Experiment No.: 07

Aim: Analyze the given Case study: How Turing test is performed between Responder and an Interrogator?

Course Outcome: Apply method for knowledge representation to make informed decisions for various applications.

Theory:
The Turing Test is one of the most well-known and debated concepts in artificial intelligence (AI). It was proposed by the British mathematician and computer scientist Alan Turing in 1950 in his seminal paper, "Computing Machinery and Intelligence." He proposed that the "Turing test is used to determine whether or not a computer(machine) can think intelligently like humans"?

The article aims to provide a comprehensive overview of the Turing Test, discussing its historical context, significance, controversies, and current status in the field of AI.

What is the Turing Test?
The Turing Test is a widely recognized benchmark for evaluating a machine's ability to demonstrate human-like intelligence. The core idea is simple: A human judge engages in a text-based conversation with both a human and a machine. The judge's task is to determine which participant is human and which is the machine. If the judge is unable to distinguish between the human and the machine based solely on the conversation, the machine is said to have passed the Turing Test.

Criteria for the Turing Test:
The Turing Test does not require the machine to be correct or logical in its responses but rather to be convincing in simulating human conversation. The test is fundamentally about deception—the machine must fool the judge into believing that it is human.

The key criteria include the following for turing test:

Natural Language Processing (NLP): The machine must understand and generate human language fluently.
Knowledge Representation: The machine needs to handle and manipulate knowledge to provide contextually relevant responses.
Reasoning: The machine should demonstrate some form of logical reasoning, even if flawed, to sustain a conversation.
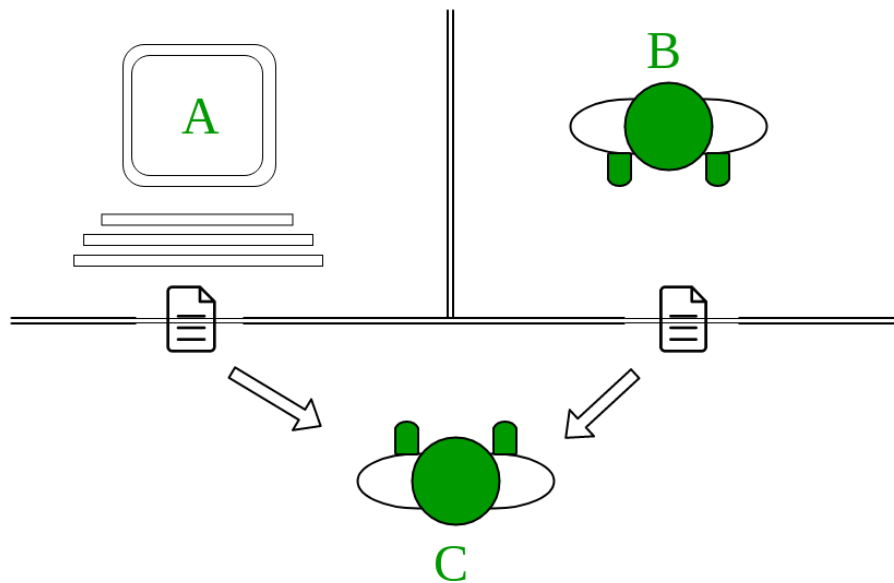Learning: Ideally, the machine should learn from the interaction, adapting its responses over time.
How the Turing Test Works?
In a typical Turing Test scenario, three participants are involved: two humans and one machine.

The interrogator, a human judge, is isolated from the other two participants. The judge asks questions to both the human and the machine, aiming to identify which one is the human. The

machine's goal is to respond in a way that makes it indistinguishable from the human participant. If the judge cannot reliably identify the machine, the machine is considered to have passed the Turing Test.

Here's an example of a conversation between the interrogator and the machine:

Judge: Are you a computer?
Machine: No.
Judge: Multiply 158745887 by 56755647.
Machine: (After a long pause) [Provides an incorrect answer].
Judge: Add 5,478,012 and 4,563,145.
Machine: (Pauses for 20 seconds and then responds) 10,041,157.
If the judge cannot distinguish between the responses of the human and the machine, the machine passes the test. The conversation is limited to a text-only format, such as a computer keyboard and screen, to prevent the judge from being influenced by any non-verbal cues.

Conclusion:
I have successfully analyzed the Turing Test case study and understood the theoretical interaction between the Responder and the Interrogator.