Designing GUI for Computer Novice Users in Higher Education

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Abstract

In this paper, we describe the process and results of exposing computer literacy students to sample graphic user interfaces of a novel nature, developed by computer science students. The instructional aims of this exercise is to help the literacy students grasp the arbitrary nature of a graphic user interface and empowers them to pass judgement on it as consumers of technology, while engaging computer science students in the challenge of communicating with users. User feedback from the literacy students focuses on two aspects of using the interfaces: the pragmatic question of making each perform and their conceptual effectiveness. Students who figured out how to run an interface were generally able to find a file (pragmatic aspect). Students who found the interface easy to learn tended to have positive feelings about it as a model, as well (conceptual aspect). CPSC 150 students picking GUIs to evaluate chose PowerPoint simulations over other GUIs created in other technologies by a ratio of 3 to 1. Comments on positive and negative aspects of the GUIs reveal a wide range of opinions and reasons for them, with a tendency to stress either aesthetics (appearance, fun, originality, etc.) or utility (efficiency, speed, few distractions, etc.).

1.0 Introduction

In this work, we report on a collaborative instructional project in which 100 students in a computing literacy service course, CPSC 150, tested out and commented on graphic user interfaces, GUI, projects created by computer science students taking a human computer interaction, HCI, course CPSC 270.

CPSC 270 Students

Rationale for Exercise

The goal for the computer science students in the user interface class is to get some direct experience of feedback from users without investing a substantial effort in programming. To make sure the task stayed focused on conceptual challenges, not programming, students were allowed to work in groups, if they desired, and to implement their

interfaces as simple mock-ups using hypertext links in MS PowerPoint to simulate state transitions. Students who preferred to use other technology were allowed to do so.

Procedure

Students were given the assignment of creating a non-traditional user interface for navigating a traditional, hierarchical file system. In fact they were forbidden to use yellow folders, in particular, to represent directories containing other directions and/or files. The scope of the job was to allow users to explore a file system with at least a few nested directories, and to be able to locate at least one file in the file system.

CPSC 150 instructor, Lynda Williams, visited the CPSC 270 class to describe the assignment and given a demonstration of how to mock up their interfaces in MS PowerPoint. PowerPoint can simulate an interface design by setting slide transition off and attaching hypertext links to objects that jump to another slide in the set. In this fashion, each slide can stand in for one of the cards, and each hypertext-linked object is an active part of the screen. The purpose of using PowerPoint was to maximize the ratio of conceptual effort to programming effort by making the actual construction of the GUI simulation very simple. However, students who wished to use alternative technologies were not prohibited from doing so, as long as the resulting GUI would be able to be accessed via the CPSC 150's students' WebCT course shell on the web.

The actual assignment was stated to the CPSC 270 students as follows:

> Model a file system with at least five directories and one file. The user's job is to find the file my navigating the file system. Do not use the standard approach of showing directories as yellow folders that expand in a tree-like structure when clicked on. Only one directory should have a file. Some states must hide some directories.

Once the assignment was explained, students had twenty minutes to work together in groups to come up with their plan using paper cards. After that time, the instructors invited two students to describe their plans to the rest of the group. Finally an demonstration was given explaining of how to use MS PowerPoint to build an interface, quickly.

The task of creating the actual mock up was left as homework.

About 30 students took part, working in pairs. A total of seven assignments finished assignments were available in time to get them mounted and presented to CPSC 150 students in a WebCT shell. Of these seven, one was excluded from the analysis because it failed to meet the criteria for the assignment.

CPSC 150 Students

Rationale For Exercise

Students in the computing literacy class have been observed, anecdotally, to have a great deal of difficulty distinguishing underlying concepts such as "directories contain files" from the concrete images and behaviours that typically represent computing objects. This causes their knowledge to be brittle. For example, a student accustomed to seeing files and directories laid out in Windows Explorer may not realize the same files are still available when using a program like WORD to open a file, because the dialog box does not show exactly the same image. Exposure to novel methods of representing an idea provides an opportunity to separate the idea from the specific examples encountered in labs.

Novice users can also be intimidated by modern user interfaces and feel foolish because they do not know what to do with all the menus, buttons and various cursors. The exercise is used as a playful way to point out just how arbitrary GUIs can be and to motivate attention to a lecture on interface design from the user's point of view.

Procedure

CPSC 270 instructor, Dr. Saif Zahir, gave a guest lecture to the CPSC 150 class on user interface design from a user's point of view.

Students were then given two weeks to review the GUI projects of the CPSC 270 students in order to earn participation credit. Seven interfaces were made available in the CPSC 150 students' WebCT shell and seven surveys were provided to collect their feedback. Students had to do 5 surveys to earn the credit offered. Note that interface 1 did not meet the criteria for the exercise, and was therefore dropped out of the data set collected. Interface 1 about user interfaces instead of being a user interface, which made the survey results for this example invalid.

Survey questions were a simplified adaptation of those recommended by Davis, F. D. (1989) *Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology.* MIS Quarterly, 13:3, 319-340, as described on the web page http://www.acm.org/~perlman/question.cgi?form=PUEU

The first two questions address whether or not the GUI was usable at all. The next two target the conceptual effectiveness of the GUI. The last set of questions prompt for both positive and negative comments.

The survey questions are included in appendix B, along with the actual instructions seen by CPSC 150 students on the WebCT web page where the interface exercise was presented.

