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INTERNATIONAL

Exercise Manual for Course 1802

User Experience (UX) Design
for Successful Software

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Exercise Manual Contents

Legend for Course Icons

Standard icons are used in the hands-on exercises to illustrate various phases of each exercise.

	Major step		**Warning**
1. ❑	**Action**		**Hint**
	Checkpoint	STOP	**Stop**
	Question		**Congratulations**
	Information		**Bonus**

You're a relatively inexperienced user experience designer whose company has a new client: Roadworthy, LLC. You've received the following description from Roadworthy which describes why they need someone like you.

Roadworthy UX Redevelopment
Operational Concept Description
Roadworthy, Inc.
Version 1.0

"Democratizing technology for the trucking industry"

1.0 The Roadworthy Company and WADI

As Roadworthy has grown to a half-billion–dollar company with thousands of employees, our goal continues to be to provide high-end, technologically sophisticated solutions for the real problems that our customers face and to provide those solutions at a low cost. Our vision is "Democratizing technology for the trucking industry"—making solutions that were available only to large truck fleets available to our customers: mid-size, and even small, truck fleets.

1.1 The WADI Line of Products

The Wide Area Driver Information (WADI) system consists primarily of data-gathering devices. The data-gathering devices are attached to trucks to gather and broadcast information about those vehicles. Each data-gathering model is designed to gather specific data (e.g., mileage, tire pressure, brake stroke, etc.). Models are also designed to be easy to install on particular makes and models of tractors and trailers. For any data-gathering type and vehicle model combination, we have a wide variety of devices for customers to choose from, depending on cost, compatibility with third-party applications, battery life, broadcast type (Wi-Fi, Bluetooth, and radio-frequency identification), range, and more. Customers can order these products online using our purchasing application developed in house.

2.0 Issues

The runaway success of the WADI application has exposed issues with our existing customer ordering application.

2.1 Customer Ordering

The application is a constant source of complaints from our customers. Customers complain that the application is hard to use and confusing. They describe the experience as "frustrating" and "maddening." The nicest thing any customer has said about it is that the application is "old-fashioned."

Many of our customers' orders are sources of complaints and additional costs because customers do not get what they thought they ordered.

The experience this application delivers to our customers conflicts with our image as a technologically sophisticated company.

You are excited to be part of the team that will be developing the new User experience for Roadworthy's Customer Ordering application.

Objective

You will be acting as a UI designer for Roadworthy—you can find the brief you received from Roadworthy on page MA-1. To begin the process of designing a new UX for the company, you will design the persona for a critical cohort for the application.

Your team leader has called you into her office and given you the results of interviews with people who use the WADI Ordering application (you can find those results on page MA-9, after the exercise).

1. ❑ After reviewing the results of the interview, with your team (on your classroom computer), complete the WordPad document called EX22 with information about Jonas Johansson, the midlevel supervisor of a trucking fleet who uses the WADI ordering application.

    ⚠️ **When using your team's computer, these two actions will help ensure that you won't get locked out of the computer:**
    - Use the Smart RDP client to connect to the computer (your instructor will show you how)
    - Have only one team member interact with the remote computer in each exercise: Pick a driver from your team for each exercise

    💡 *Feel free to make any assumptions about your selected application that you want, based on your own knowledge and experience. Feel free to call on your instructor for any questions.*

2. ❑ You can add any additional characteristics you think are relevant in the **Attributes** section (space has been provided following the **Jobs** entry).

Congratulations! You've created a first draft of a persona for your application. As you continue to work on the case study, you'd learn more about the persona and continue to enrich it.

STOP

This is the end of the exercise.

External Customer-Ordering Application

Enid Hussain: Owner, Enid's Trucking

This WADI system is the best thing that we've ever bought. It's cheap, easy to use—just slap the devices on the trucks—and we're getting all of the information we need to manage our vehicle's maintenance. I don't want to have a dead truck, and I especially don't want a dead truck on the side of the road. Now my maintenance head sees the info he needs as the trucks roll into or out of the yard. We're buying new equipment from Roadworthy every month as we expand.

When I started this company, I had one truck, my husband, and two husky boys. Now I'm thinking about opening up a second yard across town just to serve that end of the city. It's all about keeping costs down and being efficient. WADI lets me do that.

