AGENCY".



# Create an ePub from a Word document

The trick to creating a PDF file that converts properly into ePub is to set up the pages in a way that can be read by an e-reader and to use the word processor's built-in formatting styles. Here are a few tips:

- Use styles to format headings, indented paragraphs, numbered lists, and bullet lists.
- Use page breaks when you intentionally want a page to stop at a particular spot (for example, at the end of each chapter).
- Choose an 8.5" x 11" page size with a portrait orientation and .5-inch margins.
- Left align or center align the paragraphs.



# Create an ePub from a Word document

The trick to creating a PDF file that converts properly into ePub is to set up the pages in a way that can be read by an e-reader and to use the word processor's built-in formatting styles. Here are a few tips:

Use a single font for the text. Recommended fonts are Arial, Times New Roman, and Courier.

- Use 12 pt font size for body text and 14 pt to 18 pt for headings.
- Create images in JPEG or PNG format with a maximum size of 600 pixels tall and 550 pixels wide. Images should be in RGB color mode and 72 DPI.
- Do not wrap text around images. Use inline images where the text is above and below the image.



**How would you add a download link in your website to allow your ePub to be downloaded by your visitor?**

One option:

```
<a download href="filename-of-your-ePub.epub"> Download ePub now! </a>
```



**Tomorrow's lecture is in-person and online as usual.**

**David will be lecturing on and live coding Javascript**



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National  
University

# Full Stack Web Dev Overview

Comp1710/6780 Week 11

**Xuanying Zhu**  
[xuanying.zhu@anu.edu.au](mailto:xuanying.zhu@anu.edu.au)  
School of Cybernetics  
The Australian National University

# Acknowledgement of Country



# Outline

01      About Me

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02      Front End Web Development

---

03      Back End Web Development

---

04      Common Stacks

---

# About Xuanying Zhu



Currently a lecturer at ANU School of Cybernetics  
- Course convenor for CECS8001

PhD at ANU School of Computing  
- Associate lecturer for COMP1710/6780

Software Engineer in industry

**Research Interests:** When HCI meets AI/ML

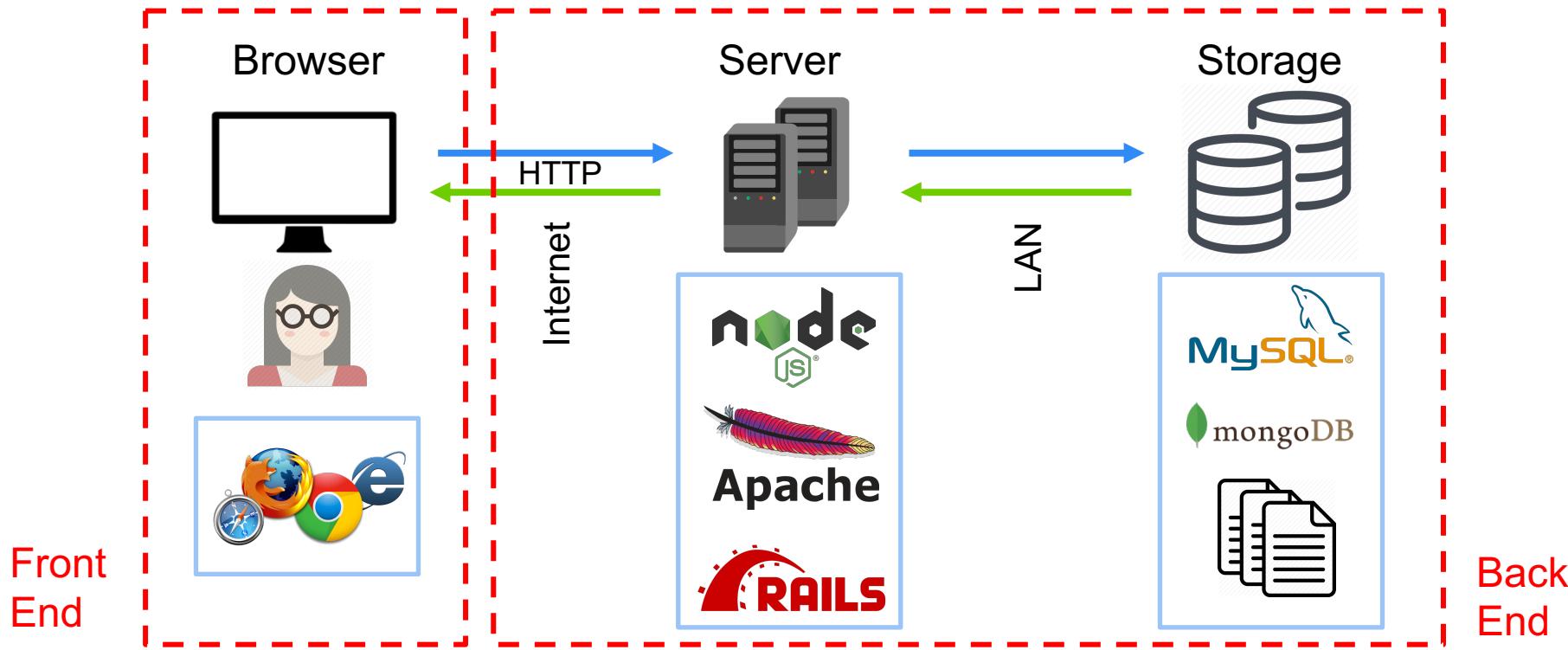
# Poll Everywhere

<https://pollev.com/xuanyingzhu488>

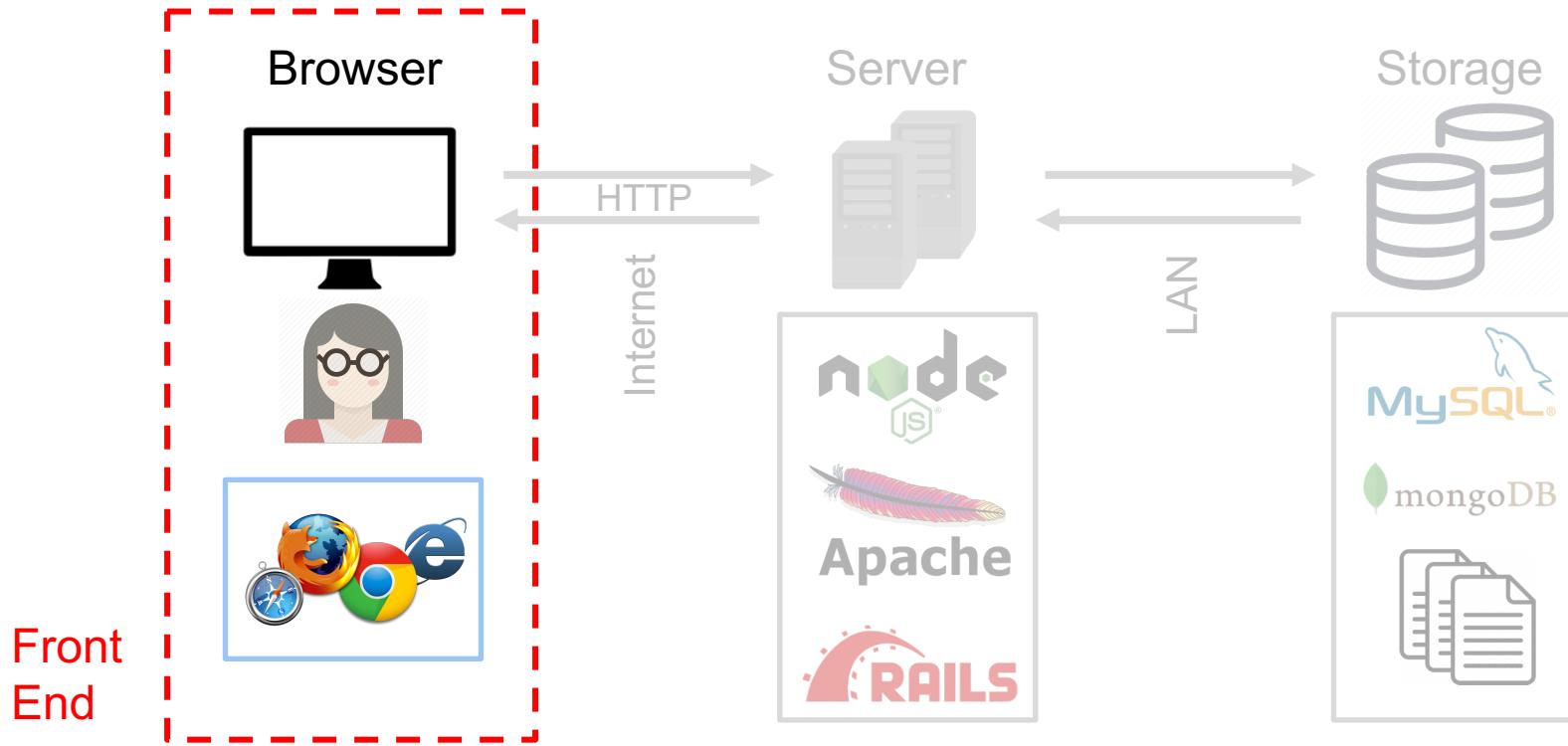
Q1&2: Your understanding of front end



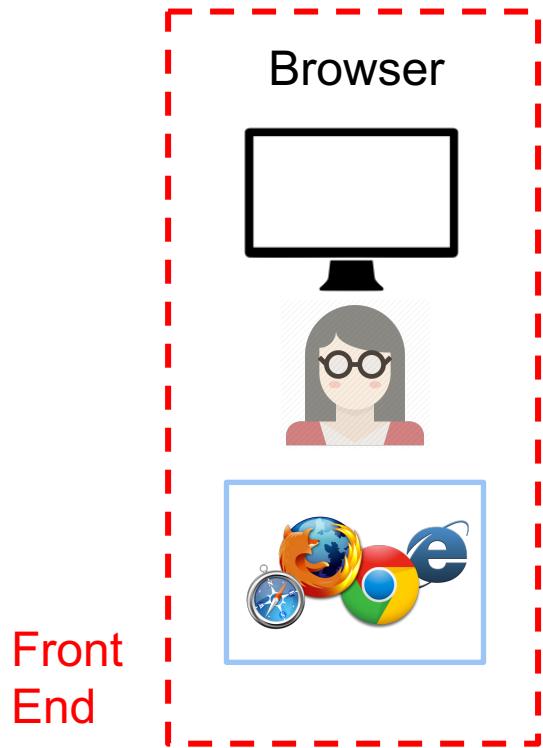
# Full Stack Web Application Architecture



# Full Stack Web Application Architecture



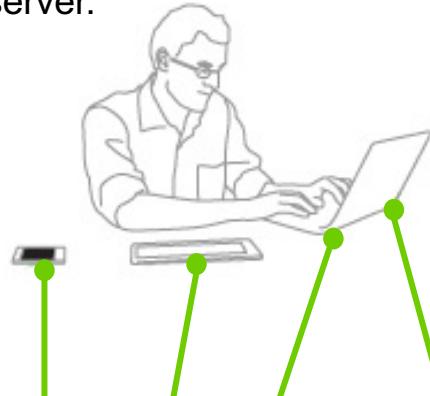
# Front End Development



- Also called “Client-side” programming
- It is everything that users see and interact with in the browser.

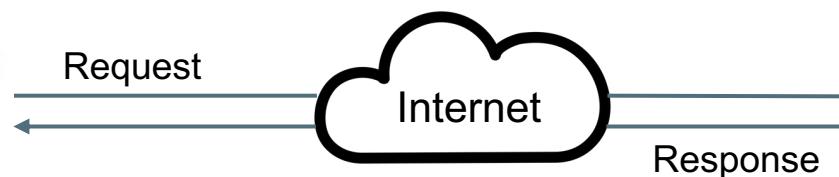
# Front End Development

- 1 A site is loaded in a browser from the server.