Survey results were collected as comma separated text files from the CPSC 150 WebCT shell.

Summary data is given in Appendix C together with written comments for each interface

Results

Computer Literacy Students Favoured PowerPoint GUIs

Approximately 30 CPSC 150 students opted to do the exercise for three of the six functional GUIs while under ten did the exercise for the three unique examples.

This was an unanticipated finding, especially as the Flash Animation and HTML examples (GUIs 3 and 4) ran directly, without any need to save files as a first step, in UNBC student labs where CPSC 150 students are presumed to work. The Flash Animation example, GUI 3, may have given trouble at home to students without a Flash-capable web browser, but the HTML example (GUI 4) should have been the easiest to access.

The binary executable example (GUI 5) had to be saved and run, but this was true of PowerPoint examples as well. It was also the most sophisticated and technically oriented, which may have daunted some beginners. Comments demonstrate it was both praised and criticized for being more "technical" than the other examples. It may be interesting to correlate results, in a future exercise, with a self-rating by the CPSC 150 student of his or her own proficiency with computing, to analyse responses based on user-experience or confidence. CPSC 150 students are well known to represent a wide spread of comfort with computing, from computer science students picking up an elective credit to students with very little confidence in their computing skills who are required to take the course.

The discarded example (GUI 1), was also a PowerPoint file and attracted approximately the same number of CPSC 150 students as the other three PowerPoint examples.

Most likely, given the available evidence, PowerPoint GUIs were preferred for convenience because a) they were familiar and b) each of the non-PowerPoint GUIs used a unique technology, within the scope of the exercise, and may have seemed like more work to tackle.

Pragmatic Measures

Pragmatic measures are the ability to run the GUI and then to find something that can be identified as a file, using it.

Most CPSC 150 who were able to make an GUI run, reported that they were also able to locate something they could identify as a file. With the exception of GUI 4, however, merely being able to run the interface did not guarantee a CPSC 150 student would be confident about locating something meant to represent a file. The most problematic example was GUI 3, the Flash Animation, which used a navigational wheel as a means of navigating the file system and color diamond shapes to represent files. About 20% of those who ran this interface could not be confident they had located a file in it. Comments indicate a sharp split between those who enjoyed the GUI 3 interface and those who were irritated by it.

GUI 4 may have gained the high success rate in finding files by cheating, a little, on the exercise's criteria, since it uses the familiar term "folder" and relies on the familiar concept of a filing cabinet, even though it does steer clear of actual folder icons.

All other GUIs, except GUI 4, were unable to convince all successful users that they had found a file, but GUI 6 and GUI 7 fared better than GUIs 2,3 and 4.

PRAGMATIC MEASURES
Ability to Use Interface as Intended
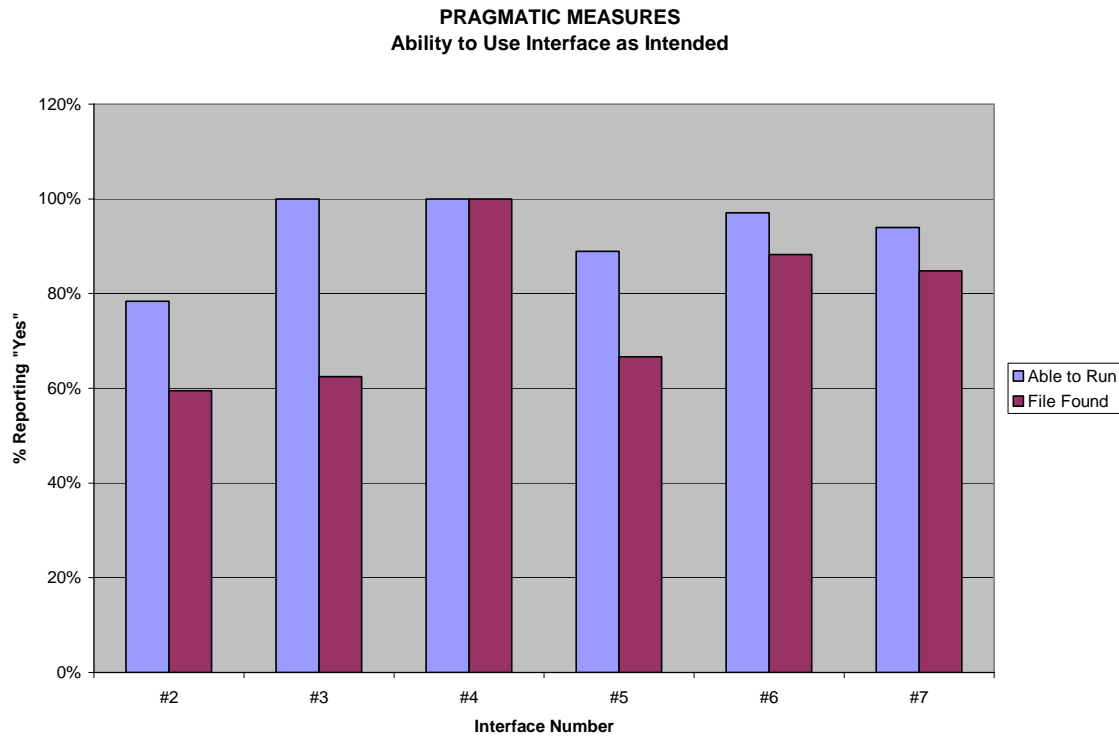

Conceptual Effectiveness

Conceptual effectiveness is a combination of whether a GUI was deemed easy to learn and whether it made sense to the CPSC 150 student as a model for file systems.

