CMPT 363: User Interface Design
Summer 2021

Week 6: Interface Types, Prototyping Tools & Techniques for UX

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Recap from Last Part

- Different (computer) user interface types
  - History, characteristics, benefits/drawbacks
  - Future
- Prototyping tools and techniques
 - Balsamiq & Figma

Today

- General interface design principles
  - Visual design principles
  - C.R.A.P. design principles
  - Gestalt principles
  - Interface-specific considerations

General Interface Design Principles

Visual design & Gestalt

The Dominating Interface is Still GUI

- Easy to manufacture, lots of ways to improve (e.g., resolution, colour space)

- Compatible with many media (e.g., images, videos, texts)

- Easy to learn, use, and remember

- But! GUI does not automatically mean a good interface

  - Many software systems are never used due to poor UI design

    - E.g., hard to find items, input mechanisms that are hard to use

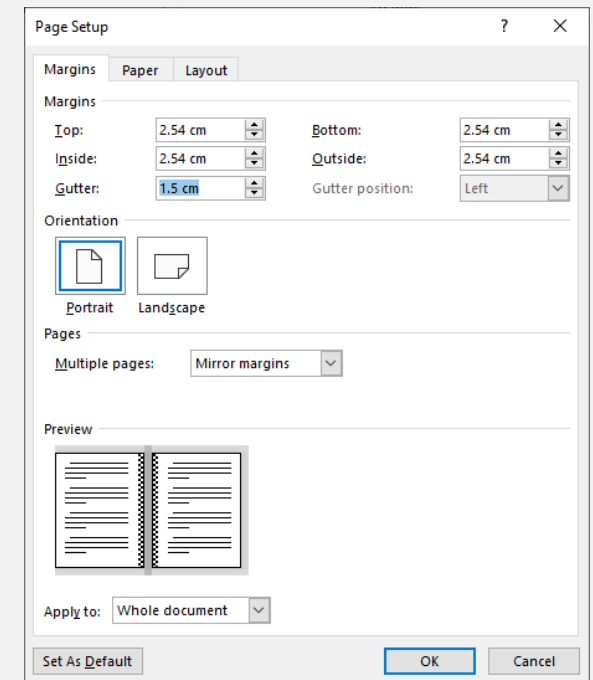- There are some design principles that we can follow to make it better!
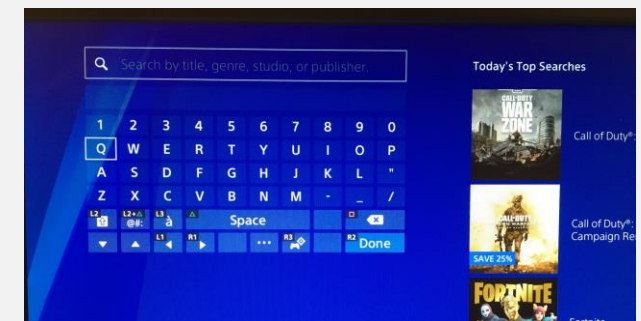
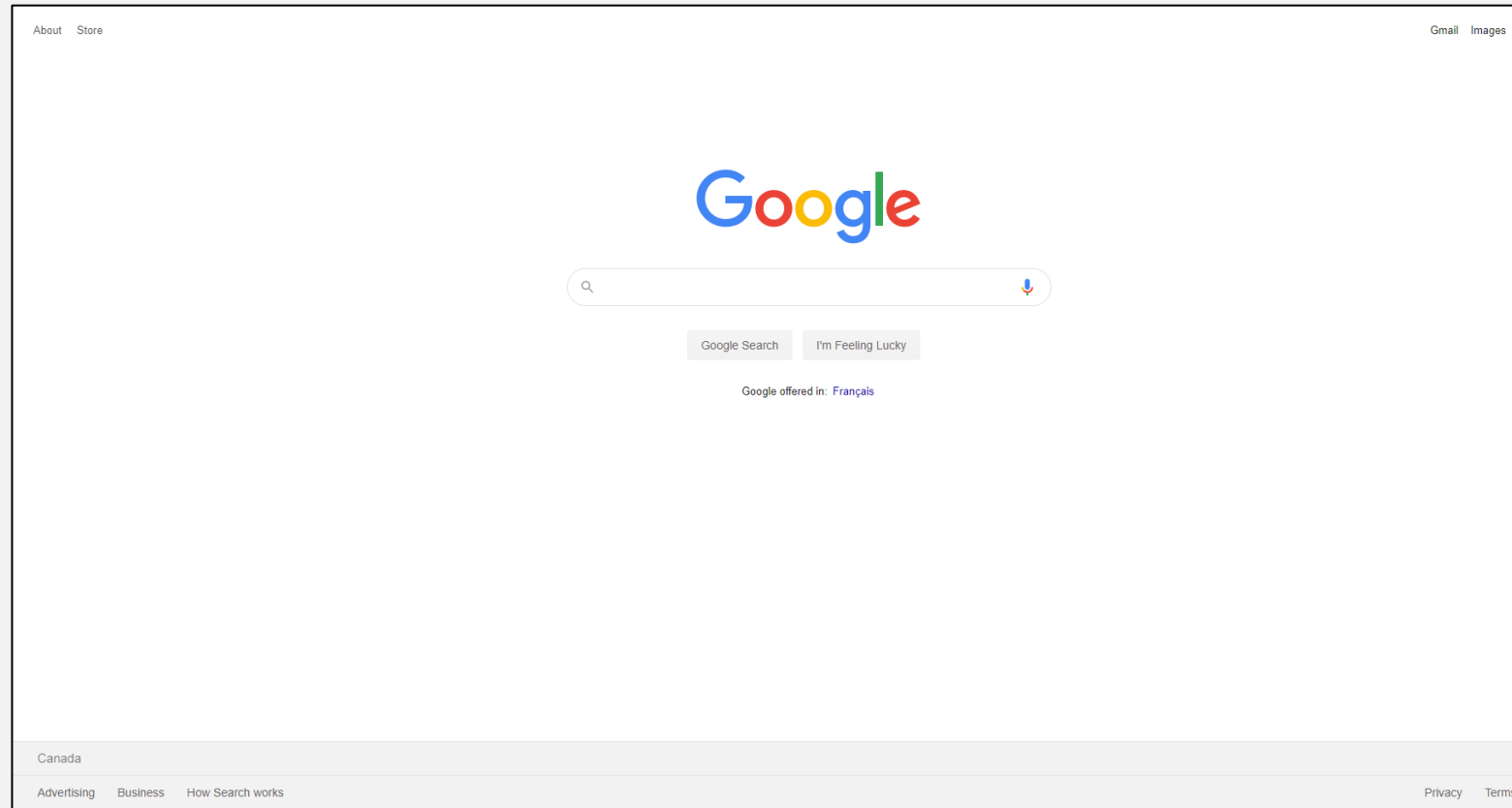Top: Netflix's search keyboard
Bottom: Playstation's search keyboard

Visual Design Principle #1 – Spacing

- Areas without content (sometimes called "negative space")
  - Margins, gutters, column-spacing, line-spacing, padding
- "Macro white space" – space between major layout elements (e.g., margins)
  - Control overall amount of information available, draw attention
- "Micro white space" – space within content elements (e.g., line/paragraph-spacing)
  - Helps with readability