Galina Zakharov: Manager, Logistics, Xtra Foods

Don't get me wrong—we like WADI products very much. And Roadworthy's solution is very complete because it includes not only the individual devices, but also the infrastructure we need to use the information the devices produce. I've been in this business for almost 20 years now and this is the system every company has needed to manage vehicle maintenance. But ordering using Roadworthy's systems? Not nearly good enough.

Every device is designed to do one thing and fit on one particular model of tractor or trailer. The "do one thing" part is great: We can buy what we want and skip what we don't want. The "fit on one model" is also great…when we install the devices. But ordering the devices…Roadworthy seems to be under the impression that customers like us will be familiar with their entire product line.

We know what trucks we have and what devices we want to put on them. The Roadworthy system gives us no help at all in picking the right devices. It takes too long to order, and we have frequently found we have ordered the wrong devices. Then we have to send them back and try again. Nightmare.

Akio Oe: Mechanic, Dulton Trucking

The WADI stuff is OK, I guess. You can tell they know trucks. You get the right device for your truck and it pretty much installs itself—but it still takes time, especially if we get 40 or 50 of them at once. Really well-designed, but they do break. The mileage and tire pressure things are bouncing along two feet off the roadbed, right out there. We find a broken unit that's not reporting and everyone wants it replaced. And now. Can't *not* know everything about every truck! We don't keep the WADI devices in stock, so I get to order the replacements. WADI ships fast, but getting the right one…? That's tough.

Everyone says, "Just order another of the one that broke." Yeah, but they don't make that one anymore. But even if I could—you look at what's left of one of those things after a rock hits it. Try to figure out what it was. A lot of the time, I have to order it before I even start to take the thing off the truck.

Jonas Johansson: Supervisor, Williams Trucking

We've made WADI the centerpiece of our new tractor/trailer information-management system. That means I need to purchase multiple devices for every vehicle in our fleet, spread across all of our yards, in four cities. The existing Roadworthy systems for buying devices are no help to us at all.

Hey, if I know what I want to order, I can place an order. But there's no support for figuring out what or how many devices I need. Fundamentally, I know what devices I want to put on each truck and how many trucks I have. But I have to break that down into this many of device *X*, this many of device *Y*. And I have to do it for each kind of truck we have and then total it all up to place the order for 76 of device *X*, 52 of device *Y*. We've got a big fleet out there: old trucks, new trucks, four or five manufacturers.

And finding the things! Don't get me started. I bring up WADI's ordering system and, heck, I don't know their part names. So I'm scrolling through this list and that list trying to find what I want and then ordering several dozen of these and several dozen of those other things. Come on! And, on top of that, they're going to ship the whole order to one place. We'll have these coming in to the head office, and I have to reship them to each yard. Give me a break!

Objective

Define one scenario for your team's persona.

Write a scenario for the persona describing how Jonas would carry out a common task using the existing WADI application. In real life, you would observe members of your cohorts carrying out their tasks. That not being possible here, you'll need to imagine Jonas at work.

To make it easier to apply insights from other team's designs, your instructor may direct all teams to use a common persona: `C:\1802\Jonas Personas.docx`.

Here's a description of what happens just before your scenario begins:

Jonas and his boss finish ordering the tractors and trailers for an expansion of the truck fleet (about a dozen tractor/trailers at two different sites). As Jonas leaves his boss's office, holding the sheets listing the truck orders, his boss says, "You should make sure that we'll have all the right WADI devices on hand when the trucks are delivered."

1. ❏ Open the WordPad document **Ex22 Scenario** on your classroom computer.

2. ❑ In the top part of the document, write a description of what Jonas does when he returns to his office. Try to make the description as realistic as possible—is it likely that he will be able to start the task immediately? Work on it without interruption? Have all the information he needs right at hand? How does he calculate the total number of each device that he orders (for example, what tools does he use)? Draw on your own experience in performing similar tasks.

> *Remember: You're trying to write something like Martha's vacation planning story, which you saw in the Course Notes—a slice of Jonas' life.*

3. ❑ In the second part of the document, fill out the form to do an analysis of your scenario. This will include
   - Persona involved (including how the persona feels about the process)
   - Persona's goal(s) for this scenario
   - Problems that the persona must resolve
   - The gratification point

Congratulations! You've defined critical information that you'll use in crafting a user experience that will meet the needs of at least one user community.

STOP

This is the end of the exercise.

Objective

Develop at least one conceptual sketch for your application.

