Usability/Accessibility testing

Software Testing: IN3240 / IN4240

Summary

Usability testing

- HCI definition, framework, and guidelines
- User-centric design processes

Accessibility testing

- Context of accessibility
- Accessibility personas and accessible design
- Web-content accessibility guidelines
- Assistive technologies and tools

Part I: Close-ended questions

Question 1

Which of the following is a purpose of HCI testing?

a. It tests that the software testing is approved by users
b. It tests that the software is precise in its calculations
c. It tests that the software is understandable
d. It tests that the software has all related documentation in place

Question 1: Clues

Which of the following is a purpose of HCI testing?

We (humans) interact with computers in various ways

- Using desktop applications
- Web browsers
- Mobile devices

Interface between us and computers is crucial

- *How* do we interact with technology?
- How can we *best* enable this interaction?

Do some user groups have advantages / disadvantages over others?

Question 1: Clues

Which of the following is a purpose of HCI testing?

HCI: Human-Computer Interaction

> *"The extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use."* (ISO 9241-11)

Purpose of HCI

Understandable
Easy to learn
Effective to use
Easy to remember
Satisfactory to use

Question 1: Answer

Which of the following is a purpose of HCI testing?

a. It tests that the software testing is approved by users
b. It tests that the software is precise in its calculations
c. It tests that the software is understandable
d. It tests that the software has all related documentation in place

Question 2

Which components constitute the HCI framework?

a. Maintainability, Portability, Security
b. Performance, Load, Stress
c. Laws, Industry-specific standards, Rules and Regulations
d. Interface standards, Usability, Interface dynamics, Aesthetics

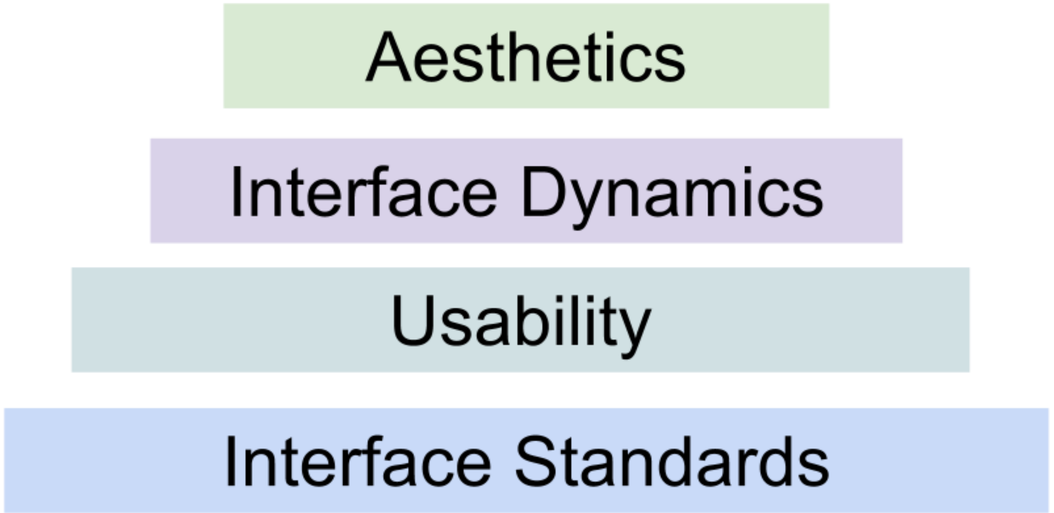
Question 2: Clues

Which components constitute the HCI framework?

HCI Framework

An abstraction to enable contextualisation

Considerations for HCI → Present a global view



Question 2: Clues

Which components constitute the HCI framework?

- Interface Standards
  - The underlying standards for designing user interfaces
- Criteria
  - Adhering to best practices
  - Consistent behaviour and design
- Objectives
  - Decrease the work load
  - Faster development

Question 2: Clues

Which components constitute the HCI framework?

Usability

Concerned with how *easy* something is to use

Consists of …

Effectiveness

Efficiency

Satisfaction

Key considerations

Understanding the target users and their needs → Create user-centric designs

Question 2: Clues

Which components constitute the HCI framework?