**Responsive** design allows a site to adapt to different devices.

- 2 **Client-site scripts**  
Run in the browser and process requests without call-backs to the server



Everything a user sees in the browser is a mix of **HTML, CSS, and Javascript**.

- 3 When a call to database is required, scripts send requests to the back end.



- 4 The **back-end server-side scripts** process the request, pull out data from database and send it back.

# Good Web Applications

## Design

---

---

+

## Implementation

---

---



### Good & Bad Design

- Style Guide
  - e.g. Material Design



### HTML, CSS, Javascript

- Responsive Design
- CSS frameworks

# Good Web Applications

## Design

+

## Implementation

### Good & Bad Design

- Style Guide
  - e.g. Material Design

- HTML, CSS, Javascript
  - Responsive Design
  - CSS frameworks

# Good Web Applications - Design

## Design

---

---



✓ Good & Bad Design

➔ Style Guide

e.g. Material Design

### Some Design Goals:

- Intuitive to use
  - Don't need to take a course or read a user manual
- Accomplish task accurately and rapidly
  - Provide needed information and functionality
- Users like the experience
  - Joy rather than pain when using the application

# Good Web Applications - Design

## Design

---

---



- ✓ Good & Bad Design
- Style Guide
  - e.g. Material Design

### Some guiding design principles

- Be consistent
  - Cognitive load less for the user
- Provide context
  - User should not get lost in the app

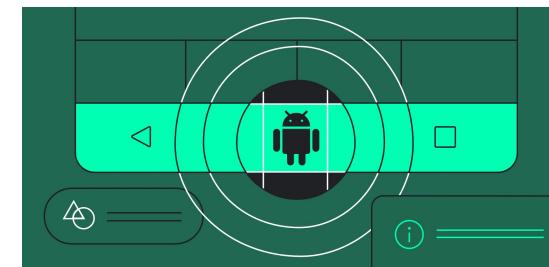
### Consistency: Style guides & templates

- A style guide – covers the look and feel
  - Define style, user interactions, layout
- Patterns – do something multiple places in the same way
- Design templates – follow a familiar structure

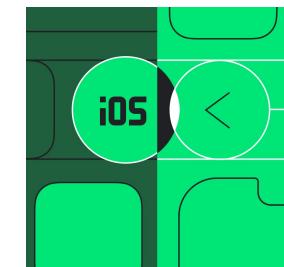
# Style Guide Example

## Material Design from Google

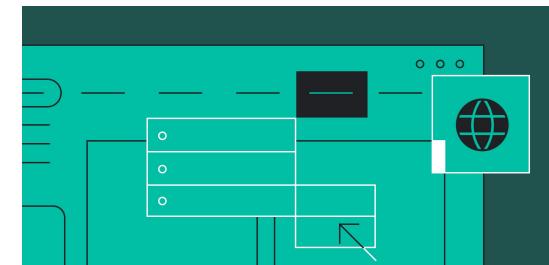
<https://material.io/develop/>



Android



iOS



Web

# Style Guide Example

## Material Design from Google

<https://material.io/develop/>



- Used in Google apps (e.g Android, web apps)
- Two goals:
  1. It unifies Google's numerous products
  2. It unifies Android app interfaces
- Focus on traditional print issues: grids, space, typography, colour etc
- Heavy use of animation to convey action

# Style Guide Example

# Material Design from Google

<https://material.io/develop/>



# Material Design Foundations

- **Environment** – surfaces, depth, and shadows
  - **Layout** – responsive layout grid, white space
  - **Navigation** – navigation transitions, search
  - **Colour** – suggestions for colours that work well together
  - **Typography** – suggestions for point size, weight, spacing
  - **Sound** – suggestions for sound attributes
  - **Shape** – use shapes to direct attention
  - **Motion** – show information, focus attention
  - **Interaction** – map touch to actions

# Style Guide Example

## Material Design from Google

<https://material.io/develop/>



### Colours

Style - Color	
<b>Red</b>	
500	#F44336
50	#FFEBEE
100	#FFCDD2
200	#EF9A9A
300	#E57373
400	#EF5350
500	#F44336
600	#E53935
700	#D32F2F
800	#C62828
900	#B71C1C
A100	#FF8A80
A200	#FF5252
A400	#FF1744
<b>Pink</b>	
500	#E91E63
50	#FCE4EC
100	#F8BDD0
200	#F48FB1
300	#F0E292
400	#EC407A
500	#E91E63
600	#D81B60
700	#C2185B
800	#AD1457
900	#B80E4F
A100	#FFB0AB
A200	#FF4081
A400	#F50577
<b>Purple</b>	
500	#9C27B0
50	#F3E5F5
100	#E1BEE7
200	#CE93D8
300	#BA68C8
400	#AB47BC
500	#9C27B0
600	#8E24AA
700	#7B1FA2
800	#6A1B9A
900	#4A148C
A100	#EA80FC
A200	#ED40FB
A400	#D500F9

Source: [Google Material Design guidelines](https://material.io/design/color/palette.html)

# Style Guide Example

## Material Design from Google

<https://material.io/develop/>



### Icons



Source: [System Icons collection from Material Design Docs by Google](#)

# Style Guide Example

## Material Design from Google

<https://material.io/develop/>



### Writing and Typography

Roboto Thin

Roboto Light

Roboto Regular

**Roboto Medium**

**Roboto Bold**

**Roboto Black**

*Roboto Thin Italic*

*Roboto Light Italic*

*Roboto Italic*

*Roboto Medium Italic*

*Roboto Bold Italic*

*Roboto Black Italic*

Source: [Google Material Design Docs](https://material.io/design/typography/the-typekit-font-family.html)

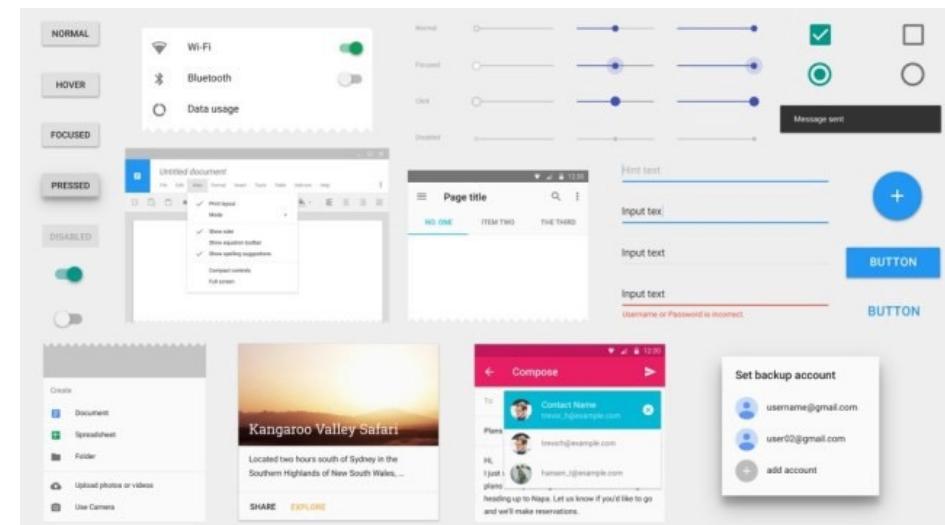
# Style Guide Example

## Material Design from Google

<https://material.io/develop/>



### Design Components



Source: [Google Material Design Docs](https://material.io/design/)

# Style Guide Example

## Material Design from Google

<https://material.io/develop/>



### How to use it for Web?

Include the material design css and js files.  
You can make use of cdn or download the  
files from [material design lite](#)

```
<link rel="stylesheet"  
      href="https://fonts.googleapis.com/icon?family=Material+Icons"  
      >  
  
<link rel="stylesheet"  
      href="https://code.getmdl.io/1.3.0/material.indigo-  
      pink.min.css">  
  
<script defer  
      src="https://code.getmdl.io/1.3.0/material.min.js"></script>
```

# Good Front-end Applications

## Design

+

## Implementation



Good & Bad Design  
Style Guide

e.g. Material Design



HTML, CSS, Javascript  
• Responsive Design  
• CSS frameworks

# Poll Everywhere

<https://pollev.com/xuanyingzhu488>

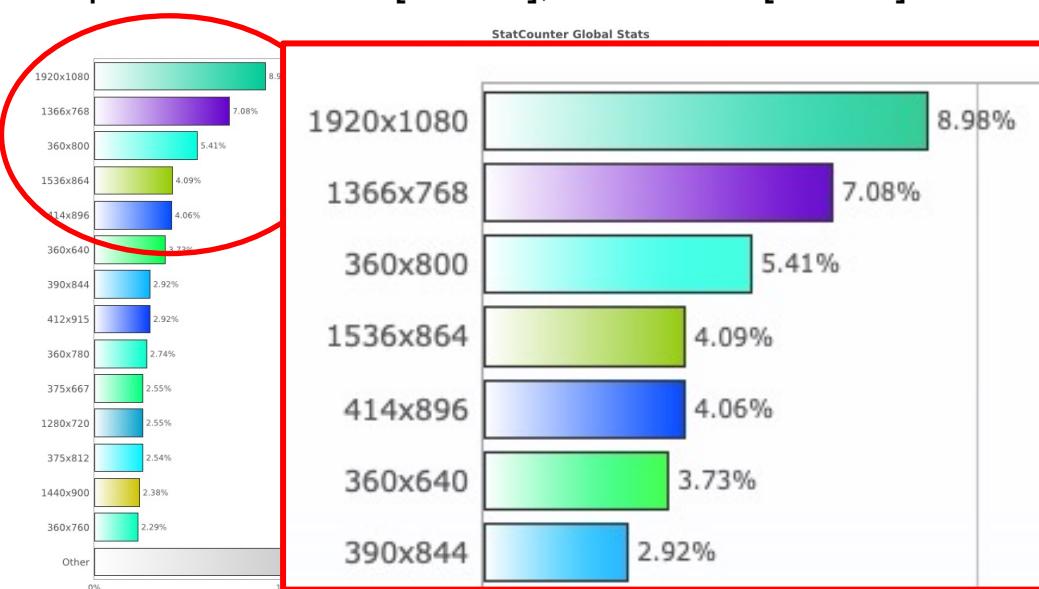
Q3: Your screen size



# Responsive Design

## Screen Resolution Stats

Top 2: 1920x1080 [8.98%], 1366x768 [7.08%]



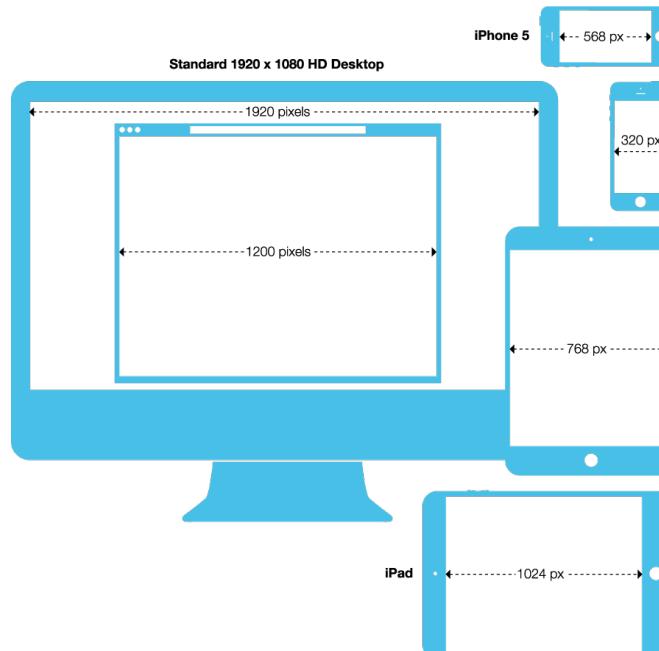
Source: [Stat Counter](#)

## Implementation

- ✓ HTML, CSS, Javascript
- ➡ Responsive Design
  - CSS frameworks

# Responsive Design

Build N versions of each web application?