As the graph below indicates, ease of mastering an interface and its perceived meaningfulness tend to vary together, but some GUIs ranked higher on one than the other.

The two questions at issue for conceptual effectiveness were both measured using a Likert scale to make it easier for students to express themselves comfortably. Results were calculated, for the graphs below, by collapsing the two positive measures above the neutral, middle choice in the Likert scale. Any net positive choice counts as a "yes" for the purpose of the graph.

An analysis that stressed the difference between those who indicated a GUI was "easy" vs. those who picked "somewhat easy" would favour GUIs 6 and 7 even more strongly.

GUI 4 (HTML example) also scores high, once again.

CONCEPTUAL EFFECTIVENESS
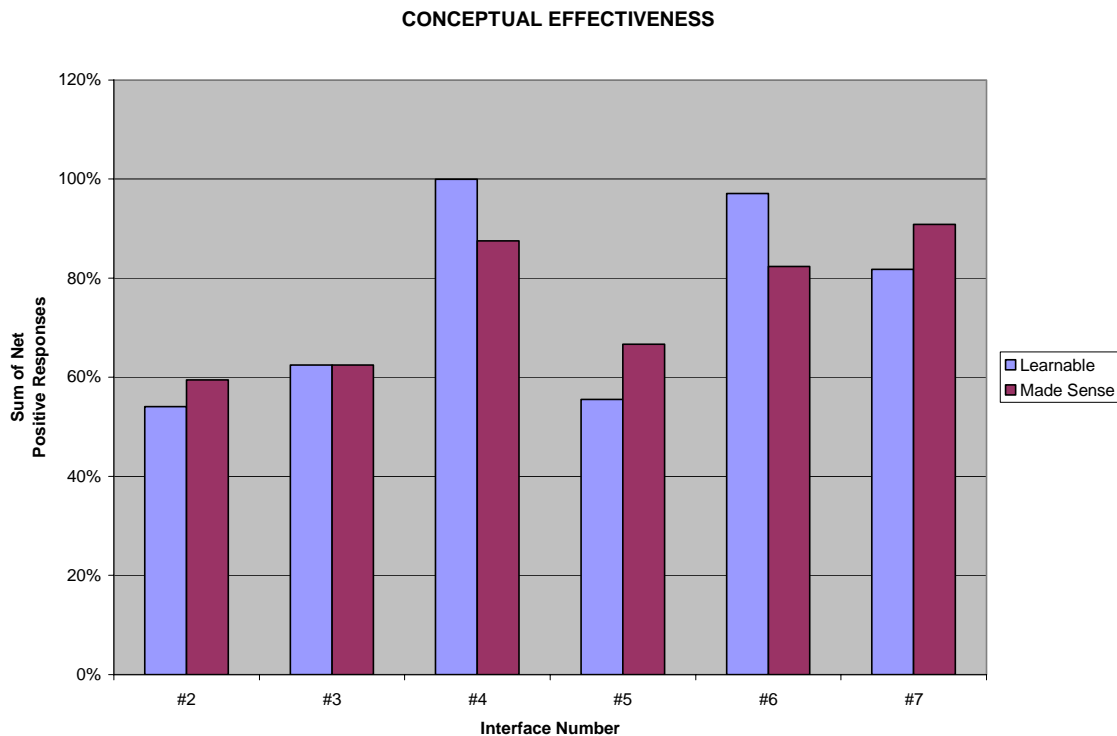
Ranking the Interfaces

Overall, GUIs 6 and 7 seemed to be the best appreciated by CPSC 150 students. Each was a PowerPoint simulation, used a simple physical model to represent a place files could be stored, and attracted about 30 evaluations. GUI 4 scored highest but was not as popular with CPSC 150 students (about 10 vs 30 evaluations) and may have side-stepped the assignment requirement to avoid standard methods of representing files by invoking the idea of folders in words and in the use of a filing cabinet icon.

GUIs 2,6 and 7 are most alike in terms of technology and number of evaluations. Of these three, 6 and 7 were about equal and slightly head of 2 in most evaluative feedback.

Comments

Comments reveal a wealth of detail about CPSC 150 students' reactions to novel GUIs. The most obvious split is between those that praise novelty or entertainment value and those that criticize the same features as being impractical. A similar split occurs between praise for the simplicity of the desk drawer example, GUI 6, and criticism of it as "silly"; or the reverse phenomenon for the more complex binary executable, GUI 5, which is praised for it sophistication and told off for being too technical.

In a future use of the exercise, it might be interesting to structure it to explore this dichotomy, to see whether it correlates with the CPSC 150 students' self-accessed

computer competency. It seems likely that more experienced user would favour efficiency and greater technical richness in a GUI while less sophisticated users would prefer more engaging, if less efficient interfaces.

Comments also reveal a mix of concern for the feelings of the CPSC 270 students (e.g. "Good job!") and blunt opinions (e.g. "childish, silly, boring"). A few CPSC 150 made use of the comments to apologize for their failure to get a GUI to work as expected, which was also interesting but could be due either self-doubts when working with software or an artefact of awareness that another student (in CPSC 270) is directly involved.

