Unit 2 - Understanding the Human & Human Interaction

Input Output Channels.

A computer gives output ⇒ accepted by ⇒ human as an input in the interaction.

A human provides instruction ⇒ recognized as ⇒ input for interaction with computer

ie; users output → computer input.

Senses of human.

① Sight (eye) ———
② Hearing (ear) ——— } important.
③ Haptic (touch) ———
④ Smell (nose)
⑤ Taste

Sight (eye):-
Vision
Visual perception
Perceiving size & depth
Perceiving brightness
Perceiving colors

Hearing:-
Language learning apps
Sound tracks
Screen reader
Voice commands
Button click sounds.

Haptic:-
Touch
Movement

Human Memory.

— Memory is like HDD where we store and retrive information.

Human Memory branches into:

Sensory memory (<1 sec)
(iconic, echoic, haptic)

Short term memory (<1 min)

Long term (lifetime) memory

Long term memory → Explicit memory & Implicit memory

Explicit memory → Declarative memory (knowing that) (facts + event)

Implicit memory → Procedure (skills + habbits) memory
implicit long-term memory
eg involve knowledge of how to ride a bycycle

Declarative memory →

Episode memory
stores info about events
eg. 1st day of college

Semantic memory
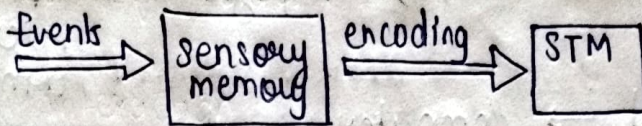stores knowledge about the meaning of words eg Delhi's capital

Sensory Memory :-

holds sensory information for very short periods of time. < 1 sec.

Processing of memories & other info begins in this type of memory.

dur? in sec. Types :-
- (0.5) Iconic - (visual) eg. fireworks
- (3-4) Echoic - (aural) eg. any sound like raindrop
- (<1) Haptic - (touch)

Events ⟹ | Sensory memory | --encoding⟶ | STM |

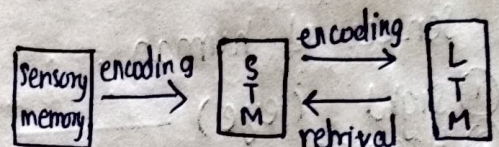# Short Term Memory :-

It is also called as working mem. It allows a person to recall a limited string of info for a short period. < 30 sec.

It is not long lasting

(pattern 1)
eg: 111156294178

1111 5629 4178
(pattern 2)

| Sensory memory | --encoding⟶ | S T M | --encoding⟶ | L T M |
(S T M ⟵ retrival)

eg. remembering a phone no. holds 7 ± 2 items

Long Term Memory :-

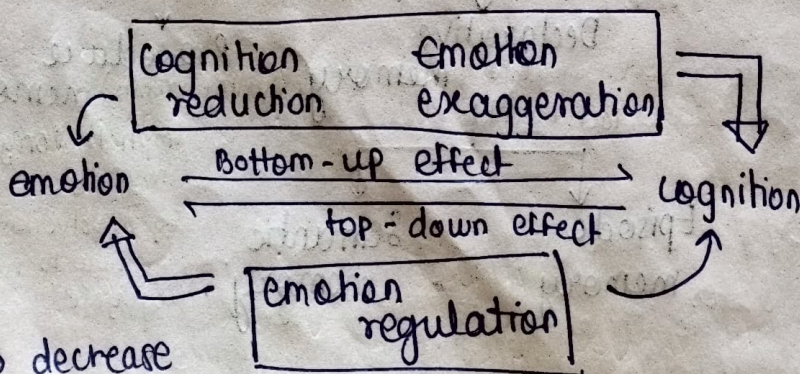It is main storage of information whatever we know by our stimuli, reading, writing, obsr, etc.

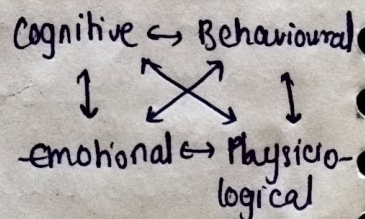unlimited duration. rehersed many times.

Types - explicit, implicit.

	STM	LTM
	< 30 sec	lifelong
storage	7 ± 2	unlimited storage
	temporary working	permanent storage space
retrival	retrival is quick	retrival includes cues
types	no types	2 types
	OTP	IX. no.

