

CSE 3421

UI and UX

SUMMER 2021

MD. RAFI-UR-RASHID

LECTURER, DEPT. OF CSE, UIU



Why This Lesson?



**This is the face of your software. Don't you
take care of your appearance?**

UX vs. UI



UX vs. UI



Example of bad UX



Bad UX

**DELTA**
TESTACCT/QA
SOLD/ELITEFLYR
DL2397768025
H2G8

BOARDING PASS
SKY PRIORITY
1 006 2144698802 0
GKAWEZ

BOARDING PASS
SKY PRIORITY
TESTACCT/QA
SOLD/ELITEFLYR
DL2397768025

FLIGHT DATE CLASS ORIGIN DEPARTS
DL10 02FEB H ATLANTA 1035P
OPERATED BY COACH
DELTA AIR LINES INC DESTINATION END TIME
LONDON-HEATHROW 940P
DEPARTURE DATE - **SUBJECT TO CHANGE**
SOUTH TERMINAL

SEAT
20E
SKY




BCN ATL001
NTL184617/100

FLIGHT DATE
DL10 02FEB
ORIGIN
ATLANTA
DESTINATION
LONDON-HEATHROW
OPERATED BY DELTA AIR LINES INC
DELTA SKY CLUB ONE-DAY PASS

SEAT
20E
SKY



INTL - VERIFY PASSPORT
WHEELCHAIR REQUESTED /SPECIAL MEAL REQUESTED

Ivan Boyko June 5, 2016  **Lufthansa**


LH 907
to Frankfurt

Terminal 2
Boarding area D


Boarding
9:10 AM


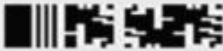
Gate
D10

Boarding priority
1 2 **3** 4

Seat
A22 
Window



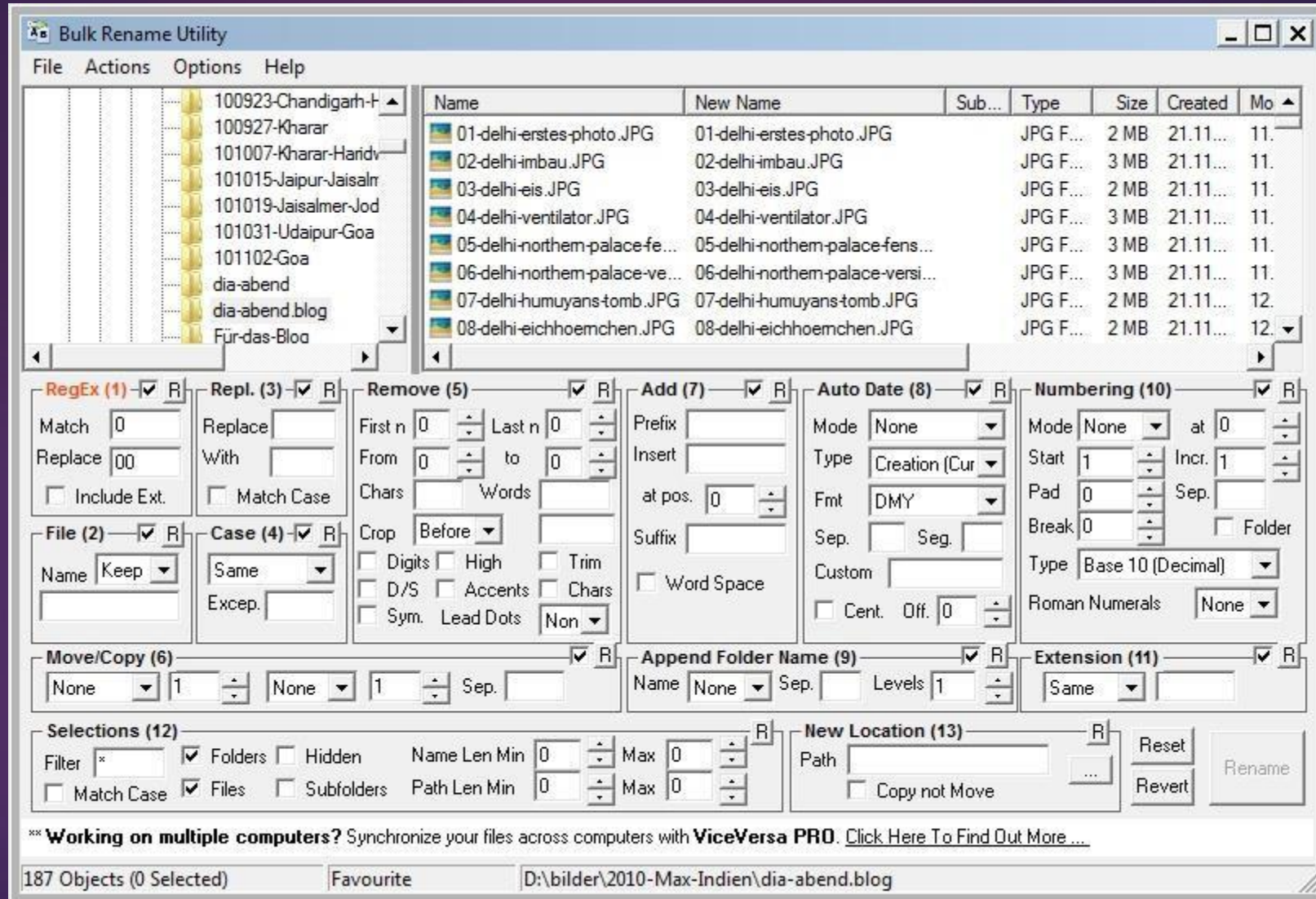
Departing 9:40 AM 

In Frankfurt
take Sky Train to Terminal 1

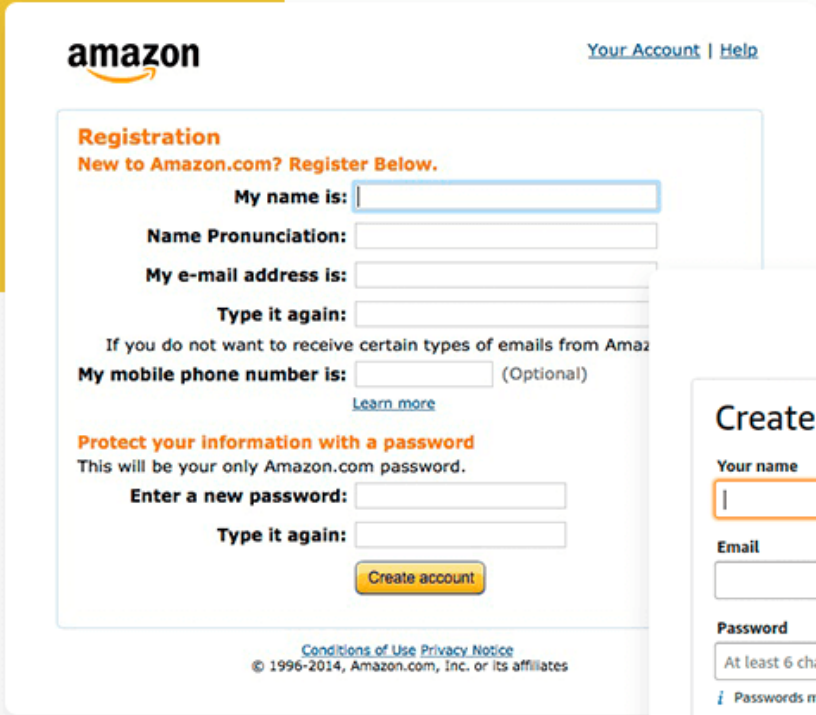
Better UX

Example of bad UX



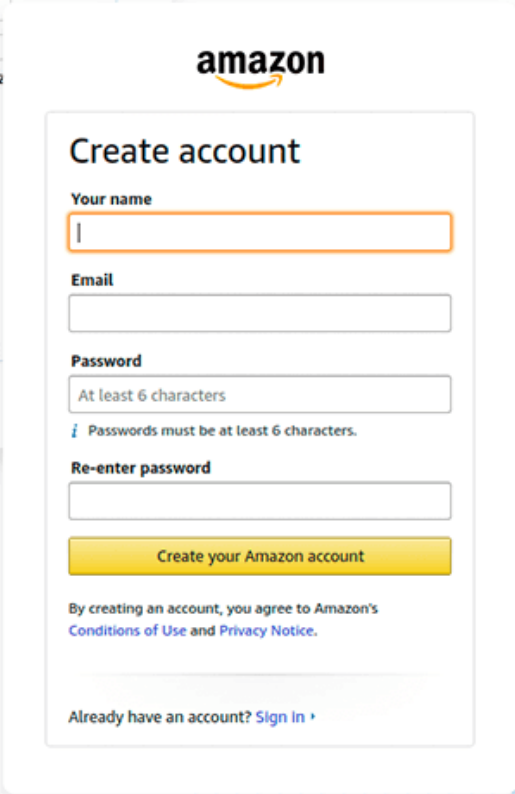
Example of bad UX

Before



The 'Before' form is the original Amazon registration page. It features a yellow header bar with the Amazon logo and links for 'Your Account' and 'Help'. The main heading is 'Registration' in orange, followed by 'New to Amazon.com? Register Below.' in orange. The form fields are: 'My name is:' (text input), 'Name Pronunciation:' (text input), 'My e-mail address is:' (text input), 'Type it again:' (text input), 'If you do not want to receive certain types of emails from Amazon, uncheck this box.' (checkbox), 'My mobile phone number is:' (text input) with '(Optional)' to its right, and a 'Learn more' link. Below these is a section 'Protect your information with a password' in orange, followed by 'This will be your only Amazon.com password.' in black. The password fields are 'Enter a new password:' and 'Type it again:', both with text inputs. A yellow 'Create account' button is at the bottom. At the very bottom, there are links for 'Conditions of Use' and 'Privacy Notice', and a copyright notice '© 1996-2014, Amazon.com, Inc. or its affiliates'.