References

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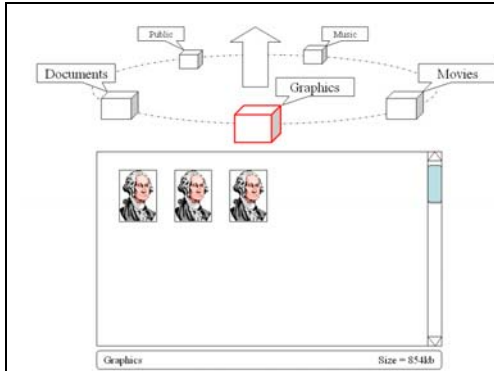
Websites

Human Factors Research Group
http://www.ucc.ie/hfrg/

Web-Based User Interface Evaluation with Questionnaires
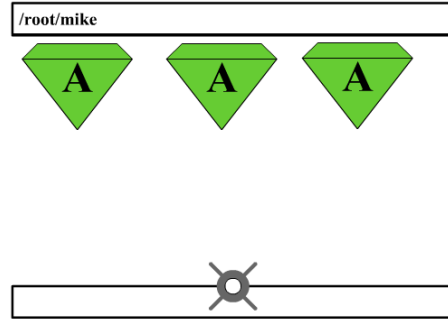http://www.acm.org/~perlman/question.html

APPENDIX A: Interfaces by CPSC 270 Students

Interface 2 (PPT File)
A ring with nodes representing different data types (e.g. movies). Clicking on a box rotates the ring to make that box occupy the foreground and displays any files of the data type indicated in a space below.

Interface 3 (Flash Animation)
Ship's wheel rotates and splits open to reveal substructure. Additional wheels appear as well as diamond shaped files. Path is written, unix style, at top.
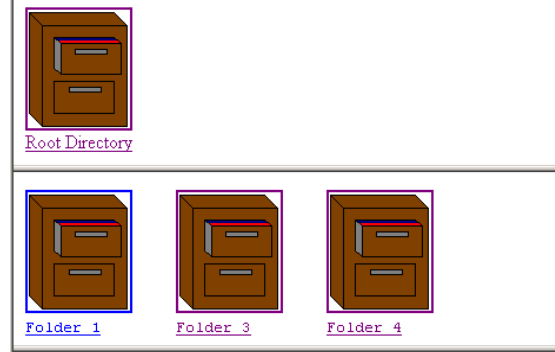
Interface 4 (HTML pages)
Builds path beneath pictures of cabinets on top row; subdirectories shown on lower row. Files in current directory listed at bottom. Clicking on a cabinet makes it change rows.
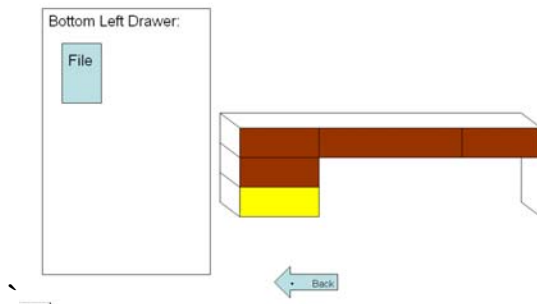

Interface 5 (.exe)
Functional (rather than mocked up) GUI interface for file navigation on the PC it runs on. Data type filtered by menu on the right. Partial paths listed in drop down menu beneath names of drives. Any files in selected directory, of selected data type, displayed in a box.

Computer Contents:
Desk Interface

Bottom Left Drawer:

File

Back

Interface 6 (PPT File)
Desk draw paradigm. Drawers change color when rolled over. Clicking on any draw makes it go yellow and displays any files in contains in a box. Includes sound effects.

back   C:\home\270

HW1   HW2   HW3

Myxx   Myxx   Myo
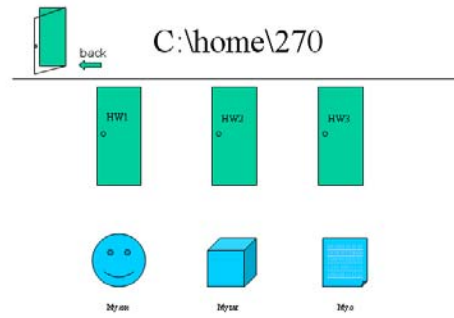
Interface 7 (PPT File)
Doors paradigm. Path is built at the top, MS Windows style. Subdirectories are shown below as doors. Any files in the current directory listed below the doors. Most slides have an open door icon that can be used to go back

APPENDIX B: Instructions on WebCT Web Page for CPSC 150 Students

User Interface #1

User Interface #2

User Interface #3

User Interface #4

User Interface #5

User Interface #6

User Interface #7

Instructions for Running Interfaces

To open an exercise, click on it. If you are asked whether to "save as" or "open" the file, choose "save as" and place it into a location on your computer. Then double-click the saved file to view it.

When evaluating interface #3, your OS may notify you that it does not know how to open the file. If this happens, it will give you the option to choose which program you want to open the file with. Select this option, and choose "Internet Explorer" from the resulting list.

To run a PowerPoint presentation, you need to run the slideshow. Save it first if necessary. Once a PPT file is open in PowerPoint, press "F5" to run a slide show (or use other command). If you do not do this, you will not be able to interactively evaluate the project.

APPENDIX C: Survey Questionnaire for Each GUI Taken by CPSC 150 Students

Question 1
I was able to run the interface.

☐   a. Yes

☐   b. No

Question 2
I was able to explore and find a file (or something representing one), using the interface.

