

Analytical Usability Evaluation:

Cognitive walkthrough

What is a Cognitive Walkthrough?

- Evaluators look at the system from the user's point of view
- They step through user tasks and predict where users will have problems
- They concentrate on learnability

“Cognitive”?

“of, relating to, being, or involving conscious intellectual activity (as thinking, reasoning, or remembering)” *Merriam-Webster Dictionary*

Evaluating a system based on a model of how the user thinks, reasons, etc.

Cognitive model of user: Exploratory learning

- Start with rough idea of task to be accomplished
- Explore interface and select most appropriate action on basis of similarity with goal
- Monitor interface reactions (has progress been made towards the goal?)
- Determine what action to take next

How do you do it? (1)

- Preparation:
 - Identify users
 - Identify representative tasks
 - Per task, describe the correct action sequence
 - Get a UI description
 - Get evaluators

How do you do it? (2)

- Evaluators walk through the correct action sequence
- For each action, they indicate whether it is a “success story” or a “failure story”
- They provide evidence for their decision

Questions to ask of each action

Will the user:

- Expect to have to take this action?
- Notice the control for the action?
- Recognize that the control produces the desired effect?

If the correct action is performed,

- Will progress be apparent?

Expect to have to do this?

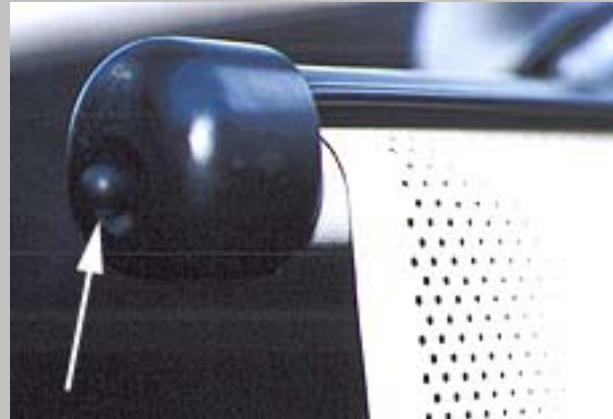
- In older versions of Windows, to shutdown the computer, press the Start button



- On a mobile phone, after entering a phone number, press the Send button.

Notice the control? (1)

- Raising the window shade



Notice the control? (2)

- Start up the gas pump



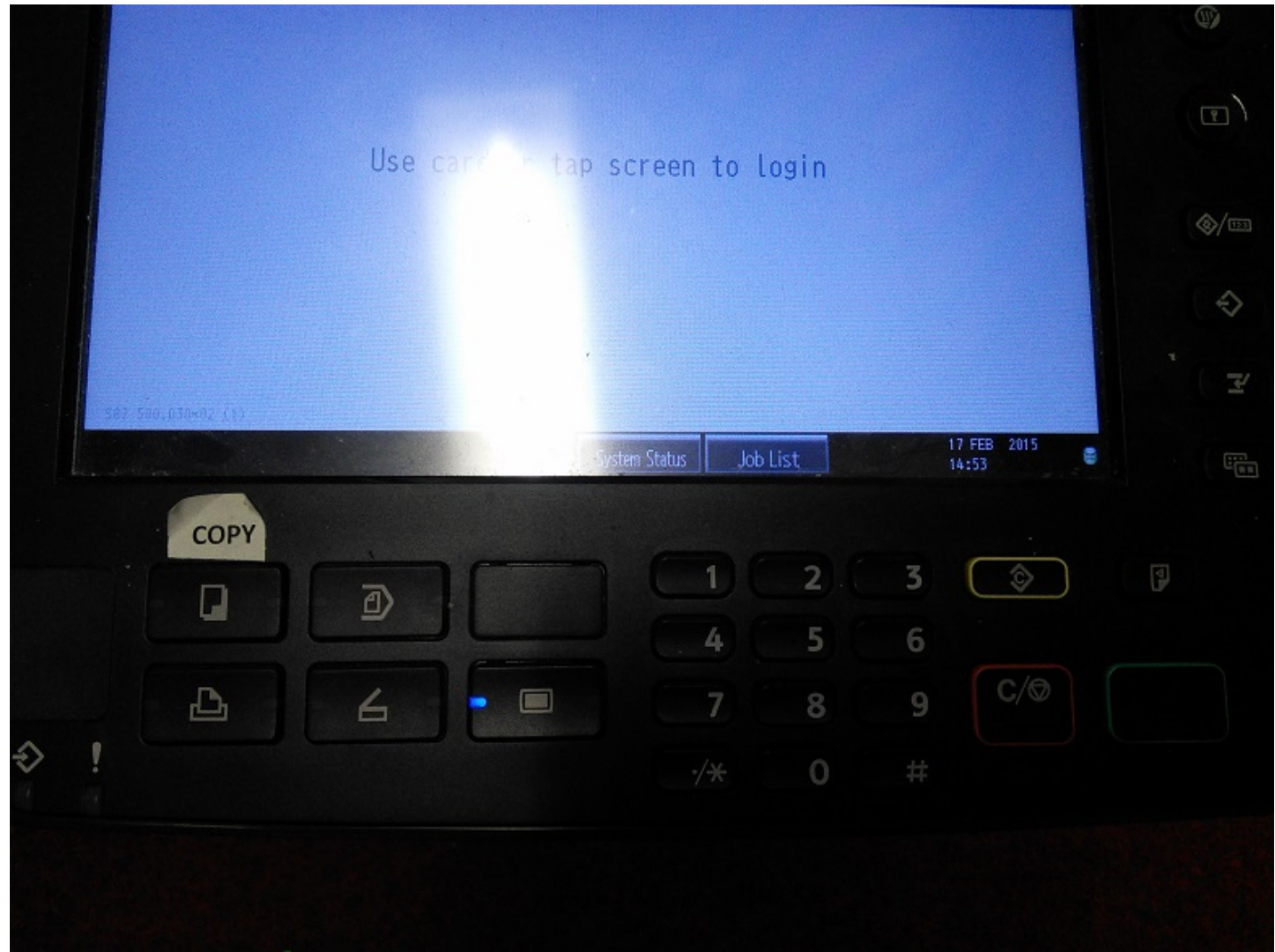
Recognize the control? (1)

- Making a photocopy



Recognize the control? (1)

In case
you think
that is just
because it
is a very
old
machine..
These are
in uni now