Source: [Design Insights](#)

## Implementation

- ✓ HTML, CSS, Javascript
- ➡ Responsive Design
  - CSS frameworks

# Responsive Design

## Example of Responsive Design

### New York, NY

Tuesday, April 15th  
Overcast

 58 °F Precipitation: 100%  
Humidity: 97%  
Wind: 4 mph SW  
Pollen Count: 36

Today  68°  
36° Pollen  
36

Wednesday  50°  
39° Pollen  
36

Thursday  55°  
39° Pollen  
36

Friday  54°  
43° Pollen  
36



Source: [Design Insights](#)

## Implementation

- ✓ HTML, CSS, Javascript
- ➡ Responsive Design
  - CSS frameworks

# Poll Everywhere

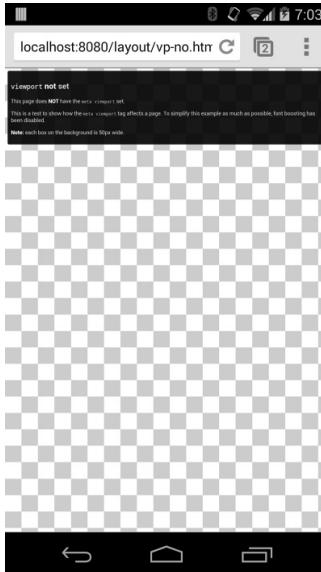
<https://pollev.com/xuanyingzhu488>

Q4: Your experience with  
responsive design

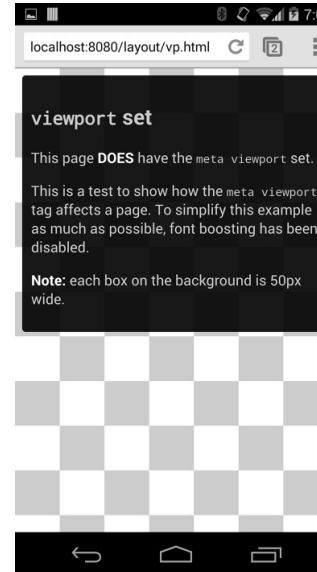


# Responsive Design

Pages optimized for a variety of devices must include a meta viewport tag in the head.



[Page without a viewport set](#)

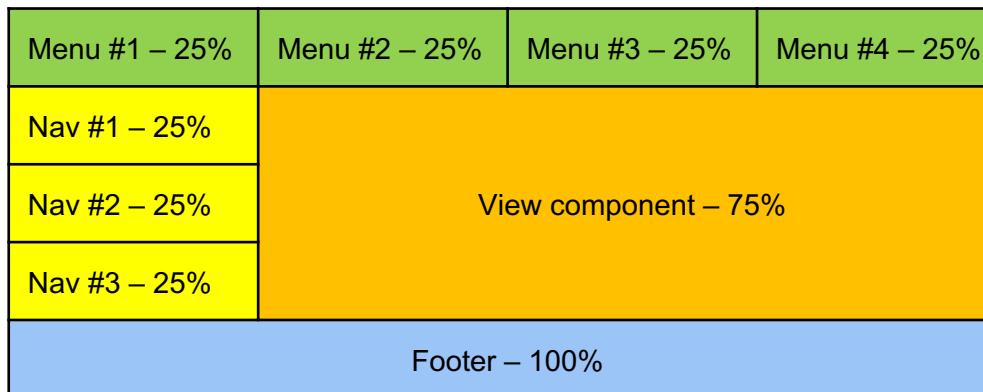
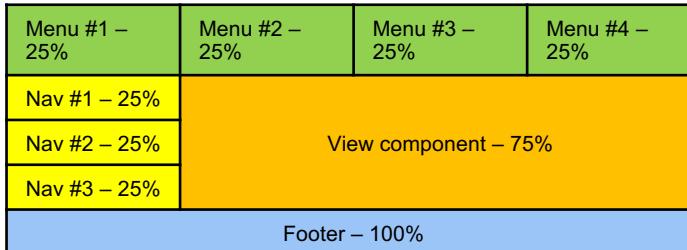


[Page with a viewport set](#)

```
<meta name="viewport"  
      content="width=device-width,  
      initial-scale=1.0">
```

1 Set the view port

# Responsive Design



```
.col-1 {width: 8.33%;}  
.col-2 {width: 16.66%;}  
.col-3 {width: 25%;}  
.col-4 {width: 33.33%;}  
.col-5 {width: 41.66%;}  
.col-6 {width: 50%;}  
.col-7 {width: 58.33%;}  
.col-8 {width: 66.66%;}  
.col-9 {width: 75%;}  
.col-10 {width: 83.33%;}  
.col-11 {width: 91.66%;}  
.col-12 {width: 100%;}
```

- 2 Add grid layout system with relative (e.g. 50%) rather than absolute (e.g. 50pt) measures

# Responsive Design

Auto-scale images and videos to fit in screen region



Source: [Responsive Images](#)

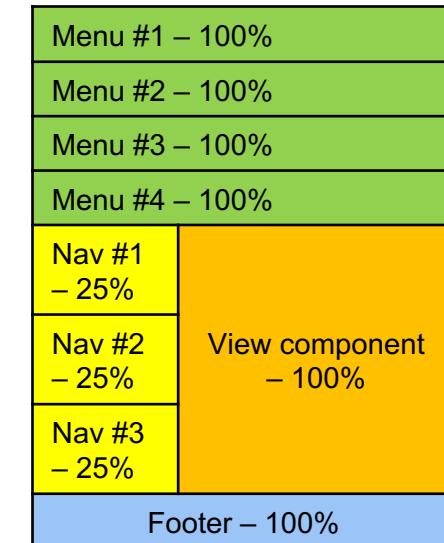
```
img, embed, object, video {  
  width: 100%;  
  height: auto;  
}
```

**3** Make components support relative sizes

# Responsive Design

## CSS Breakpoints to control layout

```
@media only screen and (min-width: 768px) {  
    /* tablets and desktop Layout */  
}  
@media only screen and (max-width: 767px) {  
    /* phones Layout */  
}  
@media only screen and (max-width: 767px) and  
(orientation: portrait) {  
    /* portrait phones Layout */  
}
```



- 4 Add @media rules based on screen sizes

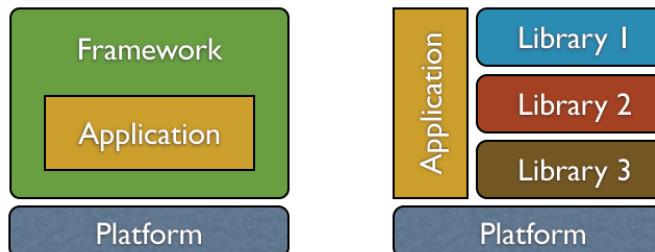
# CSS Frameworks

*A framework is a standardized set of concepts, practices and criteria for dealing with a common type of problem.*

## Difference

**Libraries:** You are in control of when the library should perform a particular function.

**Frameworks:** The control flow is in the framework and you can customize it.



Source: [Tom Lokhorst's blog](#)

## Implementation

- ✓ HTML, CSS, Javascript
- ✓ Responsive Design
- CSS frameworks

# CSS Frameworks

## Advantages

- Easier code maintenance
- Coherent organizational structure
- Responsive media queries
- Uniform styling across buttons, forms etc.
- Consistent set of fonts and icons



Source: [troxler's github](#)

## Implementation

- ✓ HTML, CSS, Javascript
- ✓ Responsive Design
- CSS frameworks

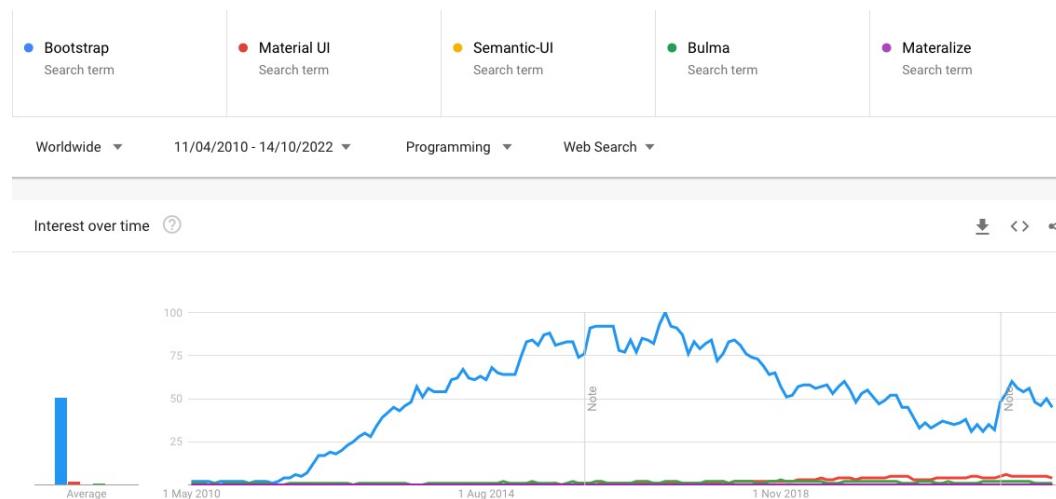
# Poll Everywhere

<https://pollev.com/xuanyingzhu488>

Q5: Your understanding of front-end/css frameworks



# CSS Frameworks



Source: [Google Trends](#)

# CSS Frameworks

## GitHub stars

- Bootstrap: [160K Stars](#)
- Material UI: [82K Stars](#)
- Semantic-UI: [50.2K Stars](#)
- Bulma: [46.5K Stars](#)
- Materialize: [38.7K Stars](#)

# CSS Frameworks

## What are the best CSS frameworks to learn?

Depends on your skills. Having a solid understanding of HTML, CSS, and JavaScript is still the most important skill overall.