☐   a. Yes, I found a file

☐   b. No, I could not identify a file

☐   c. Not Sure

Question 3
Learning to operate the interface was easy for me.

☐   a. 1 (easy)

☐   b. 2 (somewhat easy)

☐   c. 3 (neither easy nor hard)

☐   d. 4 (somewhat hard)

☐   e. 5 (hard)

Question 4
The system made sense, to me, as a means of searhing for a file.

☐   a. 1 (yes)

☐   b. 2 (mostly)

☐   c. 3 (neither yes nor no)

☐   d. 4 (not really)

☐   e. 5 (did not make sense)

Question 5
List the most positive aspect(s) in point form.

Question 6
List the most negative aspect(s) in point form.

APPENDIX D: Summary Data from CPSC 150 Surveys and Written Comments

I. SUMMARY OF RAW SCORES FOR EACH GUI

	Interfaces					
	#2	**#3**	**#4**	**#5**	**#6**	**#7**
Total # Surveys	37	8	8	9	34	33
	RAW SCORES					
Questions						
1. Able to Run						
Yes	29	8	8	8	33	31
No	8	0	0	1	1	2
2. Found File						
Yes	22	5	8	6	30	28
No	10	2	0	2	1	2
Not Sure	5	1	0	1	3	3
3. Learnable						
Easy	7	4	5	2	24	20
Somewhat Easy	13	1	3	3	9	7
Neutral	12	2	0	0	0	5
Somewhat Hard	4	0	0	3	1	0
Hard	1	1	0	1	0	1
4. Made Sense						
Yes	11	2	5	3	15	20
Mostly	11	3	2	3	13	10
Neutral	4	0	1	1	1	0
Not Really	8	2	0	1	2	1
No	3	1	0	1	3	2

Comment: It is unclear why GUIs 3,4 and 5 were less popular with CPSC 150 students than 2,6 and 7, but highly suggestive that it might have been because 2,6 and 7 were all PowerPoint files while 3, 4 and 5 were implemented as Flash Animation, HTML and a binary executable, respectively. CPSC 150 students may simply have found PowerPoint files more familiar.

II. SUMMARY OF PERCENTAGE SCORES FOR EACH GUI

	Interfaces					
	#2	#3	#4	#5	#6	#7
Total # Surveys	37	8	8	9	34	33
	PERCENTAGES					
Questions						
1. Able to Run						
Yes	78%	100%	100%	89%	97%	94%
No	22%	0%	0%	11%	3%	6%
2. Found File						
Yes	59%	63%	100%	67%	88%	85%
No	27%	25%	0%	22%	3%	6%
Not Sure	14%	13%	0%	11%	9%	9%
3. Learnable						
Easy	19%	50%	63%	22%	71%	61%
Somewhat Easy	35%	13%	38%	33%	26%	21%
Neutral	32%	25%	0%	0%	0%	15%
Somewhat Hard	11%	0%	0%	33%	3%	0%
Hard	3%	13%	0%	11%	0%	3%
subtotal "yes" votes	54%	63%	100%	56%	97%	82%
4. Made Sense						
Yes	30%	25%	63%	33%	44%	61%
Mostly	30%	38%	25%	33%	38%	30%
Neutral	11%	0%	13%	11%	3%	0%
Not Really	22%	25%	0%	11%	6%	3%
No	8%	13%	0%	11%	9%	6%
subtotal "yes" votes	59%	63%	88%	67%	82%	91%

Positive Comments for GUI 2

- only one page / good design / good graphics
- Clear labels / Nice pictures / Good model
- The images were neatly layed out / Each page identified which category/file it was talking about clearly / It was well labelled
- simple looking / clean lines / nice to look at
- It seems like a good idea but I can't run the interface..
- good pictures / interesting approach / different
- it was a diagram / It looked nice / It was a cool picture
- It is creative and fun / Interesting
- simplistic / specific catagories / clean design
- This was very well set up, nice display / the circular motion for files was original / the highlighting of the current file was nice
- it wound wrk
- good diagrams
- After spending some time with it, you could figure out how it worked / It was interesting after you figured it out / It was labelled clearly
- interesting set-up / different approach / to the point
- it was black and white / it was only one page
- Detailed. / Covered a lot of information. / Looks like lots of effort was put in.
- easy to navigate and find diferent file types
- It was easy to navigate, and understand where i was going / The up arrow was niceto get back to where i was perviously / The oval dimension for the files was unique.
- could not open the interface assignment to view
- arrow / box
- the graph is easy to understand
- liked the layout: very much like Sony Playstation demo disks actually! / Good visual interaction / Could see all options at once
- good format / good explanation
- I liked the cyclical look of it, I felt like a was spining a carriage and accessing boxes wich contained something I wanted / I liked the higlighting of the box you were looking 'in' / I liked that you could see the differnt sizes of files
- easy to use, simple to understand
- the pictures/icons are very clear... / /
- Lot of pictures and models / Lots of changing picture to demonstrate the meanings and change / Lots of slids to demonstrate what you are trying to relate.
- The layout / Use of the arrow /
- was again a good presentation, but the first one was better / good format /
- creative / innovative / thought provoking
- I liked the idea of having boxes to represent the folders and having the current one in the front and centre / It shows the file size in the bottom right corner. /
- good icons for movies / highlighted images made it easy to recognize / labeled directory of files
- Extensive file system. / Size added is a nice touch. /