- Interface Dynamics
  - Interfaces (whether visual or API) must adhere to specific criteria
- Criteria
  - Responsive and fast
  - Adaptable to the users needs and context
  - Empowering the user
  - Captivating
  - Dynamic

Question 2: Clues

Which components constitute the HCI framework?

- Aesthetics
  - How the system / IT artefact appears
  - Responsible for the first impression
- Criteria
  - Design should be modern, fresh, and appealing
  - Recognition of a company's applications
  - A company's graphical profile

Question 2: Answer

Which components constitute the HCI framework?

a. Maintainability, Portability, Security
b. Performance, Load, Stress
c. Laws, Industry-specific standards, Rules and Regulations
d. Interface standards, Usability, Interface dynamics, Aesthetics

Question 3

Which of the following represent interface dynamics principles?

a. Software has to be responsive, fast and adaptable to user needs and the given context
b. Software have to have the same response time for all devices that run on it
c. Software has to respond quickly to fast-changing needs
d. Systems have to be tested for load and stress, to verify their dynamic metrics

Question 3: Clues

Which of the following represent interface dynamics principles?

Interface dynamic principles

Principles related to the dynamic aspects / nature of interfaces

Characterised by constant change, activity, or progress

Interfaces must be designed in such a way that they are

Responsive and fast

Adaptable to the users' needs and context

Empowering to the user

Captivating

Question 3: Answer

Which of the following represent interface dynamics principles?

a. Software has to be responsive, fast and adaptable to user needs and the given context
b. Software have to have the same response time for all devices that run on it
c. Software has to respond quickly to fast-changing needs
d. Systems have to be tested for load and stress, to verify their dynamic metrics

Question 4

Which of the following is a good practice when using system alerts?

a. Never write a short message – People need as many details as possible about the alert
b. Use capital letters or exclamation marks - Users see it better
c. Never use error codes, jargon or technical terms – Speak the users language
d. Place the system alert on the top-left of the page – Users see it first

