MODULE 7: USER INTERFACE BASICS

The user interface (UI)/user experience (UX) could and can make or break the usability of your application and thereby its success. An overly complicated user interface can frustrate users to the point that they will stop using your application.

The key to a successful UI/UX is to design the layout from the end user's perspective. See how they will use your application.

In this module, we'll cover some of the basics of UI/UX design.

Reference: [Usability in Software Design - Win32 apps | Microsoft Docs]

UX versus UI

These two terms are often used interchangeably, but in fact, they refer to two different methods. *UX or User Experience* describes the overall end-user experience, including their emotions. Do they enjoy working with your app? Do they find it visually appealing? Can they find the data they need quickly, or must they navigate around to find it? Is the flow of the application fit the culture (Left to right, and up to down in the US)?

All of these questions help build the UX. A proper UX provides the user with a pleasant (not frustrating) and visually pleasing experience. Easy access to easy-to-use is a big part of UX.

On the other hand, *UI or User Interface* deals through the layout and flow of your application, with the iterative process, the UI can enhance the usability, ease of use, and increase the enjoyment of using your application.

UI Design Principles

The three principles of UI design are:

- Giving the user control over the interface - Allowing them to control the look and feel of the interface
- Reducing the memory burden of the user – Using images and layouts consistently
- Keeping the consistency of the interface – Maintain the same look and feel throughout the application

User Interface Design

Taken from [UX vs UI: Design, Differences, and Relationship | Full Scale]

User Interface Design is concerned with the visual scheme of a website or a mobile app—how to make it attractive, assistive, and responsive to users. This includes the development and presentation of an appropriate look-and-feel for a website or an app.

The Usability Post defines eight (8) characteristics for a successful user interface. To do this, designers should consider the following aspects:

- **Clear**—Clarity is the most important characteristic of a user interface. It justifies the definition of the user interface as a medium of interaction for users and systems with meaning and function. Each element should represent exactly what they are enabling users to perform what function they want.

- **Concise**—Being clear with your features is good. However, over-explaining instructions or descriptions may bore your users. You should be clear with as short an explanation as possible. If you can use one word instead of two, do it. If you can explain a feature in one sentence instead of four, go for it.
- **Familiar**—Making an interface intuitive is a challenging part of a UI designer's job. This deals with the conventions that the target audience is used to. Making a UI intuitive is simply making it familiar. To do this, one should integrate signs, icons, or templates that have been already encountered before. A navigation bar or a search bar is conventionally located at the topmost part of an application page. This is also the same convention that most designers and customers are used to. Changing its placement means risking the familiarity of the users in navigating through your software application. Therefore, this is something that you should avoid.
- **Responsive**—Responsive can mean two things: fast and interactive. One, your interface has to be fast. Waiting for lagging pages can be frustrating to your users. Having a fast interface will boost the user experience. Two, your interface also has to be interactive. It should be communicating with your users and provide some form of feedback with each action that they make. How do they know when they clicked a button? Is there a loading page that should appear? Should a menu be displayed? Should they navigate to another page? These are things that should be considered.
- **Consistent**—Old adage says 'consistency is key' and it still remains true. There should be a consistent style with how the content is presented: the layout, icons, images, text, etc. Consistent interfaces also allow users to gauge familiarity with your product.
- **Attractive**—One of the main purposes of UI is its visual aspect. Making the UI attractive is as important as the rest of the characteristics. Your application may suffice in terms of function and efficiency but making it attractive is an extra step to increase user experience satisfaction. This is especially specific for sites or products that have a filtered market in which UI designers can customize the design to make it more appealing to the target audience.
- **Efficient**—Does it make the user's life easier? Does the user have to go outside of the app to accomplish some tasks? Are the functions obtained in as little time and as little effort as possible? A good user interface should be efficient enough to answer correctly to these questions. The essence of UI design display functions with minimal clutter that provides efficiency of use.
- **Forgiving**—There should be a fallback option for your users in instances that they make mistakes. For example, the user accidentally publishes a post. Is there an option to delete the post? Is there an option to edit it? Your interface has to be forgiving and proactive. Don't go too hard on jargon, too.