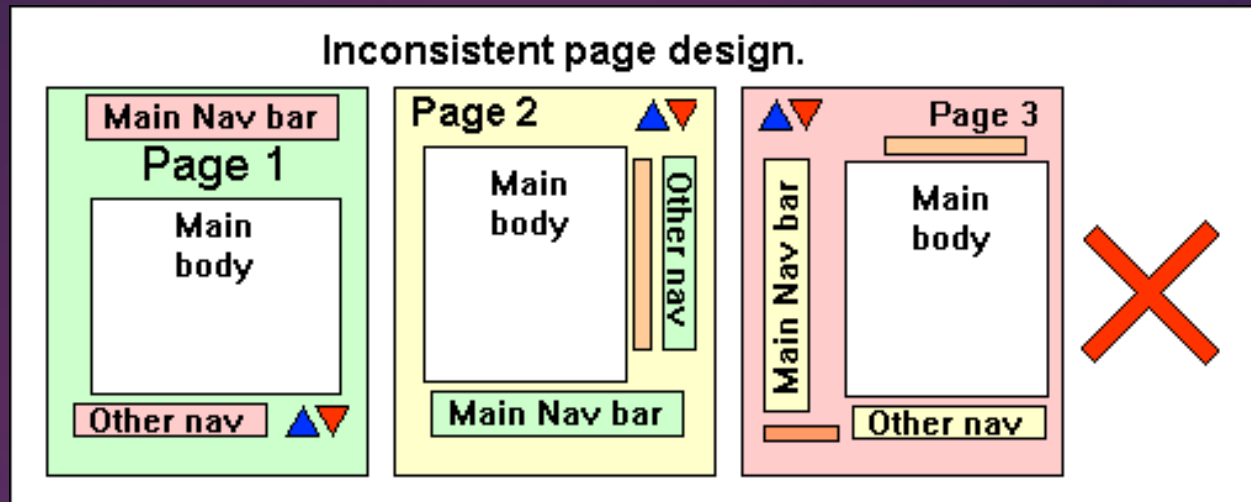
After



The 'After' form is a redesigned version of the Amazon registration page. It features a white header bar with the Amazon logo. The main heading is 'Create account' in black. The form fields are: 'Your name' (text input), 'Email' (text input), 'Password' (text input) with a placeholder 'At least 6 characters', a blue information icon followed by the text 'Passwords must be at least 6 characters.', 'Re-enter password' (text input), and a yellow 'Create your Amazon account' button. Below the button, there is a line of text: 'By creating an account, you agree to Amazon's Conditions of Use and Privacy Notice.' At the bottom, there is a link 'Already have an account? Sign In'.

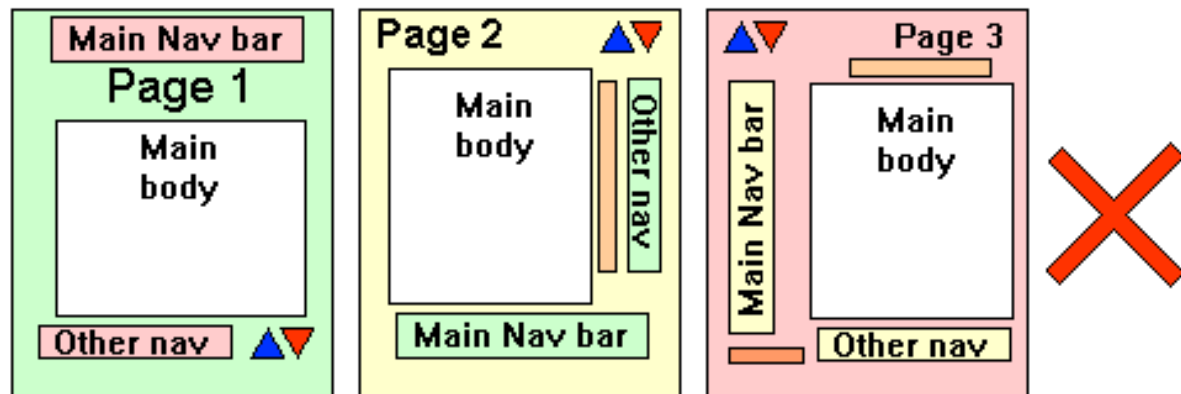
9

Example of bad UX

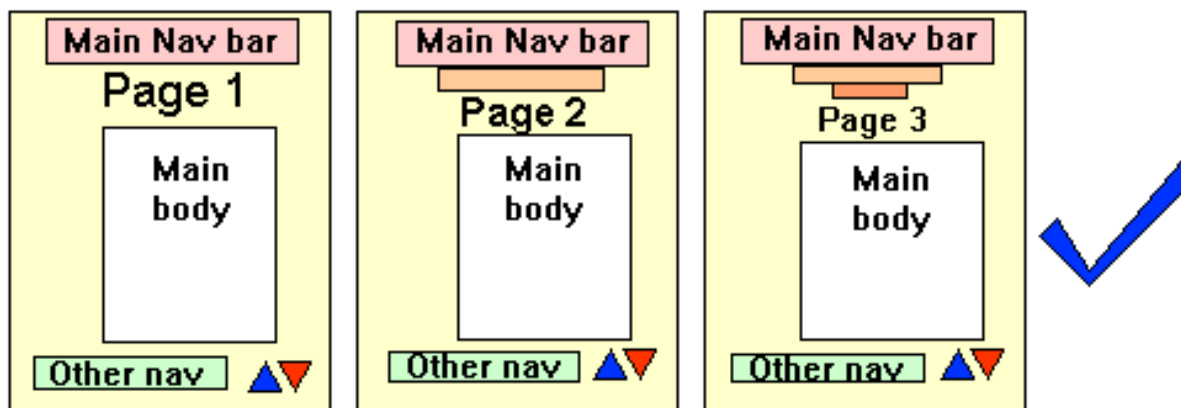


Example of bad UX

Inconsistent page design.



Consistent page design.



E-mail

me@domain.com

Password

Error!



E-mail

me@domain.com

Password

Password incorrect. If you don't remember your password, [reset it](#)



LOG IN

E-mail adress

Password

LOGIN ME

SIGN UP

FORGOT PASSWORD?



LOG IN

E-mail adress

Password

LOGIN ME

SIGN UP

Forgot Password?





www.ARNGREN.net



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[< Frithjof i sin Fly-Bil](#)

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[Teknologi & Gadgets](#)

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[HP-Måler \(Bil\)](#)

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[Kamera \(trådløst\)](#)

[Kino \(bærbar\)](#)

[Kompass \(Bil/Båt\)](#)

[Laser-Jamer \(Bil\)](#)

[Luft-Jekk](#)

[Lykt \(oppladbar\)](#)

[Mobil-telefon-1, 2](#)

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[Omformer \(110V\)](#)

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Trådløs Kamera
m/ Alarm
& GSM
1999.-



Trådløst Kamera
60cm lang
499.-



Tau & Brann-Båt. kr. **598.-**

Spruter-Vann

El-bil til Posten

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Elektronikk

Flysimulator Gratis!

Elektronikk

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Elbil; Arngren-Comarth

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44 Språk-Talende Oversetter

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Spion-Kamera

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RC Flybil VTOL(3ch)

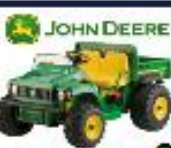
kr. **249.-**



1398.-



9998.-



JOHN DEERE



kr. **4.998.-**



Elektrisk-ATV



fra kr. **3999.-**



7998.-



1200.-



2999.-



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Oppladbar-Lykt (15mill.)

Verdens Sterkeste

kr. **499.-**

Disko-Lys



Laser-Show

fra kr. **599.-**



4 mp Kikkert med Digital-Kamera

& LCD skjerm

kr. **1598.-**



Tank

72 cm Lang

kr. **998.-**

RC-Produkter

Alle Produktene på denne siden lagerføres hos **ARNGREN** i Oslo. Se Lagerkoden etter Prisene (lev. 2 - 5 dager):

- er på Lager**
- kommer før 3 uker**
- lengre enn 3 uker**

RC Produkter

120cm langt. Computer-styrt



Video-1

Video-2

RC 4ch Helikopter

fra kr. **798.-**

Rakett-Fly



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Fair. Balanced.