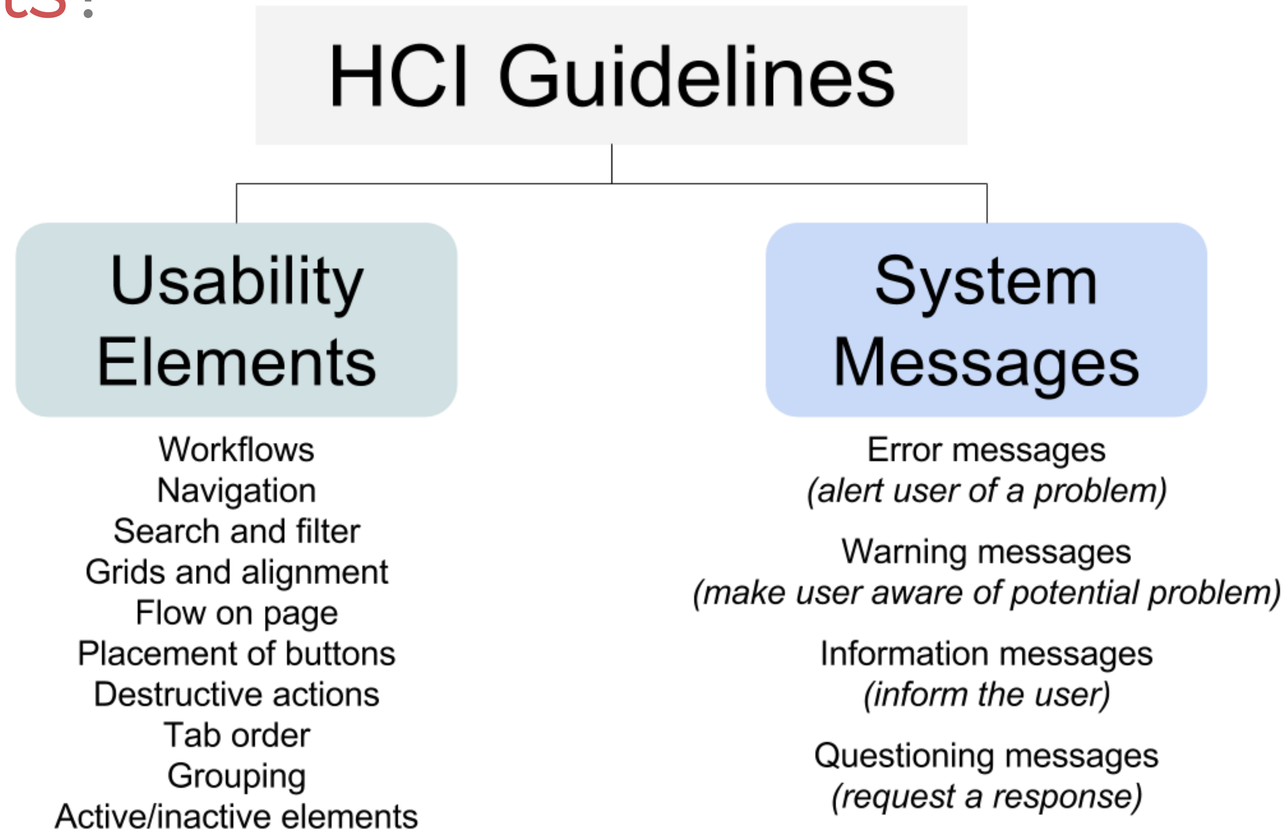
Question 4: Clues

Which of the following is a good practice when using system alerts?

- HCI Guidelines
  - A collection of interface standards
    - Windows, OS X, and web guidelines such as W3C
- Purpose of the guidelines
  - Provide developers / testers with a set of best practices
    - Consistent behaviour and design of software
    - Decrease people's workloads
    - Faster development cycles

Question 4: Clues

Which of the following is a good practice when using system alerts?



Question 4: Clues

Which of the following is a good practice when using system alerts?

- Guidelines for using system alerts
  - How they behave | The way they must be designed and used
- Error and warning messages
  - Explain the problem + Provide a solution
- Good practices
  - Never use error codes, jargon, or technical terms → Speak user's language
  - Never use capital letters or exclamation marks → Considered aggressive

Question 4: Clues

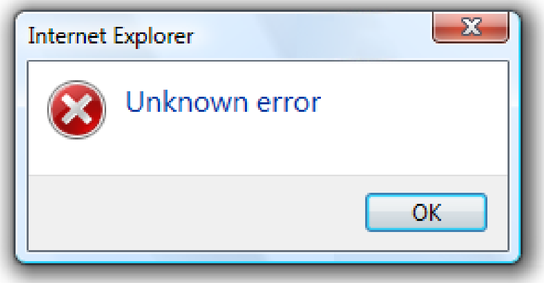
Which of the following is a good practice when using system alerts?

- Other considerations
  - Keep the messages short and concise
    - Should *explain* something of *value* to the user
    - Do not make them read entire paragraphs / incident descriptions
  - Use the right action buttons
    - Errors and Warnings are never OK → Use “Close”
    - Having “Yes”, “No” and “Cancel” for a question is confusing

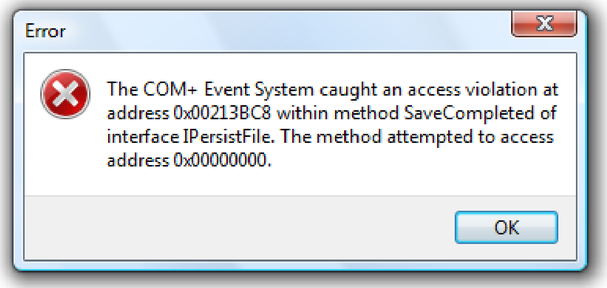
Question 4: Clues

Which of the following is a good practice when using system alerts?

Examples



What are the problems with this error message?

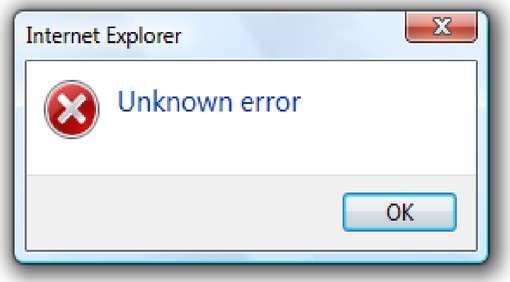


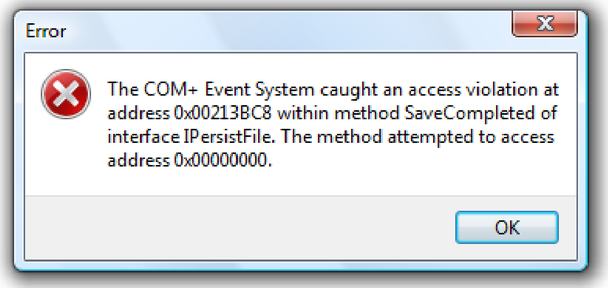
What are the problems with this error message?