- Reading/Watching:
  https://www.interaction-design.org/literature/article/the-power-of-white-space
  Typography tutorial: https://www.youtube.com/watch?v=QrNi9FmdlxY
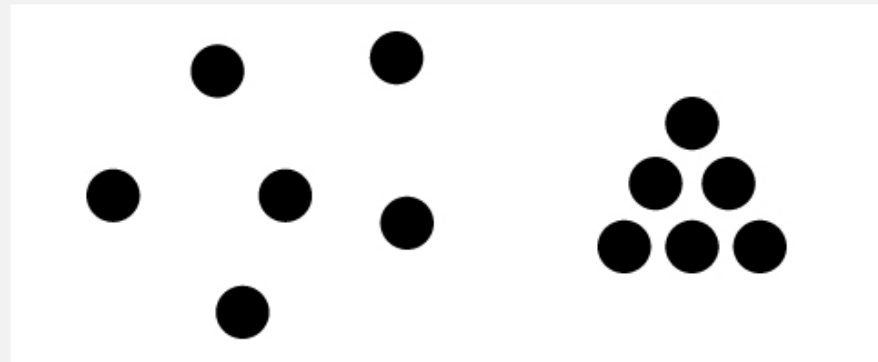

Margin/gutter setup in MS Word

Visual Design Principle #1 – Spacing – Example

Google's landing page

Visual Design Principle #2 – Grouping

- Law of Proximity: we perceive things closer to together as being related to each other
  - Good grouping allows users to quickly learn about the interface by association, and find things quicker
  - Also makes mistakes less likely to occur (e.g., un-related buttons put further away from each other)

  - Reading:
    https://www.interaction-design.org/literature/article/don-t-put-that-there-the-importance-of-proximity-in-design

Visual Design Principle #2 – Grouping – Example

- Which one is better?

Visual Design Principle #3 – Simplicity

- It is important to not overwhelm user with "visual clutters"
  - Otherwise will lose user's attention easily, and more prone to make mistakes
- Some ways to achieve simplicity
  - Hide infrequently used functions until they are needed (e.g., collapsed menu, tooltip)
  - Provide good defaults that people are likely to use
  - Incorporate wizards to help simplify/guide complex or infrequent tasks

- Reading:
  https://www.ui.expert/blog/using-visual-simplicity-in-user-interface-design/

Not a simple interface
Cragslist Vancouver

# Visual Design Principle #3 – Simplicity – Example

Wikipedia's landing page

C.R.A.P. Design Principles

- Contrast – make different things stand out from each other, bring out dominant elements & mute lesser ones