- I like the fact that there was a diagram, the graphic caught my attention / Seemed very organised and easy to navigate through / Generally it looked attractive, rather than the traditional icon
- interesting / innovative / attractive

Negative Comments for GUI 2
- small icons / lack of color / just squares... use different shape?
- It doesn't do anything / It doesn't work / I don't get it
- It was very hard to understand because there was no written explanation / The slides were not connected so each slide was viewed separately and did not run smoothly like the previous Interface / There were a few spelling errors caught on some pages
- all the icons looked the same, there was no defining characteristics / a little confusing
- I can't run the interface, sorry...
- hard to know what to do / no ecxplination made it difficult to understand what was being taught / seem kind of pointless
- It didn't do anything / There was no explanation / What was it for?
- It takes a bit of time to figure out how it works but it's still very good
- lack of labelling / no intro. / lack of further info.
- i still couldnt activate it / could get confused easily with current one / some were empty? why? not important?
- i could not get it to load properly
- plain and simple / needs colour
- It wasn't very clear / Kind of hard to operate at first / A little confusing
- no color / confusing / unable to open files or pictures
- it made no sense to me
- Complicated system. / Hard to follow what is going on. / Could not run the slide show.
- not alot of color and all icons looked the same
- I'm not exactly sire what the whole point of that system is / it would have been great to have working movies and stuff / could have had a better flow between files
- could not open the interface to view
- the meaning not clear.
- if there is a introduction about the excerise it will be better / hard to let one know what is going on
- Pictoral representation of directories was difficult when in another directory (boxes in documents folder) / Arrow was a little confusing. I thought it would be to upload or "get" a file or something. Users are oriented to a "back" button to go backwards / maybe some instructions next time on what to do, as it took a bit to realize you had to click on the objects. Might be difficult for those new to PPt
- could have been more colorful / needed a bit more explanation
- I didn't ge the arrow in the middle / It doesn't show parent and child relationships well / maybe too much of the same symbols (boxes)

- nothing
- the Arrow that is in the middle is confusing....psychologically.....
- It would be better if there were written explanation rather than all pictures / A rapid change of model or change would show a significant change / For sure, more written explanation
- Not enough instruction / Wasn't sure what the presenter was getting at
- could have been a explained a bit better / needed some more color, emphasis on presentability!
- not very interesting / poor use of icons
- If there would be more directories it would appear too cluttered. / It has a button to go back by the looks of it but no button for forward
- boxes stating graphics, movie, etc. / arrow pointing upward confused me / it didnt flow very good
- Powerpoint platform. / Tougher to use than some.
- I wasn't sure if there were files in the interface, or are they supposed to be assumed to be there? / Too many diagrams would have to be made for each directory, may get cluttered and confusing / Searching through each directory may take time, not sure how the procedure is
- unsure of where I was / have to get used to it

Positive Comments for GUI 3
- It worked / It was cool
- Excellent visual graphics
- the animation was good
- It is truly creative, reminds me alot of "Indiana Jones"
- To navigate through the folders was simple / I liked the diamond illistration used / Choice of colur was great
- button for navigating / file color / current path
- N/A / N/A / N/A
- It was so much fun to use, an entertaining way to find files / I love the chests opening, nice interactive approach to finding files / Very easy to use, the best interface overall in my mind so far

Negative Comments for GUI 3
- It doesn't make sense / I didn't find a file / I don't know what it was for
- Poor quality background; very plain / No written explanation therefore, was very hard to understand / No labels
- this interface was too confusing / i didn't know what anything meant or what would happen if i pressed on an icon
- However, it is somewhat confusing as I didn't know which interface has been explored, it would be good if we can differentiate "doors" via colours or something
- I could find no fault unless I missed something
- up and down / no instruction
- N/A / N/A / N/A

- It can be time consuming, waiting for those chests to open. Especially when I want to find a file right away. / Mostly organised but it is confusing to know which chest I would need to open / Some people may find it unprofessional, seems more like a game rather than a productive interface

Positive Comments for GUI 4
- Easy to understand / accessible / It worked
- Good visual graphics / Self explanatory / Labelled correctly
- Everything was labelled / Easy to move around /
- It is truly easy to understand, because it doesn't vary much from the concept of "folders"
- file list / current directory / folder list
- I liked that you could see the different levels / I liked the use of a filling cabinet for the root / I liked that when you chose a folder it would be put next to the root
- very clear as to what was meant by the file cabnets / good use of colour / good size
- It was simple and it did what it was suppose to do / No complications, easy to navigate around / The icon of the "directory" seemed more realistic than the chest in the previous interface

Negative Comments for GUI 4
- Not very many pictures / You couldn't do anything with the files / poor
- Poorly spaced / Background very plain
- icon was ugly / it was a little confusing at first, but i caught on quickly
- Lack creativity
- color / font / files display
- I would have liked a different name and icon for the sub-directories / I would have liked you to write the file specification under the root and its sub-directories (the first level) / The files were not very visible, they should be given an icon
- kind of boring
- Looked rather dull and boring / More effort could have made to organise the files better / All the directories looked the same, without the directory's name I would have been lost

Positive Comments for GUI 5
- Nice graphics / Sort of easy to use / organized
- Good use of space / Well labelled /
- nice layout
- It is truly cool, you can tell by the design that the designer made an effort to do the homework well
- file list box / operating method / navigate button
- N/A / N/A / N/A
- This seems like it would be a useful interface for someone with a lot of computer knowledge / I felt their was the potential to gain a good understanding for file

systems through this interface / I think if I had instructions it would have been a lot easier to use this
- once i was able to figure out what was going on it was easy to use / creative idea
- Very attractive interface, I liked the design / I could differentiate between the directory and file very well / I liked the effort into this interface, well done!