### Bootstrap

<https://getbootstrap.com/>



### Materialize

<https://materializecss.com/>



### Bulma

<https://bulma.io/>



### Semantic UI

<https://semantic-ui.com/>

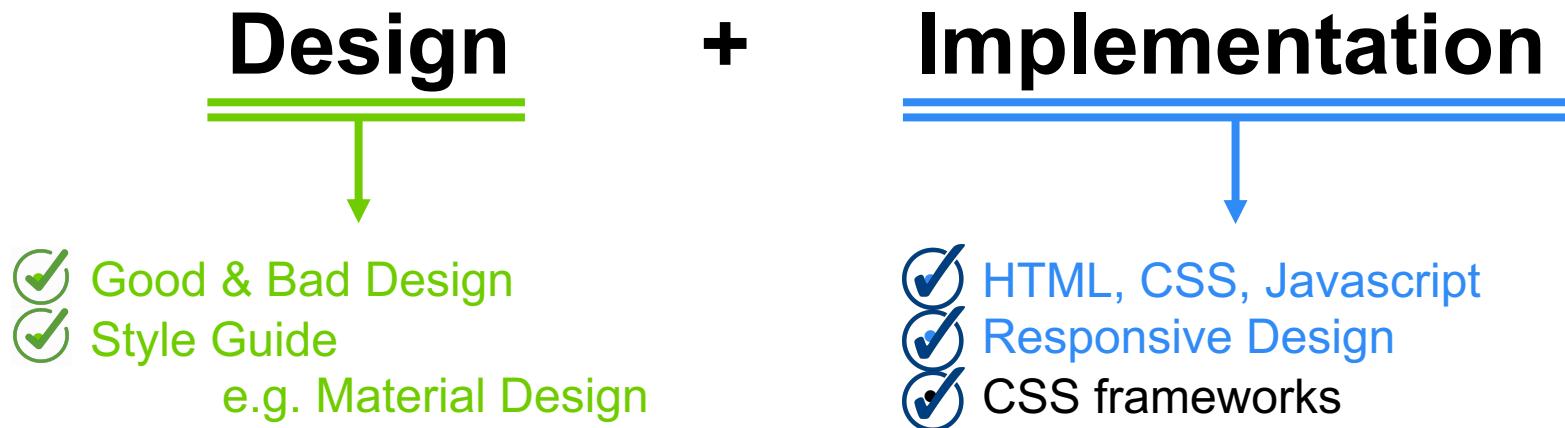


### Material UI

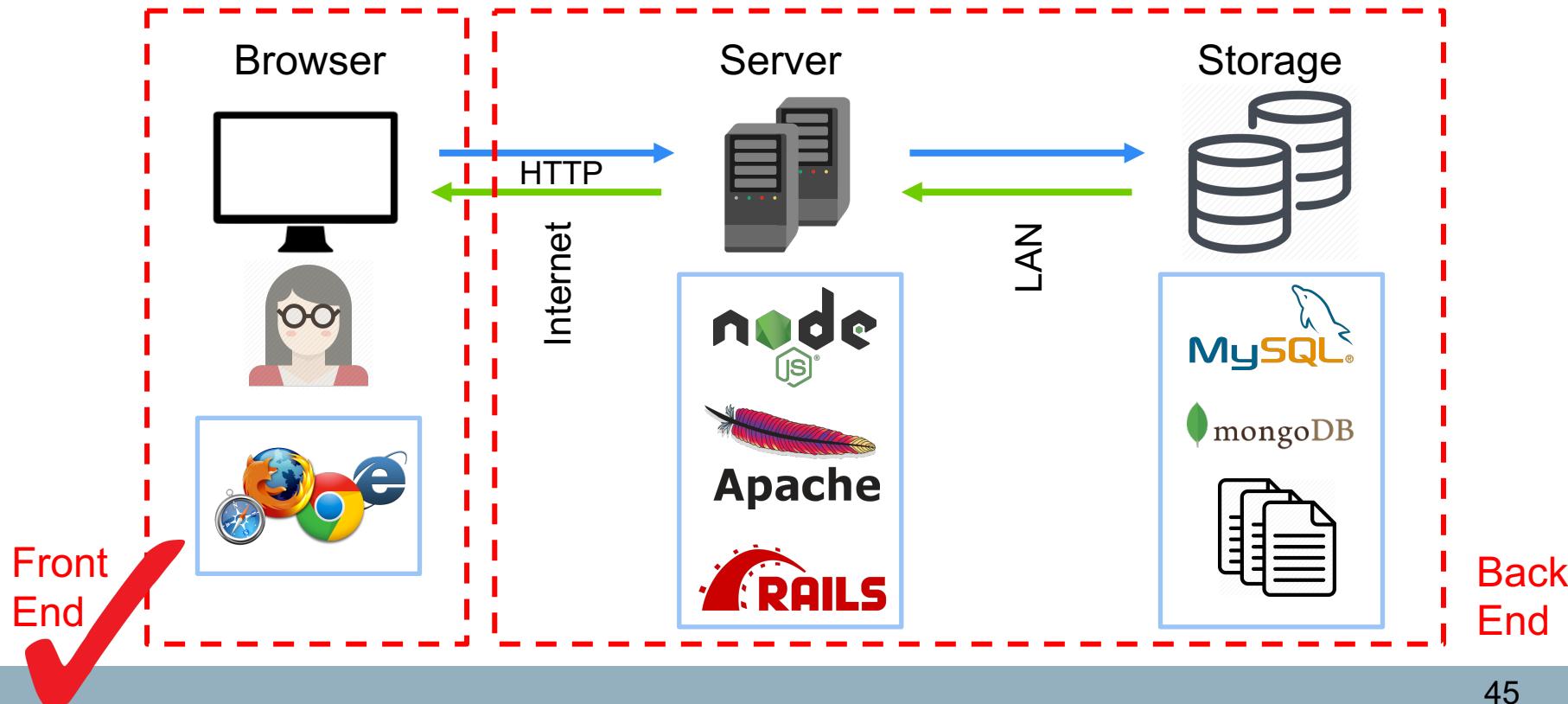
<https://material-ui.com/>



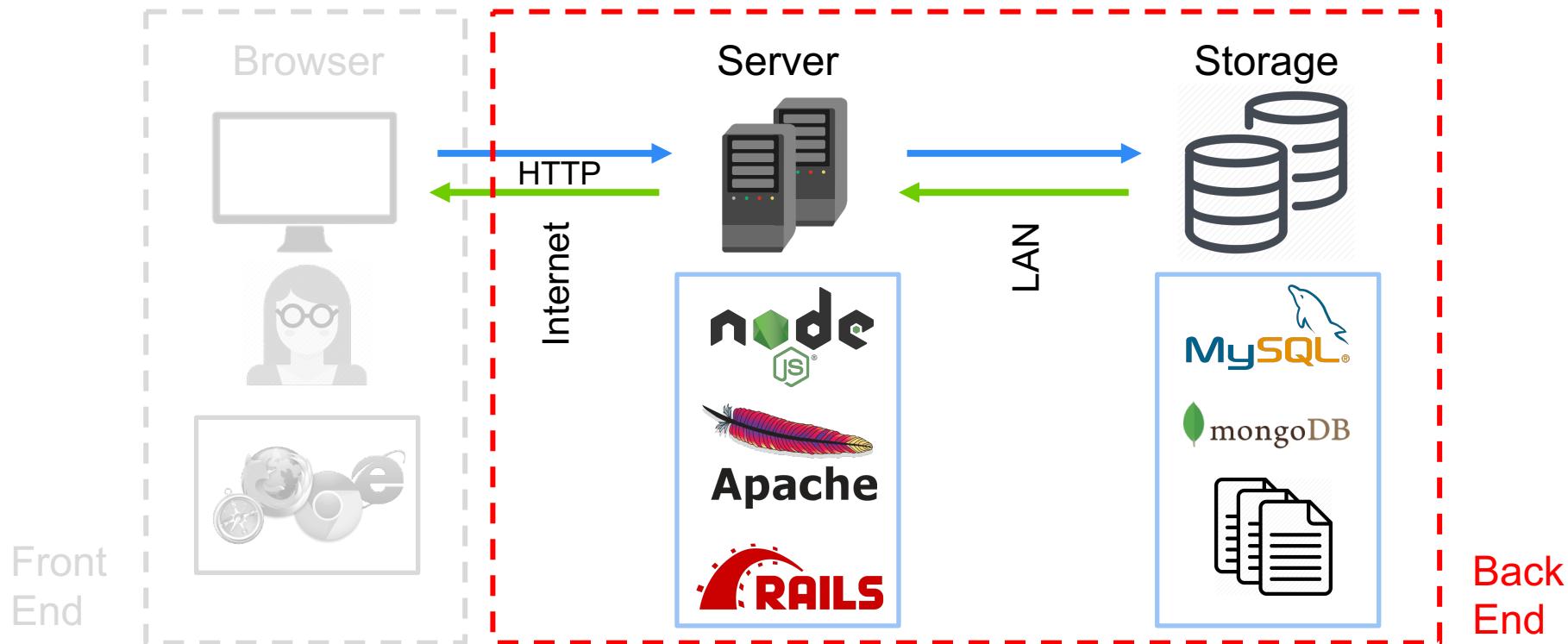
# Good Front-end Applications



# Full Stack Web Application Architecture



# Full Stack Web Application Architecture



# Poll Everywhere

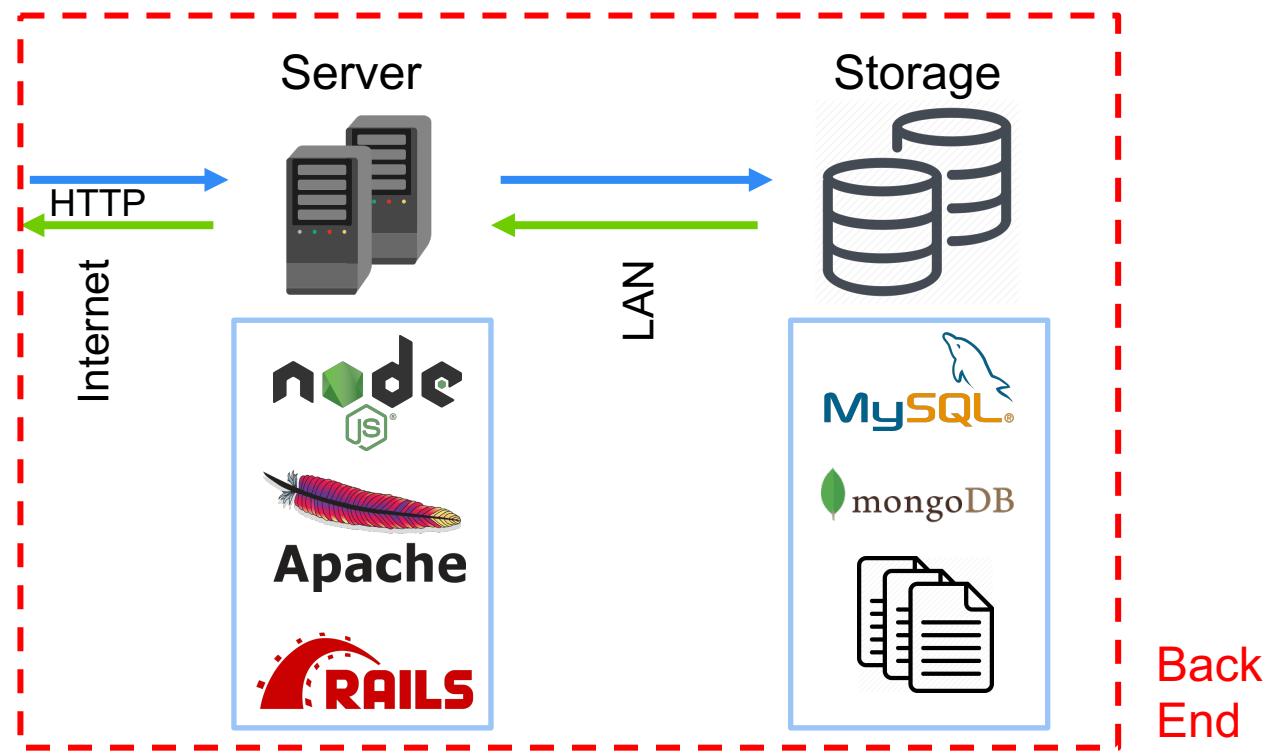
<https://pollev.com/xuanyingzhu488>

Q6&7: Your understanding of  
back-end frameworks



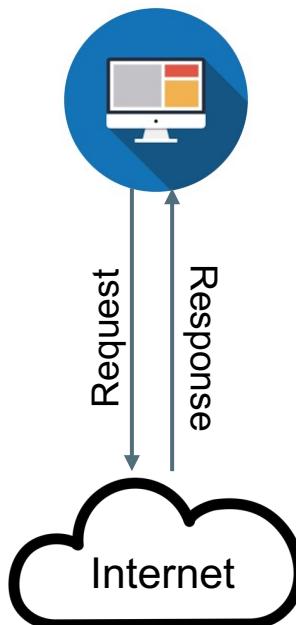
# Back End Development

- Also called “Server-side” programming
- It is everything that happens on the server and databases
- Everything is behind the scenes