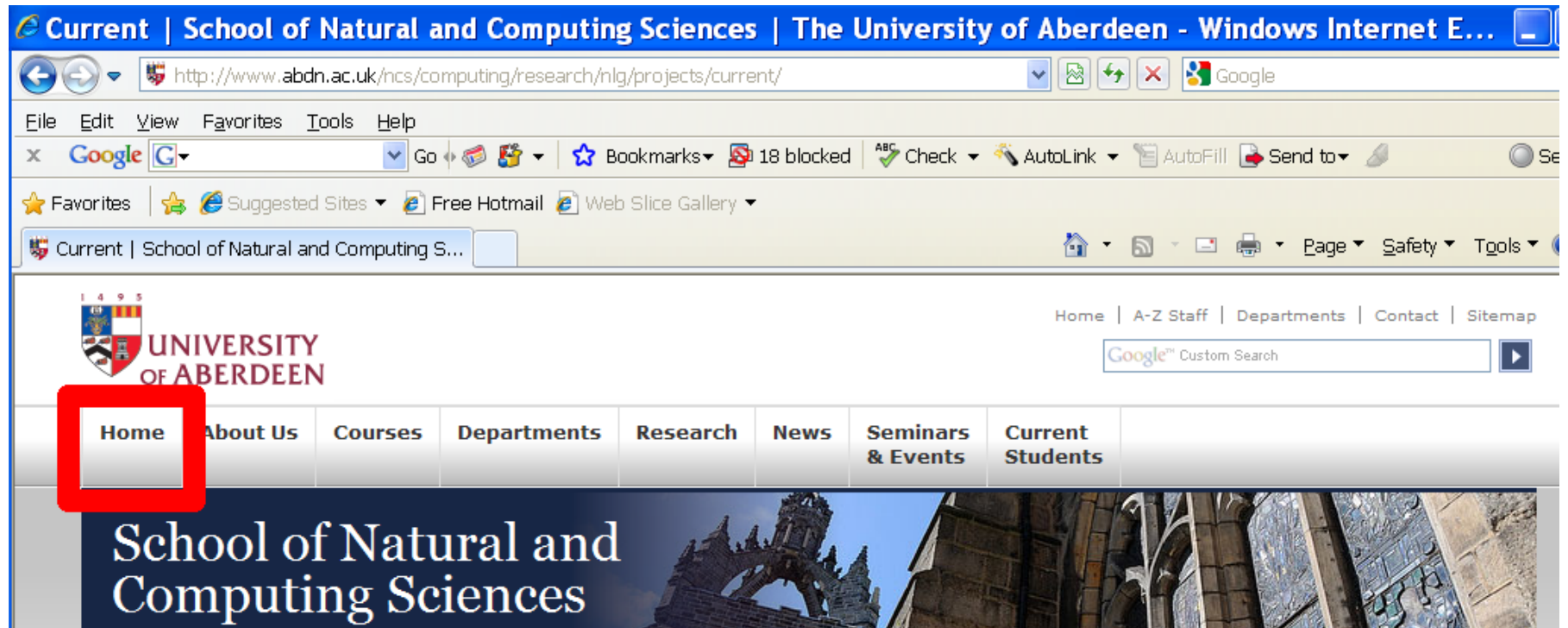
Recognize the control? (2)

- Turning the volume down



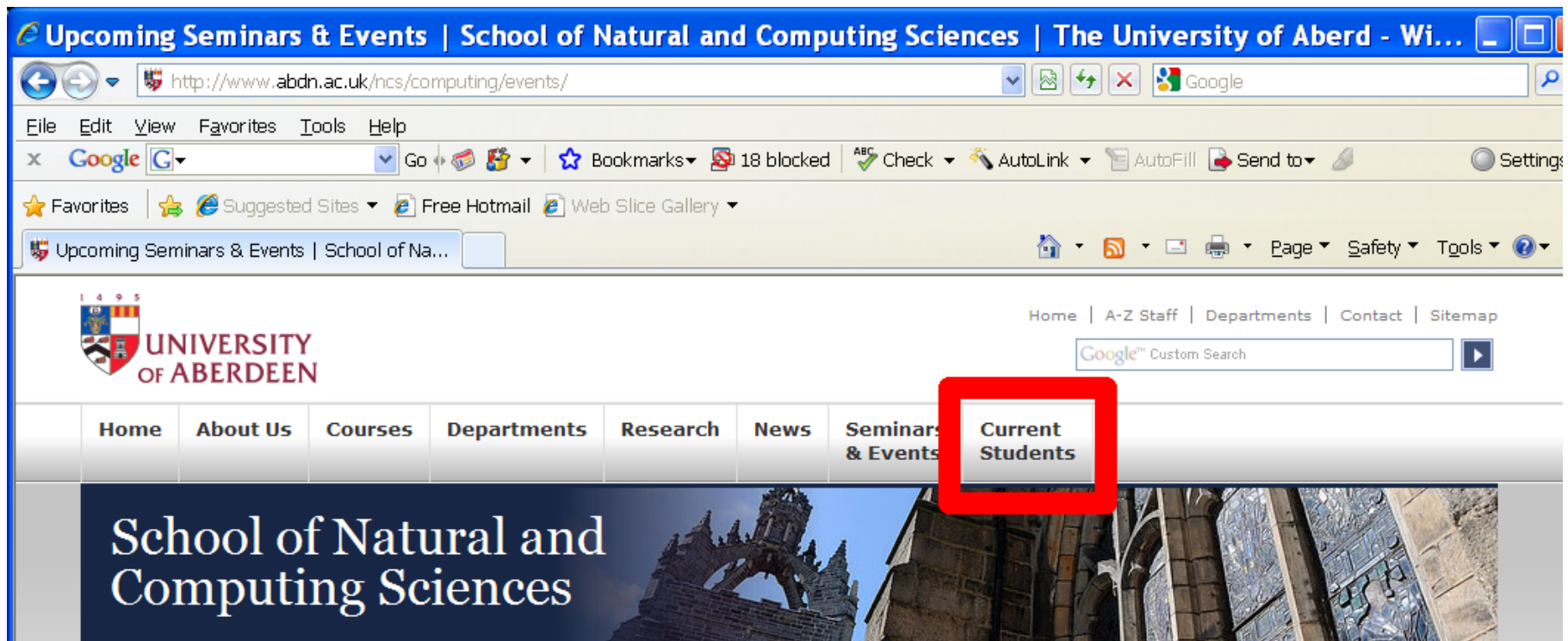
Recognise the control (3)