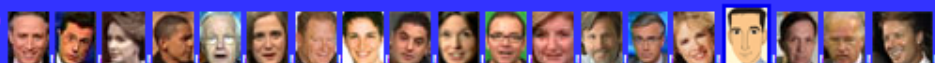
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Democratic News:

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TV:



2010

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\$10.35 Trillion Def**"Two Santa Clauses or How The Republican Party Has Conned America for Thirty Years."**[HavenWorks.com+A-Z](#)**News Topics**[Hartmann/MP3s/TV](#)[Greenwald/+Radio/MP3s](#)[Blogs!-; ABlog? TV Blog](#)[Weblog](#)[OPINION](#)[Government](#) - [Economic](#) - [Accounting](#) -[Job](#) - [History](#) - [Politics](#)[The New Deal and right-wing](#)[revisionism.](#) ... "The best regarded data excluding

public-works employees traces a steady decline in

joblessness through the first five years of the New

DEM 2010 TV[OBAMA TV](#)[WHITE HOUSE TV](#)[ChangeDotGov TV](#)**'News' Media Politics**

PBS.org/moyers

Jay Rosen and Glenn

Greenwald discuss

journalism and media

U. S. A.

20090218

Politics[Barack Obama](#) - [Don Young](#) -[Government](#) - [Money](#) - [Missouri](#) - [Alaska](#)[Education](#) - [GOP \[Republicans\] Fighting](#)[For Money From Stimulus](#)[They Opposed.](#) ... "House

Republicans, as a group, may take great

pride in the goose egg [zero votes] they

offered [Democratic] President Obama's

stimulus package. But now the

unanimous opposition is struggling to

bring that money home." ...

[Republicans](#) will be working hard to

make sure the money they opposed

ends up benefiting their home districts,

WORLD

20090218

Media[US](#) - [Global](#) - [Science](#) - [Environment](#) - [Politics](#) - [Corporations](#)[Media often fail in their global](#)[warming coverage, says](#)[climate researcher.](#) ... "Business

managers of media organizations: You

are screwing up your responsibility by

firing science and environment reporters,

who are frankly the only ones competent

to do this," said climate researcher and

policy analyst Stephen Schneider, in

assessing the current state of media

coverage of global warming and related

issues." ... "Schneider, a coordinating

lead author of Chapter 19 in the report of

INTELLIGENCE**IRAQ NEWS****War Crimes****Law/Legal****Poll - CT****Criminal - Torture****Poll: Most want inquiry****into anti-terror tactics.** ...

"Even as Americans struggle with

two wars and an economy in tatters,

a USA TODAY/Gallup Poll finds

majorities in favor of investigating

some of the thorniest unfinished

business from the [Republican

President] Bush administration:

MEN

WOMEN

Search

**Atterley**
a world of boutique style

SIGN IN



WISHLIST



BAG (00)

NEW IN

CLOTHING

SHOES

ACCESSORIES

GIFTS

SALE

BRANDS

BOUTIQUES

THE EDIT

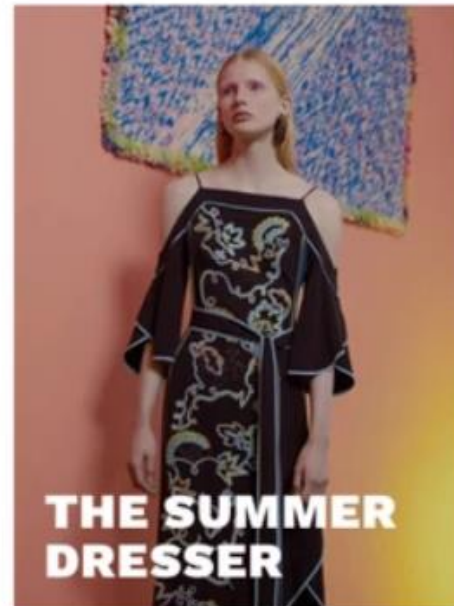
ALL CATEGORIES ▾

SPRING/SUMMER 2018 ▾



TALKING POINT: MODERN EVENT- DRESSING

Comics! Cowboys! Playing cards! Decoding the SS18 shows



THE SUMMER DRESSER

In an era when your event style can make a statement about your political and social stance (see the Golden Globes black dress movement), it's safe to say that occasion dressing has changed



READ MORE

It's time to re-evaluate old notions of what's acceptable. Neon, bold prints and shorter lengths are now worth considering. When in doubt, think: 'What would Andre Agassi have worn to the beach in the eighties?'



THE RISE OF DEMI- COUTURE

This season, swimwear comes with a side of eighties attitude. We went to Miami to put SS18's best styles through their paces.



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What is Office 365?

Most Important Thing

Usability

The effectiveness with which users can accomplish tasks in a (software) system, as measured by

- Learnability: is it easy to learn?
- Efficiency: once learned, is it fast to use?
- Safety: are errors few and recoverable?

Usability matters: the cost of getting it wrong

50% of all “malfunctioning” electronic devices returned to stores are in full working order, but users can't figure out how to operate them.

[Elke den Ouden, 2006]



Three Mile Island:
nuclear reactor
meltdown caused by
an ambiguous user
interface

10 Usability Heuristics



Visibility

Show system status, tell what's happening



Mapping

Use familiar metaphors & language



Freedom

Provide good defaults & undo



Consistency

Use same interface and language throughout



Error Prevention

Help users avoid making mistakes



Recognition

Make information easy to discover



Flexibility

Make advanced tasks fluid and efficient



Minimalism

Provide only necessary information in an elegant way



Error Recovery

Help users recognize, diagnose and recover from errors



Help

Use proactive and in-place hints to guide users

A good user interface is hard to design

- ▶ You are not the user
 - ▶ Most software engineering is about communicating with other programmers.
 - ▶ UI is about communicating with users.
- ▶ Users are always right ...
 - ▶ Consistent problems are the system's fault.

Achieving usability: best practices

- ▶ User testing and field studies
- ▶ Evaluations and reviews by UI experts
- ▶ Not getting overwhelmed by additional technicalities

Steps in UI design

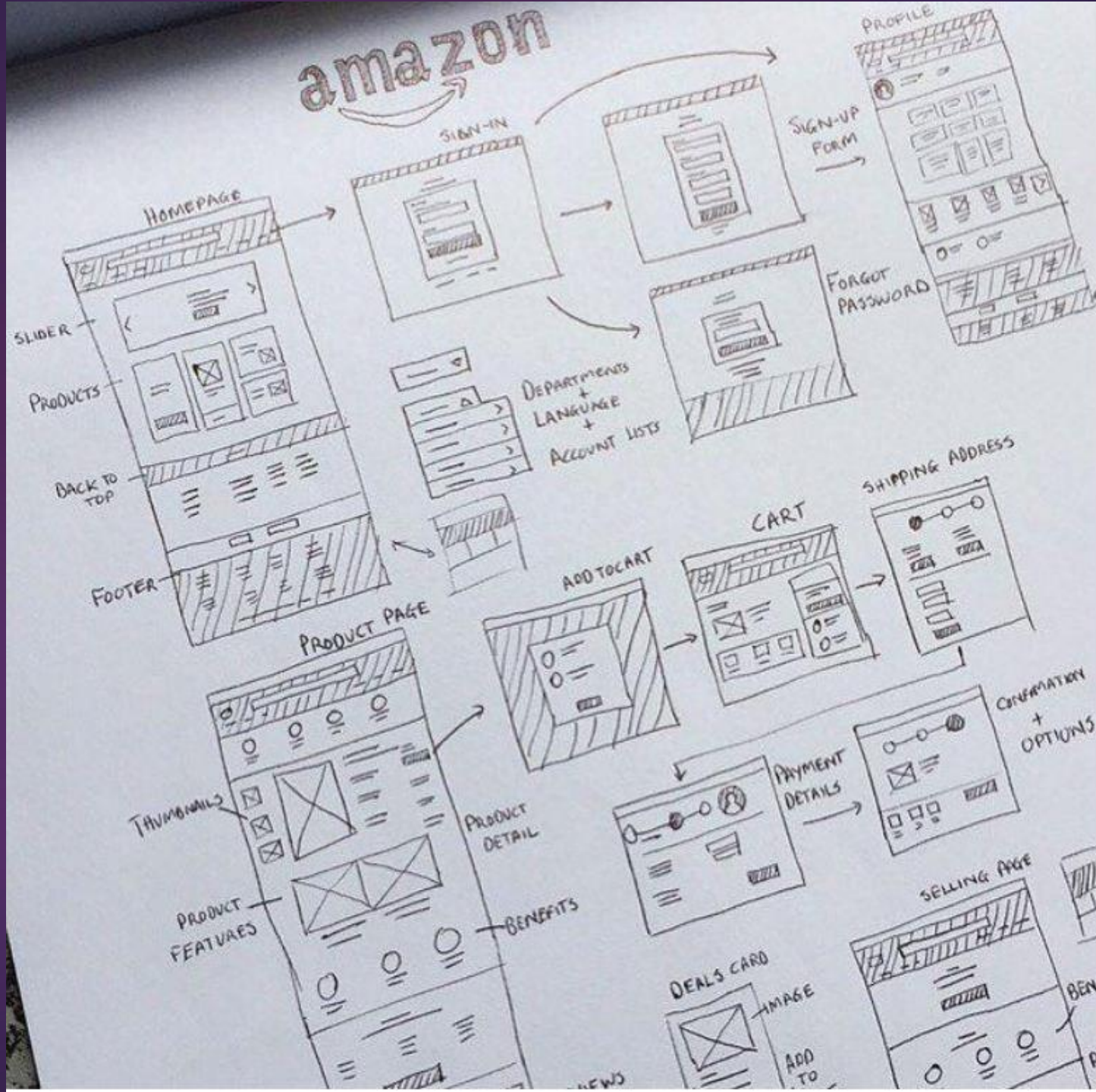
- ▶ Planning
- ▶ Prototyping and sketching
- ▶ Optimization
- ▶ Implement