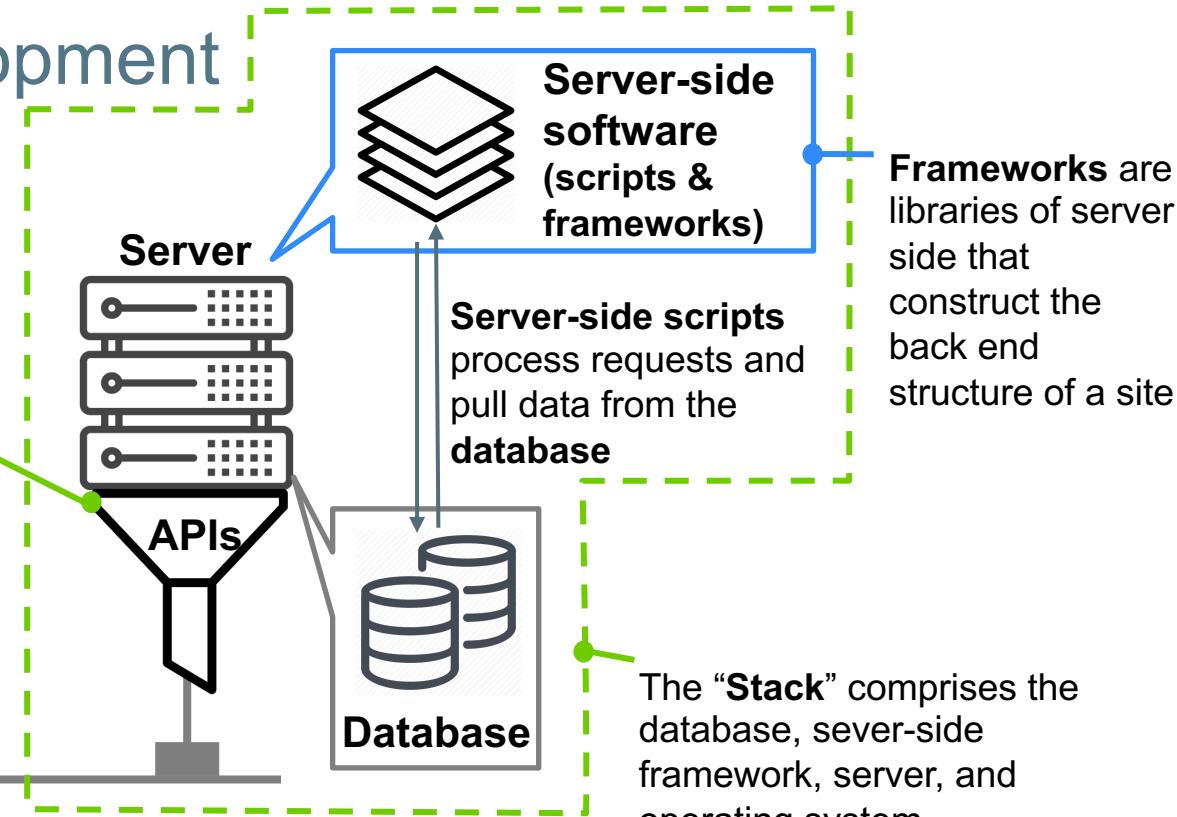


# Back End Development

The front end

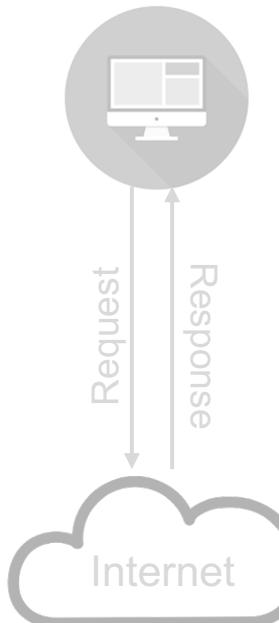


APIs structure how data is exchanged between a database and any software accessing it.

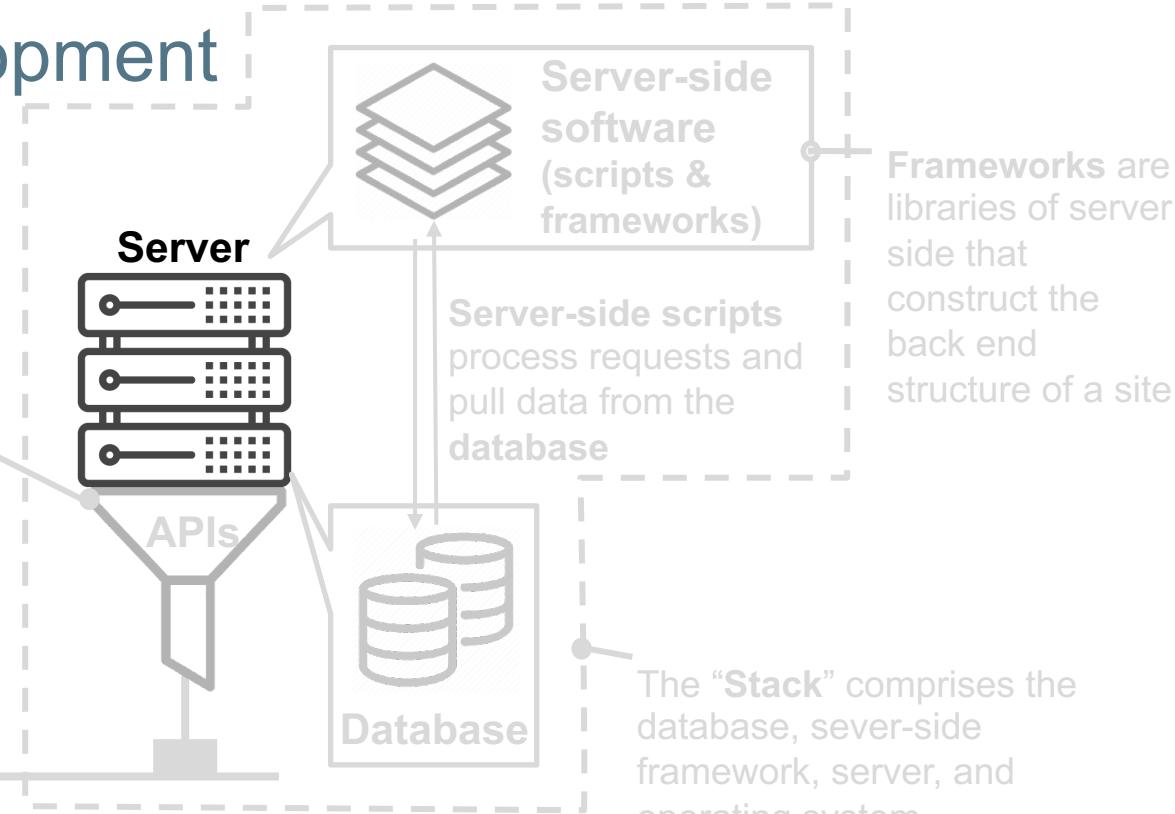


# Back End Development

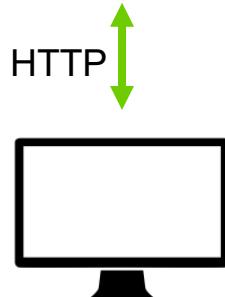
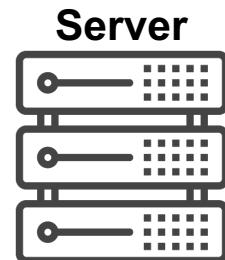
The front end



APIs structure how data is exchanged between a database and any software accessing it.



# Server



Browser

## What do servers do?

Browsers: send HTTP requests and get HTTP responses  
Servers: get HTTP requests and send HTTP responses

# Server: Behind the Scenes

**Browser** –  
what it all starts



**Client side**



**HTTP server**  
(e.g. Apache)



1. Is this request a simple HTML file or graphic?

HTTP server can handle and send it back

- 2.

- Is this request for a file?

HTTP server script will send to app server



Request interpreted,  
executed, and sent  
back to server

**APP server**  
(e.g. PHP)



**Database**  
(e.g. MySQL)

- 3.

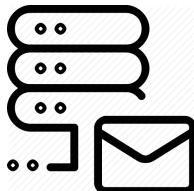
- Does the request need to pull, edit,  
delete or save data to the database?

The server-side script gathers and  
processes the request, then sends it back.

## Type of Requests

- Simple HTML file or graphic
- Complex file request
- Database request

# Other servers



## Mail servers

Sending and storing emails network.

e.g. [Microsoft Exchange Server](#)



## Proxy servers

These servers improve speed, security and performance between local network and the web by filtering requests and also providing cached versions of site pages to reduce network workload.

e.g. [Nginx](#)



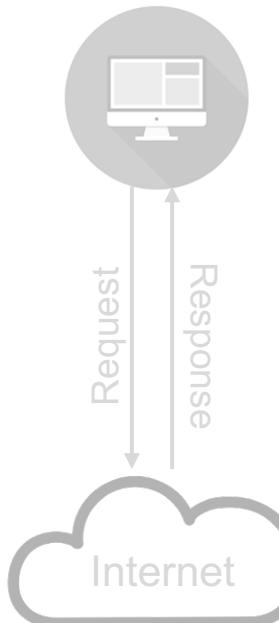
## FTP servers

All about uploading and sending files.

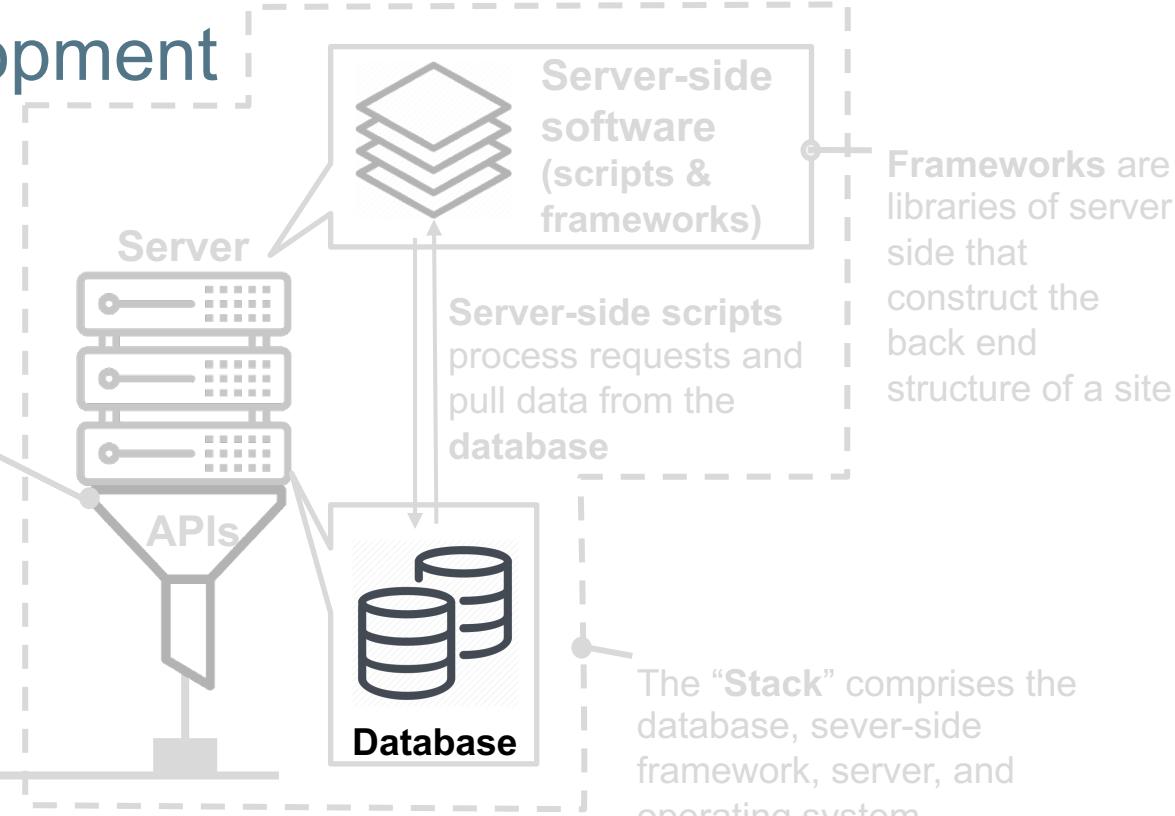
e.g. [Filezilla FTPS](#)

# Back End Development

The front end



APIs structure how data is exchanged between a database and any software accessing it.