Going to the *school* home page



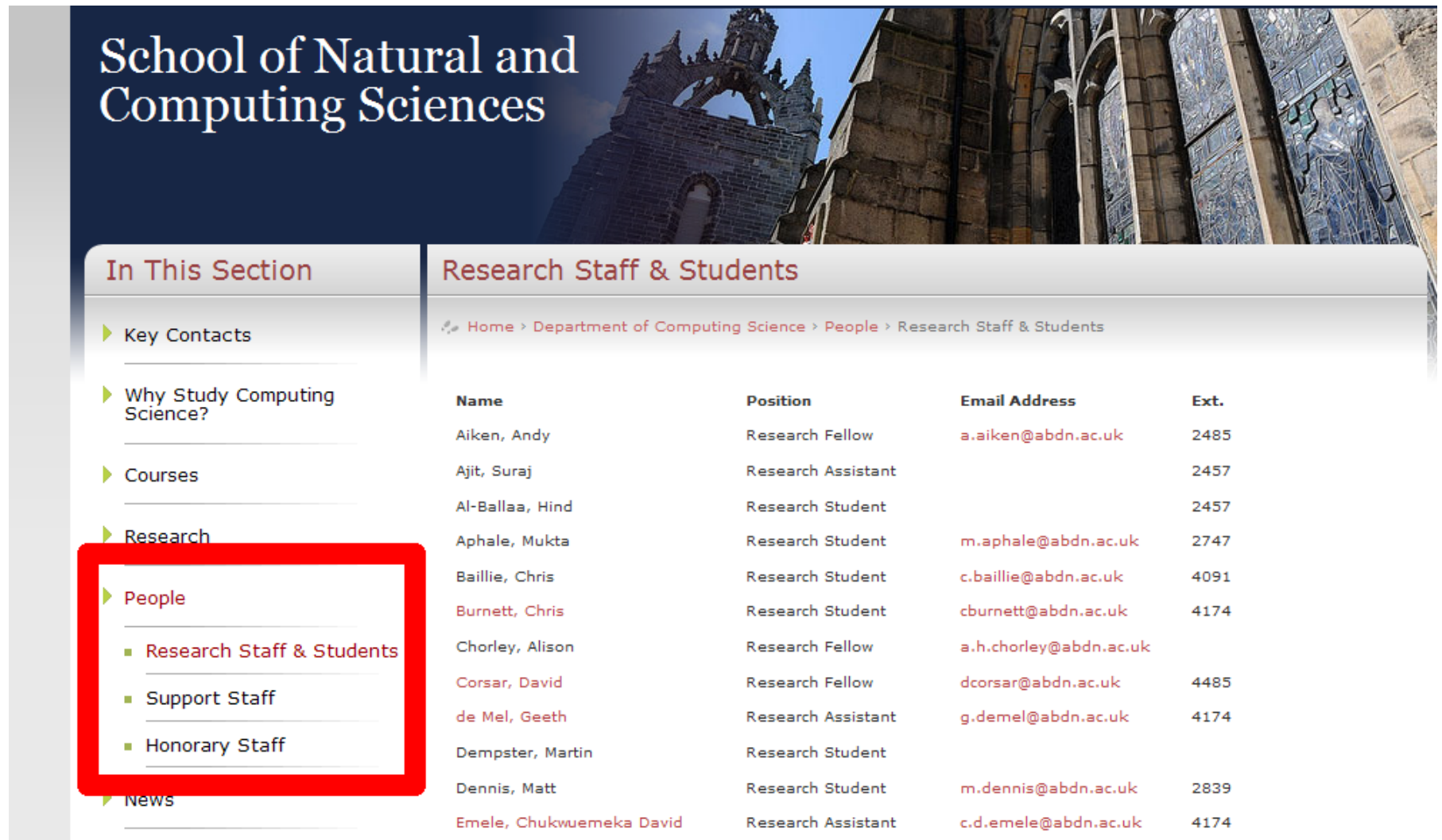
Recognise the control (4)

Getting information about your course, not
information about current students



Recognise the control (5)

Find information about a lecturer



School of Natural and Computing Sciences

In This Section

- ▶ Key Contacts
- ▶ Why Study Computing Science?
- ▶ Courses
- ▶ Research
- ▶ People
 - Research Staff & Students
 - Support Staff
 - Honorary Staff
- ▶ News

Research Staff & Students

Home > Department of Computing Science > People > Research Staff & Students

Name	Position	Email Address	Ext.
Aiken, Andy	Research Fellow	a.aiken@abdn.ac.uk	2485
Ajit, Suraj	Research Assistant		2457
Al-Ballaa, Hind	Research Student		2457
Aphale, Mukta	Research Student	m.aphale@abdn.ac.uk	2747
Baillie, Chris	Research Student	c.baillie@abdn.ac.uk	4091
Burnett, Chris	Research Student	cburnett@abdn.ac.uk	4174
Chorley, Alison	Research Fellow	a.h.chorley@abdn.ac.uk	
Corsar, David	Research Fellow	dcorsar@abdn.ac.uk	4485
de Mel, Geeth	Research Assistant	g.demel@abdn.ac.uk	4174
Dempster, Martin	Research Student		
Dennis, Matt	Research Student	m.dennis@abdn.ac.uk	2839
Emele, Chukwuemeka David	Research Assistant	c.d.emele@abdn.ac.uk	4174

Will progress be apparent?

- Which train am I booked on? What date?
- How long do I wait after clicking “Buy Tickets”?

FirstScotRail: Train tickets, travel information, train times and train timetables - Mozilla Firefox

File Edit View History Bookmarks Tools Help


FirstScotRail: Train tickets, travel inf... +

scotrail.co.uk https://www.buytickets.scotrail.co.uk/payment.aspx

Google

Card type

Visa Credit



Name of cardholder

CHRIS MELLISH

Card number

655745463432

Card start date

month

year

04

10

(If shown on card)

Card expiry date

month


year


04

13

Security code

896

 3 digits on the back of card

 4 digits to the right of the card number on the front

Issue number

(If shown on card)

Save this card

☐

Billing address

Your billing address

Use saved address

Primary address

Country

United Kingdom

Post Code

IV67AB

Search

Address 1

13 NEWTON PARK

Address 2

BEAULY

Address 3

ROSS-SHIRE

Address 4

Address 5

Booking summary

Journey price: Aberdeen to Inverness

Anytime Day Single, 1 Adult

£26.20

Total booking cost

£26.20

Buy Tickets


Back

Verified by VISA

MasterCard SecureCode.

Terms & Conditions

Privacy/Cookies



Cognitive Walkthrough Example 1

- Forwarding calls on campus telephone system (Wharton et al, 1994)
- User: new member of staff
- Task: forward phone calls to extension 1234
- Interface: Phone on desk. Overlay template includes: FWD *2
CNCL #2
SEND ALL *3

Example: Correct action sequence

1. Pick up the receiver [Phone: dial tone]
2. Press #2 (=cancel forward) [Phone: bip bip bip]
3. Hang up the receiver.
4. Pick up the receiver. [Phone: dial tone]
5. Press *2. {=forward calls} [Phone: dial tone]
6. Press 1234. [Phone: bip bip bip]
7. Hang up the receiver.

Example walkthrough steps (1)

1. Pick up the receiver. [Phone: dial tone]

Success story: Seems ok based on prior experience with phones.

2. Press #2. [Phone: bip bip bip]

Failure story:

- Will the user expect to have to take this action?

How does the user even know that forwarding is in effect?

Example walkthrough steps (2)

- Will the user notice the control for the action?
Probably yes, if forwarding is active, one must be able to cancel it. CNCL is visible on the template.
- Will the user recognize that the control produces the desired effect? Might not recognize CNCL as the control to cancel forwarding. Might think that just pressing '2' is sufficient, instead of '#2'. Might try to press the buttons simultaneously, rather than sequentially.

Example walkthrough steps (3)

- If the correct action is performed, will progress be apparent? How do first-time users know they have succeeded? After some experience, they will recognize the bips as confirmation, but will they at first?

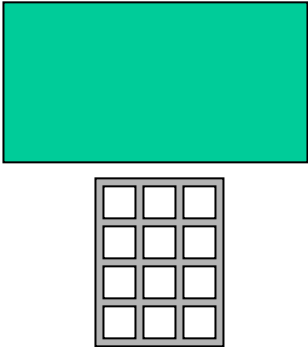



3. Hang up the receiver.

Failure story:

- Will the user expect having to take this action? Probably not. How do you know you have to hang up before reestablishing forwarding?