Planning

- ▶ **understand** the values standing behind our customer
- ▶ Brainstorming and research
- ▶ Make Feature List
- ▶ Plan the navigation

Sketching & Prototyping

- ▶ Also known as wireframe modeling
- ▶ It is the skeleton of the eventual user interface.
- ▶ Can be done
 - ▶ Manually (paper-pencil, pen tablet)
 - ▶ Electronically (Adobe XD, Photoshop, Figma)



Home	About Us	Services	Contacts
------	----------	----------	----------

Notification

Button

Button

Search 🔍

List ▼

X

☐ Check box

☒ Check box

Text field

Link

Link

Link

Link

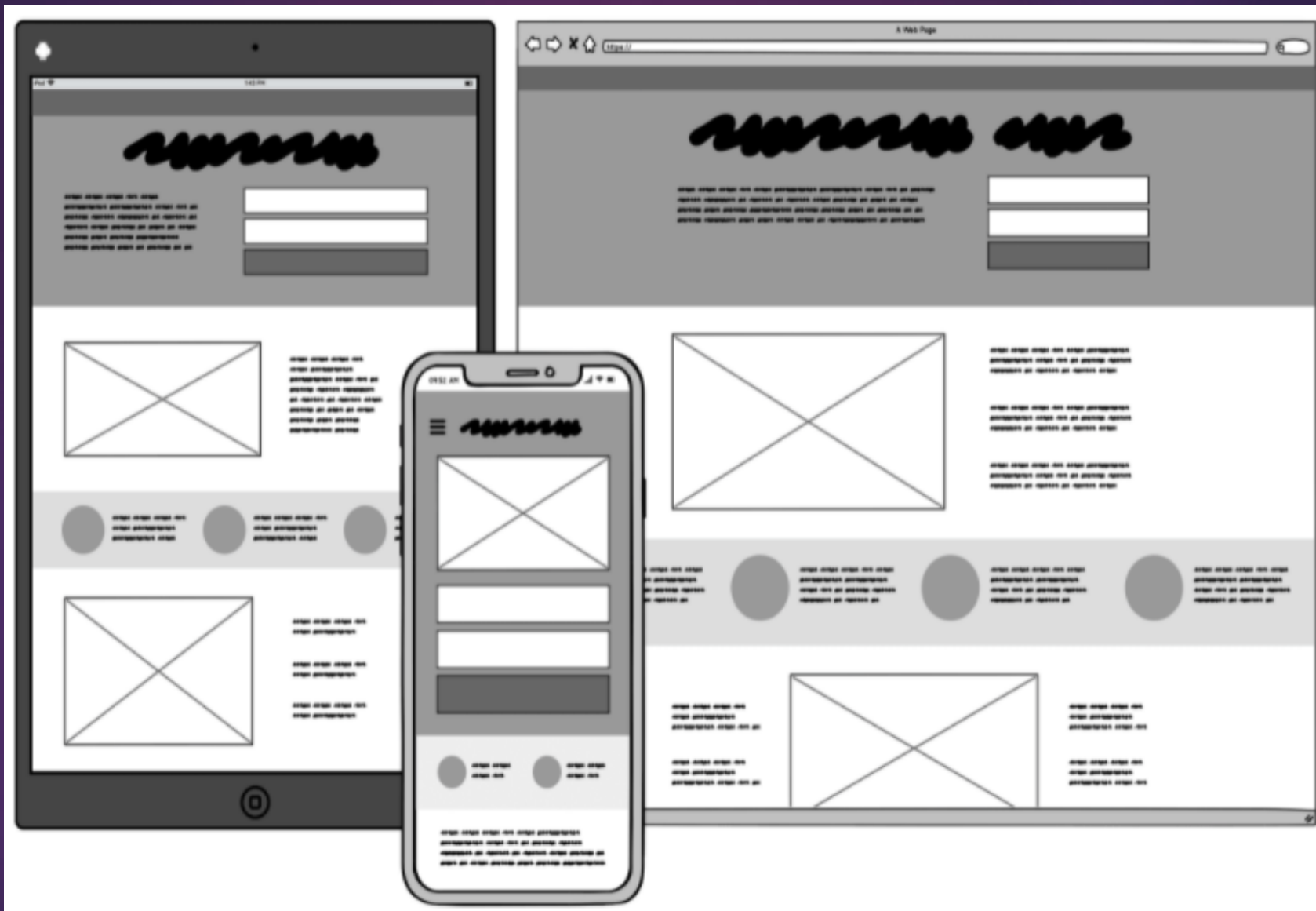
Link

☐ Radio button

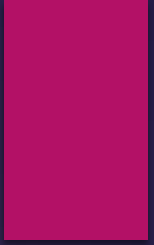
☒ Radio button

Vertical scrollbar

← 1 2 3 4 5 →





- 
- ▶ Benefits of prototyping:
 - ▶ Aids UI implementation
 - ▶ help discover requirements
 - ▶ help discover test cases and provide a basis for testing
 - ▶ allows interaction with user to ensure satisfaction



Two types of User Interace

Graphical User Interface

- ▶ GUI permits users to use the graphics to interact with an operating system.
- ▶ It includes windows, scrollbars, buttons, wizards, images, icons etc.
- ▶ It's intuitive, simple to find out and reduces psychological feature load.

Command-line User Interface

- ▶ CLI permits users to put in writing commands in terminal or console window to interact with an operating system
- ▶ For this users are compelled to remembering command for performing the task.

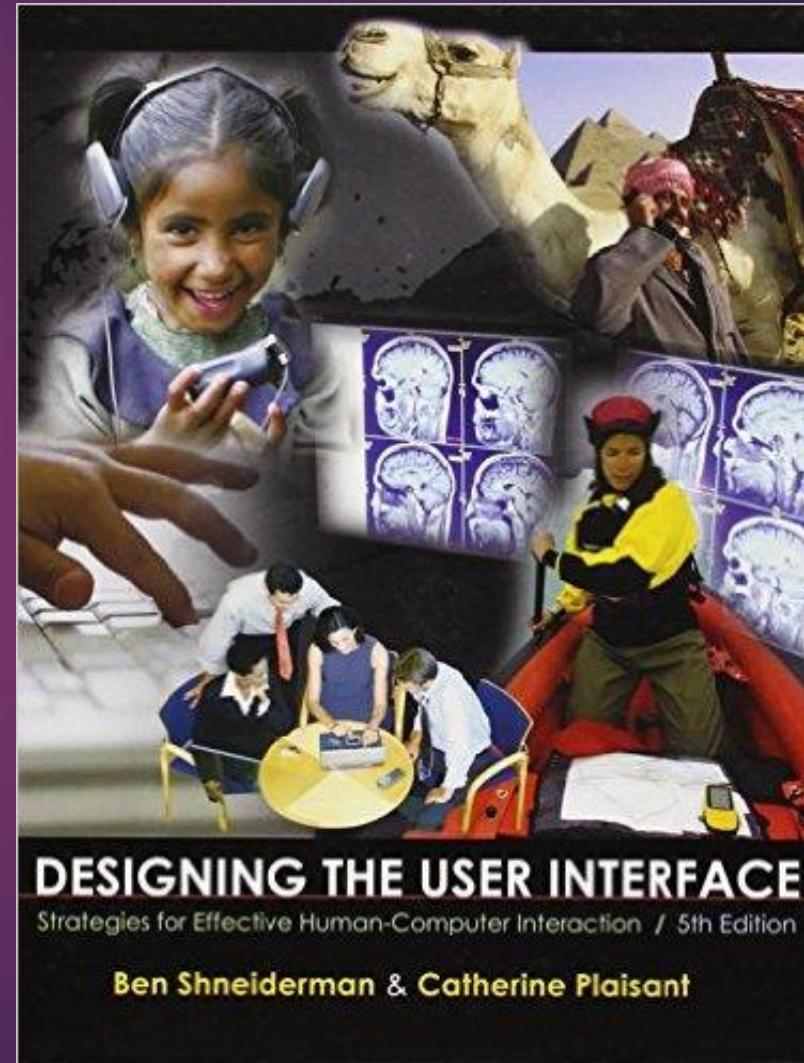


Think about the following properties for GUI and CLI:

- ▶ User friendliness,
- ▶ memory use,
- ▶ Processing speed,
- ▶ handling complex task,
- ▶ flexibility,
- ▶ interface upgrades

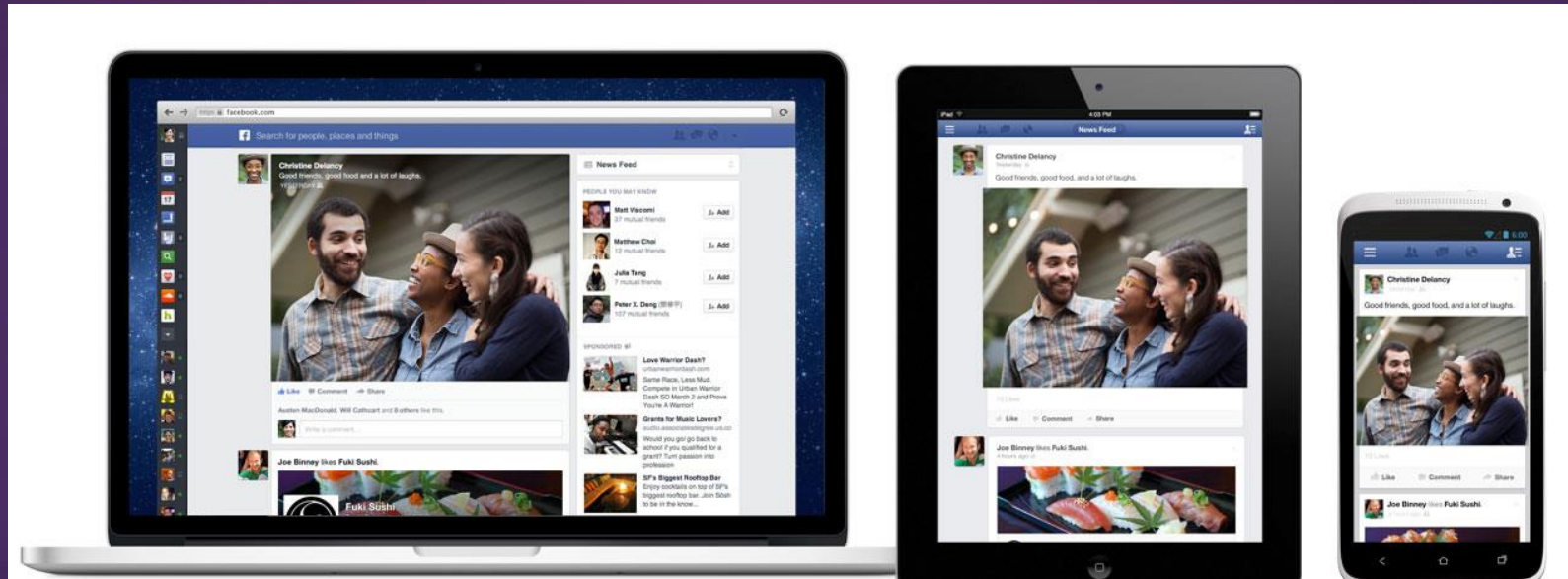
UI Design Consideration

Schneiderman's 8 Golden Rules



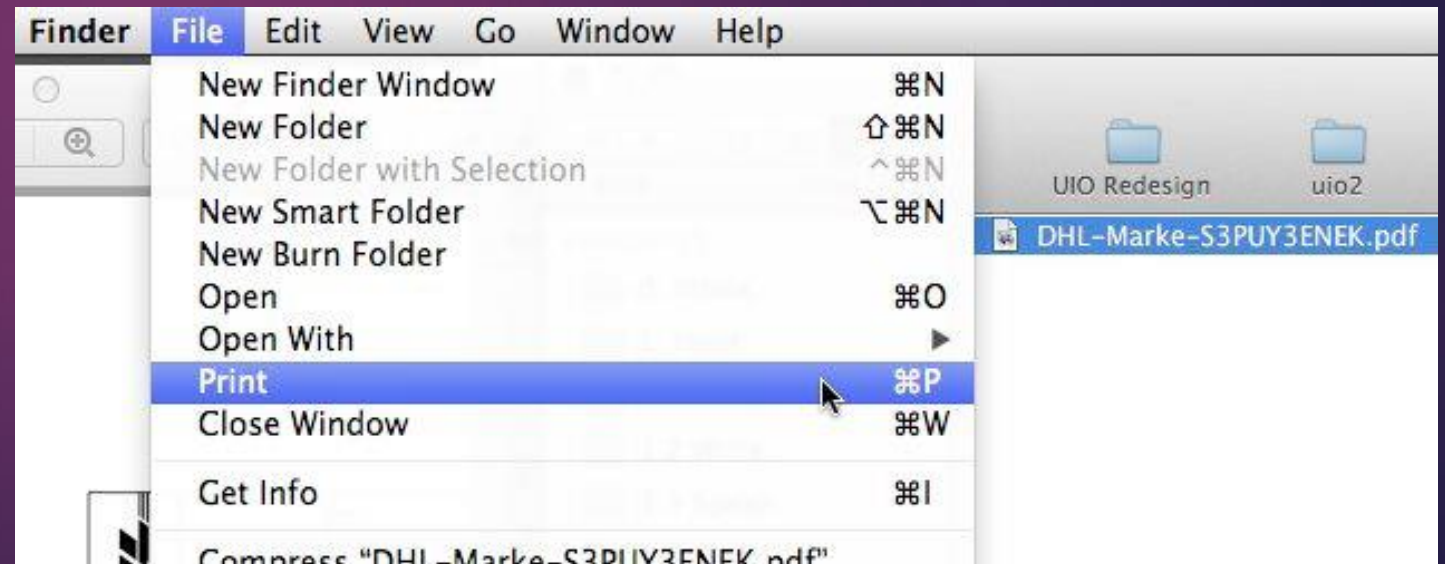
Rule 1: Strive for consistency.

Consistent sequences of actions should be required in similar situations; identical terminology should be used in prompts, menus, and help screens; and consistent commands should be employed throughout.



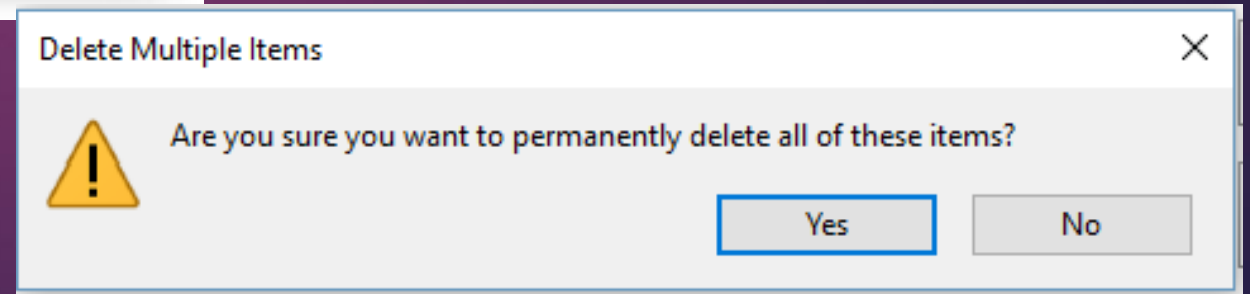
Rule2: Enable frequent users to use shortcuts

As the frequency of use increases, so do the user's desires to reduce the number of interactions and to increase the pace of interaction. Abbreviations, function keys, hidden commands, and macro facilities are very helpful to an expert user.