# Database / Storage



Database

Databases store, organise and process information so that we can easily find what we need.

## Properties

- Always available – Fetch correct app data and store updates
  - Even if many requests come in concurrently – Scalable
  - Even if pieces fail – Reliable / fault tolerant
- Provide a good organisation of storing data
  - Quickly generate data for view
  - Handle app evolving over time

# Database Type 1: Relational Database



Database

- | **Relational Database**
  - | Data is organised as a series of **tables** (also called **relations**)
  - | A table is made of **rows** (all called **records**)
  - | A row is made of a fixed (per table) set of typed **columns**
- | **Relational Database Management System (RDBMS):**
  - | **CRUD** functions: **C**reate, **R**ead, **U**pdate and **D**elete data
  - | Build-in programming language: **SQL** (Structured Query Language)
  - | e.g. [MySQL](#), [PostgreSQL](#), [Microsoft SQL Server](#), [Oracle](#)
- | ***Ideal for***
  - | *Organising and retrieving structured data*

# Database Type 2: NoSQL Database



Database

- | **NoSQL Database**
  - | • NoSQL = “Not only SQL.”
  - | • These databases are non-relational and distributed, addressing the issue that most modern data from the web is not structured.
- | **How do NoSQL databases work?**
  - | Document-oriented: If a blog used a NoSQL database, each file could store data for a blog post: social likes, photos, text, links etc
- | **Pros:** Flexible & Ease of access (execute queries without SQL)
- | **Cons:** Require extra processing effort and more storage
- | **Ideal for**
  - | *Organising and retrieving inconsistent/incomplete data*

# SQL or NoSQL



Database

## Reasons to use a SQL database

Your data is structured and unchanging.

## Reasons to use a NoSQL database

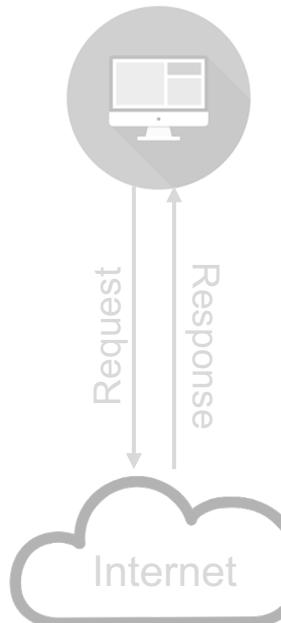
1. Storing large volumes of data that have little or no structure.
2. Making most of cloud computing and storage
3. Rapid development



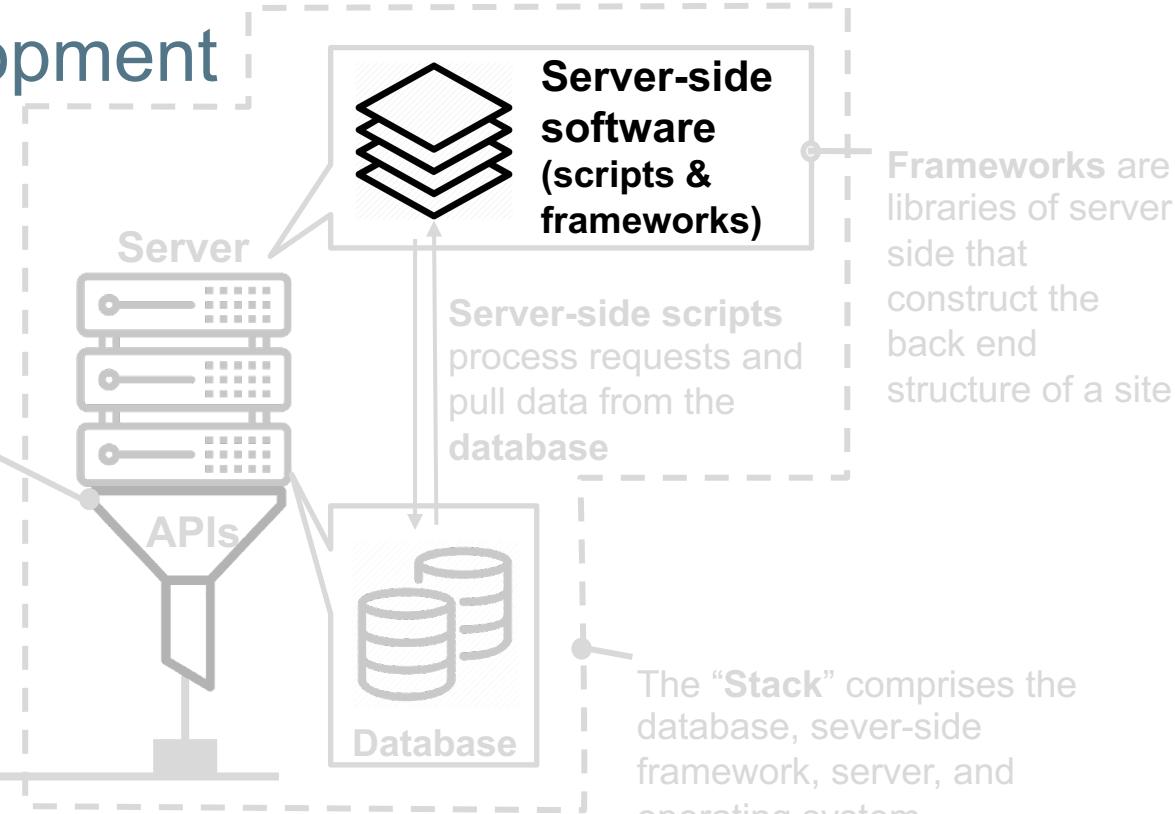
Source: [SQL vs NoSQL](#)

# Back End Development

The front end



APIs structure how data is exchanged between a database and any software accessing it.

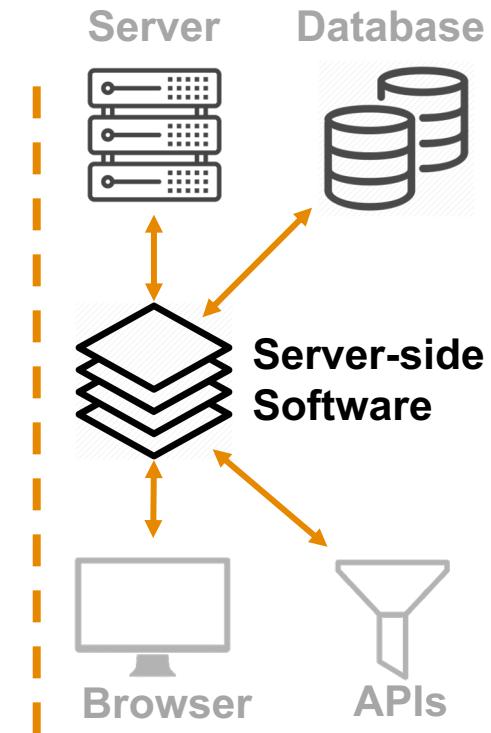


# Server Side Software

- Also called “back-end web application”

## Tasks

- Provide application services based on business logic
- Create the communication channel between browsers, server and storage system.
- Build application programming interfaces (APIs), which control what data and software a site can share with other apps

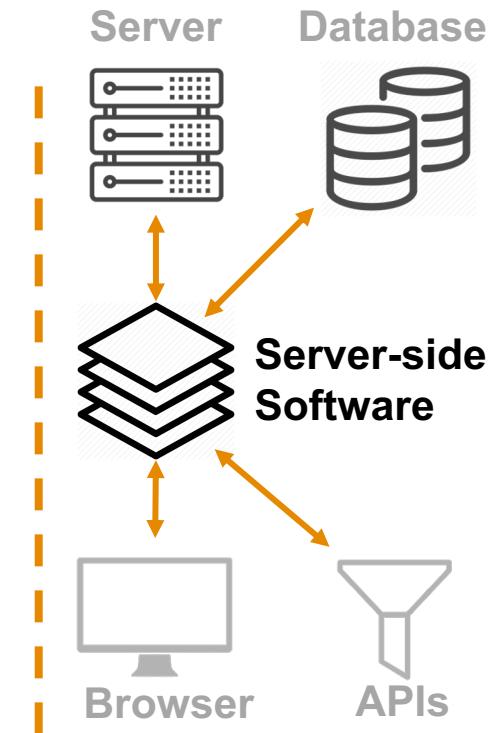


# Server Side Software

- Also called “back-end web application”

## Tasks

- 1. Provide application services bases on business logic  
2. Create the communication channel between browsers, server and storage system.  
3. Build application programming interfaces (APIs), which control what data and software a site can share with other apps



# Server Side Software - Frameworks

*A framework is a standardized set of concepts, practices and criteria for dealing with a common type of problem.*

## Why frameworks?

They boost performance, extend capabilities, and offer coding shortcuts that developers don't need to start from scratch.

### Example:

When you're making a sandwich, it's much easier to buy pre-made, sliced bread from the store than it is to bake it on your own from scratch. Frameworks are your site's sliced bread—they speed up the process.



# Server Side Software - Frameworks

## Generation 0: Before frameworks (1993-)

Browser: static HTML files only with HTML forms for input

Server: Common Gateway Interface (CGI)

- Certain URLs map to executable programs to process data or generate pages
- Language: perl, c, c++, java

### Example

Browser: <FORM METHOD=POST ACTION=http://www.example.com/cgi-bin/**formprocess.pl**>

Server: Execute “**formprocess.pl**” from cgi-bin/

.pl: a program written in Perl (.java for java, .c for c)



# Server Side Software - Frameworks

## Generation 1 (1995-)

### Server:

- Examples: PHP, Asp.net, Java servlets
- Incorporate language runtime system directly into web server
- Web-specific library packages were available:
  - URL handling, HTML generation, database access...
- Introduce **Templates**:
  - HTML/CSS describes view



# Server Side Software - Frameworks

## Generation 2 (2002-)

### Server:

- Examples: [Django for Python](#), [Rails for Ruby](#), [Laravel for PHP](#)
- **Model-View-Controller (MVC)**
  - Divide an application into 3 interconnected parts
- **Object-Relational Mapping (ORM)**
  - Make database tables and rows appear as classes and objects



# Model-View-Controller (MVC) Pattern

## Model:

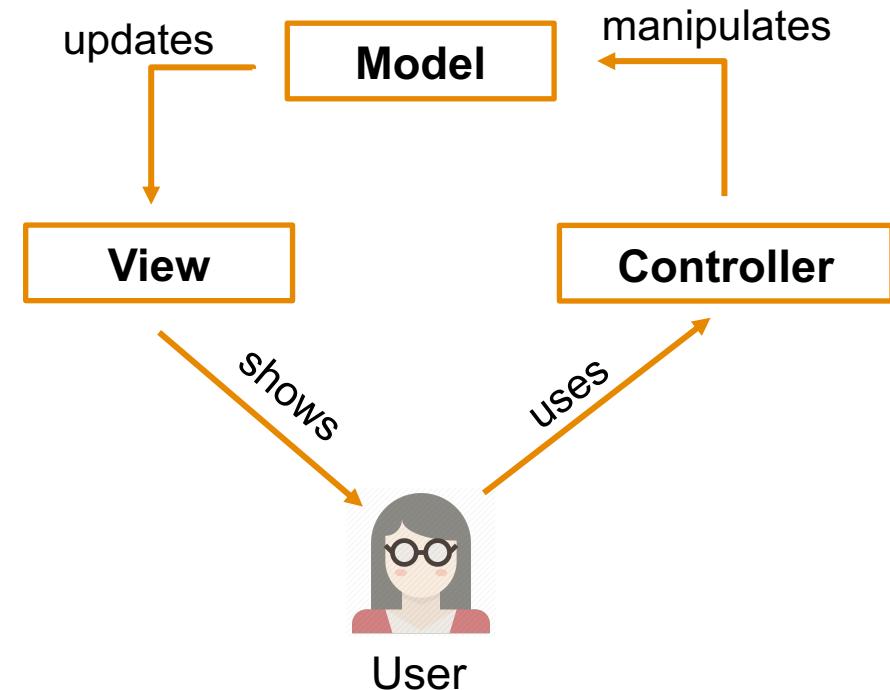
- Manages application's data
- Connects the View and the Controller

