

IQRA National University, Peshawar

Department of Computer Science

Fall Semester / Examination, Date: 26th June, 2020

Final – Semester Examination

Instructor: Mr. Shahab Ul Islam

Total Marks: 50 Timing: 12:00 PM - 06:00 PM



HUMAN COMPUTER INTERACTION

Instructions:

- All questions are compulsory.
 - Marks of each question are mentioned with it.
 - **Marks will be given as per the DEPTH of the answer, not LENGTH. (Kindly don't write lengthy stories, just to the point)**
 - No *Outsourcing* please (Save that to IT Companies).
 - For this paper, you'll not be required to borrow anything from anyone.
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ID: 14646

NAME: Abdul Musawer

Question 1:

(10)

Consider the chair given below. Your Employees want to use it as a computer chair. Your task is to write any As HCI Specialist, your job is to point out any Five issues in the design of this chair.

Question 2:

(06)

What is Paradigm, and what do you mean by paradigm shift?

Question3:

(06)

Explain Design Rationale. Write and explain the types of design rationale.



Question 4:

(10)

Find the web pages that illustrate the principle of consistency. You must provide one good and one bad example of consistency. You must provide the screenshot of web pages along with the URL and the written explanation justifying your good and bad examples in your answer. To provide the relevant examples browse the internet.

Question 5:**(08)**

Write the Shneiderman's 8 Golden Rules.

Question 6:**(10)**

You are familiar with internet explorers. Explain any five usability goals in terms of internet explorer. Justify each goal with example

“SOLUTION”

QUESTION 01:

Consider the chair given below. Your Employees want to use it as a computer chair. Your task is to write any As HCI Specialist, your job is to point out any Five issues in the design of this chair.

ANSWER:

Several basic concepts should be considered:

- One chair does not fit everyone. The users' body dimensions must be considered when selecting a chair so that the chair does not strain one part of the body while fitting another.
- Collect data about the user's body height. The optimal seat height is about one quarter of the body height. This estimate is only a rule of thumb since the torso-to-leg ratio can vary widely.
- There is no chair suitable for every activity. For example, dentists require a different chair than do industrial workers or computer operators.
- Consider maintenance and repair costs. Check with the manufacturer for items to inspect for and how often inspection should be done.

FIVE ISSUES IN THE CHAIR GIVEN:

1. **Adjustability** of the chair is the biggest issue if a person is short height wise how will that person access the table's top to read, write or use the computer and much more stuff like that. In short it's height is not adjustable.
 2. **Backrest** is poorly designed as it will cause too much problem while backtesting because the spaces given between each section is not proper, it may cause issues for a healthy person.
 3. **No armrests** are there present in this chair as one cannot give rest to his/her hands.
 4. **Stiffness** while the chair is made of wood it will give some sort of stiff effects, because there is no sitting foam present. **No proper seat surface to sit on.**
 5. **Seat height range** varies from a person to person.
 6. As it's wooden so it can be broken easily and is less **stable than that of a steel chair.**
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QUESTION 02:

What is Paradigm, and what do you mean by paradigm shift?

ANSWER:

PARADIGM:

The collection of beliefs and concepts is what is known as a **paradigm**, which is a set of theories, assumptions, and ideas that contribute to your worldview or create the framework from which you operate every day. For example, you've probably heard the phrase 'the American way of life,' which is a paradigm because it refers to a collection of beliefs and ideas about what it means to be American. For people who find this paradigm very important, it may serve as the foundation of how they view or interact with the world around them. This emphasizes one of the most important purposes of a paradigm, which is that it consists of beliefs and ideas that form a framework to approach and engage with other things or people.

OR

Predominant theoretical frameworks or scientific world views

– e.g., Aristotelian, Newtonian, Einsteinian (relativistic) paradigms in physics

• Understanding HCI history is largely about understanding a series of paradigm shifts

– Not all listed here are necessarily “paradigm” shifts, but are at least candidates

– History will judge which are true shifts

Paradigms of interaction

- New computing technologies arrive, creating a new perception of the human—computer relationship.
- We can trace some of these shifts in the history of interactive technologies.