- Repetition – repeat conventions throughout to tie elements together

- Alignment – visually associate related elements by lining them up

- Proximity – group related elements, separate unrelated elements

- Reading:
  https://vwo.com/blog/crap-design-principles/

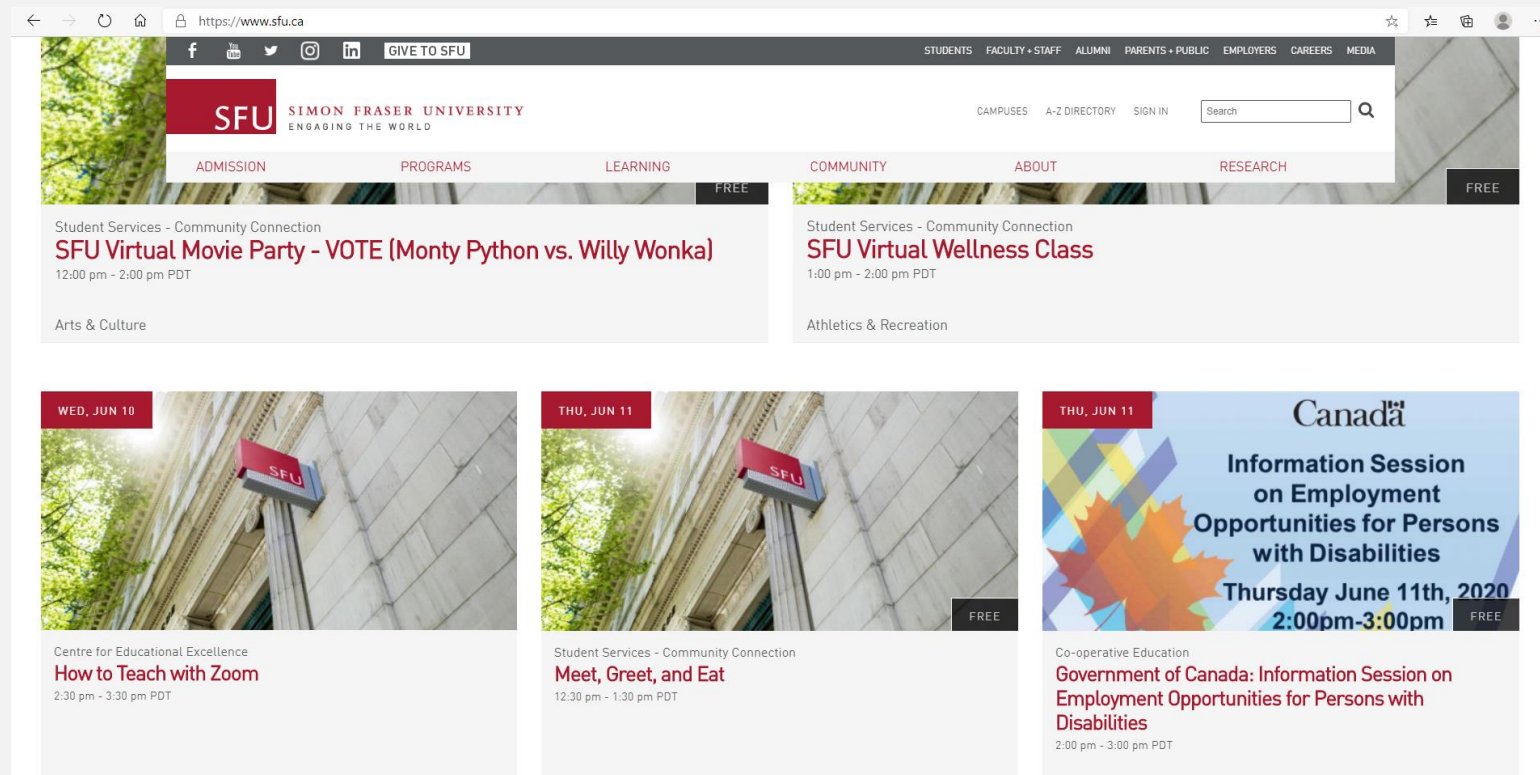# Contrast.R.A.P Design Principles

- Can be by colour, size, weight, shape

Attention
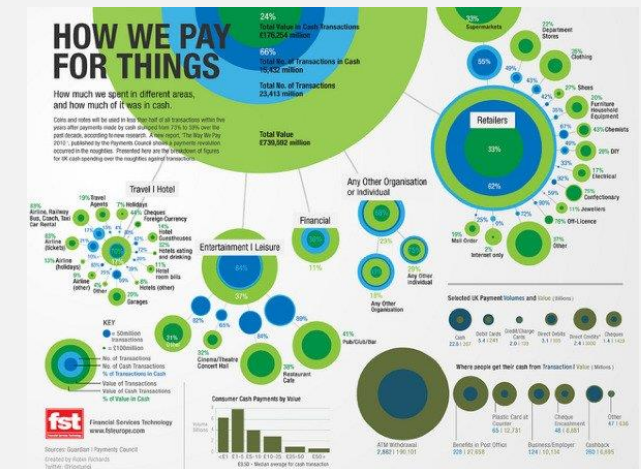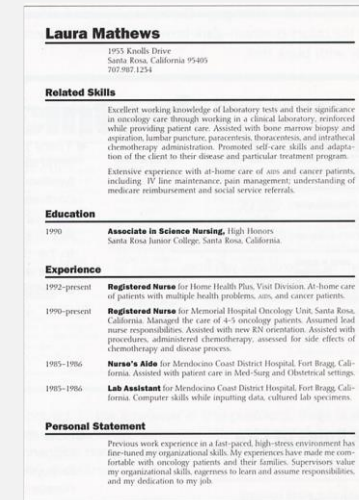
C.Repetition.A.P. Design Principles