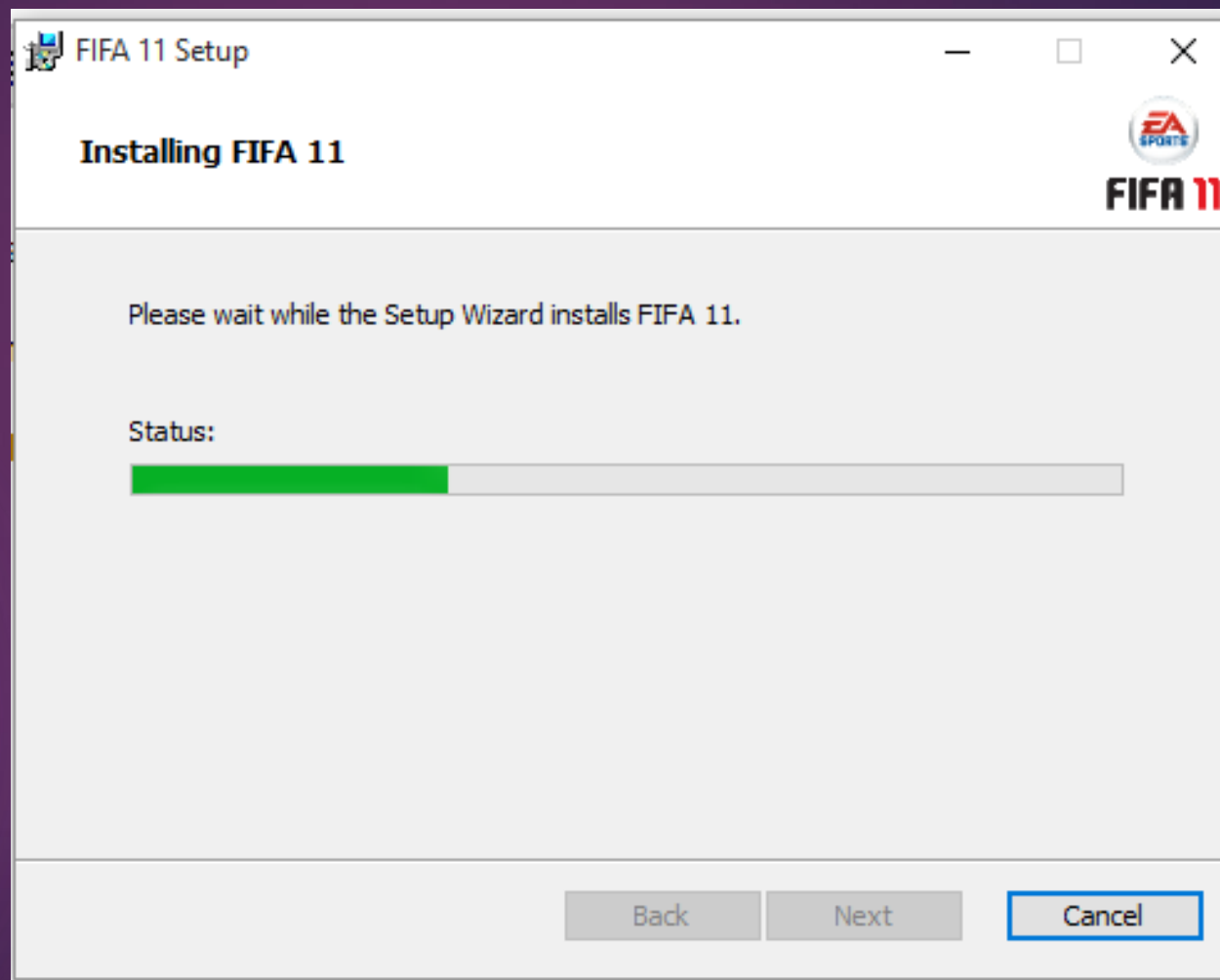
Rule 3: Offer informative feedback

For every operator action, there should be some system feedback. For frequent and minor actions, the response can be modest, while for infrequent and major actions, the response should be more substantial.



Rule 4: Design dialog to yield closure

Sequences of actions should be organized into groups with a beginning, middle, and end. The informative feedback at the completion of a group of actions gives the operators the satisfaction of accomplishment, a sense of relief, the signal to drop contingency plans and options from their minds, and an indication that the way is clear to prepare for the next group of actions.



Rule 5: Offer simple error handling

As much as possible, design the system so the user cannot make a serious error. If an error is made, the system should be able to detect the error and offer simple, comprehensible mechanisms for handling the error.

The screenshot shows a user interface for creating an Apple ID. It features two main sections: 'Your Name' and 'Apple ID and Primary Email Address'. The 'Your Name' section contains the text 'Andy Geschäftsleitung' and an 'Edit' link. The 'Apple ID and Primary Email Address' section contains a text input field with the value 'abc@something.com'. A tooltip is displayed next to the input field, titled 'Apple ID must:', listing three requirements: 'Be a valid email address', 'Not already be in use', and 'Not use a domain owned by Apple'. Below the input field, there is explanatory text about using the new Apple ID to sign in to services like iTunes, the App Store, and Game Center, and a note that the user might be required to verify their email address before using the new Apple ID.

Your Name
Andy Geschäftsleitung [Edit](#)

Apple ID and Primary Email Address

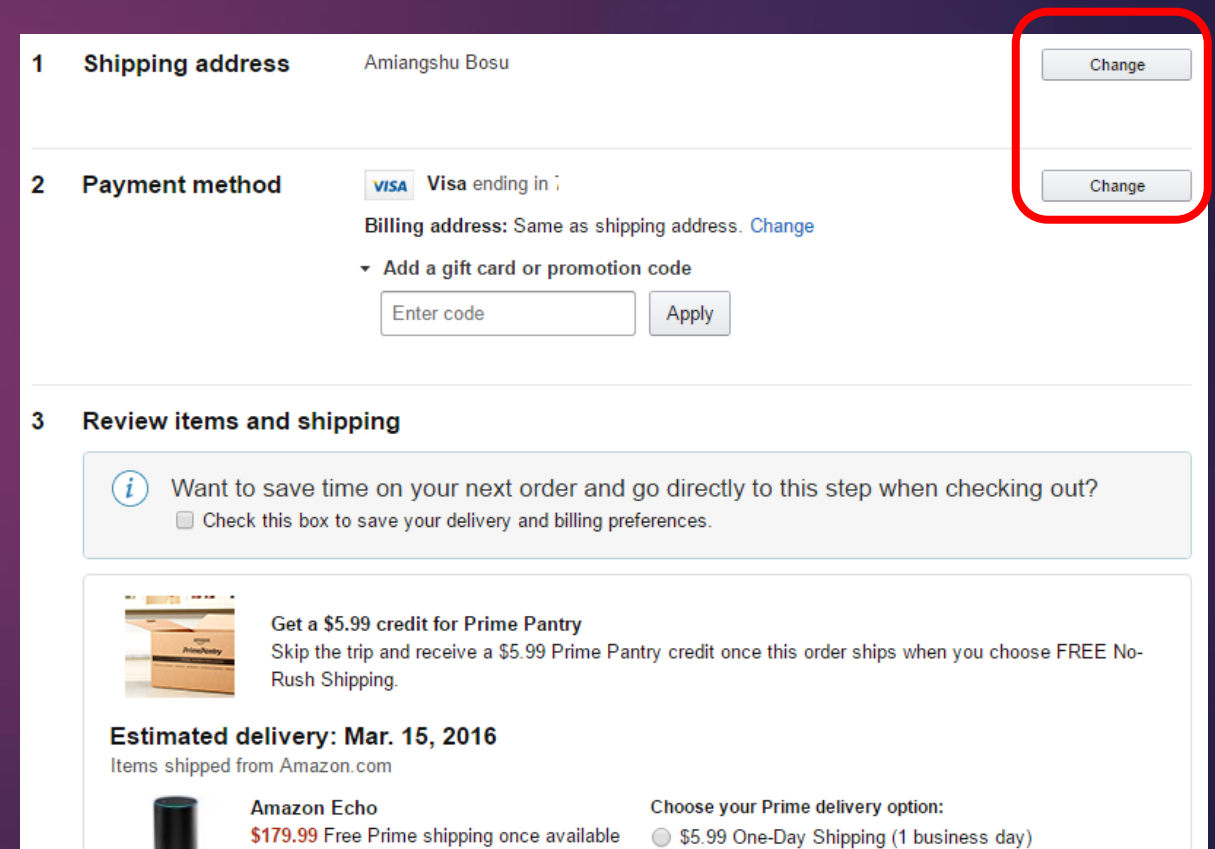
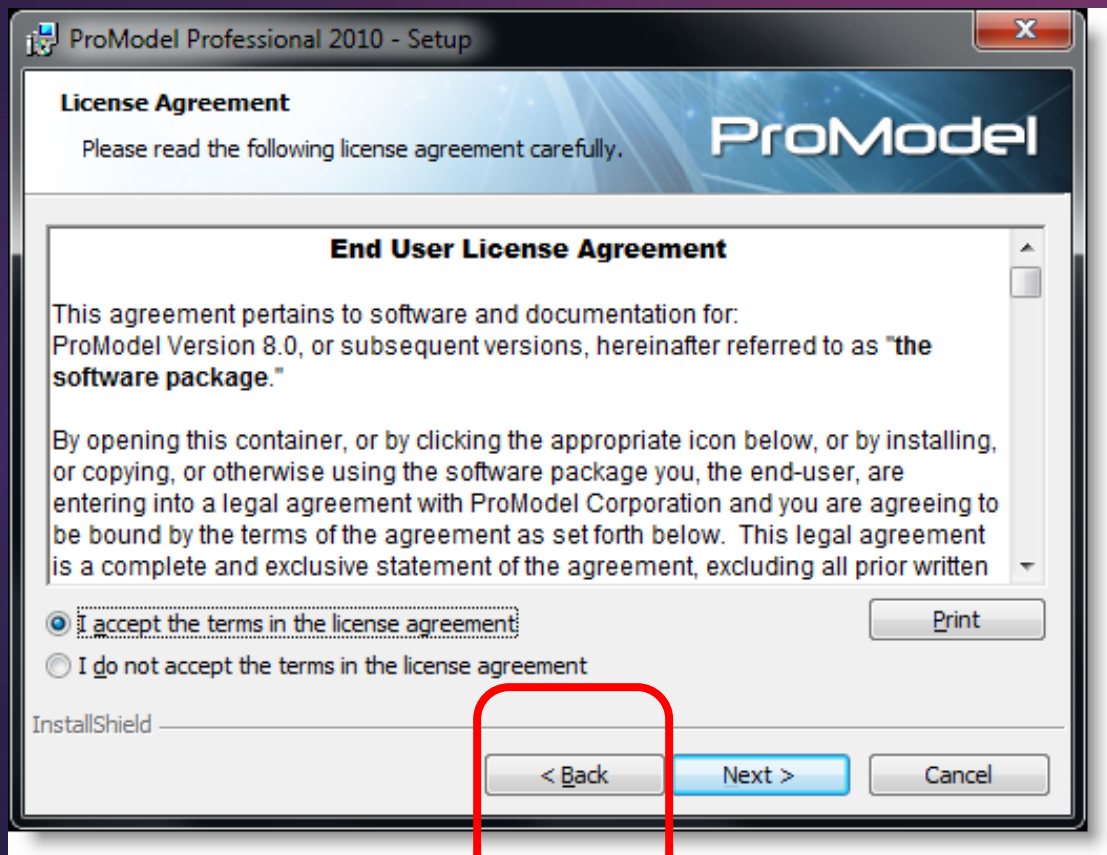
Apple ID must:

- Be a valid email address
- Not already be in use
- Not use a domain owned by Apple

You'll use your new Apple ID to sign in to services such as iTunes, the App Store, and Game Center. Please note that you might be required to verify your email address before you can start using your new Apple ID.