Cognitive Walkthrough Example 2

- Train ticket vending machine [Newman & Lamming 1995]

<p>1. Choose destination or enter fare</p> <ul style="list-style-type: none">● Newark● Rahway● Metropark● Metuchen● Edison● New Brunswick 	<p>2. Indicate journey type</p> <ul style="list-style-type: none">● One-way● Round-trip
<p>LIFT for ticket and change</p>	<p>3. Deposit money</p> <p>coins  bills </p> <p> 4. Press to receive ticket and change</p>

Cognitive Walkthrough Example

Scenario: Maria wants to buy a one-way ticket to New Brunswick. She has a \$5 bill in her pocket + some change

Correct action sequence:

1. Press button in front of New Brunswick [Button lights up]
2. Press button in front of One-way [Button lights up, fare shown in green area]
3. Deposit money till fare reached
4. Press button in front of 4 [Ticket and change given]

The diagram illustrates the steps for purchasing a ticket on a transit machine:

- 1. Choose destination or enter fare:** A list of destinations (Newark, Rahway, Metropark, Metuchen, Edison, New Brunswick) is shown next to a green rectangular display area and a numeric keypad.
- 2. Indicate journey type:** Two options are available: One-way and Round-trip.
- 3. Deposit money:** Slots for coins and bills are shown.
- 4. Press to receive ticket and change:** A button with the number 4 is highlighted with a green circle.

A grey box at the bottom left of the machine interface reads "LIFT for ticket and change".

Cognitive Walkthrough Example:

Press button in front of New Brunswick [Button lights up]

1. Will the user expect to have to take this action?

<p>1. Choose destination or enter fare</p> <ul style="list-style-type: none">● Newark● Rahway● Metropark● Metuchen● Edison● New Brunswick <div data-bbox="768 853 1078 1013" style="background-color: #00FF99; width: 150px; height: 100px; margin: 10px auto;"></div> <div data-bbox="859 1028 994 1199"><table border="1"><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr></table></div>													<p>2. Indicate journey type</p> <ul style="list-style-type: none">● One-way● Round-trip
<p>LIFT for ticket and change</p>	<p>3. Deposit money</p> <p>coins <div style="display: inline-block; width: 10px; height: 20px; background-color: black; vertical-align: middle;"></div> bills <div style="display: inline-block; width: 100px; height: 20px; background-color: black; vertical-align: middle;"></div></p>												
	<p>● 4. Press to receive ticket and change</p>												

Cognitive Walkthrough Example:

Press button in front of New Brunswick [Button lights up]

1. Will the user expect to have to take this action?

Yes, will expect to have to provide destination, and sub goals provided, so will expect to do this first

The diagram illustrates a transit ticket machine interface with four numbered steps for a cognitive walkthrough. Each step is circled in red.

- 1. Choose destination or enter fare**
 - Newark
 - Rahway
 - Metropark
 - Metuchen
 - Edison
 - New Brunswick

A green rectangular display and a numeric keypad are shown to the right of the destination list.
- 2. Indicate journey type**
 - One-way
 - Round-trip
- 3. Deposit money**

coins | bills
- 4. Press to receive ticket and change**

A button labeled "LIFT for ticket and change" is located at the bottom left of the interface.

Cognitive Walkthrough Example:

Press button in front of New Brunswick [Button lights up]

2. Will the user notice the control?

<p>1. Choose destination or enter fare</p> <ul style="list-style-type: none">● Newark● Rahway● Metropark● Metuchen● Edison● New Brunswick <div data-bbox="768 853 1078 1013" style="background-color: #00FF99; width: 150px; height: 100px; margin: 10px auto;"></div> <div data-bbox="859 1028 994 1196" style="border: 1px solid black; width: 60px; height: 100px; margin: 10px auto; display: flex; flex-direction: column; align-items: center;"><div style="border: 1px solid black; width: 40px; height: 20px; margin-bottom: 2px;"></div><div style="border: 1px solid black; width: 40px; height: 20px; margin-bottom: 2px;"></div><div style="border: 1px solid black; width: 40px; height: 20px; margin-bottom: 2px;"></div><div style="border: 1px solid black; width: 40px; height: 20px; margin-bottom: 2px;"></div><div style="border: 1px solid black; width: 40px; height: 20px; margin-bottom: 2px;"></div><div style="border: 1px solid black; width: 40px; height: 20px; margin-bottom: 2px;"></div><div style="border: 1px solid black; width: 40px; height: 20px; margin-bottom: 2px;"></div><div style="border: 1px solid black; width: 40px; height: 20px; margin-bottom: 2px;"></div><div style="border: 1px solid black; width: 40px; height: 20px; margin-bottom: 2px;"></div><div style="border: 1px solid black; width: 40px; height: 20px;"></div></div>	<p>2. Indicate journey type</p> <ul style="list-style-type: none">● One-way● Round-trip
<p>LIFT for ticket and change</p>	<p>3. Deposit money</p> <p>coins <div style="display: inline-block; width: 10px; height: 20px; background-color: black; vertical-align: middle;"></div> bills <div style="display: inline-block; width: 100px; height: 15px; background-color: black; vertical-align: middle;"></div></p>
	<p>● 4. Press to receive ticket and change</p>

Cognitive Walkthrough Example:

Press button in front of New Brunswick [Button lights up]

2. Will the user notice the control?

Yes, destination selection area is top left, and clearly indicated by 1, so would see it. Button clearly visible.

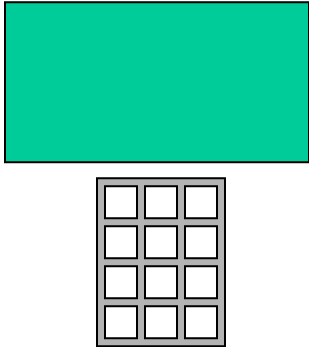


The diagram illustrates a transit ticket machine interface with four numbered steps for a cognitive walkthrough:

- 1. Choose destination or enter fare**: This step is highlighted with a red circle. It includes a list of destinations with radio buttons: Newark, Rahway, Metropark, Metuchen, Edison, and New Brunswick. To the right of the list is a green rectangular display area and a 3x3 grid of buttons.
- 2. Indicate journey type**: This step includes two radio buttons for "One-way" and "Round-trip".
- 3. Deposit money**: This step includes input fields for "coins" (a vertical bar) and "bills" (a horizontal bar).
- 4. Press to receive ticket and change**: This step is indicated by a green circle and points to a button labeled "LIFT for ticket and change" located in a grey box at the bottom left of the machine.

