

## Ch-1

1

→ Q) "HCI arises in our daily life," explain with appropriate figure.

Ans: Human Computer Interaction (HCI) is the study of how people use computer systems to perform certain tasks.

Some everyday examples of HCI in our daily life:

### 1) Waking Up:

#### a) Alarm Clock:



Fig: Alarm Clock

Alarm clock helps us to wake up to a sound or pleasant tune from HCI design. Simple interfaces and snooze buttons satisfy even the most reluctant risers.

### 2) Commuting:

#### a) Navigation Apps:

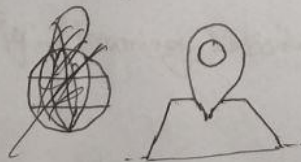


Fig: Navigation

HCI helps us to easy travel using google maps on phones or any ~~ph~~ smart devices. Easy navigation, real-time traffic reports keep us going.

## b) Public Transportation Ticketing : $\Phi$ Mobile

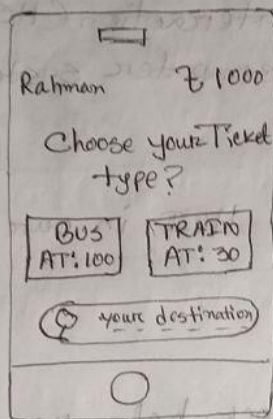


Fig: Mobile Ticketing APP

ticketing applications and touchless payment systems in bus, train and subways are HCI wonders. They make travels easier, cut waiting times and improve travel.

## 3. Work and Education :

### a) Video Conferencing : HCI designed video

conferencing solutions provide global connectivity for colleagues and classmates.



Fig: Video Conferencing





## b) Online Learning Platforms

Everyone may access educational content via online platforms.

Interactive learning, gamified learning, and personalized dashboards

keep students engaged.

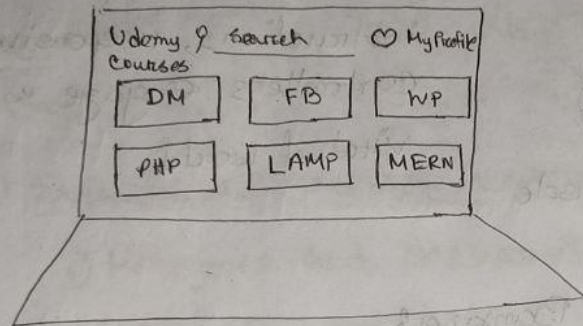


Fig: Online learning platform

## 4) Leisure and Entertainment

### a) Streaming Services

From being watching our favourite shows to discovering new music,

streaming platforms keep us entertained.

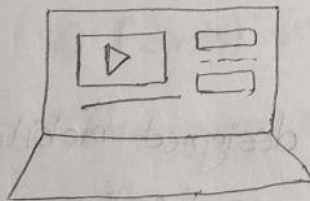
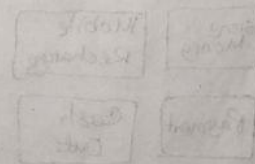


Fig: Streaming Website



### b) Gaming Console:

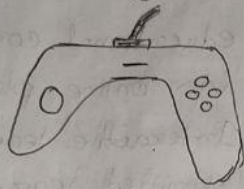


Fig: Gaming Console

HCI creates immersive gameplay. Voice activated instructions, responsive controllers engage us in virtual world.

### b) Shopping and Banking

a) E-commerce websites: User-friendly interfaces, secure payment methods, and fast delivery systems make online purchasing easy.

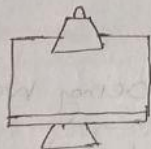
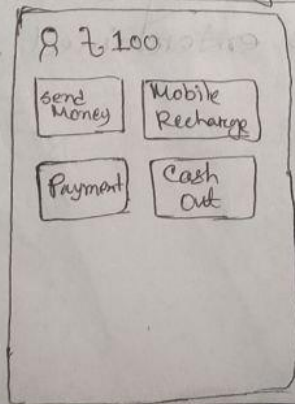


Fig: E-commerce website

### b) Mobile Banking App:



HCI designed mobile banking applications provides financial management on the move. Balances, transfers, and bill payment are only giving financial management.



→ ② "Google's search engine has the largest market share", why? Explain.