To make it easier to apply insights from other team's designs, your instructor may direct all teams to continue to use a common persona (C:\1802\Common\Jonas Personas.docx) and a common scenario (C:\1802\Common\Jonas Scenario.docx) for your UX design.

Develop a conceptual sketch.

1. ❏ On your classroom computer, using Microsoft Paint, develop a concept sketch to support the scenario you described in the previous exercise, identifying how it supports your persona and scenario.

   Resist the urge to think in terms of forms and widgets. Focus on what information has to come in, what has to come out, how pain points will be addressed and gratification points achieved.

2. ❏ Review your concept:
   • How does it support your persona's goals? Values?
   • Does it support the scenario you described in the previous exercise? How?

Develop a second conceptual sketch.

3. ❏ If you have time, still using Microsoft Paint, develop a second concept sketch for the scenario, identifying how it supports your persona and scenario.

Try to develop as different a concept as you can from your first sketch to get new ideas to integrate into your final design.

4. ❑   If you had time to do two concepts, do a review of them:
- Which do you prefer?
- Can you identify why by referring to the persona's goals, values, and scenario?
- Are there ideas from the other concept that you'd like to integrate into your first concept? Or do the two concepts address different parts of the problem, and can they be joined together?

Congratulations! You've developed a conceptual sketch that supports at least one persona and scenario—and that you can turn into a user interface.

STOP

This is the end of the exercise.

Objective

Organize the interaction artifacts that make up your design into groups and assign meaningful names to each group.

Because you've developed a concept only for a single persona/scenario, it probably doesn't have enough interaction artifacts to make for an interesting card sort. Don't panic! We have provided additional artifacts.

1. ❑ On your classroom computer, double-click the Navigation application to start it.

   The application displays a set of 20 interaction artifacts representing reports provided by the existing version of your application.

2. ❑ Generate the cards for your case study by clicking the external purchasing application on the tool strip at the top of the form.

   ⚠ **"I've generated the list of reports for a different case study."**

   You can start over. Just click the Reset button to clear out the cards before doing Step 2 again.

3. ❑ Sort the items into groups based on your understanding of the mental model of your persona: Which reports will the persona see as similar? Which reports would they use together to perform their scenarios?

Remember: Your goal is to create groups that reflect your persona's way of looking at the world. One way to understand this is to consider one of your persona's scenarios: Which artifacts belong together in terms of that scenario?

4. ❑ After creating your groups, assign each group a name that defines the group. To do that:
   a. Click the **Add Header** button at the top of the form to start creating a Group card
   b. After the text box appears to let you set your group name, type a name and press the `<Enter>` key to create the Group card
   c. Drag the Group card to your group

5. ❑ When you're done, click the **Save** button to save your groups and headers. You can then safely close the Navigation application.

Congratulations! You have started to design the map that will drive the design of your application's menuing and navigation system.

STOP

This is the end of the exercise.

Objective

Develop an interaction script for your concept.

List the actions that will be performed by your persona in this scenario and how your application will respond.

1. ❑ Open the **Ex41 Interaction Script** document on your classroom computer's desktop.

2. ❑ On the first page, list (on the left) the actions taken by your persona and (on the right) the responses from your application for the case study you've been working on. Leave a row between each item to record barriers.

   Remember: In an interaction script, you record all of the actions performed by the user, not just the ones that you know your application will be involved with. This positions you to find ways that your application could be extended to support more of the user's activities.

   If you need more lines in the Action/Results table, just put your cursor in the last cell in the second column and press the <Tab> key. Word will add a new row to the table.

3. ❑ What are the barriers embedded in this script?
   - What information about the persona would it be useful to have to provide a better UX?
   - What actions by the persona will be awkward/difficult?
   - How could the UI be extended to integrate with all of the actions that the user performs?

   Remember: When defining an interaction script, you don't have to provide a solution to the problem, and there doesn't even have to be a feasible solution.

   Identify and begin to address barriers in your script.

4. ❑ Still in your document and following your Interaction Script, use the provided form to list your barriers and generate ways that your concept could be extended to address them.

   Congratulations! You've developed an interaction script, identified barriers, and started generating proposals to address those barriers.

   STOP

   This is the end of the exercise.

Objective

In this part of the case study, you will take the UI designed earlier in the chapter and, using Axure, begin to support your interaction script.