Cognitive Walkthrough Example:

Press button in front of New Brunswick [Button lights up]

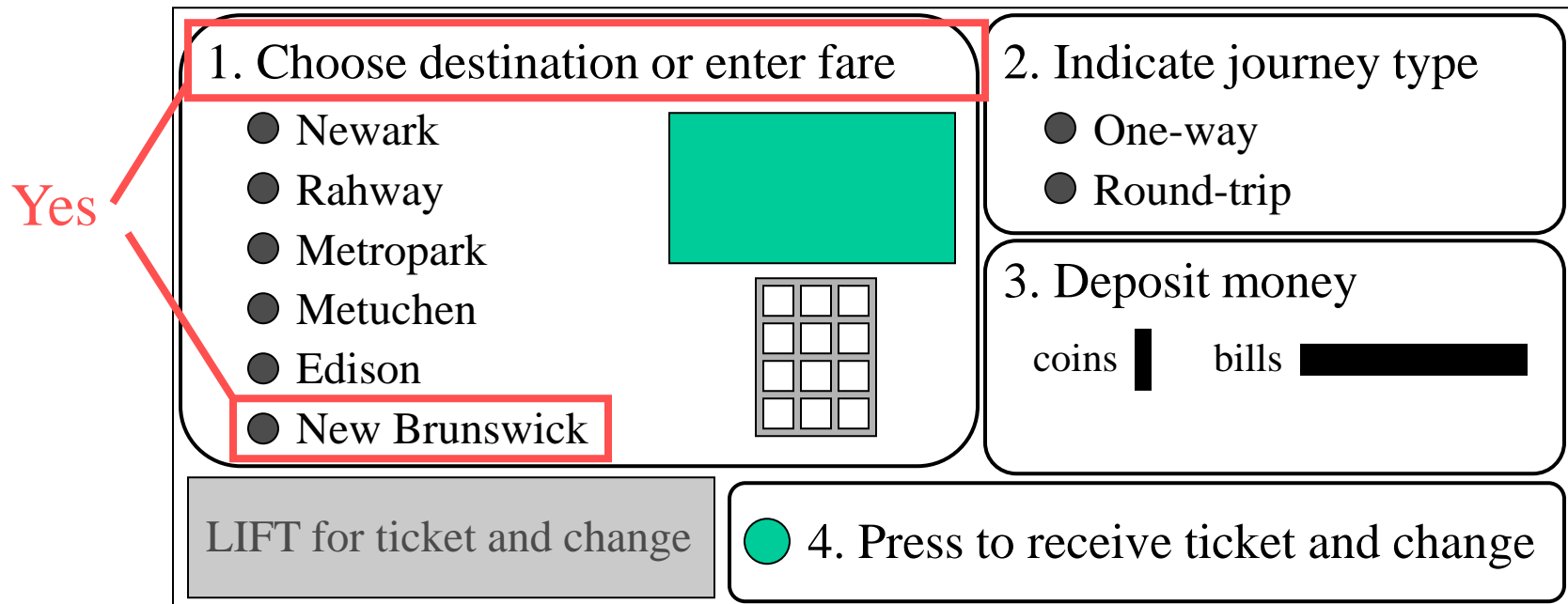
3. Will the user recognize that the control produces the desired effect?

<p>1. Choose destination or enter fare</p> <ul style="list-style-type: none"><input type="radio"/> Newark<input type="radio"/> Rahway<input type="radio"/> Metropark<input type="radio"/> Metuchen<input type="radio"/> Edison<input type="radio"/> New Brunswick 	<p>2. Indicate journey type</p> <ul style="list-style-type: none"><input type="radio"/> One-way<input type="radio"/> Round-trip
	<p>3. Deposit money</p> <p>coins  bills </p>
<p>LIFT for ticket and change</p>	<p><input checked="" type="radio"/> 4. Press to receive ticket and change</p>

Cognitive Walkthrough Example:

Press button in front of New Brunswick [Button lights up]

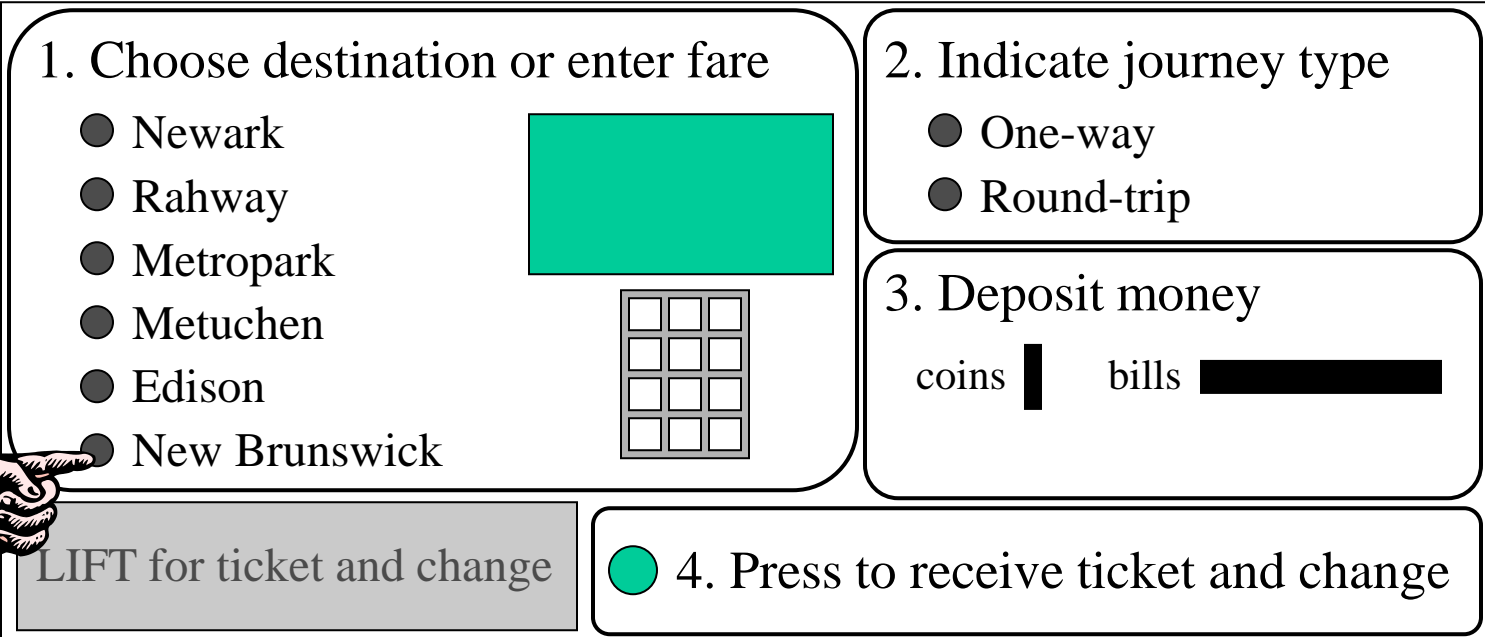
3. Will the user recognize that the control produces the desired effect?



Cognitive Walkthrough Example:

Press button in front of New Brunswick [Button lights up]



4. Will progress be apparent?



The diagram illustrates a transit fare machine interface with four steps highlighted in a cognitive walkthrough. A hand icon points to the 'New Brunswick' option in step 1.