- Maintain consistency in ways of presenting information (e.g., colour, size, weight, shape)

C.R.Alignment.P. Design Principles

- Place elements in association with some invisible guidelines (e.g., edge/center alignment, left/right/center/justify)
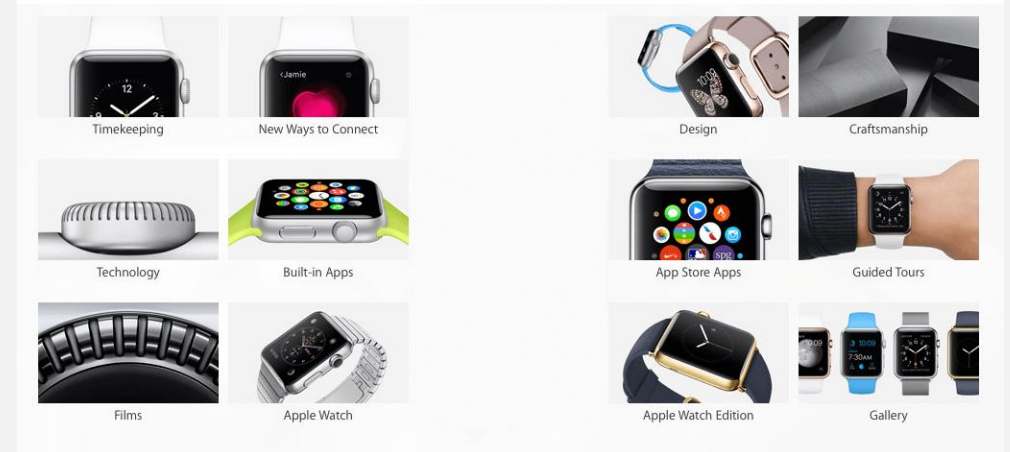

Edge alignment

Center alignment

https://960.gs/

15
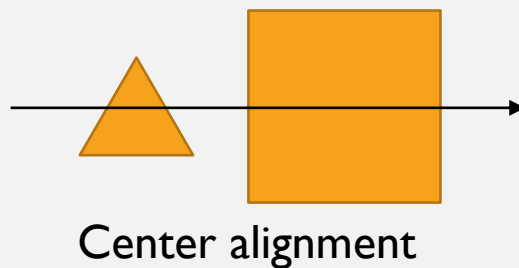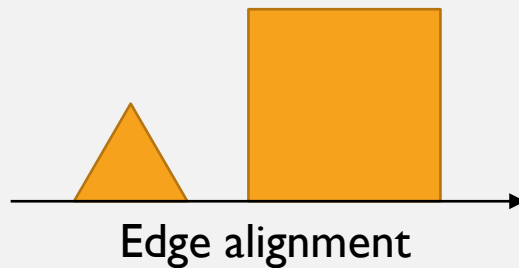
C.R.A.Proximity Design Principles
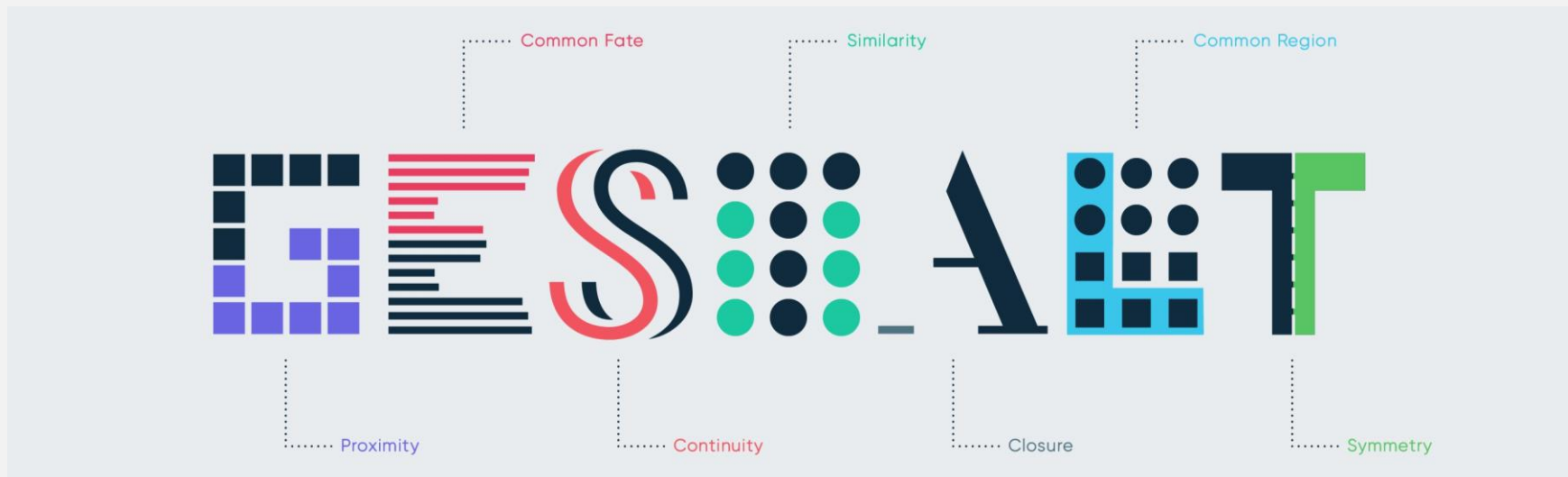
- Same as Grouping
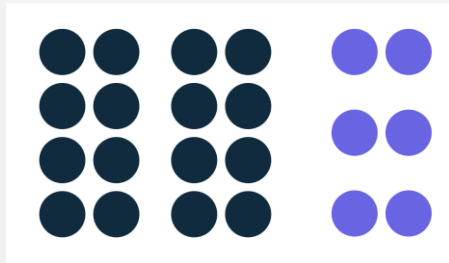