Paradigm Shifts

A paradigm shift is a major change in the concepts and practices of how something works or is accomplished. A paradigm shift can happen within a wide variety of contexts. They very often happen when new technology is introduced that radically alters the production process of a good or service. For example, the assembly line created a substantial paradigm shift, not only in the auto industry but in all other areas of manufacturing as well.

- Batch processing
- Timesharing
- Networking
- Graphical display
- Microprocessor
- WWW
- Ubiquitous Computing

Personal computing

- 1970s – Papert's LOGO language for simple graphics programming by children.
- A system is more powerful as it becomes easier to use.
- Future of computing in small, powerful machines dedicated to the individual.
- Alan Kay at Xerox PARC – the Dynabook as the ultimate personal computer.
 - Notebook sized computer loaded with multimedia and can store everything.
 - Personal computing.
 - Desktop interface.
 - Overlapping windows.

Time-sharing

- 1940s and 1950s – explosive technological growth.
- 1960s – need to channel the power.
- J.C.R. Licklider at ARPA.
 - 1960 - Postulated “man-computer symbiosis”.
 - Couple human brains and computing machines tightly to revolutionize information handling.
- Single computer supporting multiple users.

EXAMPLES From Daily Life:

1. Swiss mechanical watches to Japanese quartz electronic movement.
 2. Photographic film to digital photography.
 3. Regular taxi to uber.
 4. The shift from a geocentric view of the solar system to a heliocentric view.
 5. The shift from Newtonian Mechanics to Einstein's Relativistic Approach or that from Newtonian Mechanics to quantum concepts at the molecular level.
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QUESTION 03:

Explain Design Rationale. Write and explain the types of design rationale.

ANSWER:

A design can be documented in many different ways. Design documentation ranges from formal design specifications, often following a rigorous standard imposed by an outside agency, to informal notes contained in the notebooks of the individual designers. One type of documentation that is often only recorded informally, if recorded at all, is design rationale (DR) - the reasons behind the design decisions and, in some cases, a record of what decisions were *not* made and why.

DESIGN RATIONALE:

A design rationale is an explicit documentation of the reasons behind decisions made when designing a system or artifact.

- Rationale has to do with logical explanations and reasons
- Discussions, debates, negotiations.
- Reasons for features.
- Reasons against features.
- Weighing of tradeoffs.

Tools used in Design Rationale

- scenarios
- narratives
- claims analysis

DR supports

- Task-artifact framework

TYPES OF DESIGN RATIONALE:

- Process-oriented
- Structure-oriented

Process-oriented

Preserves order of deliberation and decision-making.

Structure-oriented

Emphasizes post hoc structuring of considered design alternatives.

Two examples:

- Issue-based information system (IBIS)
 - Design space analysis
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QUESTION 04:

Find the web pages that illustrate the principle of consistency. You must provide one good and one bad example of consistency. You must provide the screenshot of web pages along with the URL and the written explanation justifying your good and bad examples in your answer. To provide the relevant examples browse the internet.

ANSWER:

THE NEW YORKER:

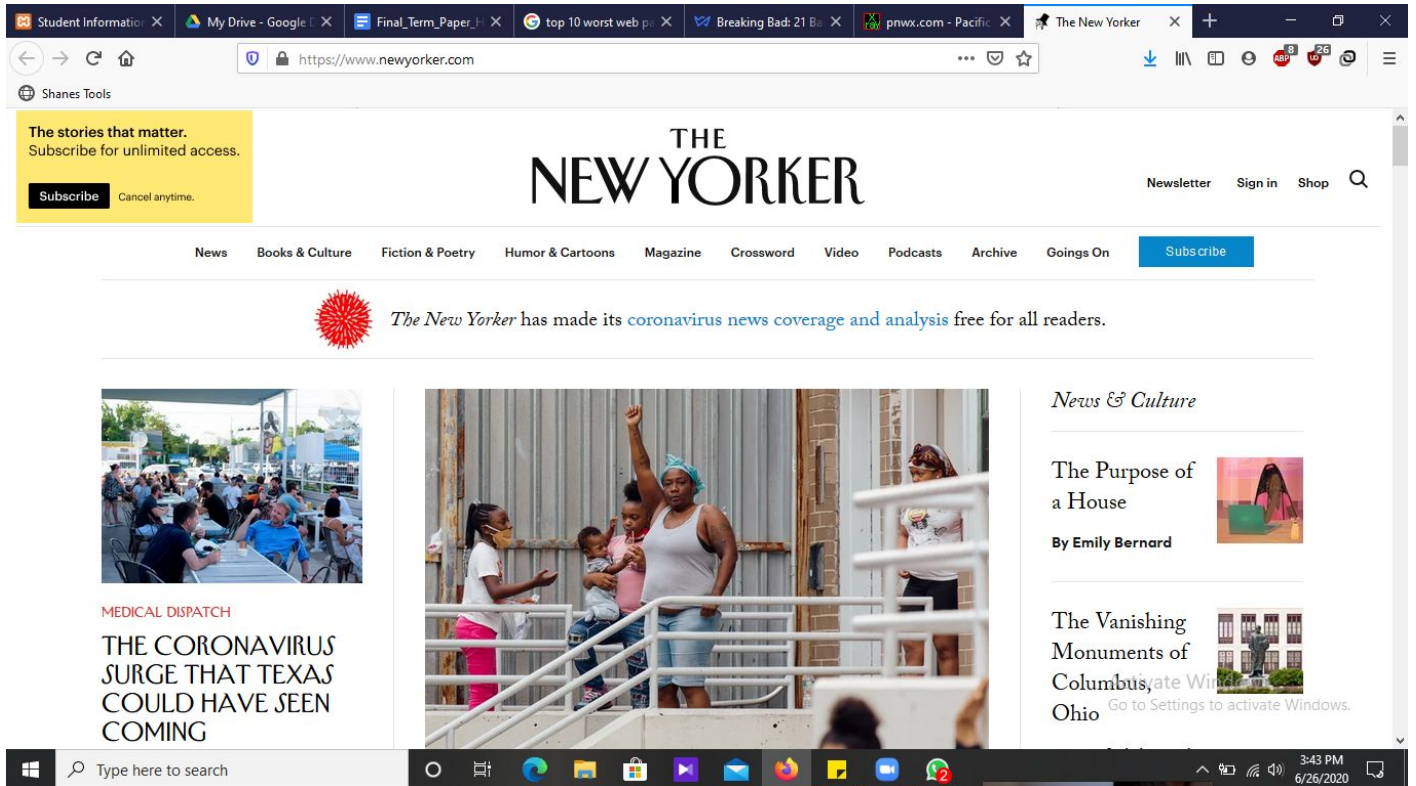
URL:

<https://www.newyorker.com/>

The venerable publication famed for its satirical cartoons brings a stately approach to presenting its content online.

Reasons/ Justification:

- **Masonry** – The New Yorker’s homepage echoes the trend of the cascading, tiled content block layout that keeps the user scrolling down, scanning for items of interest.
- **Variety** – There are a wide range of image sizes on offer in this layout, which prevents monotony setting in while browsing through.
- **Minimalism** – The overall aesthetic here is clean, structured, and minimalist that lets the content speak, while using the New Yorker’s signature font throughout.



PACIFIC NORTHWEST X-RAY Inc.:

URL:

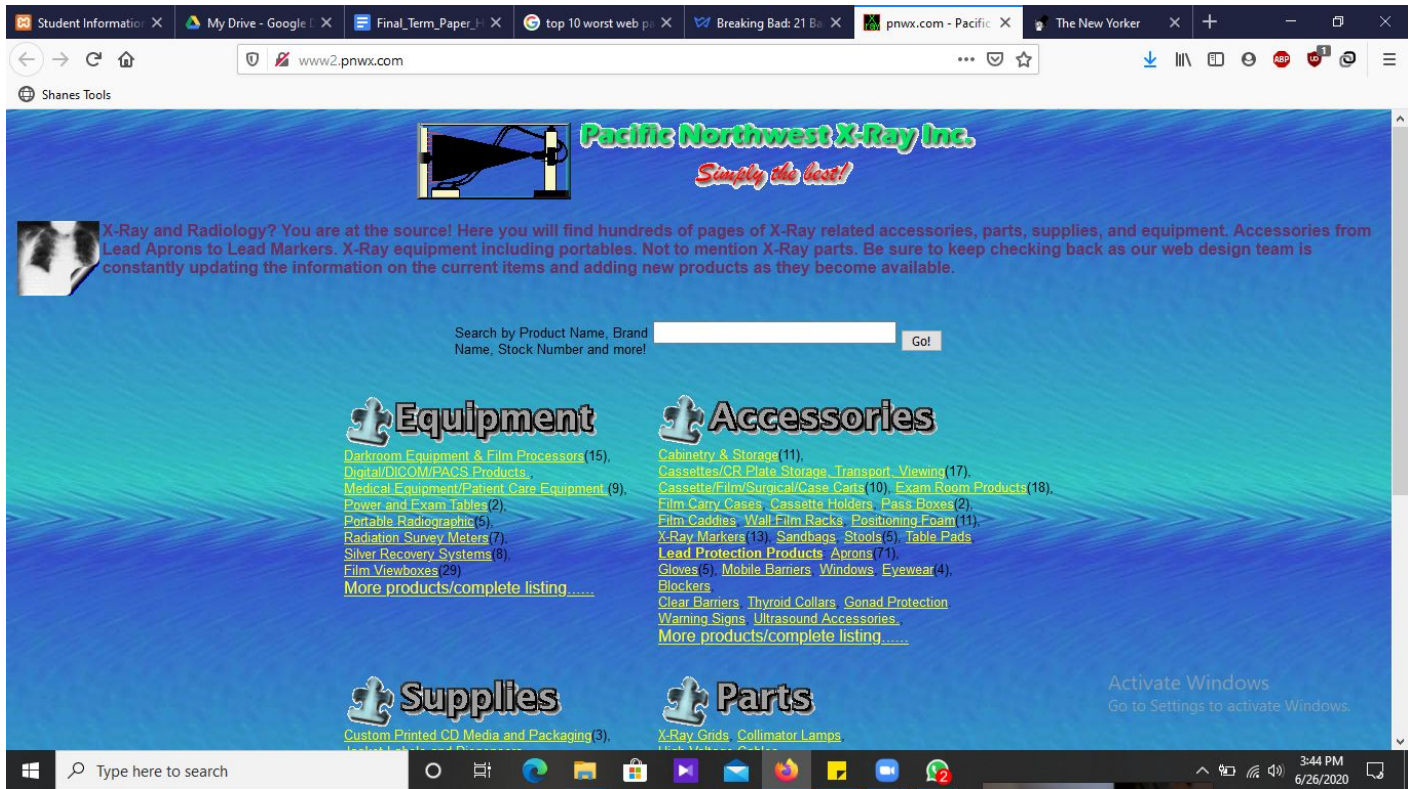
<http://www2.pnwx.com/>

The website text and background colors are conflicting. It is really difficult to read the content because of the absence of anti-aliasing, and the web page text has no paddings or appropriate white space.

Reasons/ Justification:

- Bad typography with poor readability.
- Font colors don't match with the website design.

- Lacks proper calls to action. There is only a phone number that too at the bottom.
- Flash is dead.



QUESTION 05:

Write the Shneiderman's 8 Golden Rules.

ANSWER:

SHNEIDERMAN'S 8 GOLDEN RULES:

1. Strive for consistency.
2. Enable frequent users to use shortcuts.
3. Offer informative feedback.
4. Design dialogs to yield closure.
5. Offer error prevention and simple error handling.
6. Permit easy reversal of actions.
7. Support internal locus of control.
8. Reduce short-term memory load.