## View:

- Displays the web pages

## Controller:

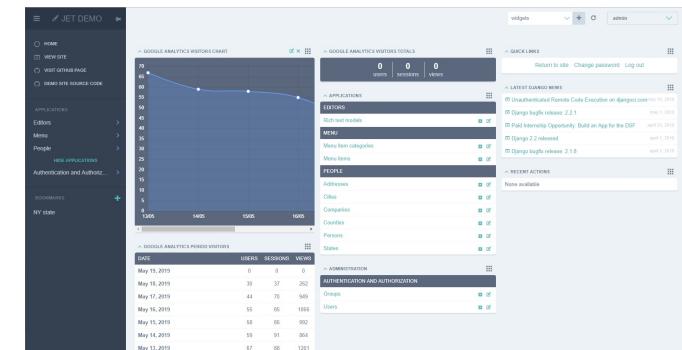
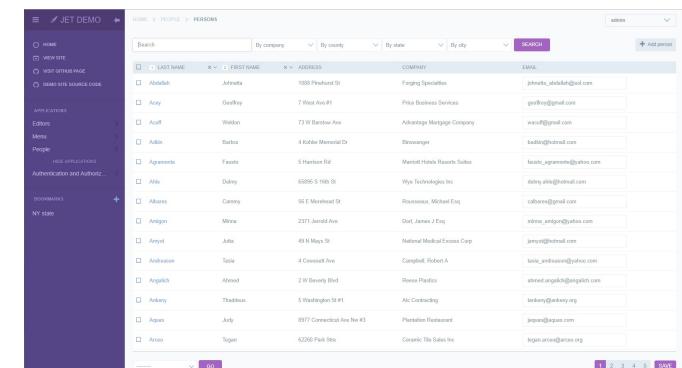
- Handles users' interactions
- Fetches models and controls views



# Model-View-Controller (MVC) Pattern

## View Generation

- Templates** are commonly used
  - Write HTML containing parts of the page that are always the same
  - Add bits of code that generate other parts that are computed for each page
  - The template is expanded by executing code snippets, substituting the results into the document
- Pros**
  - Reusability
  - Easy to see how dynamic data fits in

This screenshot shows a 'PEOPLE' list view. The table columns include LAST NAME, FIRST NAME, ADDRESS, COMPANY, and EMAIL. The data includes entries for Johnette Abidah, Geoffrey Acy, Wadon Asif, Barbara Agarwal, Felecia Akila, Caryn Alvaras, Mina Anjan, Julie Amyot, Tola Anderson, Ahmed Argabdi, Thadeous Ankony, Judy Aquae, and Togen Arzani. Each row contains a blue link labeled 'Email' to the right of the email address. The bottom right corner shows a navigation bar with pages 1 through 5 and a 'SAVE' button.

# Server Side Software - Frameworks

## Generation 3 (2010-)

- Examples: [AngularJS](#)
- JavaScript frameworks running in browser – More app-like web applications
  - Excels at building dynamic, single page web apps (SPAs)
  - Interactive, quick responding applications – Don't need server round-trip
- Many concepts of previous generations carry forward
  - Model-View-Controllers
  - Templates



Server-side  
Software

# Server Side Software - Frameworks

## Angular JS

- **Two-way data binding**

A model variable is bound to a HTML element that can both change and display the value of the variable.

```
First name: Xuanying
Last name: Zhu

Set the first name: 
Set the last name: 
```

Source: [Demo](#)

The firstName and lastName model variables were bound to a couple of HTML input elements.

When the page is loaded, the value of the input elements are initialized to those model variables.

Whenever the user types something in an input, the value of the model variable is modified as well.



# Server Side Software - Frameworks

## Generation 4 (2013-)

- Examples: [React.js](#), [Vue.js](#), [Angular v2](#)
- Focus on JavaScript components rather than pages/HTML
  - Views are reusable JS components rather than pages
  - Involve with more software engineering focus: modular design, reusable components, testability etc

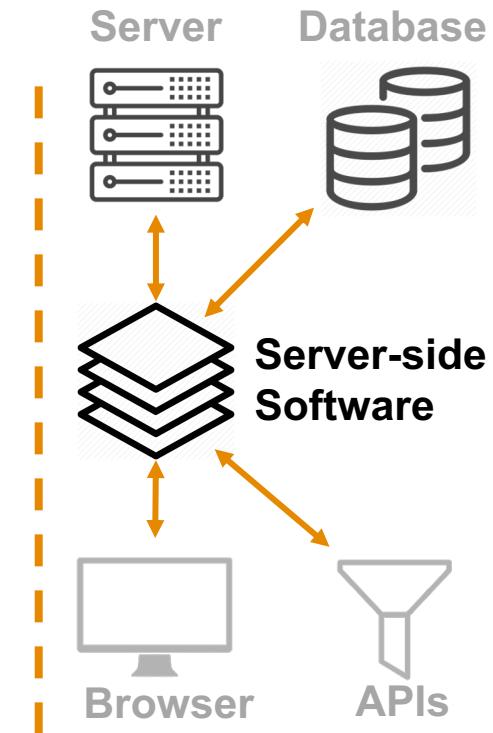


# Server Side Software

- Also called “back-end web application”

## Tasks

1. Provide application services bases on business logic
2. Create the communication channel between browsers, server and storage system.
3. Build application programming interfaces (APIs), which control what data and software a site can share with other apps

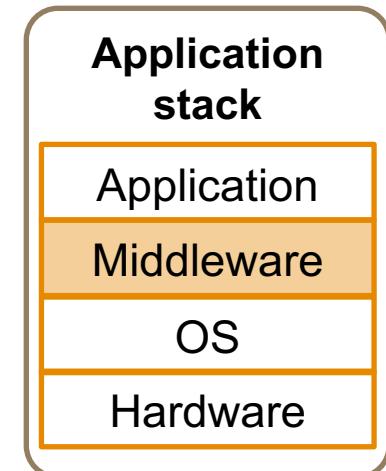


# Server Side Software - Middleware

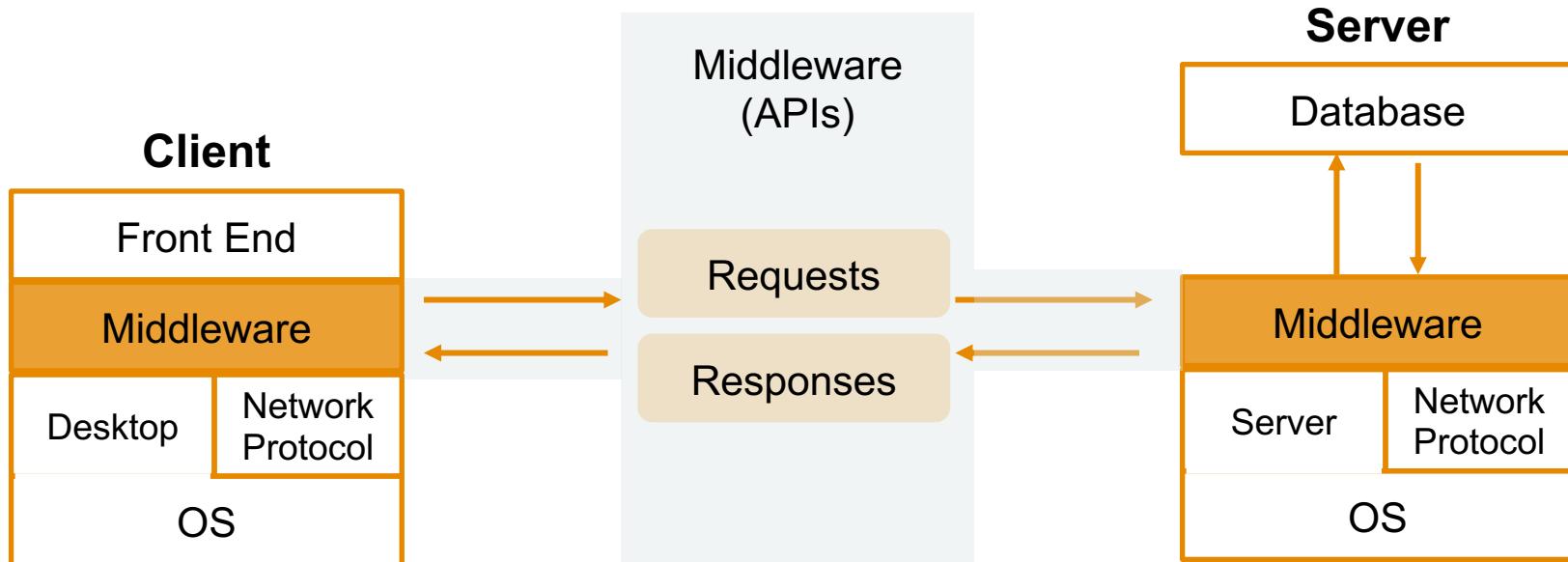
Middleware is any software that glues an application and its network.

## Pros

- It facilitates client-server connectivity, forming a middle layer in the application that acts as “glue” between the app(s) and the network.
- It ties together complex systems and keeps all of the business’ software linked and able to communicate smoothly.
- It lets cloud applications and on-premise applications “talk” and provides services like data integration and error handling.



