

Q#1: What is Memory System?

It is said that a goldfish has a memory that lasts only three seconds. Imagine this were true of you: everything would be new and fresh every three seconds. Of course, it would be impossible to live or function as a human being.

Without the capacity to remember and to learn, it is difficult to imagine what life would be like, whether it could be called living at all. Without memory, we would be servants of the moment, with nothing but our innate reflexes to help us deal with the world.

Memory is not simple information store but has a complex structure.

Latest research says memory has the following components

- Sensory Stores
- Short Term Memory (Working Memory)
- Long Term Memory

Sensory stores:

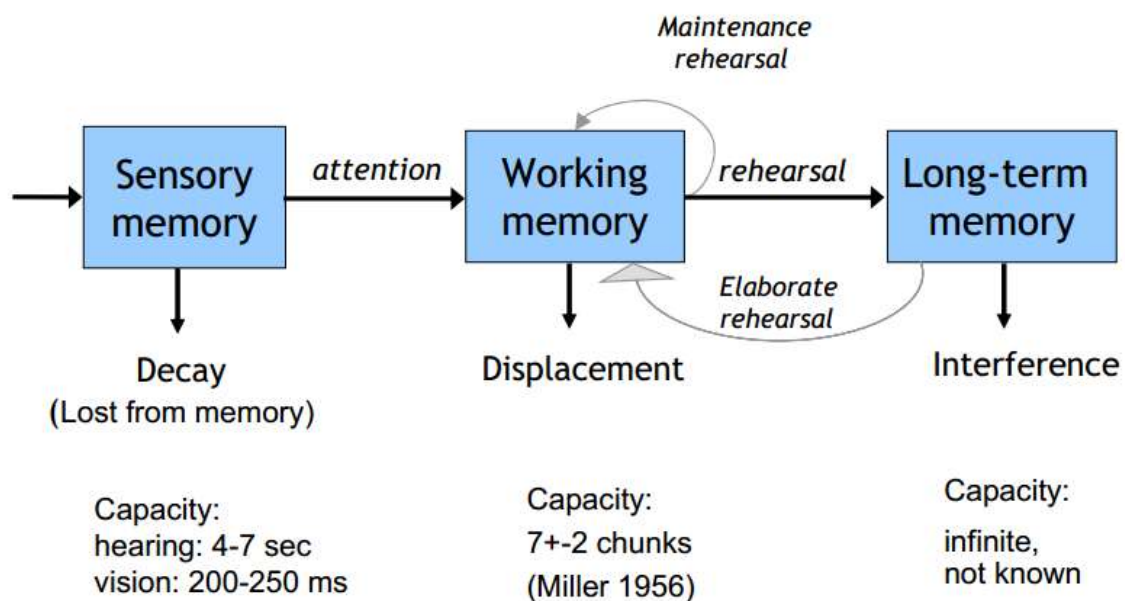
- Visual store, auditory store, etc.
- Each hold information very briefly.
- Is limited to one sensory modality.

Working memory:

- Very limited capacity.

Long-term memory:

- It is essentially unlimited capacity.
- And can hold information over extremely long periods of time.



Q#2: Explain Short term Memory and long-term memory?

Short term Memory:

Information is passed from sensory memory into short-term memory by attention and it is also called 'working memory'. Working memory has limited space and things decay out of it and the items can also be displaced. In order to retain items we rehearse them.

Example:

- Now look at the following number
0092 51 2289920
- If you can remember between 5 to 9 digits your memory is average
- Chunking can increase the information you can remember
- Also meaning increases memory

Long-term memory:

Long-term memory refers to the storage of information over an extended period. If you can remember something that happened more than just a few moments ago, whether it occurred just hours ago or decades earlier, then it is a long-term memory

- slow access – relative to STM
- slowly created – rehearsal
- slow decay, if any
- huge or unlimited capacity

Q#3: What is Attention? And what are the factors affecting attention?

“The concentration of mental effort on sensory or mental events”

Attention is very important for many human activities and failures in attention cause accidents and drive car or bike while using mobile phones and control room operators not knowing which instrument to attend to.

In order to make good design we need to understand the capabilities and limitations of attention.

Selective (or focused) attention generally refers to whether or not we become aware of sensory information. Focused attention is selecting one input over another.

Divided Attention:

Mental resources are divided between while multi-tasking and the performance of two simultaneously executed tasks would be poorer than attending to just one at a time.

- Watching TV and talking to a person
- Talking on phone and driving a car
- Driving a car while talking

Factors Affecting Attention

- Stress
- Vigilance
- Mental Workload
- Visual Search

Stress:

Most critical factor affecting our level of arousal while Arousal means how awake we are.

Stress can be due to external stimuli such as noise, turbulence, bright lights etc. Stress can also be psychological such as anxiety, fatigue, danger, threat or lack of sleep

Vigilance:

Vigilance is a term applied to the execution of a task wherein an individual is required to monitor an instrument or situation for a signal if you are on a pirate ship imagine you are the look out

- Ships you can raid
- Signs of dangers such as rocks or icebergs
- It's a boring job being alone in the middle of the night staring at water

What does it have to do with HCI?

If you are designing a system where an operator may have to monitor something you have to ensure that important things draw his attention. Such as warning signal that a reactor is overheating and on the other hand you have to also ensure that less important or less urgent information doesn't draw attention away from critical things.