UI Fundamentals

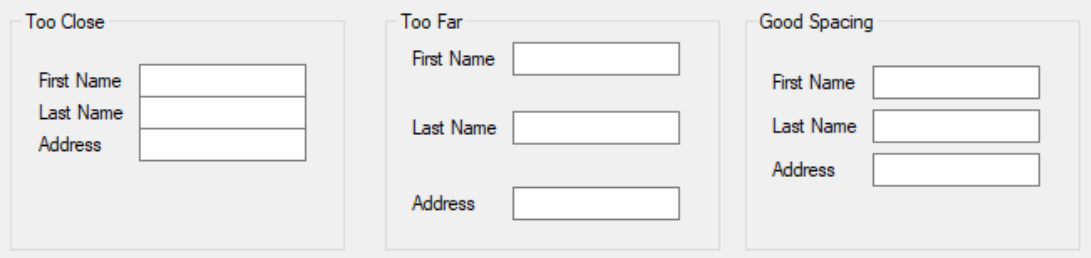
There are seven fundamentals of UI design. Abiding by these will help you create a beautiful and functional UI

- White space
- Alignment
- Tab Order and Focus
- Color Harmony
- Contrast
- Scale
- Typography (Fonts)
- Visual Hierarchy

White Space

Also known as *negative* space, it is the space between elements. Squishing controls too close together makes the interface too hard to read. Spreading the controls too far apart will cause the same effect.

Take a look at the three examples below.



Notice that group, labeled *Too Close*, the textboxes borders are touching. This makes the data hard to read and can confuse the customer. The customer will have difficulty separating the different data meanings.

The group labeled *Too Far,* is also difficult to read. The spaces between the textboxes make them look like they are not related, or part of a single record. The separation between controls indicates a change in a relationship in the data.

The group labeled *Good Spacing* provides enough space to tell the customer that the values are separate but still close enough to be related to each other. Spacing is important not only for aesthetics but also to let the customer know how data is related.

The example below demonstrates how important the spacing between related data.

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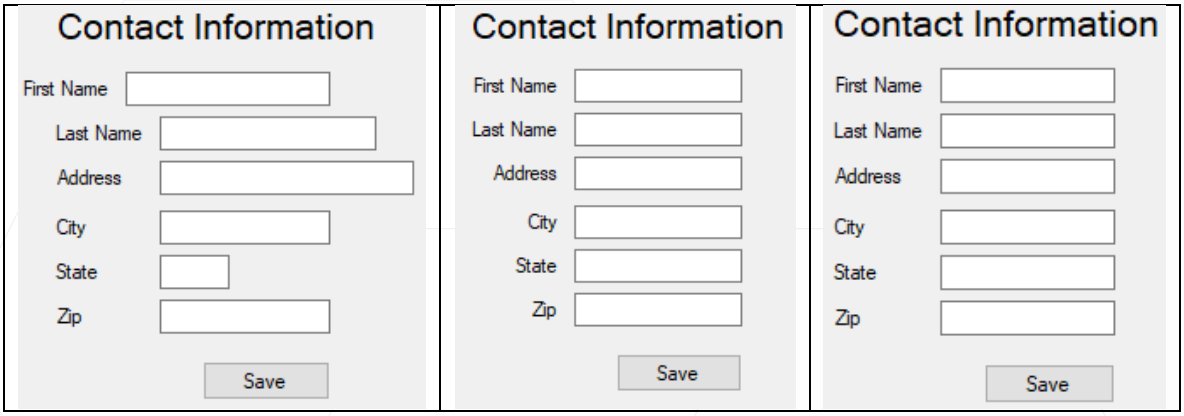
The first group indicates that the data fields *City, State, and Zip* aren't related to the upper controls by the amount of space between them. The second group clearly says that all the fields are related by their spacing alone.

When designing your forms, remember that the spacing between controls is important to communicate to your customers how data is related. Using *GroupBoxes* is a great way to do just that.

Alignment

One thing that destroys a good design is bad alignment between controls. Alignment is the process of ensuring that every element is positioned correctly in relation to other elements. The following example is from a web page, but the principle applies here a well.



The second and third examples are better aligned, making the form more readable. Which one do you like better?

What's the first thing you see? Is it the title, the button, what?