Ans: The reasons that why Google's search engine has the largest market share are:

1) Data Acquisition and Analysis:

1) Relevance and Accuracy of Results

2) User friendly Interfaces

3) Advance Search Technology

4) Constant Innovation

5) Comprehensive Indexing

6) Global Reach and Localization

7) Advertising Revenue Model

8) Integration with other services

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→ ② How to achieve "user-friendliness" in computer design? Can you suggest 5 such designs?

Ans: Some ways to achieve "user-friendliness" in computer designs:

- 1) Focus on presenting the information the information and functionalities that users need most.
- 2) Provide clear and intuitive interaction.
- 3) Avoid jargon and technical terms and use inclusive language and visuals.
- 4) Keep informed of evolving trends in technology and user behavior and adapt the design accordingly.

5 such designs that I can suggest:

- 1) Google Search: It's clean interface, familiar layout, and powerful search algorithms deliver a quick and accurate search experience for everyone.



2) Duolingo: This language learning app makes learning entertaining and interesting. Its bite-sized lectures and simple UI engage learners.

3) Spotify: This music streaming service customises music for each user with personalized suggestions, curated playlists and cross-device playing.

4) Figma: This collaborative design tool simplifies creative teamwork with a simple UI and real-time editing.

5) Apple Watch: This smartwatch seamlessly integrates health tracking, notifications and communication features with a simple design.

→ ④ Briefly explain the following HCI goals safety, utility, effectiveness, efficiency, usability and appeal. Is there any difference between utility and effectiveness?

Ans: Explain the HCI goals:

a) Efficiency: A measure of how fast users can finish their work using the system.

Ex: Find a book from library website

b) Usability:

b) Safety: Protecting the user from dangerous conditions and undesirable situations.

c) Utility: Extent of providing the right kind of functionality so that users can do what they need or want to do.

d) Effectiveness: Concern a user's ability to accomplish a desired goal or to carry out work.



e) Usability: Ease of learning and ease of use.

f) Appeal: How well the users like the system.

Yes there is a difference between Utility and Effectiveness.

Criteria	Utility	Effectiveness
Focus	Centered on users satisfaction.	Centered on achieving goals.
Measurement	Measured by subjective factors like preferences, want and needs.	Measured by objective factors like data, results and outcomes.

Q 5) What are the Norman's 7 principles of usability?

Ans:

P.T.O

-Norman's 7 principles are:

- 1) Use both knowledge in the world and knowledge in the head
- 2) Simplify the structure of tasks
- 3) Make things visible
- 4) Get the mappings right
- 5) Exploit the power of constraints, both natural and artificial
- 6) Design for error
- 7) When all else fails, standardise.

→ ⑥ Pull or Push? Which Norman's principle has been used? [Summer 2022, 5 Co]

Ans: From my perspective, Norman's 4th principal used.

4th principal of Norman is,

Get the mappings right.



→ ⑦ What are the activities involved in HCI design? Explain each with flow diagram.

Ans:

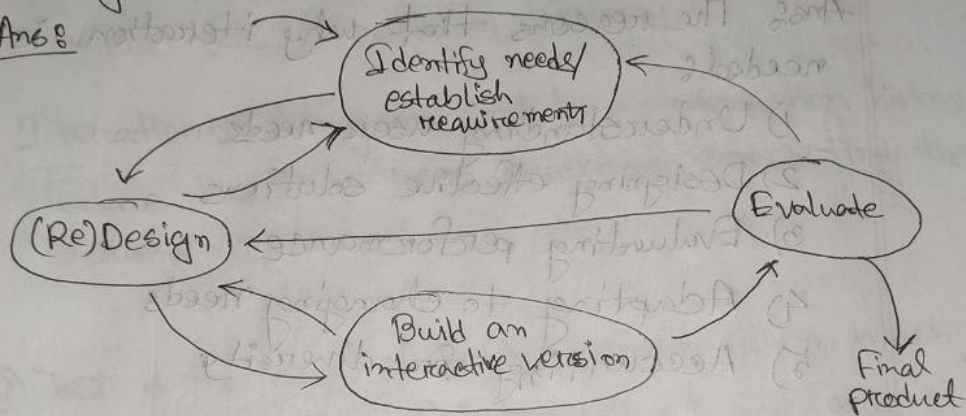


Fig: Activities in HCI design

### Activities in HCI design:

- 1) Identify needs and establish requirements
- 2) Develop alternative designs
- 3) Build interactive prototypes that can be communicated, communicated and assessed.
- 4) Evaluate what is being built throughout the process.