1. Strive for consistency.

Consistent sequences of actions should be required in similar situations; identical terminology should be used in prompts, menus, and help screens; and consistent commands should be employed throughout.

2. Enable frequent users to use shortcuts.

As the frequency of use increases, so do the user's desires to reduce the number of interactions and to increase the pace of interaction. Abbreviations, function keys, hidden commands, and macro facilities are very helpful to an expert user.

3. Offer informative feedback.

For every operator action, there should be some system feedback. For frequent and minor actions, the response can be modest, while for infrequent and major actions, the response should be more substantial.

4. Design dialog to yield closure.

Sequences of actions should be organized into groups with a beginning, middle, and end. The informative feedback at the completion of a group of actions gives the operators the satisfaction of accomplishment, a sense of relief, the signal to drop contingency plans and options from their minds, and an indication that the way is clear to prepare for the next group of actions.

5. Offer simple error handling.

As much as possible, design the system so the user cannot make a serious error. If an error is made, the system should be able to detect the error and offer simple, comprehensible mechanisms for handling the error.

6. Permit easy reversal of actions.

This feature relieves anxiety, since the user knows that errors can be undone; it thus encourages exploration of unfamiliar options. The units of reversibility may be a single action, a data entry, or a complete group of actions.

7. Support internal locus of control.

Experienced operators strongly desire the sense that they are in charge of the system and that the system responds to their actions. Design the system to make users the initiators of actions rather than the responders.

8. Reduce short-term memory load.

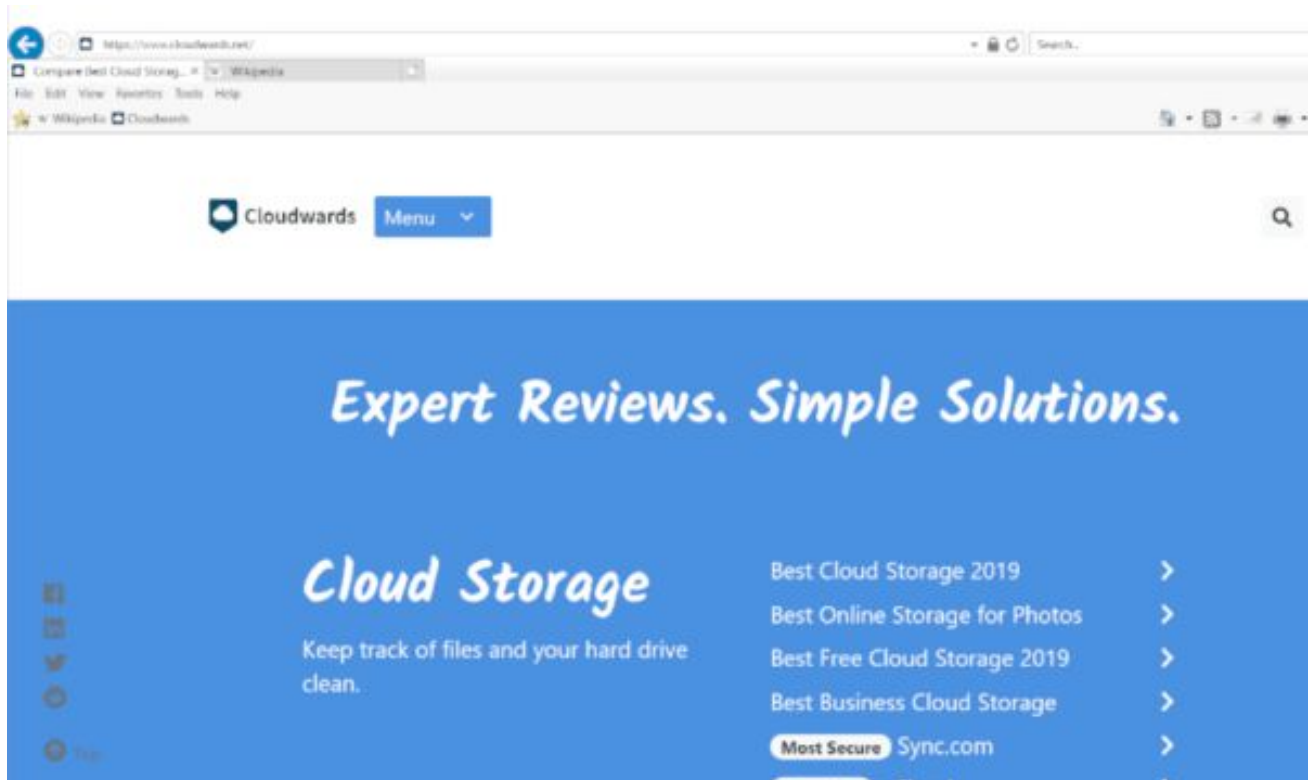
The limitation of human information processing in short-term memory requires that displays be kept simple, multiple page displays be consolidated, window-motion frequency be reduced, and sufficient training time be allotted for codes, mnemonics, and sequences of actions.