VS

Gestalt (Visual Perception) Principles

- "Form", "shape" in German

- A group of visual perception principles developed by German psychologists in 1920s

- Built on the theory that "an organized whole, is perceived as greater than the sum of its parts"

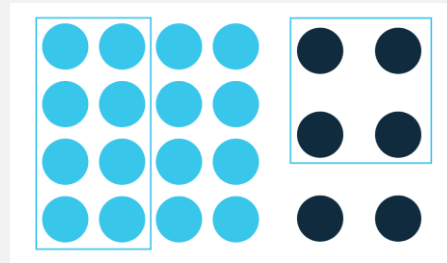https://medium.muz.li/gestalt-principles-in-ui-design-6b75a41e9965

7 Gastalt Principles

- Source: https://medium.muz.li/gestalt-principles-in-ui-design-6b75a41e9965
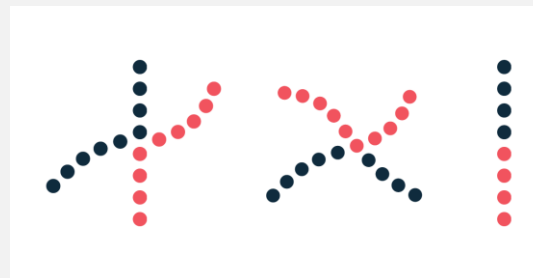