Negative Comments for GUI 5
- A bit difficult to understand / I wasn't sure if i found a file
- A little confusing / Need of some amateur computer knowledge / Too many file extensions may confuse the viewer
- getting around was a bit confusing / i didn't know what all the terms meant
- The problem is, I can't and dunno how to run the whole thing... some instructions available would help
- font color / no more instruction
- N/A / N/A / N/A
- I could not figure it out! / There wer no directions on what to do. / It was overwhelming
- somewhat confusing when it first opened / the use of only black and white made it difficult to know where to click / boring layout
- It is hard to find a particular file, everything seems really cluttered and chaotic / If it was more organised properely I think it would be easier to use / Appreviated files is really annoying, I have to search through all of them before I can find anything

Positive Comments for GUI 6
- Very basic and easy to understand / Good use of audio and visual graphics / Exploring is forced therefore, learned independantly
- it was different / creative / i liked the layout
- great interface. instructions on what to do really helped / every folder had a name that you could recognize / simple format and nice
- I like the idea of searching a file in computing as searching a file in a drawer / /
- easy to use / analogous with a familiar object for new users / clever
- easy to use / made sense what i was doing / clear
- good visual representation. Liked the desk drawer system / was nice to have instructions on how to use / was easy to navigate and find out what was going on
- easy to follow / fun /
- it was an interesting point of view on how to find a file / it was fun / it was different then anything i've seen before
- Desk a great idea, sounds nice addition / Back button helpful / Very easy to navigate and understand
- Not too difficult to understand / I found the file! / Searching for a file was straightforward
- interesting and creative / simple /
- good base design / has a title which introduces topic / has sound
- desk / color / file list

- was an okay presenatation / rather simple /
- the desk pictures idea was creative / the drawer break down makes it easy / the computer suprise at the end was nice
- liked the use of desk / fun to use, easy to understand, liked the sound! / very easy to naviagete and not confusing at all
- Screen showing 'found file'. / Rather easy to use and understand. /
- well planned out / i liked the idea of using the drawers /
- nice simple explanaton / child like graph, easy to understand / good portion of slides, not to many, not to little
- it was easy to understand
- neat and creative
- liked the way the drawers opened / interface was confused with back button but both worked fine to controling it / The project looked good in that it had names and pictures after the project
- Easy to operate / Made sense / Easy to find a file
- good graphics / original format / simple
- Fun clicking on the drawers / Cool idea / Easy to understand
- Simple, easy to use / Files organised very effectively / I liked the idea of a desk storing files, like in real life, just more organised, lol
- Using a desk it made it very obvious what was a child and parent directory. / /
- was well designed / new approach, looked good! / simple, yet well done
- Instructions were not neccessary but a nice touch. / The interface was easy to understand . / Showed contents of each drawer.
- Nice and simple. / Good idea of using a desk and drawers. / Easy for everyone to use.
- fun to play with
- the cool design of the desk with the drawers / the back button / the clapping when clicking on drawers
- very easy to operate

Negative Comments about GUI 6
- Did not explain what the purpose of the presentation / Did not explain what we are searching for /
- at first i was not sure of what the task was
- ugly colour for drawers / no other complaints /
- However, what's the relation between different drawers? Are they parent & child? That's a little confusing, as if we're just looking into random drawers for a file we need...
- no negatives
- noise scared me / lighting up of drawers to pick i didnt like, but thats just me /
- labels on the drawers would have made it better
- nothing
- what was the point? / how does it help me actually find a file in my harddrive? / kind of silly

- Only the tip of the back button was able to be clicked on / With additional levels it would not look like a desk anymore / If heavy searching done, the sounds would be irritating
- It wasn't quite clear what you wanted the user to do to find the file / You could just scroll down to find the file / You had to just randomly click on folders to find the file
- maybe labelling the drawers would be a good idea
- crashed ppt and then 2nd time crashed IExplorer / very vague on information within the presentation / clickable area on back button is SOOOOO small
- no instruction / no file list /
- was lacking color / needed a bit more in comparison with the others seen before / was simple, but needs a bit more explanation as well
- the inetface wouldnt work.....it was a little short / not enough description of files / too short
- nothing for me
- Not very orginal from current file system. / Small file system. /
- none
- Could use more explanations / narrating or some other form of explanation will be helpful / use different model than desk might allow viewer to understand better
- I don't think the drawer interface will work for my organization.....the desk for my interface will end up with many drawers / why does it have to be a drawer...? why can't it be a book shelf..? / the noise/sound was annoying
- no much information given / more work need to be done /
- THe desk interface was difficult to understand in that the drawer can be confused with the back button and the desk drawers itself / The scroll down takes you towards each drawer and confuses you with the desk itself and the back button, too many actions are made in this program to open drawers / Another is the organization, the desk interface was confused with back button not going back by order instead its skipping
- Not the nicest to look at / The description box for the drawers was too empty / The back button didn't work
- not very informative / can't really just find a file by clicking around / very short
- There were none.
- It was too slow to go between directories / If there were more directories, the desk would be massive, therefore really hard to find anything / One would have to know which desk is there directory by clicking on all of them to figure out which directory if for which, time consuming.
- The back button only takes you back between the 2 directories. Go from 1 to 2 and then back to 1
- nothin really
- Took three people to make this. / The congrats after finding the file was childish. / Again, it took three people to make this.
- No negative aspects.
- no real navigation plan / must remember were in the desk you placed every file /

- a silly system for finding a file / why was it a game to find the file / a pain to click on the file, you had to be over a specific part to open it
- there was only one file?....