Assume that you are building the UI for the concept and interaction script you developed. Your concept probably includes some of these features:

- Specify what kinds of WADI devices are needed (mileage, tire pressure, etc.) for each tractor or trailer being purchased. You can assume that customers will put the same combination of devices on every tractor and trailer in their fleet
- Specify what combination of make and models of tractors and trailers the company has purchased (most companies have at least three different models of trucks, for instance)
- Generate and review the order
- Determine the price and delivery date for the order
- Be able to modify the order before sending it to WADI
- Send the order to WADI and get confirmation
- Choose whether to receive updates on their order status

1802-MA-15

Hands-On Exercise 4.2:
Developing a Wireframe Mock-up
(continued)

We'll start by opening the Axure project that you'll use to build your prototype.

1. ❑ Start Axure by double-clicking the Axure icon on your desktop.

2. ❑ Open the Axure project that represents your project: **Materials Purchasing Ex42**.

   ⓘ From the File menu, select Open and navigate to C:/1802/StartPoints to find your file. Double-click it to open it.

   ✓ The pages from the navigation path activity have already been added to your project and given headers.

Now you'll start building the prototype for your UI.

   ⓘ If your team wants to do a paper/whiteboard/flipchart/Paint sketch before working in Axure, that's fine. You'll need to transfer your design to Axure before the end of the exercise, though.

3. ❑ Pick one member of your team to work with Axure (your "Axure driver"). Change your driver with each exercise.

4. ❑   Begin by adding a new page to your project to hold your UI.

ⓘ In the list of pages (site map) in the upper left corner of Axure:
1. *Right-click the first page under the Home page.*
2. *From the pop-up menu, select Add | Sibling Page Before.*
3. *Your new page is added, and you can give your page a name. Type a meaningful name for your page.*
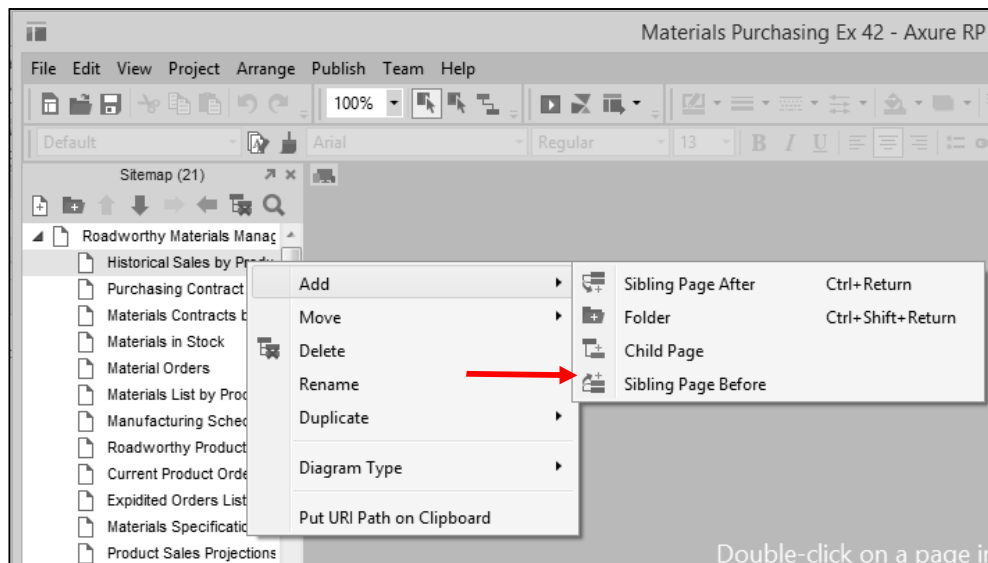
5. ❑   Start dragging Axure Widgets onto your page.

ⓘ To change the text in a widget, right-click the widget and select Edit Text.

If you want to add a grid with data to your prototype, the easiest widget to use is the Table widget.
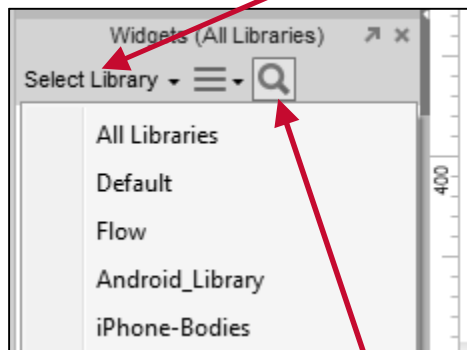
⚠️ **"I can't find the widget I want."**

ⓘ *The most likely problem is that Axure is looking in the wrong library. At the top of the Widgets list, set the Select Library dialog to All Libraries.*

You can now browse all of the widgets.