Question 4: Clues

Which of the following is a good practice when using system alerts?

Examples





Does not give a specific problem

There is nothing the user can do

Instead: Design proper error handling into the system

Does not help the user understand the problem

Is useless to the user

Cause: Programmers make error messages for themselves

Question 4: Answer

Which of the following is a good practice when using system alerts?

a. Never write a short message – People need as many details as possible about the alert
b. Use capital letters or exclamation marks - Users see it better
c. Never use error codes, jargon or technical terms – Speak the users language
d. Place the system alert on the top-left of the page – Users see it first

Question 5

The purpose of HCI testing is to make a software system easy to learn and easy to remember.

a. True
b. False

Question 5: Clues

The purpose of HCI testing is to make a software system easy to learn and easy to remember.

- Purpose of HCI testing
  - To ensure optimal user experience
  - Users should experience some *value* from using the system

Understandable
Easy to learn
Effective to use
Easy to remember
Satisfactory to use

Question 5: Answer

The purpose of HCI testing is to make a software system easy to learn and easy to remember.

a. True
b. False

Question 6

HCI testing's primary concern are the aesthetics of a software program.

a. True
b. False

Question 6: Answer

HCI testing's primary concern are the aesthetics of a software program.

a. True
b. False

Question 7

Which of the following elements are components of the HCI testing framework? (Draw arrows)

Components of the HCI testing framework	Laws and regulations
	Interface standards
	Interface dynamics
	Accuracy
	Usability
	Compliance
	Aesthetics

Question 7: Answer

Which of the following elements are components of the HCI testing framework? (Draw arrows)

Components of the HCI testing framework	Laws and regulations
	Interface **standards**
	Interface **dynamics**
	Accuracy
	Usability
	Compliance
	Aesthetics

Question 8

When designing _____ software systems, one has to:

- Understand how the users think and behave
- Gather fact and data instead of relying on opinion and speculation
- Perform studies, design and test on users before implementation
- Iterate

Question 8: Answer

When designing _____ software systems, one has to:

User-centric

Question 9

When specifying demands (creating requirements) for user-centric software systems, we can use personas.

a. True
b. False

Question 9: Clues

When specifying demands (creating requirements) for user-centric software systems, we can use personas.

- Specifying demands
  - A crucial step in the development and testing processes
  - We want to know exactly what the system should do / how it should behave
- Serve to …
  - Document the problems
  - Summarise, analyse, and compare results
  - Create the basis for problem conceptualisation
  - Ensure quality control mechanisms

Question 9: Clues

When specifying demands (creating requirements) for user-centric software systems, we can use personas.

- Personas
  - Design and specification tool
  - Description of a representative user
- Provide information about
  - Who the users are
  - Goals, motivations, and activities of usage
- Informed based on research and checked to validate assumptions

Question 9: Clues

When specifying demands (creating requirements) for user-centric software systems, we can use personas.

Background

- Name
- Age
- Job title
- Education
- Experience

Characteristics

- What type of person is he/she?
  - Detailed
  - Casual

Skills

- Technical
- Analytical

Tasks

- What are the main work tasks?



Goals / Motivations

- Why does he/she need this product?
- What does he/she want to achieve?

Pains

- What are the key aspects the usability engineers need to consider?
- Why?

Background

- Jane Doe
- 23
- Student
- Bachelor
- Photography and marketing

Characteristics

- Jane is detail-oriented and very interested in photography
- She likes the outdoors and spends a lot of time in the woods

Skills

- Proficient with most mobile phone operating systems

Tasks

- Photography and messaging



Goals / Motivations

- Wants a mobile phone to communicate with friends
- Picture taking, social networking, messaging

Pains

- Visible screen contents for all lighting conditions
- Easy enabling of flash

Question 9: Answer

When specifying demands (creating requirements) for user-centric software systems, we can use personas.

a. True
b. False

Question 10

Is it allowed to use low-fidelity prototyping when designing a user-centric software system?

a. Yes
b. No

Question 10: Clues

Is it allowed to user low-fidelity prototyping when designing a user-centric software system?