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→ ⑧ "Iteration is needed throughout the UX core activities", why? Give an example.

Ans: The reasons that why iteration is needed:

- 1) Understanding user needs
- 2) Designing effective solutions
- 3) Evaluating performance
- 4) Adapting to changing needs
- 5) Accounting for diversity

Ex: Consider a mobile banking app

Iteration 1: Designers create an initial prototype of the mobile banking app with basic features like account balance check and fund transfer.

Iterative 2: Users provide feedback that they find the fund transfer process ~~confusing~~ and the layout could be more intuitive.

Iteration 3: Designers improving the fund process and refining the layout for better usability.



Iteration 4: Users now find the fund transfer process clearer, but they suggest adding a feature for transaction history.

Iteration 5: Designers include a transaction history feature based on user feedback, completing the iterative cycle.

→ ⑤ "HCI is the study of bridge between them, which includes observation of interactions", give any example and explain it. What else also a part of HCI study?

Ans: The study of bridge between them, which includes,

1) Observation of interactions between people & computers. For example, Find examination papers via our library web.

2) Analysis of the involved interactions. For example, Are all the steps involved are necessary?

3) Human consequences after interacting with

computers. For example, Can the users perform his task? Does he enjoy working with the computer?

Parts of HCI study:

- 1) User Interface Design
- 2) Usability Testing
- 3) User Experience Design
- 4) Accessibility
- 5) Information Architecture
- 6) Human Centered Design

→ ⑩ "Utility affects effectiveness", is it true?

Explain with example?

Ans: Yes, utility affects effectiveness. Some examples are:

1) Kitchen to

2) Transportation:

High utility, high effectiveness: A well-maintained multi-gear bicycle is great for commuting,



fitness, and leisure trips. Its ~~adapt~~ adaptability to diverse terrains and speeds makes it a versatile transportation option.

Low utility, low effectiveness: A automobile with a is far less useful. Unsafe to drive, it cannot be used for transportation until the tyre is fixed.

## 2) Learning Resources:

High Utility, ~~and~~ high effectiveness: An interactive online course with clear explanations, interesting material, and personalized feedback promotes successful learning.

Low Utility, low effectiveness: Modern students find obsolete knowledge, thick writing and no visual illustrations or examples in a textbook useless. It's less entertaining and tougher to understand.

→ (11) Define HCI by ACM, Dix and Carroll. Are all the definitions same? If not differentiate them.

Ans: HCI adopted by:

Association for Computing Machinery (ACM):

"Discipline concerned with the design, evaluation, implementation of interactive computer systems for human use & with the study of major phenomena surrounding them."

Dix: "HCI is study of people, computer technology and the ways these influence each other. We study HCI to determine how we can make this computer technology more usable by people."

Carroll: "HCI is the study and practice of usability. It is about understanding and creating software and other technology that people will want to use, will be able to use, and will find effective when used."



No, all the definitions are not same. The differences are:

ACM	Dix	Carroll
Study of design, evaluation and implementation.	Study of people, computer technology.	Study of usability.
Focus on computing field.	Focus on theoretical and practical foundation.	Focus on design and evaluation.

➔ ② 'Which controls go with which buttons rings?'

[Summer 2022, 6(d)]

Ans: নিচে প্রশ্নটি দেখানো হয়েছে।

→ (13) Use playing a game in face book as an example : - - - -

[Summer 2022, 7th]

Ans: নিজে খেলা করতে হবে।

→ (14) How HCI increases a company's productivity?

Example?

Ans: HCI contribution to increase productivity.

1. User centered Design: Make the process of onboarding straightforward, easy to use and fit to new activities.
2. Task Efficiency: By the help of HCI, employees can perform their tasks very easily.
3. Improved Communication and collaboration: HCI principles can be applied to design software for communication and collaboration, such as video conferencing platforms.



Ex: An HR Management System.

- 1) Design a HR Management System with intuitive design, navigation, clear instructions and reducing manual work.
- 2) Implement a self-service features for leave requests, expense reports.
- 3) Integrate data from different systems to ensure accuracy and eliminate redundancy.
- 4) Design the system with mobile accessibility in mind, allowing employees to manage HR task remotely.

→ (15) "Workers in a maintained need . . . . ."

[Summer 2022, 7(c)]

Ans: নিচের বুলি করতে হবে।