QUESTION 06:

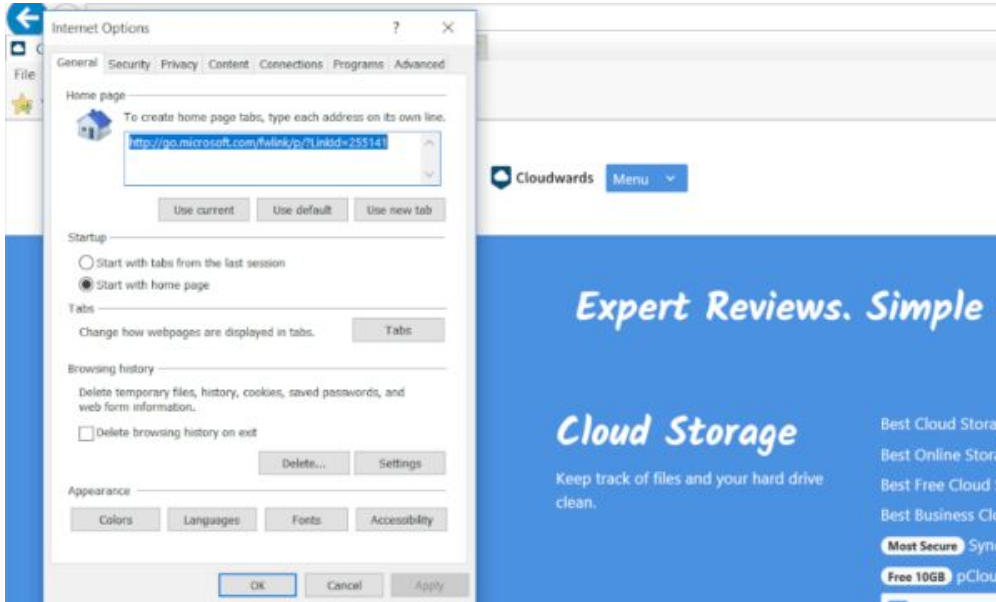
You are familiar with internet explorers. Explain any five usability goals in terms of internet explorer. Justify each goal with example

ANSWER:

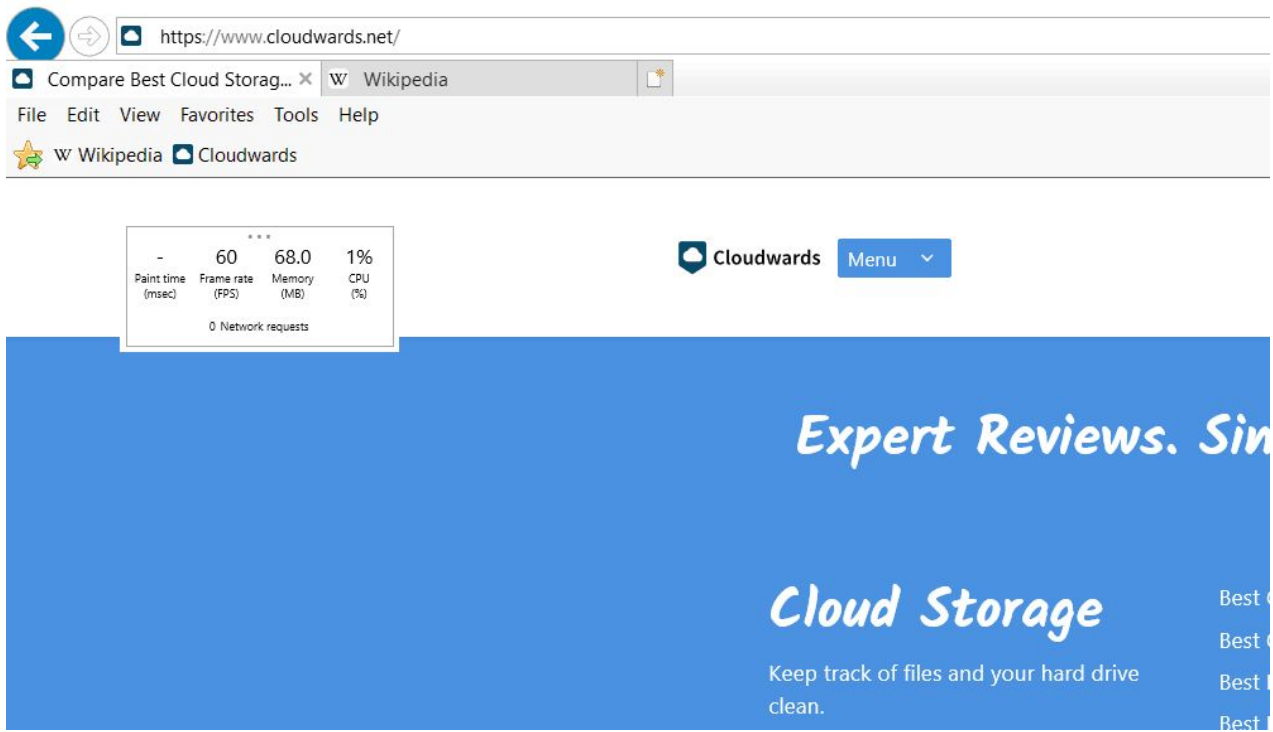
1. The basic structure of Internet Explorer's interface looks similar to other browsers with the address and search bars on top and the tabs and bookmarks beneath them, but it has far too many menus and buttons. The interface feels ancient, and there's a lack of control over the browsing experience, with simple things such as pinning or selecting multiple tabs missing.



2. Other than basic settings for text size and color, there's no way for you to customize the look of the browser.
3. The settings menu also feels like an outdated relic and navigating it to find the option you're looking for is often tedious and difficult because making small changes frequently requires you to pore through lengthy checklists hidden in advanced categories.



- 4. Internet Explorer is slow, achieving similar speeds to its replacement browser.
- 5. RAM usage is also high, with the browser consuming just as much of your system resources as Chrome, despite being so much slower.



What I like?

Internet Explorer is a free browser which is usually the default browser in any Windows operating system. Explorer boasts of using a zone-based protection framework which makes it one of the most secure browsers compared to its adversaries. Apart from the above mentioned, it is a cache mechanism that makes the page loading time much better. Explorer also comes pre-loaded with ActiveX and VB support which are necessary for running various applications. In summary, Explorer provides a dependable, interface easy and secure browsing experience.

What I dislike?

Unfortunately, Explorer is a bit slow compared to other browsers like Chrome and Firefox. It takes more time to load pages and switch between tabs. Additionally, it lacks the luster of a modern browser and is very humble in its appearance. Very few add-ons, extensions, and plugins support add to woes of Explorer as it becomes difficult to customize the browser. Outdated security mechanisms also make it more vulnerable to phishing scams.

Recommendations to others considering the product:

I would recommend internet explorer to anyone who wants a simple yet sturdy browsing experience without being bogged up with unnecessary features. In terms of security, Explorer stands at the top, with various pre-build mechanisms to prevent hackers from snooping into your system.

THE END