- 1. Choose destination or enter fare**
 - ☒ Newark
 - ☐ Rahway
 - ☐ Metropark
 - ☐ Metuchen
 - ☐ Edison
 - ☒ New Brunswick

A green rectangular display screen and a 3x3 grid of buttons are shown to the right of the destination list.
- 2. Indicate journey type**
 - ☐ One-way
 - ☐ Round-trip
- 3. Deposit money**

coins  bills 
- 4. Press to receive ticket and change**

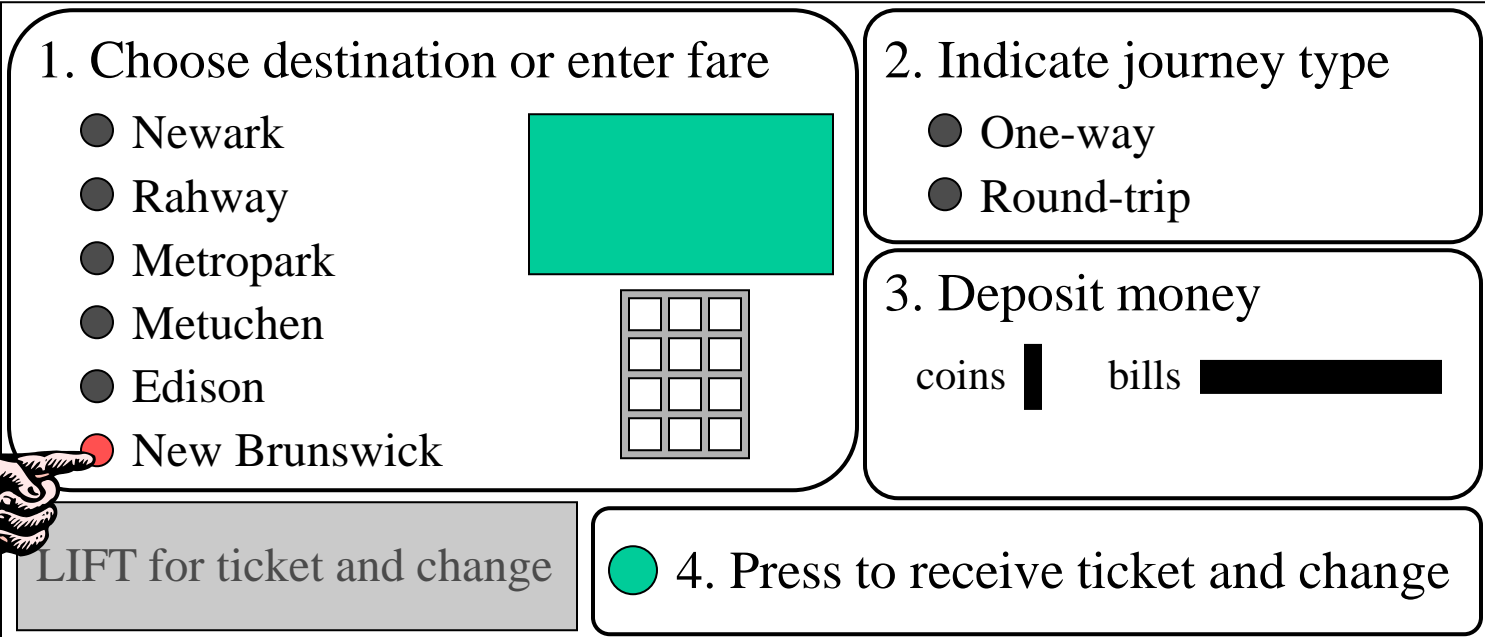
LIFT for ticket and change

Cognitive Walkthrough Example:

Press button in front of New Brunswick [Button lights up]

4. Will progress be apparent?



Yes
(given
button
lights
up...)



The diagram shows a transit fare machine interface with four steps highlighted in rounded rectangles:

- 1. Choose destination or enter fare**
 - Newark
 - Rahway
 - Metropark
 - Metuchen
 - Edison
 - New Brunswick

A hand icon is pointing to the "New Brunswick" option, which is highlighted with a red dot. To the right of the list is a green rectangular display area and a 3x3 grid of buttons.
- 2. Indicate journey type**
 - One-way
 - Round-trip
- 3. Deposit money**

coins  bills 
- 4. Press to receive ticket and change**

Below the first step, there is a grey rectangular button labeled "LIFT for ticket and change".

Cognitive Walkthrough Example:

Press button in front of One-way
[Button lights up, fare shown in green area]

1. Will the user expect to have to take this action?

<p>1. Choose destination or enter fare</p> <ul style="list-style-type: none">● Newark● Rahway● Metropark● Metuchen● Edison● New Brunswick <div data-bbox="768 853 1078 1013" style="background-color: #00ffcc; width: 160px; height: 112px; margin: 10px auto;"></div> <div data-bbox="859 1028 994 1196" style="border: 1px solid black; width: 60px; height: 118px; margin: 10px auto; display: flex; flex-direction: column; align-items: center;"><div style="border: 1px solid black; width: 40px; height: 20px; margin-bottom: 2px;"></div><div style="border: 1px solid black; width: 40px; height: 20px; margin-bottom: 2px;"></div><div style="border: 1px solid black; width: 40px; height: 20px; margin-bottom: 2px;"></div><div style="border: 1px solid black; width: 40px; height: 20px; margin-bottom: 2px;"></div><div style="border: 1px solid black; width: 40px; height: 20px; margin-bottom: 2px;"></div><div style="border: 1px solid black; width: 40px; height: 20px; margin-bottom: 2px;"></div><div style="border: 1px solid black; width: 40px; height: 20px; margin-bottom: 2px;"></div><div style="border: 1px solid black; width: 40px; height: 20px; margin-bottom: 2px;"></div><div style="border: 1px solid black; width: 40px; height: 20px; margin-bottom: 2px;"></div><div style="border: 1px solid black; width: 40px; height: 20px;"></div></div>	<p>2. Indicate journey type</p> <ul style="list-style-type: none">● One-way● Round-trip
<p>LIFT for ticket and change</p>	
<p><input checked="" type="radio"/> 4. Press to receive ticket and change</p>	

Cognitive Walkthrough Example:

Press button in front of One-way
[Button lights up, fare shown in green area]

1. Will the user expect to have to take this action?

Yes, will expect to have to input that it is a single trip,
and sub goals provided, so will expect to do this next

1. Choose destination or enter fare

☐ Newark

☐ Rahway

☐ Metropark

☐ Metuchen

☐ Edison

☒ New Brunswick

2. Indicate journey type

☐ One-way

☐ Round-trip

3. Deposit money

coins

bills

LIFT for ticket and change

4. Press to receive ticket and change

Cognitive Walkthrough Example:

Press button in front of One-way
[Button lights up, fare shown in green area]

2. Will the user notice the control?

1. Choose destination or enter fare

☐ Newark

☐ Rahway

☐ Metropark

☐ Metuchen

☐ Edison

☒ New Brunswick

2. Indicate journey type

☐ One-way

☐ Round-trip

3. Deposit money

coins

bills

LIFT for ticket and change

4. Press to receive ticket and change

Cognitive Walkthrough Example:

Press button in front of One-way
[Button lights up, fare shown in green area]



2. Will the user notice the control?

Yes, journey type area is clearly indicated by 2 and the surrounding box so would see it. Button clearly visible.

The diagram illustrates a transit fare machine interface with four numbered steps for a cognitive walkthrough:

- 1. Choose destination or enter fare**
 - Newark
 - Rahway
 - Metropark
 - Metuchen
 - Edison
 - New Brunswick

A green rectangular display area and a numeric keypad are shown to the right of the destination list.
- 2. Indicate journey type**
 - One-way
 - Round-trip
- 3. Deposit money**


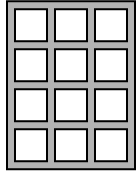


coins  bills 
- 4. Press to receive ticket and change**

A button labeled "LIFT for ticket and change" is located at the bottom left of the interface.