Proximity

Common Region

Similarity

Closure

Symmetry

Continuation

Common Fate

Interface-Specific Design Considerations – Web

- Web interfaces are becoming more like GUIs (e.g., online portals, web apps)
  - Need to consider how to design, present, and structure information and system behaviour
  - Navigation is also important
- Useful readings:
  - https://www.interaction-design.org/literature/article/don-t-make-me-think-key-learning-points-for-ux-design-for-the-web
  - https://blog.hubspot.com/blog/tabid/6307/bid/30557/6-guidelines-for-exceptional-website-design-and-usability.aspx
  - https://www.codementor.io/design/tutorial/6-ux-web-design-best-practices
  - https://www.uxpin.com/studio/blog/web-layout-best-practices-12-timeless-ui-patterns-explained/
  - Top 10 Mistakes in Web Design: https://www.nngroup.com/articles/top-10-mistakes-web-design/
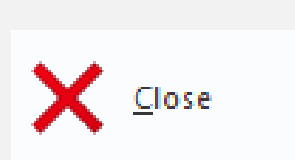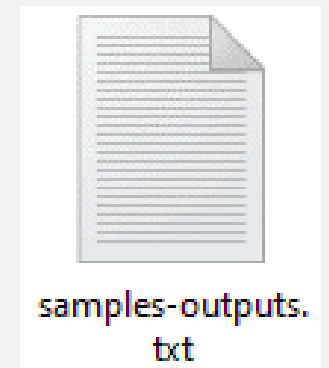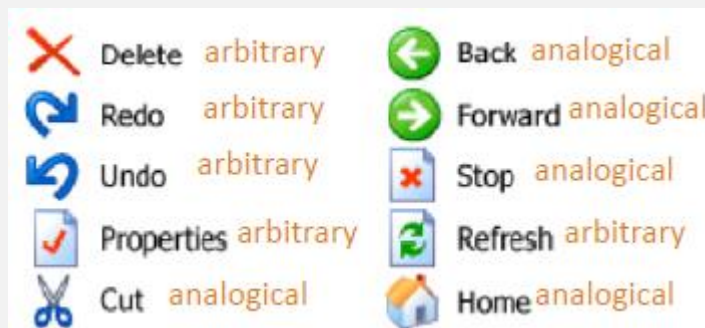
Interface-Specific Design Considerations – WIMP Icons

- Icons should map representation to what they are referring to

  - Similarity (e.g., picture of file to represent a file) – most effective, but doesn't work for abstract actions

  - Analogy (e.g., picture of scissors to present "cut") – useful for abstract actions/representations

  - Arbitrary (e.g., use 'x' to represent "delete") – versatile, but requires learning, might create confusion

similarity   arbitrary   analogy

analogy   similarity   similarity

Delete arbitrary	Back analogical
Redo arbitrary	Forward analogical
Undo arbitrary	Stop analogical
Properties arbitrary	Refresh arbitrary
Cut analogical	Home analogical

samples-outputs.txt

Cut

Delete   Close
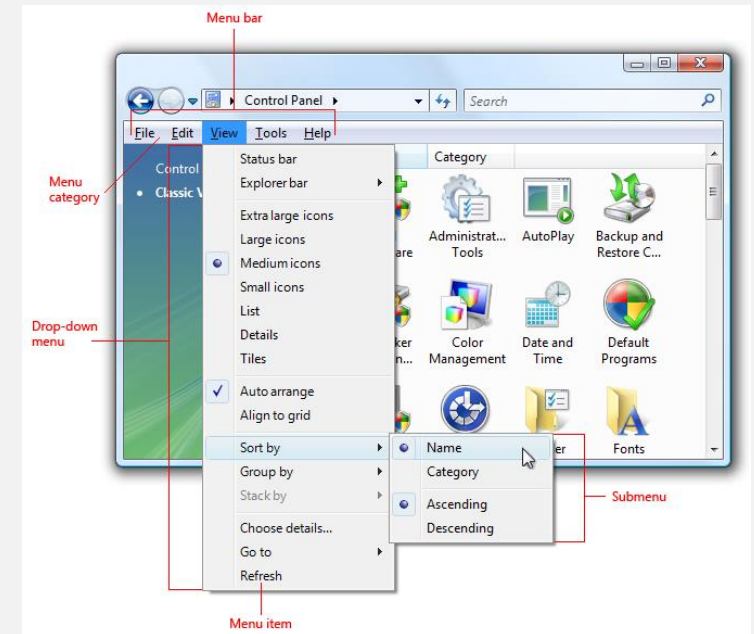
Interface-Specific Design Considerations – WIMP Menus