- Development of concept
  - We have a problem to solve
  - Creative process → How can we solve this problem?
- Prototyping
  - Exploring various ways of representing and solving the problem
  - Low-fidelity prototyping
  - High-fidelity prototyping

Question 10: Clues

Is it allowed to user low-fidelity prototyping when designing a user-centric software system?

Low-fidelity prototyping

Mock-ups and wireframes

Start by sketching on paper → Paper prototyping

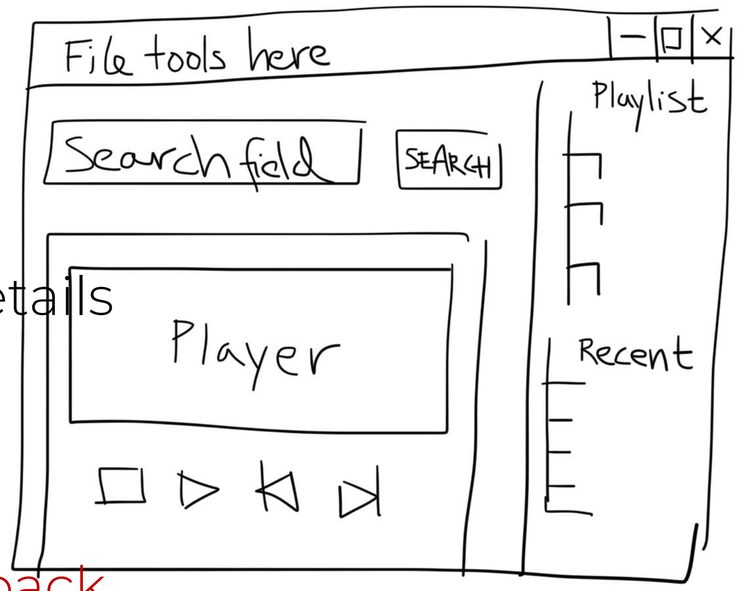
Focus on structure and function → As opposed to details

Do not apply any design

Create multiple concepts

Evaluate, refine, and narrow down → Based on feedback

Note: It is not supposed to be pretty!



Question 10: Clues

Is it allowed to user low-fidelity prototyping when designing a user-centric software system?

Characteristics of low-fidelity prototyping

Fast → Quick progress on requirements specification and testing

Easy → Anyone can to it

No specialised skills required

Simple → No unnecessary details included

Non-technical individuals can easily understand the concept

Cheap → Takes pen and paper

Relevant → Communicates the essentials

Question 10: Answer

Is it allowed to user low-fidelity prototyping when designing a user-centric software system?

a. Yes (it is also recommended)
b. No

Part II: Exercises and Open-ended questions

Exercise 1: Design of Things

Watch the video on “Thoughtful design”

www.youtube.com/watch?v=E_rwwEo5YhY

Follow-up questions

- Can you give examples of everyday things that seemed confusing to you?
- Have you experienced confusing software?

Exercise 2: SiO Case Study

The Student Organisation (SiO) has updated their website (www.sio.no) to make it more effective, efficient, and user-friendly.

Now they are conducting “user observation” for usability testing.

A group of students are invited to perform some actions on the site.

Exercise 2: SiO Case Study

Which of the following points must an observer keep in mind while conducting “user observation”?

1. Try to cover a huge number of tasks and to make a lot of observations
2. Give the students time to perform the task instead of interrupting or showing them how to perform said task
3. The focus of the observation should be to check the expertise level of the users
4. The focus of the observation is to discover the problems in the software with the help of the user

Exercise 2: Clues

Which of the following points must an observer keep in mind while conducting "user observation"?