Positive Comments for GUI 7
- The idea of storage and doors works well / Navigating back through open doors was useful / that they wrote the file specification as well above the doors was good
- Great explanation / Compared files to everyday things to make it easier for the viewer to comprehend / Exploring and searching made it easier to learn independantly
- creative idea / well formatted / clear as to what was the point
- instructions helped / nice and easy layout /
- I like the idea of "door interface", it is quite interesting / /
- it was lots of fun to use this interface / it was easy to find the flie and understand how to get to it / it was not easy to get lost
- easily understandable / made sense in real world / orginal
- Wicked instructions! / liked the set up, and it was vey nice to have the real world representation / was nice to have the details explicated at the beginning to sort out how everything worked
- had an explination / it was a different approach to teaching which could make it easier for students / good metaphors
- Graphics and layout easy to understand and navigate / Icons helpful to understand availability and some content / Pathway display useful
- It actually had an explanation for how to use it / It was easy to understand / It was a really good idea
- It was a very good idea / good explanation at the beginning /
- has colour / good detailed descriptions / easy to follow navigation design
- door / operating method / navigating button
- this one was a new uniuque idea compared to the other ones! / good introduction, easy to learn! / simple and good
- the door idea was neat / the stages of 270 etc. was nice / the happy faces were a nice touch
- liked the use of doors / liked the use of do not enter sign / like the use of door numbers for id
- Great introduction / Extensive file system / Current directory listed up top
- I thought of all 7 interfaces, I thought this one was the best done. / The opening of "doors" to represent file directories was great / Easy to Understand and well done
- The colour of the directory and the files are different....easy to differentiate / no annoying sounds / Psychologically......everyone will understand it........even little children....
- From all of the interface I think this one is the best / neat,easy, understandable, creative, overall its a A++++work!! / good introduction
- It guided to the file directories how it began with parent directories by having a door / Then as you enter the file directory (door) you view the child directories

within / by clicking on the child directories you can see what that folder alone contains.

- Made perfect sense after a few tries / Fairly easy to operate / Had a description on the first page
- original idea / good use of graphics and information / easy to follow
- Neat idea with the doors / Easy layout / Easy to follow with an explanation given at the beginning
- Very cute interface / The general idea was there / Creative
- Having a description of the structure. / Using something that everybody should find easy / The layout was easy to use
- This one had a good explantion at the introduction, it was really good / it was well done how there was the door idea, made things simple to understand / well done
- Option to go back. / Instructions at the beginning. / Doors to go through.
- Good Approach. / Icons were new and interesting. /
- easy to navigate / good layout /
- it had the directories / child directories with file in them / many different files
- excellent door idea / very well laid out / breif description at start made it much easier

Negative Comments on GUI 7
- I didn't get to see the whole file system together (like the folders pane) / The language used in the explanation was hard to understand / The open door (with back button) should have its name shown when you are looking at its contents
- Too many child and grandchild directories in a parent directory making searching long and boring / Should explain more why or why not certain files cannot be accessed or be opened
- not sure if i located the file or not / a bit too much on the screen (too busy) / somewhat confusing
- the doors were a bit confusing / it was hard to tell what folder i was in
- However I was "stuck" at the first door and couldn;t open the rest... sorry!!
- no negatives
- no exit signs
- The instructions (though necessary, and appreciated) were a little too wordy; some people might not read them / a little confusing when got to "My.exe", as I could not "go" anywhere /
- the back button didn't really work, it took me to places i wasn't in / confusing as to what went to where / was not enjoyable, only frustrating
- The file name text may be too small for some users / Icon content was occasionaly difficult to determine (boxes, happy face) / Linking did not always work
- It was hard to tell which files were in which directories
- It was confusing and hard to explore at times
- my.exe should not open up like a folder because it is displayed as a file. / none / none
- file list

- all good
- a little confusing at the beginning, I didn't know what to look for / whats the point of the forbidden files.... / my.exe?? confused with that idea
- found it hard to get back to origanl location
- None.
- none
- The icons did not match the purpose of the files......e.g..why does an ".exe" have a happy face
- if all of the file contain something its will be better
- The pictures confused me, didnt know what their functions were for / Some of the emoticons didnt work as you clicked / The numbers didnt specify what they contained, so needed to be more specific.
- Didn't have a back button / Took a few tries to completely understand / At first, i twas kind of hard to operate
- can't think of anything negative to say
- Didn't know where I was going / Not sure what some of the doors were for when they were empty? /
- The interface took too long to get anywhere / Sometimes I got lost and it wouldn't take me back, I felt it didn't work / The system made no sense cause there were icons that I didn't know what it did, caused too much anxiety, didn't like it.
- when you run "my.exe" there is no way to go "back" one it has been stopped
- nothin really
- I would get stuck and had to restart. / Option to go back was not always there. / I had no idea if I found a file or not.
- To much explanation to start. / Labels on doors might have helped.
- only one rought of navigation
- set up was a little weird with the folders on top of the files
- nothing bad to say about this one