In the first example, the only things that are aligned are the textboxes. The form looks confusing and is hard to follow. Remember, your forms should be designed from the customer's perspective. What is important to them to complete the task your application has been developed for? When designing a form, consider how the placement of the controls affects the customer's ability to complete the task.

- How many clicks does it take to complete the form's data requirements?
- Does the data flow logically?
- Can the customer complete the form's requirements without using a mouse/touchscreen?
- Does the form emphasize the important parts?

Consider the three options below.

Option 1: This represents a typical flow. The textboxes are aligned and in proper order. This alignment allows the customer to complete the form in a logical flow. Screen real estate is better utilized and is visually more appealing.

Option 2: This option segments the data into related segments (name and address fields are segregated). Note, though, the customer's eye movement is required to shift directions. The name fields are vertical, then the customer must shift horizontal, then vertical again. Besides, moving the fields in this order creates unwanted whitespace.

Option 3: Understand that this is an extreme example of a bad UI. Try to remember the order your eyes see the fields. While this may seem logical, it is uncommon. You could say even unnatural. The data fields are presented in a horizontal pattern, but because of that, the relation of the data requested seems disjointed.

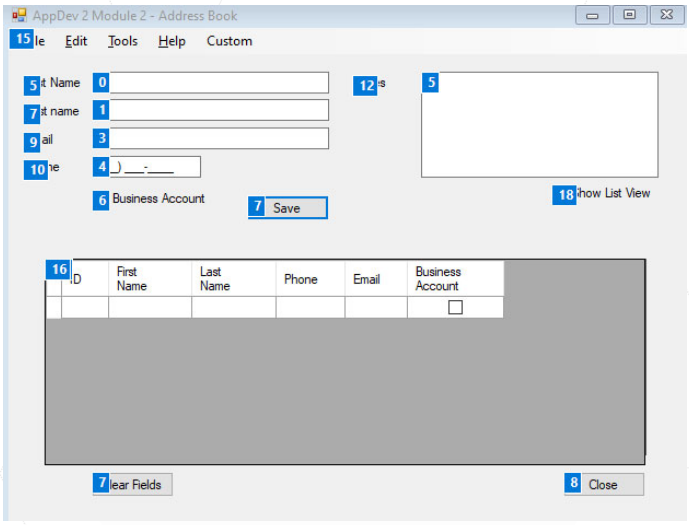
Tab Order

At this time it is important to review the *Tab Order* of the form. Remember, that the tab order dictates the order in which the controls are accessed by the customer when they press the *Tab* key. The Tab Order is important because it can minimize the customers' need to use use the mouse to navigate the form.

Setting the Tab Order

The control's tab order can be set in two ways. The first way is to manually set the tab order by editing the *TabIndex* property. Starting with zero (0), set each control's tab index to the appropriate number.

The second way is to use the *Tab Order* option on the *View* menu. Activating this view will display the tab order on the form itself. To change the tab order on a control, place the mouse over the current tab index in blue, and click. Each click will increment the tab index.



Once you have the tab order set, click the *View* menu and click the *Tab Order* option again to remove the blue boxes.

Form AcceptButton

Another property to set that will make data entry in your form easier for your customer is to set the forms *AcceptButton*. Setting this property identifies the button that will be *clicked* when the customer presses the enter key. Doing this will allow your customer to minimize the need for the mouse.

Control Focus

When the customer completes the form and successfully saves the data, the proper thing to do at that point is to clear the entry fields and position the cursor in the first field to allow the customer to continue adding new data. Remember, our job as designers are to develop a solution to solve a problem. In doing so, we must not make it more work to use our solution.

Clear() - *control.Clear()* method clears any information contained in the control

Focus() – *control.Focus()* method positions the cursor in the control

IMPORTANT: When creating a form for data entry, it is our responsibility to make the task as easy as possible. Make sure that your code

1. clears the entry fields
2. positions the cursor in the first field
3. set the AcceptButton for the form

Color Harmony

A color is a powerful tool that can speak as loudly as words. Most applications, be them websites, mobile, or desktop, always depend on some use of color to enhance their application, identify their brand or draw the customer's attention to important parts of the application.