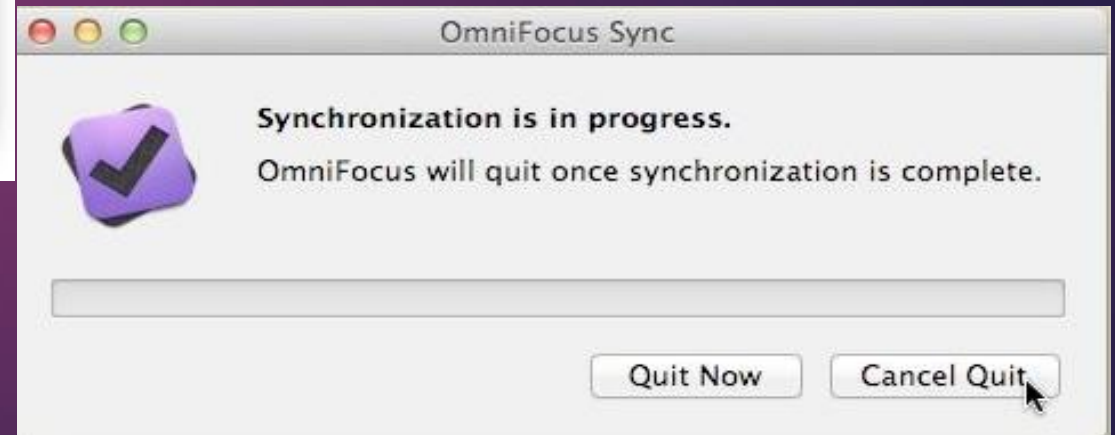
Rule 6: Permit easy reversal of actions

This feature relieves anxiety, since the user knows that errors can be undone; it thus encourages exploration of unfamiliar options. The units of reversibility may be a single action, a data entry, or a complete group of actions.



Rule 7: Let the user be in control.

Experienced operators strongly desire the sense that they are in charge of the system and that the system responds to their actions. Design the system to make users the initiators of actions rather than the responders.



Rule 8: Reduce short-term memory load on the user.

The limitation of human information processing in short-term memory requires that displays be kept simple, multiple page displays be consolidated, window-motion frequency be reduced, and sufficient training time be allotted for codes, mnemonics, and sequences of actions.



Checkout (1 item)




1 Shipping address

Amiangshu Bosu

Change

2 Payment method

 Visa ending in 1

Change

Billing address: Same as shipping address. [Change](#)

▼ Add a gift card or promotion code

Enter code

Apply

3 Review items and shipping



Want to save time on your next order and go directly to this step when checking out?

☐ Check this box to save your delivery and billing preferences.



Get a \$5.99 credit for Prime Pantry

Skip the trip and receive a \$5.99 Prime Pantry credit once this order ships when you choose FREE No-Rush Shipping.

Estimated delivery: Mar. 15, 2016

Items shipped from Amazon.com



Amazon Echo

\$179.99 Free Prime shipping once available

Qty: 1

Sold by: Amazon Digital Services LLC

In stock on March 10, 2016.

 Add a gift receipt

and see other gift options

☐ Pay in 5 monthly payments of \$36.00

Choose your Prime delivery option:

- ☐ \$5.99 One-Day Shipping (1 business day)
 - ☒ FREE Two-Day Shipping (2 business days)
 - ☐ FREE Standard Shipping (4-5 business days)
 - ☐ FREE No-Rush Shipping (5 business days)
- Get a \$5.99 credit for Prime Pantry. [Details](#)

Place your order

By placing your order, you agree to Amazon.com's [privacy notice and conditions of use](#).

Order Summary

Items:	\$179.99
Shipping & handling:	\$0.00
Total before tax:	\$179.99
Estimated tax to be collected:	\$11.25

Order total: \$191.24

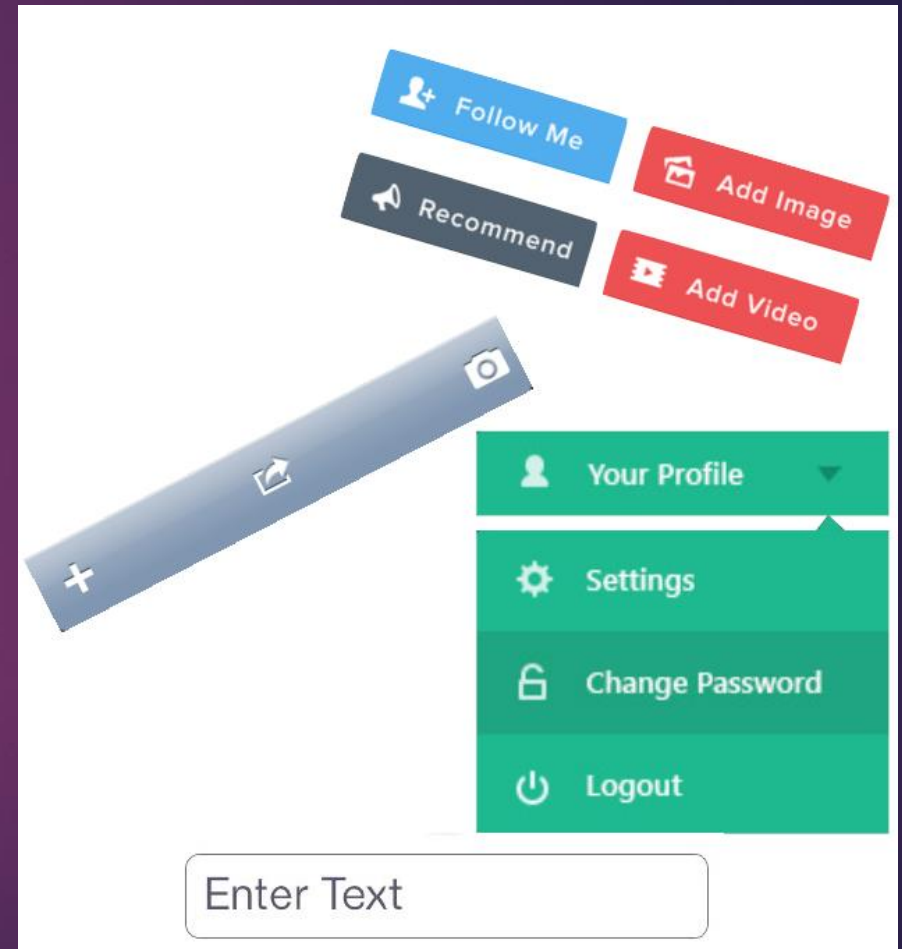
By placing your order, you agree to all of the terms found [here](#).

[How are shipping costs calculated?](#)

Prime shipping benefits have been applied to your order.

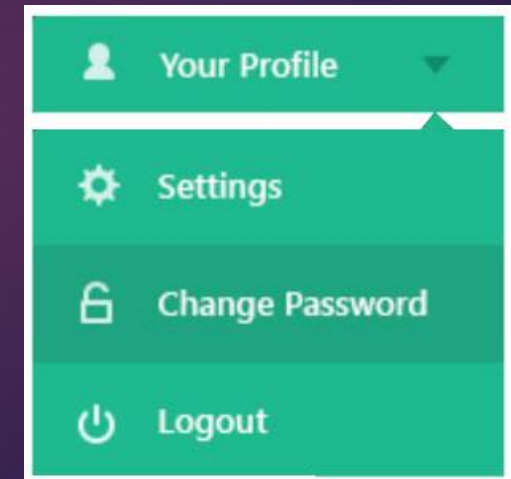
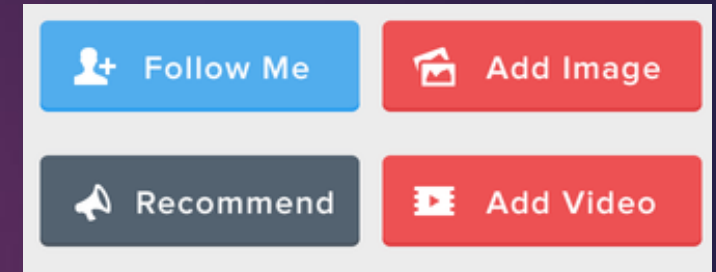
UI Design Components

- ▶ button
- ▶ check box
- ▶ radio button
- ▶ text field
- ▶ list
- ▶ combo box
- ▶ menu
- ▶ dialog box



UI design: buttons, toolbars, menus

- ▶ Use **buttons** for single independent actions that are relevant to the current screen.
 - ▶ Use button text with verb phrases such as "Save" or "Cancel", not generic: "OK", "Yes", "No"
 - ▶ Use Mnemonics or Accelerators (Ctrl-S)
- ▶ Use **toolbars** for common actions.
- ▶ Use **menus** for infrequent actions that may be applicable to many or all screens.
 - ▶ Users hate menus! Try not to rely too much on menus. Provide another way to access the same functionality (toolbar, hotkey, etc.)