Cognitive Walkthrough Example:

Press button in front of One-way
[Button lights up, fare shown in green area]

3. Will the user recognize that the control produces the desired effect?

<p>1. Choose destination or enter fare</p> <ul style="list-style-type: none"><input type="radio"/> Newark<input type="radio"/> Rahway<input type="radio"/> Metropark<input type="radio"/> Metuchen<input type="radio"/> Edison<input checked="" type="radio"/> New Brunswick  	<p>2. Indicate journey type</p> <ul style="list-style-type: none"><input type="radio"/> One-way<input type="radio"/> Round-trip
	<p>3. Deposit money</p> <p>coins  bills </p>
<p>LIFT for ticket and change</p>	<p><input checked="" type="radio"/> 4. Press to receive ticket and change</p>

Cognitive Walkthrough Example:

Press button in front of One-way
[Button lights up, fare shown in green area]

3. Will the user recognize that the control produces the desired effect?

Yes

The diagram illustrates a transit fare machine interface with four main steps:

- 1. Choose destination or enter fare**
 - ☐ Newark
 - ☐ Rahway
 - ☐ Metropark
 - ☐ Metuchen
 - ☐ Edison
 - ☒ New Brunswick

A green rectangular display area and a numeric keypad (3x3 grid) are located to the right of the destination list.
- 2. Indicate journey type**
 - ☒ One-way
 - ☐ Round-trip
- 3. Deposit money**

coins bills
- 4. Press to receive ticket and change**

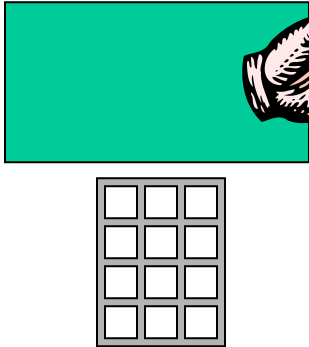



A grey button labeled "LIFT for ticket and change" is located at the bottom left.

Annotations: A red box highlights the "One-way" option in step 2. A red line points from the word "Yes" to the "New Brunswick" option in step 1. Another red line points from the "One-way" option in step 2 to the green display area in step 1.

Cognitive Walkthrough Example:

Press button in front of One-way
[Button lights up, fare shown in green area]

4. Will progress be apparent?



<p>1. Choose destination or enter fare</p> <ul style="list-style-type: none">● Newark● Rahway● Metropark● Metuchen● Edison● New Brunswick 	<p>2. Indicate journey type</p> <ul style="list-style-type: none">● One-way● Round-trip <p>3. Deposit money</p> <p>coins  bills </p>
<p>LIFT for ticket and change</p>	<p> 4. Press to receive ticket and change</p>

Cognitive Walkthrough Example:

Press button in front of One-way
[Button lights up, fare shown in green area]

4. Will progress be apparent?

Yes, fare appears and button lights up

<p>1. Choose destination or enter fare</p> <ul style="list-style-type: none"><input type="radio"/> Newark<input type="radio"/> Rahway<input type="radio"/> Metropark<input type="radio"/> Metuchen<input type="radio"/> Edison<input checked="" type="radio"/> New Brunswick <div data-bbox="768 853 1078 1011"><p>One-way \$6.35</p></div> <div data-bbox="859 1025 994 1196"></div>	<p>2. Indicate journey type</p> <ul style="list-style-type: none"><input checked="" type="radio"/> One-way<input type="radio"/> Round-trip
<p>3. Deposit money</p> <p>coins  bills </p>	
<p>LIFT for ticket and change</p>	<p><input checked="" type="radio"/> 4. Press to receive ticket and change</p>

Cognitive Walkthrough Example:

Deposit money till fare reached

1. Will the user expect to have to take this action?

1. Choose destination or enter fare

☐ Newark

☐ Rahway

☐ Metropark

☐ Metuchen

☐ Edison

☒ New Brunswick

One-way

\$6.35

2. Indicate journey type

☒ One-way

☐ Round-trip

3. Deposit money

coins bills

LIFT for ticket and change

☒ 4. Press to receive ticket and change

Cognitive Walkthrough Example:

Deposit money till fare reached

1. Will the user expect to have to take this action?

Yes, will expect to have to pay, and clear that depositing money is next step

<p>1. Choose destination or enter fare</p> <ul style="list-style-type: none"><input type="radio"/> Newark<input type="radio"/> Rahway<input type="radio"/> Metropark<input type="radio"/> Metuchen<input type="radio"/> Edison<input checked="" type="radio"/> New Brunswick <div><div>One-way</div><div>\$6.35</div><div><table border="1"><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr></table></div></div>													<p>2. Indicate journey type</p> <ul style="list-style-type: none"><input checked="" type="radio"/> One-way<input type="radio"/> Round-trip
<p>LIFT for ticket and change</p>	<p>3. Deposit money</p> <p>coins <div></div> bills <div></div></p> <p><input checked="" type="radio"/> 4. Press to receive ticket and change</p>												

Cognitive Walkthrough Example:

Deposit money till fare reached

2. Will the user notice the control?

1. Choose destination or enter fare

☐ Newark

☐ Rahway

☐ Metropark

☐ Metuchen

☐ Edison

☒ New Brunswick

One-way

\$6.35

2. Indicate journey type

☒ One-way

☐ Round-trip

3. Deposit money

coins

bills

LIFT for ticket and change



☒ 4. Press to receive ticket and change

Cognitive Walkthrough Example:

Deposit money till fare reached

2. Will the user notice the control?

Yes payment area is clearly indicated by 3 and the surrounding box, so would see it. Money slots clearly visible.

<p>1. Choose destination or enter fare</p> <ul style="list-style-type: none"><input type="radio"/> Newark<input type="radio"/> Rahway<input type="radio"/> Metropark<input type="radio"/> Metuchen<input type="radio"/> Edison<input checked="" type="radio"/> New Brunswick <div data-bbox="768 853 1078 1011"><p>One-way</p><p>\$6.35</p></div> <div data-bbox="859 1025 994 1196"></div>	<p>2. Indicate journey type</p> <ul style="list-style-type: none"><input checked="" type="radio"/> One-way<input type="radio"/> Round-trip
<p>3. Deposit money</p> <p>coins  bills </p>	
<p>LIFT for ticket and change</p>	<p><input checked="" type="radio"/> 4. Press to receive ticket and change</p>

Cognitive Walkthrough Example:

Deposit money till fare reached

3. Will the user recognize that the control produces the desired effect?

1. Choose destination or enter fare

☐ Newark

☐ Rahway

☐ Metropark

☐ Metuchen

☐ Edison

☒ New Brunswick

One-way

\$6.35

2. Indicate journey type

☒ One-way

☐ Round-trip

3. Deposit money

coins

bills

LIFT for ticket and change

☒ 4. Press to receive ticket and change

Cognitive Walkthrough Example:

Deposit money till fare reached

3. Will the user recognize that the control produces the desired effect?

Yes

The diagram illustrates a transit fare machine interface with four main steps:

- 1. Choose destination or enter fare**
 - Newark
 - Rahway
 - Metropark
 - Metuchen
 - Edison
 - New Brunswick