You can also click the magnifying glass icon to search the library you select. Be aware: Axure's search facility doesn't do any stemming, so if you don't get the widget's name right, search won't find it.

6. ❑ You can add relevant sample data to any widget that allows the user to select items. For a Drop List, for instance, right-click the widget and select **Edit List Items** to add sample data to the widget.

ⓘ *Remember that we're just trying to create a low-fidelity mock-up that would let you get some initial feedback from your stakeholders: You're not trying to either master Axure or create a real application. But if you run into a problem you want a solution for, don't hesitate to call on your instructor.*

7. ❑ When you want to see your page in action, press the <F5> key to open it in a browser. Just close the browser to return to Axure.

ⓘ Axure uses the default browser on your computer, which is, for the classroom computers, Internet Explorer. You can use a different browser (there are four installed):
1. From Axure's Publish menu, select Preview Options
2. Select the browser you'd prefer

🏆 Congratulations! You have used a UI design tool to create a wireframe of your UI and begin to support your interaction script. Next, you'll need to integrate your navigation design and incorporate some interactivity.

By the way: You'll never have enough time to build the prototype you want.

STOP

This is the end of the exercise.

Objective

Integrate your navigation plan into your prototype and add some initial interactivity.

Use your wireframe from exercise 4.2 as your starting point. If your result is not available, or if you prefer, you can use the solution to the exercise from file `C:\1802\Sample Solutions\Customer Order Ex4.2`.

First, open the project you worked on in Exercise 4.2 if it isn't already open and add any new pages. If you're not happy with what you created in Exercise 4.2, you can open the start point we've created for Exercise 5.1 and use it instead.

1. ❑   Change your Axure driver.

2. ❑   If it's not already open, start Axure. You can open your UI project by using the **File** menu and selecting **Open Recent**. Your project should be the top item in the list.

3. ❑   If Axure is already open but your project isn't displayed, use the **File** menu and select **Open Recent**. Your project should be the top item in the list.

4. ❑   Add any pages you feel that you're missing by right-clicking your initial page in the page list and selecting **Add | Sibling Page Before**.

The first step in implementing navigation is to let users know where they are. Decide how you will signal that to users.

If you want to review the groups you created in the affinity analysis exercise, just double-click the Navigation application to re-open the application. Provided that you clicked the Save button before exiting, the application will automatically display your groups and headers.

5. ❑ Before you add your navigation widgets, you might want to select all of the widgets you already have on your page and drag them down the page to make room for your navigation system.

6. ❑ What do you want to add to your page to let users know that they're on your site?

Widgets you might want to try:
1. *Image: With some text added, can be used to indicate where you want graphics to appear*
2. *Rectangle: Can be used to mark out header, footer, and other panels*

Just add these items (and your following navigation widgets) to the pages you've added to your application. Axure provides masters that hold UI elements common to many pages and, with a full-fledged prototype, that's where you would add your menus. However, using Axure masters is beyond the scope of this course.

The second step in implementing navigation is providing any menuing systems and in-page navigation.

7. ❏ Decide where any constant navigation will appear (menus or links that are the same on every page).

8. ❏ Add the widgets you want to use to those areas.

(i) A widgets you might want to try:
Classic Menu – Horizontal or Classic Menu – Vertical: To add a menu header, right-click the menu and select one of the Add Menu choices.

To add a submenu:
1. Select a single menu item.
2. Right-click the menu item.
3. Select Add Submenu.

If you want to add an OnClick event to a menu item or a button so that users can navigate to another page when using your mock-up:
1. Select a menu item.
2. On the right, in the Widget Interactions and Notes, make sure that the Interactions option is selected (and not Notes).
3. Double-click OnClick to display the Case Editor dialog to add a case.
4. On the left, in the Links section, select Open Link.
5. On the right, select a page.
6. Click the OK button.

9. ❏ Press <F5> and test your menuing widgets. Correct any problems in your menuing system. Just close the browser to return to Axure.

10. ❏ Finally, is there a form/page in your application with "in page" navigation—where:
    - The user will need to move from one page to another (a "related to" relationship in your navigation plan)?
    - That link will not be implemented through your context-sensitive menus?

    ⓘ Widgets you might want to try (use the OnClick event in the Interactions and Notes panel to have the widget display a different page):
    - *Button*
    - *Table Link*

11. ❏ Again, press the <F5> key to test your prototype in a browser.