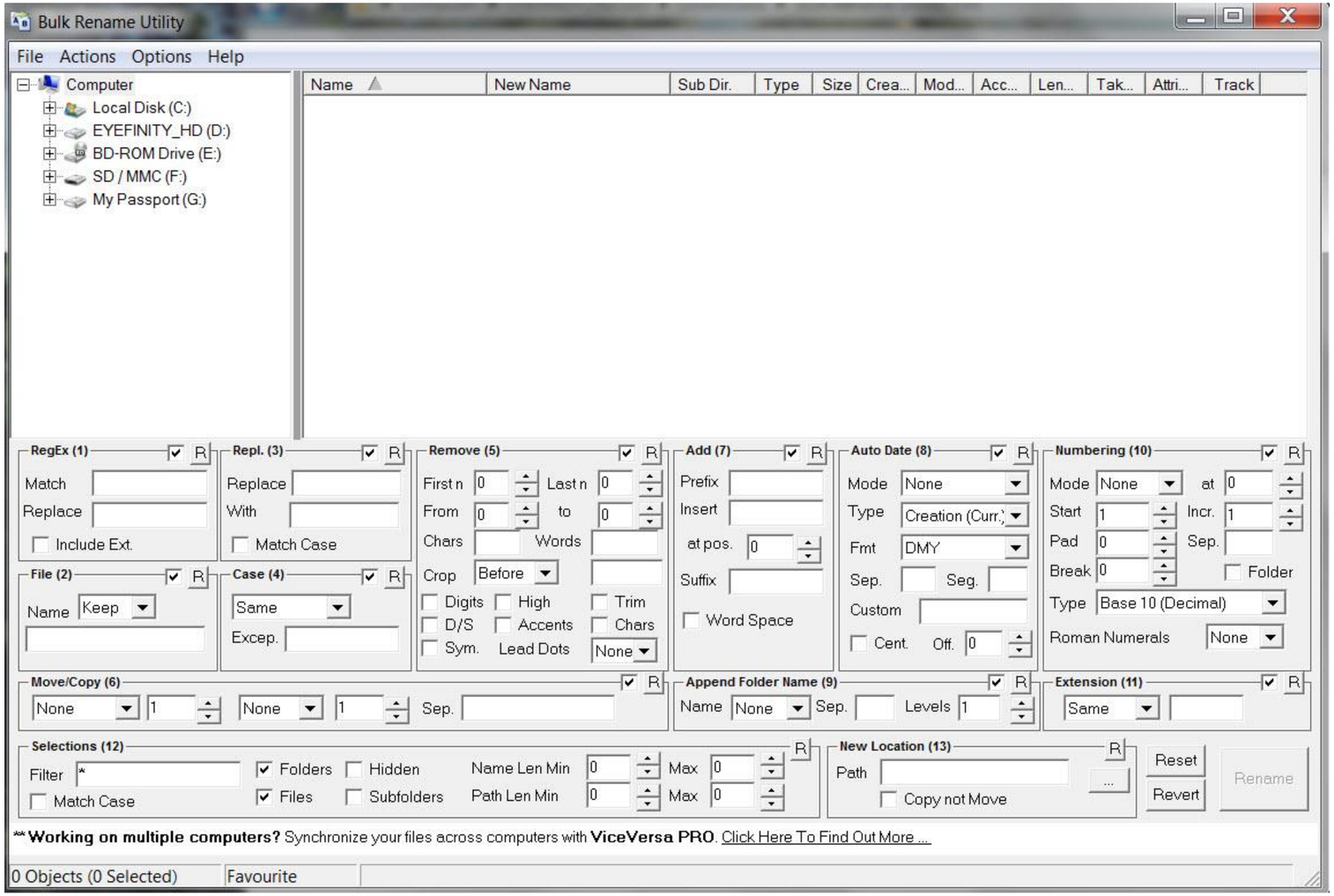
Good practices for user observation

- Start looking for potential users in advance of the study
- Be realistic about how many observations you will have time for during the study
- Give the user time to perform the task
  - Refrain from interrupting the users or showing them how to do something
- Make the study a positive experience for the user
- Recall that you are *not* testing the user
  - Instead, you are discovering problems with the help of the user

Exercise 3: Usability Issues

What are some usability issues with the following application?

How would you improve the HCI aspects of this application?



Exercise 4: Usability Issues

Can you give examples of poorly designed websites?

Follow-up questions

- What are the usability issues with the site?
- Why is this poor practice?
- What should be done to improve the HCI aspects?

The seminar slides are made by

Yulai Fjeld, revised by Eva Hadler Vihovde