- Use drop-down arrow to indicate presence of sub-menu

- Don't change menu item names dynamically (use bullets & checkmarks to show selection)

- Each menu has at most 25 items in that level (if not consider toolbars or sub-menus)

- Organize menu items into 7 or less groups, put separators between them

- Provide access keys & shortcut keys (for quick access and accessibility)

- Start menu item names with a verb, noun, or noun phrase, follow hierarchical structure (e.g., Insert > text)

Refer to this for more details
https://docs.microsoft.com/en-us/windows/win32/uxguide/cmd-menus

Interface-Specific Design Considerations – Mobile

- Mobile devices are intended to be used on the move and help users to engage in a variety of activities
  - Order rides & food
  - Online banking, dating, shopping, meetup
  - Entertainment, social media
  - Lookup maps, way-finding
  - …etc.
- Need to consider
  - Smaller screen size, less input space, bursts of usage
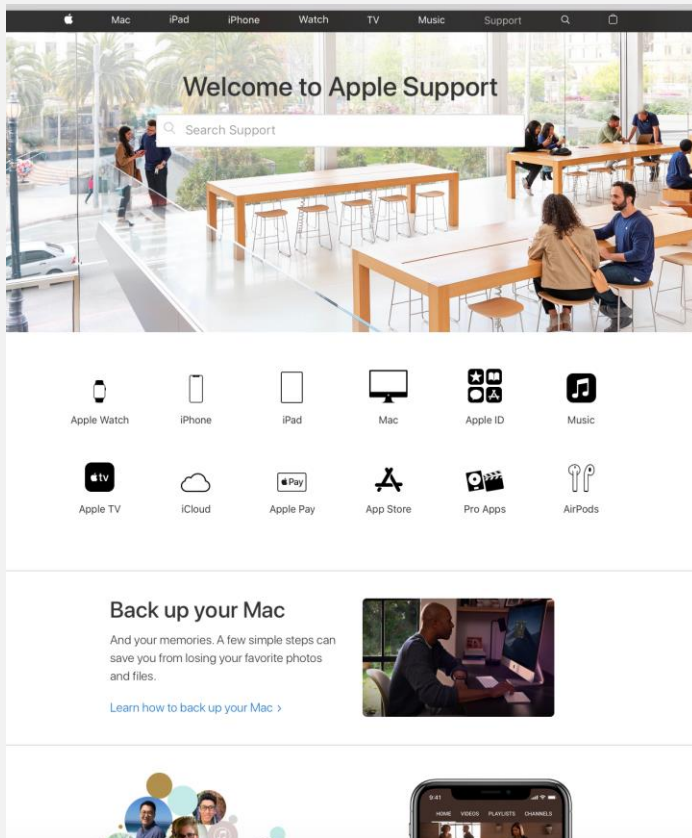 - Users expect fast response, personalized/streamline experience

Summary

- General interface design principles

  - Visual design principles – help organizing visual elements (what to include, where to place, how to present)

  - C.R.A.P. design principles – general guidelines for presentation

  - Gestalt principles – understand how human perceives visual content

  - Interface-specific considerations – understand the context, users, and capabilities of the technologies

Post-Lecture Activity

- Read/watch these (and those in the slides)

    - Chapters 7 of ID-Book: Interfaces

    - Chapter 13: Fat Fingers in Brave NUI World book by Daniel Wigdor & Dennis Wixon
    https://sfu-primo.hosted.exlibrisgroup.com/permalink/f/15tu09f/01SFUL_ALMA51189009040003611

    - Deshdeep, N. How to Use C.R.A.P. Design Principles for Better UX?
    https://vwo.com/blog/crap-design-principles/

    - Gastalt Principles
    https://www.interaction-design.org/literature/topics/gestalt-principles

- Exercise: see next page

Exercise – Examine The Use of C.R.A.P.

https://support.apple.com/

https://www.nytimes.com/