UI design: toggle, check boxes and radio buttons

- ▶ Use **check boxes** for independent on/off switches.
- ▶ Use **radio buttons** for related choices, when only one choice can be activated at a time.
- ▶ Toggle for Boolean choice



1. Do you have pets?

☒ Yes

☐ No

2. Which pets do you have?

☐ Dog

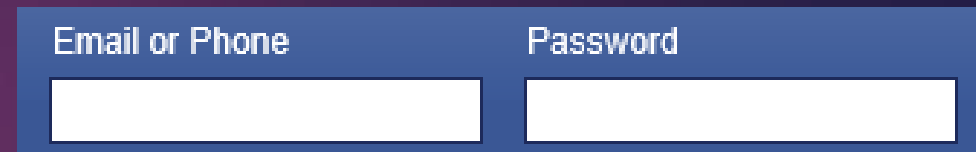
☒ Cat

☒ Lizard

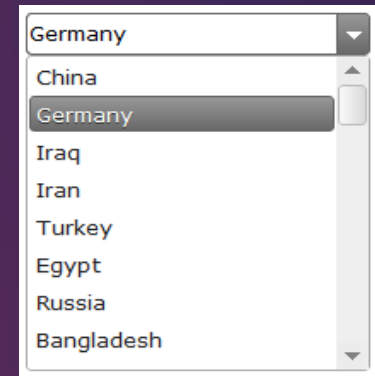
☐ Bird

UI design: text fields, lists, combo boxes, sliders

- ▶ Use **text fields** (usually with a label) when the user may type in anything they want.
- ▶ Use List/**combo boxes** when there are many fixed choices; don't take up screen real estate by showing them all at once.
- ▶ Use a **slider** or **spinner** for a numeric value.



A blue header bar contains two labels: "Email or Phone" and "Password". Below each label is a white rectangular text input field.



A list box with a dropdown arrow at the top. The list contains the following items: Germany, China, Germany (highlighted), Iraq, Iran, Turkey, Egypt, Russia, and Bangladesh. A vertical scrollbar is on the right side.

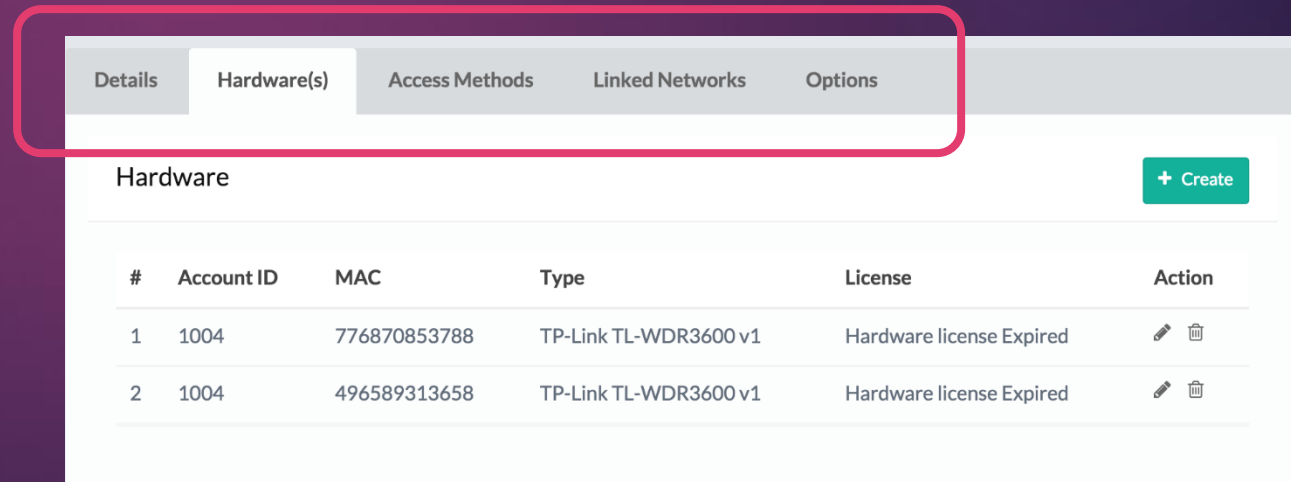


A satisfaction survey interface titled "How satisfied are you with:". It features two horizontal sliders. The top slider is for "Product" with a value of 6. The bottom slider is for "Service" with a value of 8. Both sliders have a scale from 1 (Poor) to 10 (Great).

Category	Value
Product	6
Service	8

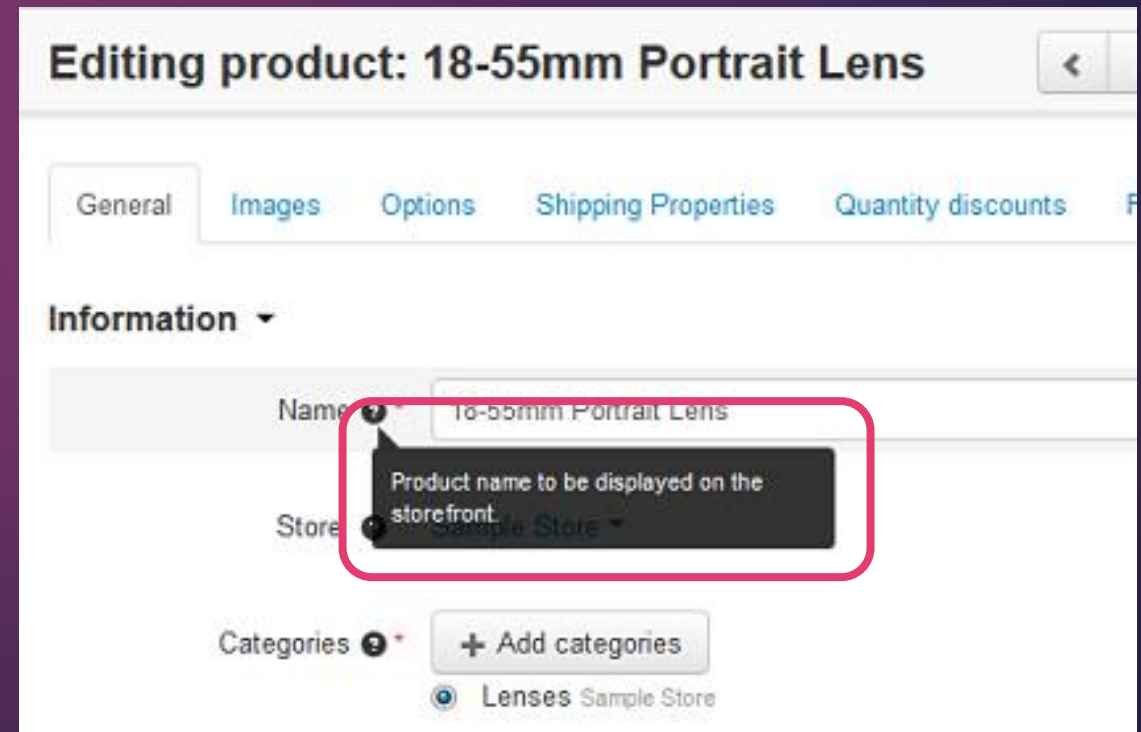
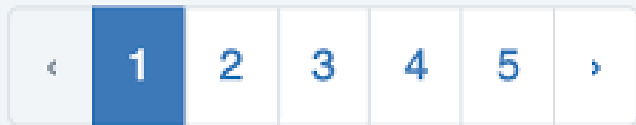
UI design: dialogs and panes

- ▶ Use a **tabbed pane** when there are many screens that the user may want to switch between at any moment
- ▶ Use **dialog boxes** or **option panes** to present temporary screens or options



UI design: pagination

- ▶ Use a **pagination panel** for incorporating multiple page/table view
- ▶ **Tooltip** is used for showing help/information



UI design: progress and picker

- ▶ Use elements for showing **progress**
- ▶ **Date and time pickers** are used for setting time and date

Select Date and Time

2018-04-08 09:02

09:02

Select

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					





Thank You