One-way
\$6.35

Calculator icon
- 2. Indicate journey type**
 - One-way
 - Round-trip
- 3. Deposit money**


coins | bills
- 4. Press to receive ticket and change**

LIFT for ticket and change

Cognitive Walkthrough Example:

Deposit money till fare reached

4. Will progress be apparent?

<p>1. Choose destination or enter fare</p> <ul style="list-style-type: none"><input type="radio"/> Newark<input type="radio"/> Rahway<input type="radio"/> Metropark<input type="radio"/> Metuchen<input type="radio"/> Edison<input checked="" type="radio"/> New Brunswick <div><div>One-way</div><div>\$6.35</div><div><table border="1"><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr></table></div></div>													<p>2. Indicate journey type</p> <ul style="list-style-type: none"><input checked="" type="radio"/> One-way<input type="radio"/> Round-trip
<p>LIFT for ticket and change</p>	<p>3. Deposit money</p> <p>coins <input type="checkbox"/> bills <input checked="" type="checkbox"/></p> <div></div> <p>4. Press to receive ticket and change</p>												

Cognitive Walkthrough Example:

Deposit money till fare reached

4. Will progress be apparent?

<p>1. Choose destination or enter fare</p> <ul style="list-style-type: none"><input type="radio"/> Newark<input type="radio"/> Rahway<input type="radio"/> Metropark<input type="radio"/> Metuchen<input type="radio"/> Edison<input checked="" type="radio"/> New Brunswick <div><div>One-way</div><div>\$6.35</div><div><table border="1"><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr></table></div></div>													<p>2. Indicate journey type</p> <ul style="list-style-type: none"><input checked="" type="radio"/> One-way<input type="radio"/> Round-trip
<p>LIFT for ticket and change</p>	<p>3. Deposit money</p> <p>coins <input type="text"/> bills <input type="text"/></p> <p><input checked="" type="radio"/> 4. Press to receive ticket and change</p>												

Cognitive Walkthrough Example:

Deposit money till fare reached

4. Will progress be apparent?



No, need feedback!

→ Add received amount display

The diagram illustrates a transit fare machine interface with four main steps:

- 1. Choose destination or enter fare**
 - Newark
 - Rahway
 - Metropark
 - Metuchen
 - Edison
 - New Brunswick

A red arrow points from the text "Add received amount display" to a green box containing the text "One-way \$6.35" and "Recv'd: \$5.00". Below this box is a 3x3 grid of buttons.
- 2. Indicate journey type**
 - One-way
 - Round-trip
- 3. Deposit money**

coins  bills 
- 4. Press to receive ticket and change**

A grey button labeled "LIFT for ticket and change" is located at the bottom left.

Cognitive Walkthrough Example:

Press button in front of 4 [Ticket and change given]

1. Will the user expect to have to take this action?

<p>1. Choose destination or enter fare</p> <ul style="list-style-type: none"><input type="radio"/> Newark<input type="radio"/> Rahway<input type="radio"/> Metropark<input type="radio"/> Metuchen<input type="radio"/> Edison<input checked="" type="radio"/> New Brunswick <div data-bbox="768 853 1078 1011"><p>One-way</p><p>\$6.35</p></div> <div data-bbox="859 1025 994 1196"><table border="1"><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr></table></div>													<p>2. Indicate journey type</p> <ul style="list-style-type: none"><input checked="" type="radio"/> One-way<input type="radio"/> Round-trip
<p>LIFT for ticket and change</p>	<p>3. Deposit money</p> <p>coins <input type="text"/> bills <input type="text"/></p> <p><input checked="" type="radio"/> 4. Press to receive ticket and change</p>												

Cognitive Walkthrough Example:

Press button in front of 4 [Ticket and change given]

1. Will the user expect to have to take this action?

Maybe not.... Most self-service machines such as candy machines don't require a confirmation.

1. Choose destination or enter fare

☐ Newark

☐ Rahway

☐ Metropark

☐ Metuchen

☐ Edison

☒ New Brunswick

One-way

\$6.35

2. Indicate journey type

☒ One-way

☐ Round-trip

3. Deposit money

coins

bills

LIFT for ticket and change

☒ 4. Press to receive ticket and change



Cognitive Walkthrough Example

- We also need to handle common error-prone situations
 - “What if the user does not have enough money but she already put some bills in?”
 - Add to scenario:
“Whilst paying Maria discovers she has not got enough coins and wants to cancel and get her money back”

Cognitive Walkthrough Example:

Not enough \$: Press button in front of 4
[Money returned, System back in starting state]

3. Will the user recognize that the control will have the desired effect?

<p>1. Choose destination or enter fare</p> <ul style="list-style-type: none"><input type="radio"/> Newark<input type="radio"/> Rahway<input type="radio"/> Metropark<input type="radio"/> Metuchen<input type="radio"/> Edison<input checked="" type="radio"/> New Brunswick <div data-bbox="755 808 1064 968"><p>One-way \$6.35 Recv'd: \$5.00</p></div> <div data-bbox="846 982 977 1150"></div>	<p>2. Indicate journey type</p> <ul style="list-style-type: none"><input checked="" type="radio"/> One-way<input type="radio"/> Round-trip
<p>3. Deposit money</p> <p>coins  bills </p>	
<p>LIFT for ticket and change</p>	<p><input checked="" type="radio"/> 4. Press to receive ticket and change</p>

Cognitive Walkthrough Example:

Not enough \$: Press button in front of 4
[Money returned, System back in starting state]

3. Will the user recognize that the control will have the desired effect?

Probably not!

The diagram illustrates a transit ticket machine interface with four main steps:

- 1. Choose destination or enter fare**
 - Newark
 - Rahway
 - Metropark
 - Metuchen
 - Edison
 - New Brunswick

One-way \$6.35
Recv'd: \$5.00

A 3x3 grid of buttons is shown below the fare display.
- 2. Indicate journey type**
 - One-way
 - Round-trip
- 3. Deposit money**

coins bills
- 4. Press to receive ticket and change**

A red arrow points from the text "Probably not!" to a green circle with two red question marks, located next to step 4. This indicates a cognitive walkthrough finding where the user might not recognize that pressing the button will return money if the fare is insufficient.

LIFT for ticket and change

Cognitive Walkthrough Example:

Not enough \$: Press button in front of 4
[Money returned, System back in starting state]

3. Will the user recognize that the control will have the desired effect?

Probably not!
→ Add a new UI element to make it clear!

1. Choose destination or enter fare

- ☐ Newark
- ☐ Rahway
- ☐ Metropark
- ☐ Metuchen
- ☐ Edison
- ☒ New Brunswick

One-way \$6.35
Recv'd: \$5.00

2. Indicate journey type

- ☒ One-way
- ☐ Round-trip

3. Deposit money

coins bills

☒ Cancel & return money

LIFT for ticket and change

4. Press to receive ticket and change

Group walkthrough

- Performed by a mixed team
- Capture information on group displays (such as flipcharts)
- Perhaps videotape whole process

Strengths of cognitive walkthrough

- Early detection of problems
- Low cost
- Task perspective

Weaknesses

- Some training required
- Need to understand user tasks
- Applies only to ease of learning problems
- Only looks at correct action sequences
- Critical defects can be missed
- Time consuming