Some key things to remember about color usage:

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1. An application's color palette should reflect and communicate the personality of the brand.
2. Achieve a better user experience
3. Influence purchasing decisions

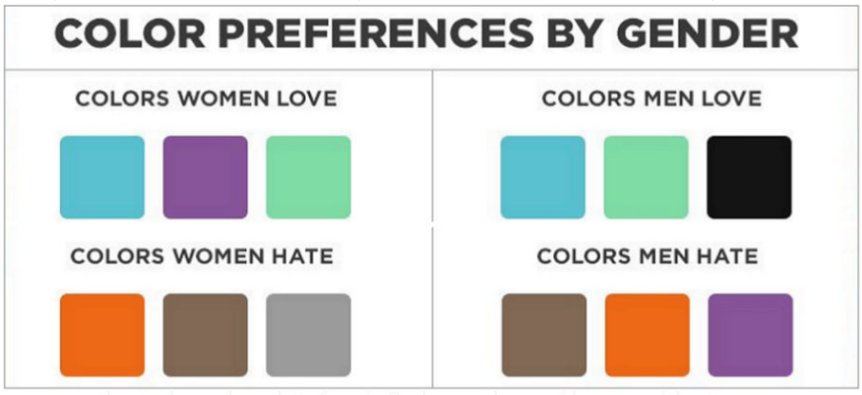
Color can communicate a unique meaning. Why do you think nP picked the colors it uses for our logo?

- **Red** — Red is the color of danger and passion, as well as excitement. It's a very strong color and can elicit strong reactions in people. Lightening it to pink makes it more feminine and romantic while darkening the hue to maroon makes it more subdued and traditional.
- **Orange** — Orange is a very creative color that's also associated with adventure and youth. It's very energetic, too. Because of orange's strong ties to the 70s style, it can also evoke a retro feeling.
- **Yellow** — Yellow is happy, optimistic, and cheerful. It's popular in designs for children and adults alike. More pastel hues are often used as a gender-neutral baby color, while brighter yellows are popular in creative designs. Darker shades of yellow become gold, which is associated with wealth and success.
- **Green** — Green has varied associations. On one hand, it provokes feelings of wealth and tradition (particularly darker hues), while on the other it's strongly associated with environmentalism and nature. Lime greens are often associated with renewal and growth.
- **Blue** — Blue is most often associated with loyalty and trust. Brighter blues can be affiliated with communication, while duller and darker blues can be associated with sadness and depression. Blue is the most universally liked color in the world, which may explain why so many companies opt for blue shades for their branding.

- **Purple** — Purple is another hue with varied meanings. It's long been associated with royalty and wealth (since purple dye was rare in many ancient civilizations, it was reserved for royalty). But it's also associated with mystery and spirituality. Purple can also evoke creativity.
- **Black** — Black implies sophistication and luxury. It can also be tied to sorrow and negativity, however. Depending on the other UX colors being used alongside black, it can feel modern or traditional, formal or casual.
- **White** — White is tied to purity, innocence, and positivity. White is also very popular in minimalist designs, due to its neutrality and simplicity. Like black, white easily takes on the characteristics of other colors it's used with.
- **Gray** — Gray has varied meanings, depending on the context. It can be conservative and sophisticated or dingy and dull. It can be emotionless or moody. It can also be associated with sorrow and sadness.
- **Brown** — Brown (which is actually a dark shade of orange) is associated with being down to earth and grounded. It's also associated with nature and even coziness. And, of course, it can be affiliated with being dirty or dingy.

color	Meaning & key words	Usage pattern
Black	Luxury, value, elegance, sophistication, power, classic,	E-commerce, high-value sites
red	youthful , power, stunning, stimulating, energizing, passion	Warnings, food, notices
yellow	Warning, happiness, fun, Playfulness, enthusiasm, wisdom,	Warning signs, traffic signals
green	nature, environmental, stability, growth, balance, stabilization	Environment, outdoor products.
gray	Traditional, professional, formality, neutrality, melancholy	Most used in website
orange	Haste, impulse, fun, activity, competition, confidence, movement	Sports, children, cartoon, logo
white	freedom, spaciousness, Clean, simplicity, virtue, purity, innocence	background color, web page
purple	Luxurious, romance, mystery, royalty, lavishness, wealth	Fashion, luxurious commodities
blue	trust, peace, order, loyalty, calmness, openness, safety, calmness	Common used, social website
ivory	elegance, simplicity, comfort, Clean, reliability, safety	Coffee Website, warm product

Gender influences color preference as well. You should select a different color scheme if you are designing an application to be used primarily by females.