Human Emotions :-

According to James Lange theory, emotions are the interpretation of human psychological response. emotion is generated with the help of cognitive & physical events.

| Cognition reduction | Emotion exaggeration |

Bottom-up effect ⟶
⟵ top-down effect

| emotion regulation |

emotion
cognition

Cognitive ⟷ Behavioural
emotional ⟷ Physico-logical

⟹ decrease
⟶ increase

Individual Differences

Every human does not have similar capabilities & limitations, so we make generalized statements for all humans

Long-Term Differences	ST Differences	changing diff.
Gender ... Physical capabilities	stress effect	age.
Intellectual capabilities	fatigue effect	
	Cultural background	learning speed

Psychology & Design   ICS

acts as bridge bet^n user thinking & reasoning capability with technology, which is used to solve a problem.

Goals?   ① Interaction Design   ② Strategic   ③ Creative Activity

for young age group users like students & learners who want to design highly interactive applications, digital product, etc.

Design planning for beginner stage of learners & experts of HCI

for researchers & developers who are interested to create new interface or object.

Human errors

error → anything that violates system, tolerance

① Error of exclusion
the action performed is not required to perform

② Error of instruction
without instruction the action is performed which was to be performed after instruction.

③ Entraneous act:
action performed to prevent system goals

④ sequential error
action is not done in proper sequence

⑤ Time error
too early
too late

Types of errors :—
① slips
② mistaks
③ ~~too~~

Reasons of errors:—
① wrong machine interface
② Bad design
③ Response time
④ Incompetence
⑤ Lack of attention
⑥ Unexpected change

Reduce?
① simple interface   ② Use clear instruction
③ Error prevention feature   ④ Provide immediate feedback

Ergonomics : (PPT)

study of physical characteristics.
focuses on creating user-friendly designs.
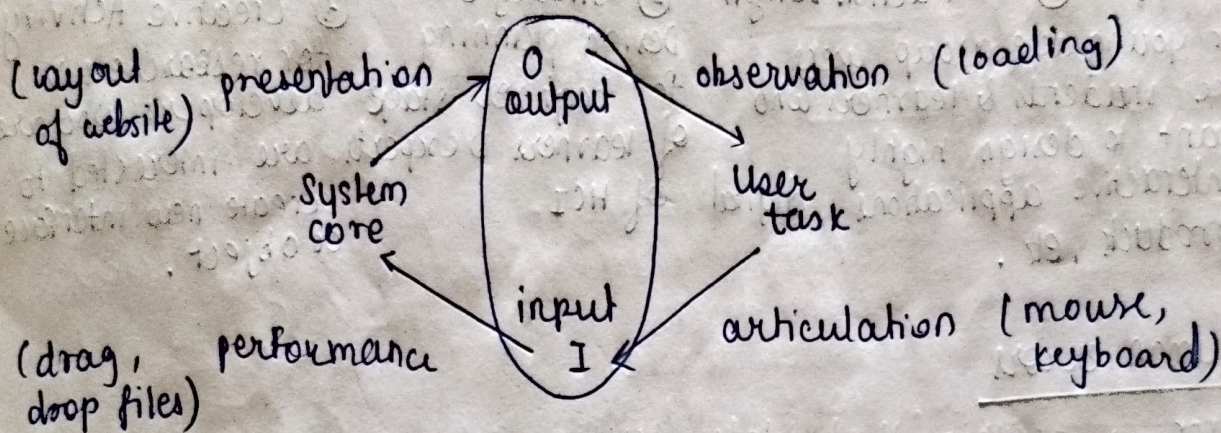eg. in case of arguments of control and displays.
    in case of physical environmental of interaction.
    in case of health issues.
    in case of colors.

Models of Interaction

Interaction framework :

(layout of website) presentation → output → observation (loading)

System core

User task

(drag, doop files) performance → input I → articulation (mouse, keyboard)

Paradigms of interactions

different approches/models for how users interact
with computers & technology.

① Time sharing.

    multiple users share access to computer system
    at samantime. short burst of time

    eg ŕL

② Video Display unit

    screen.
                       T V P D

③ Programming Toolkit
    Collection of software tools & libraries

Eg. Java Swing

④ Personal Computing
designed for individual user
eg. IBM PC

⑤ Window system & WIMP interface.
multiple windows using windows, icon, menu, pointer
eg. macOS

⑥ Direct manipulation
allows user to see effects of their action immediately
Eg. drag, drop, minimize

User Experience

understands the user by fulfilling :-

Useful	Desirable	Accessible	
Usable	findable	Credible	UUACDF

Interaction Styles

① Command line interface → typing text command lines to command prompt.
-dir, ls

② menus

③ NL → voice, chatbot, Virtual Assistance

④ Question answer & Query dialog → chatbot

⑤ form. filling & spreadsheet

⑥ Point & click

⑦ 3D effect

⑧ WIMP