# Server Side Software - Middleware

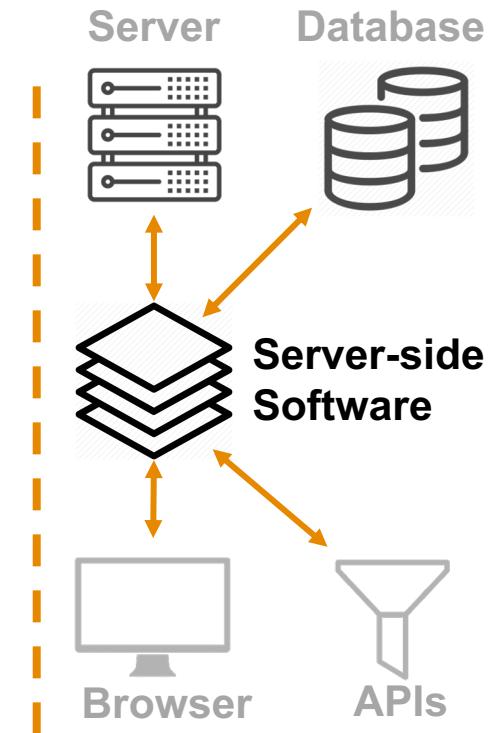


# Server Side Software

- Also called “back-end web application”

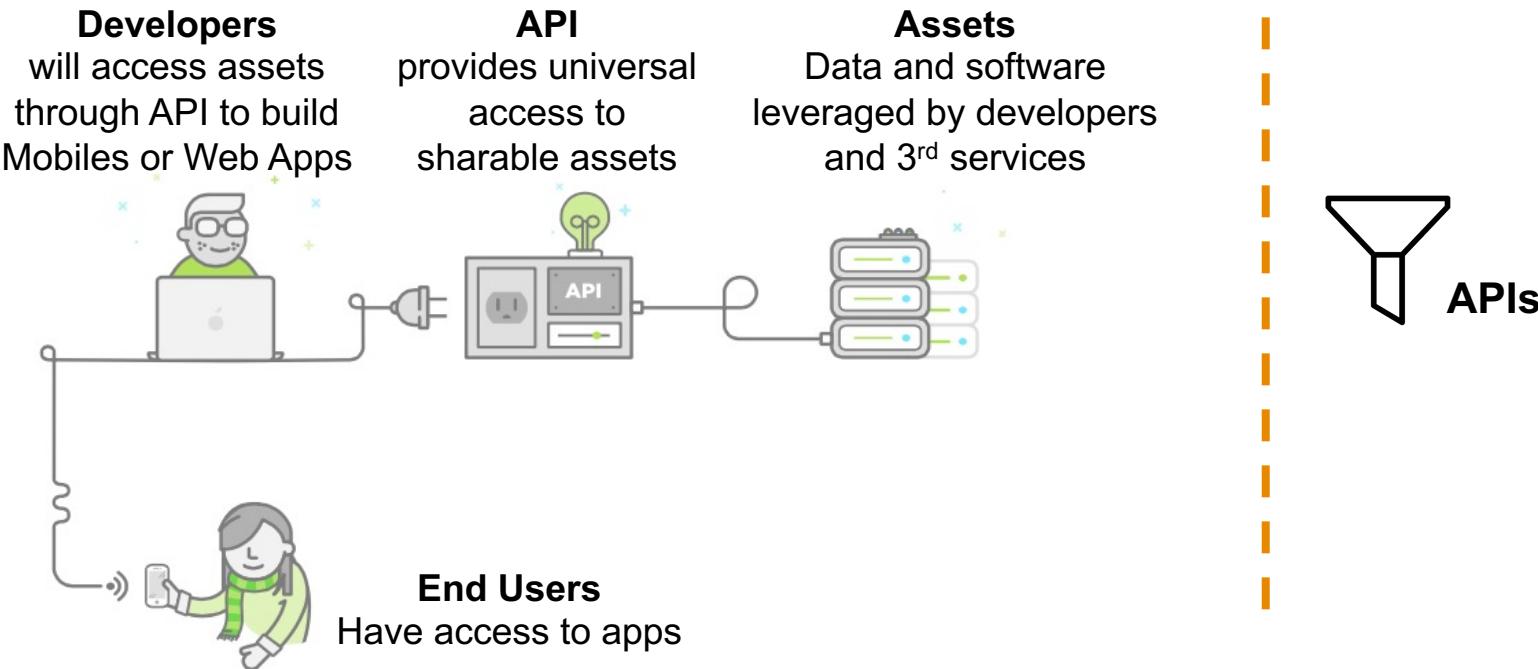
## Tasks

- Provide application services bases on business logic
- Create the communication channel between browsers, server and storage system.
- Build application programming interfaces (APIs), which control what data and software a site can share with other apps



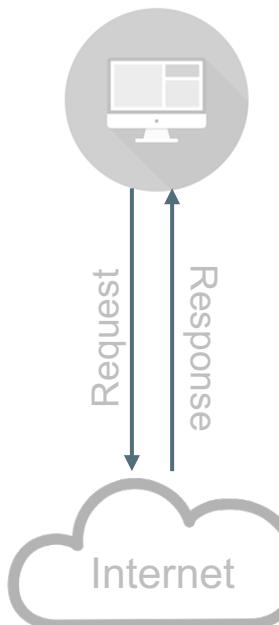
# Server Side Software - APIs

An interface that allows two applications to talk to each other.

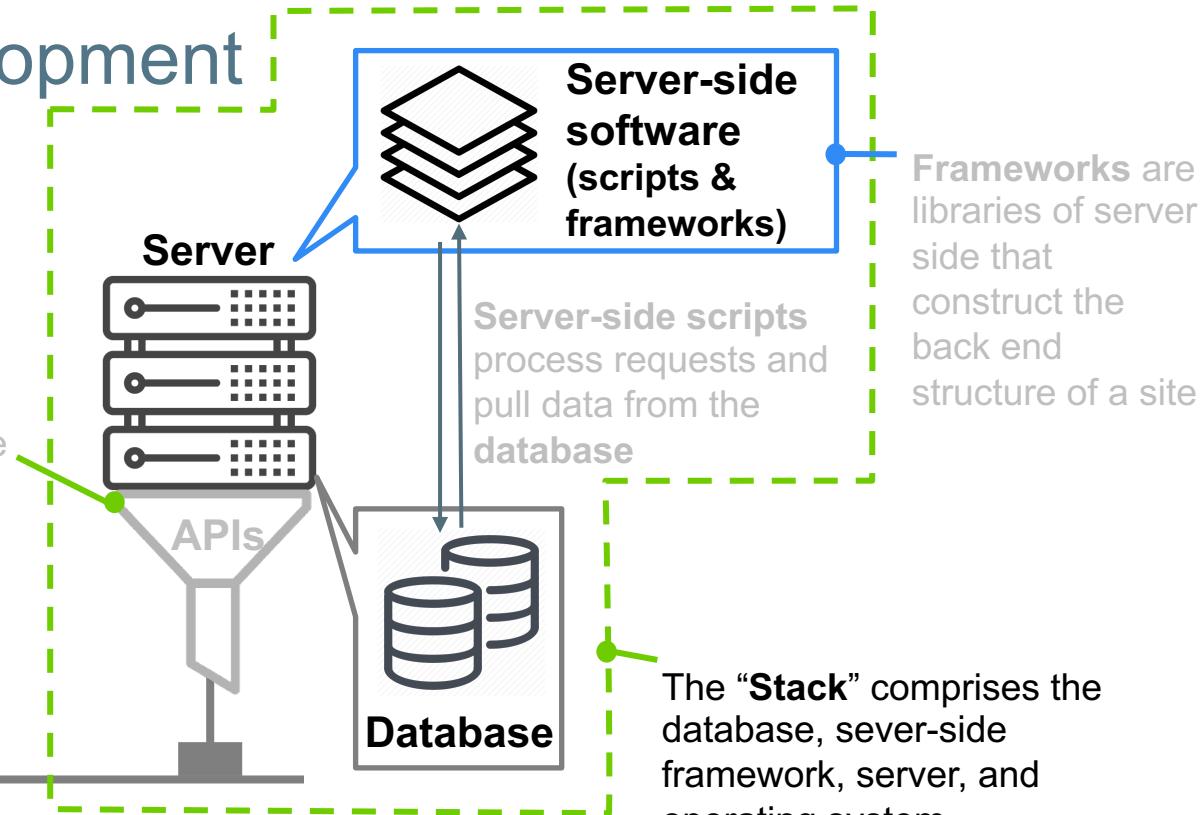


# Back End Development

The front end



APIs structure how data is exchanged between a database and any software accessing it.



# Poll Everywhere

<https://pollev.com/xuanyingzhu488>

Q8: Your understanding of stacks



# Common Stacks - LAMP

**L:** Linux operating system

**A:** Apache web server

**M:** MySQL database

**P:** PHP/Python/Perl application software

## Pros

- Flexible, customizable, easy to develop and deploy
- A huge support community since it's open-source.
- Great for organizing massive amounts of structured data.

## Variations

- WAMP: Windows/Apache/MySQL/PHP
- MAMP: Mac OS X/Apache/MySQL/PHP
- LAPP: Linux/Apache/PostgreSQL/PHP



# Common Stacks – MVC Stacks

## Django Stack: Python / Django / Apache / MySQL

- Rapid development, Simplify deploying Django software



## Ruby Stack: Ruby / Ruby on Rails / Apache / MySQL

- Rapid development

Full-stack Ruby:  
build a realtime web app  
with React.rb and Opal



# Common Stacks - MEAN

**M:** MongoDB

**E:** Express.js

**A:** AngularJS

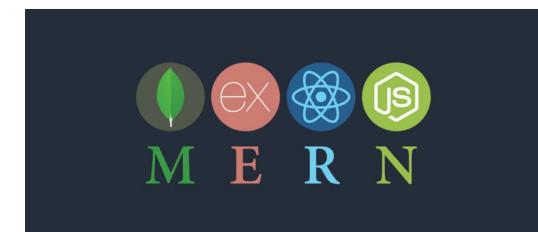
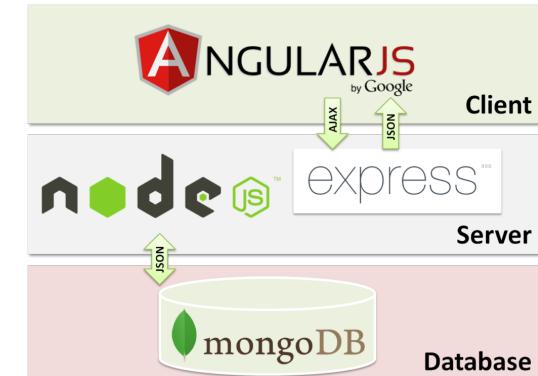
**N:** Node.js

## Pros

- Supports the MVC pattern
- Language uniformity.
- Document-based NoSQL database: more flexibility with semi-structured data.

## Variation

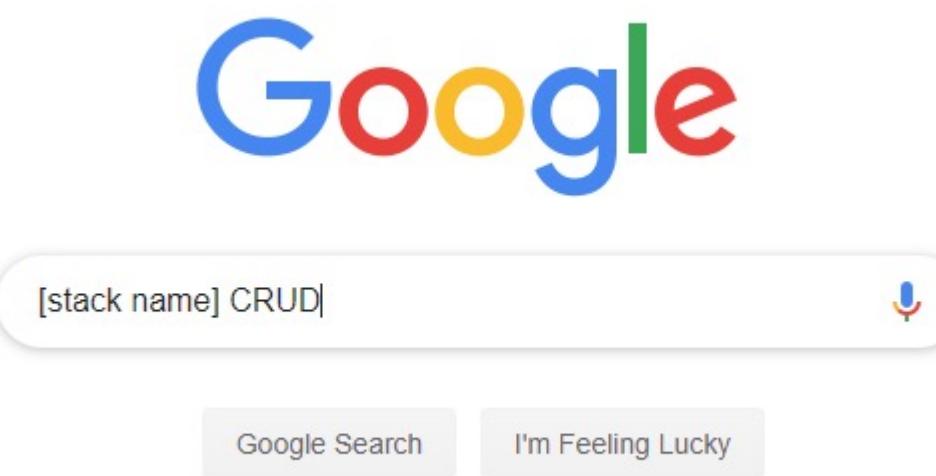
- MERN: MongoDB / Express.js / React.js / Node.js



Source: [MEAN](#)

# Tips: a way to learn stacks

Google: stack name + “CRUD”



# Tips: a way to learn stacks

- LAMP: <https://www.taniarascia.com/create-a-simple-database-app-connecting-to-mysql-with-php/>
- MVC stacks:
  - Django: <https://rayed.com/posts/2018/05/django-crud-create-retrieve-update-delete/>
  - Laravel: <https://itsolutionstuff.com/post/laravel-57-crud-create-read-update-delete-tutorial-example-example.html>
  - Ruby on Rails: <https://medium.com/@nancydo7/ruby-on-rails-crud-tutorial-899117710c7a>
- MEAN: <https://appdividend.com/2018/11/04/angular-7-crud-example-mean-stack-tutorial/>
- MERN: <https://codingthesmartway.com/the-mern-stack-tutorial-building-a-react-crud-application-from-start-to-finish-part-1/>

# Full Stack Web Application Architecture