    Congratulations! You've integrated your navigation plan into your UI. Next, you'll incorporate some interactivity by integrating typical UI design patterns.

STOP

This is the end of the exercise.

1802-MA-24

Objective

Design a user interface for the mobile experience specific to one mobile platform.

External customer-parts-ordering application: mobile version

Persona: Akio Oe

Scenario: Ordering a set of replacement parts for one model of tractor to have a complete set of spares to replace damaged devices

Background:
- WADI offers sets of devices for a single tractor (e.g., the TirePressureOnly package contains only tire-pressure monitoring devices but includes enough devices for every tire on a tractor or trailer)
- Your persona is ordering one of those standard packages for a single vehicle
- The persona will need to:
    ◦ Select one of the standard packages (packages include: MileageOnly, MileageAndTirePressure, TirePressureOnly)
    ◦ Specify the make and model of the vehicle
    ◦ Get a price and delivery date
    ◦ Confirm the order

Open the project you worked on in Exercise 5.2.

1. ❑   Change your Axure driver.

2. ❑   If it's not already open, start Axure. You can open your UI project by using the **File** menu and selecting **Open Recent**. Your project should be the top item in the list.

3. ❑   If Axure is already open, but your project isn't displayed, use the **File** menu and select **Open Recent**. Your project should be the top item in the list.

Design the UX.

4. ❑   Add a new section to the Axure project:
   a. Right-click the top line in the site map on the left-hand side.
   b. Select **Add** | **Folder**. The folder is added at the bottom of the site map.
   c. Change the name of the folder to **Mobile**.

5. ❑   Decide how many views you need and how those views will be organized. (Sequence? Spoke and hub?)

6. ❑   If you have more than one view, decide how the views will be linked. (Buttons? Table links? Menus for context-sensitive navigation?) You don't have much space, so navigation either can't take up much room or will have to be handled through a slide-in/slide-out menu.

7. ❑ Add the first mobile page and set up the page for a mobile application:
   a. Right-click the **Mobile** folder and select **Add Child Page**.
   b. Double-click the page in the site map to open it in the editor.

8. ❑ Set up the page to support one mobile screen design. If you've decided to design for:
   - Android phones, from the **Select Library** drop-down:
     ◦ Select **Android_Library**.
     ◦ Drag one of the frames from the Widgets list onto the page.
   - iOS phones, from the **Select Library** drop-down:
     ◦ If you're planning to create a vertically oriented design:
       a. Select the **iPhone_Bodies** library.
       b. Drag one of the iPhone.White, iPhone.Black, or iPhone.Stripes frames from the Widgets list onto the page.
     ◦ If you're planning to create a horizontally oriented design:
       a. Select the **iPhone_Horizontal** library.
       b. Drag one of the iPhone.Body frame from the Widgets list onto the page.
     ◦ The iPhone-UI library has some additional widgets.

9. ❑ Add additional widgets, pages, and navigation interactions to create a prototype of your design.

1802-MA-27

Congratulations! You've started exploring the issues around creating a mobile design and created a prototype for a native mobile application.

STOP

This is the end of the exercise.

Objective

Define a usability test script and use it in a usability test.

Prepare your usability test script and define roles for the test.

1. ❑ In your team, select which of the mockups you've created in previous exercises that you'll use in your test.

2. ❑ Complete the usability preparation sheet in the Ex71 Usability Test document:
   • Write one metric that you'll test (it can be quantitative or qualitative metric).
   • Write the introductory script, including a terse description of the task that will be performed.
   • Prepare any questions that you want to ask the tester after the test (leave this blank if you have no follow-up questions).

3. ❑ Select one member of your team to act as the test person for one of the other teams in the class.

4. ❑ Pick up to two members of your team to run the usability test:
   • One member will be responsible for preparing the tester that you'll work with (e.g., working through the script, starting and stopping the test). This member is also responsible for recording the quantifiable test results (e.g., start times and end times)
   • The other member will be responsible for recording what the tester does and says.

   If your team has only two members, the team member who is not acting as the tester for another team will be responsible for both of these tasks.

5. ❏   If your team has additional members, they will be responsible for observing how your team conducts your test.

6. ❏   Working with your instructor, arrange with another team to perform your usability test.

Congratulations! You have performed a usability test to discover what changes you need to make to your UI.

STOP

This is the end of the exercise.