Color Tools

Pallete generator – randomly create attractive and balanced color pallets	Colors - The super fast color schemes generator!
Color picker	Paletton - The Color Scheme Designer

Video: Dark Patterns

Contrast

Contrast is important to the visual hierarchy (see the section below). It enables the programmer/designer to present a layout in a way that informs users what parts are vital and what parts are secondary. Contrast helps capture the customer's attention and directing them to specific areas or controls

When choosing a color scheme be aware that colors will appear differently on different monitors. Your color scheme should enhance the look of your UI but not distract from it. Use contrasting colors that complement each other but don't overshadow the purpose of the interface.

Scale

Given the topic, you would think that *Scale* means *size,* and in some ways, you'd be correct. Scale can refer to different things in development, and that would depend entirely on the platform you are developing for. In today's development environment, a one-size-fits-all approach to interface design doesn't always work. If you are planning to make your application available to mobile and web, you can develop two different interfaces, or you can employ constructs that will handle the difference in screen size. Either way, your controls will need to be simple.

Typography (Fonts)

Taken from: How To Use Typography In UI Design: A Beginners Guide (careerfoundry.com)

Typography refers to, in very basic terms, the *Font and Typefaces* used in your application.

- Font – refers to the weight, widths and, style that constitute a typeface
- Typeface – refers to a family of related fonts

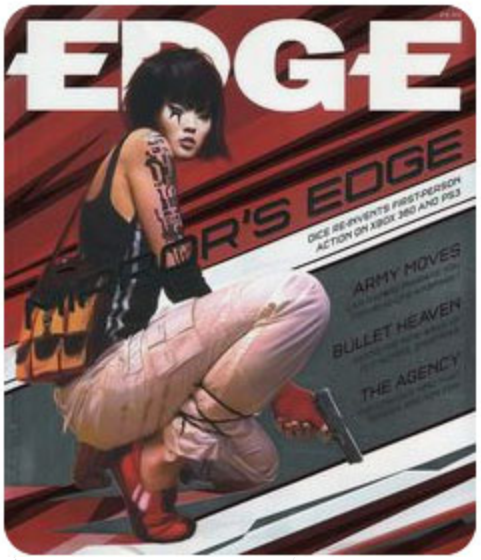
Font's and Typefaces can be very useful for emphasize a piece of data or even building brand recognition

- Consistent use of a typeface is important to avoiding confusion. Stick to the same font style.
- White space (or *negative space*) is the space around text or graphics. Proper use of white spaces will help your interface appear uncluttered
- Alignment refers to the proper spacing, size and, distance between controls- See the ***Alignment*** section above

Visual Hierarchy

Visual Hierarchy refers to the placement of elements to indicate the order of importance. It conveys a feeling of depth and importance. You've probably haven't noticed, but you are exposed to visual hierarchy almost everywhere. A good example would be gaming magazines.

Look at the three examples below and discuss what you see first. How does the layout force you to focus on what the publisher feels important.



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Module 7: Base Quest:

Using your Address Book from previous quests, redesign your UI incorporating the points discussed above. You will need to focus on:

- Typeface used
- Form placement
- Control placement and alignment
- Usage of colors

Exchange applications with your classmates and provide feedback on their design.

1. What was your first overall impression?
2. What did you feel was the most important thing you noticed?
3. Was the application easy to use? Why?
4. Was the data easy to find? Why?
5. Did the presentation seem cluttered? Why?

Instructor Notes

Instructors should be looking at:

- the use of colors to emphasize the important parts of the application
- Consistent use of the typeface
- Tab order appropriately set

Module 7: Challenge Quest

For the challenge quest, use the same requirements for the base quest. Also, add the following:

- Use multiple forms to display or enter data
- Research and use the *Transparency* property to effect a visual hierarchy
- Research and use the *Panel* control along with the transparency property to emphasize or deemphasize portions of your form

Instructor Notes:

For this quest, instructors should be looking for the effective use of the visual hierarchy of form or panel placement. If the crew member is using a single form with multiple panels, they should switch to the top when appropriate. Otherwise the same requirements of the base quests are also required for the challenge quest.