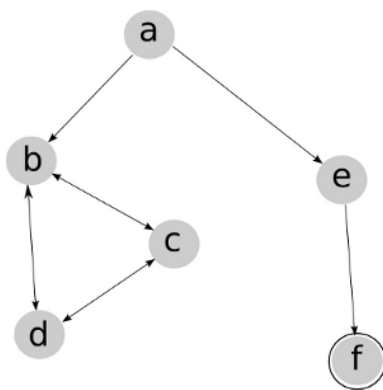


**Lab2: AI & ML 25/08/2021:** Send your response as pdf file. The name of the file should be your roll no. only . for save it as *Ex: 106119001.pdf*

Do not save filename as 106119001 AI MLWeek2.pdf or 106119001\_XXX.pdf like that.

Answer the following questions:

1. What is meant by search algorithm completeness?
2. What is meant by search algorithm optimality?
3. What are the advantages of BFS over DFS?
4. What is the advantage of DFS over BFS?
5. Consider the search problem represented in the following figure, where a is the start node and f is the goal node. Would you prefer DFS or BFS for this problem? Why? Which sequences of paths are explored by BFS and DFS in this problem?



#### 6. Exercise - Chat Bots

One of the first AI programs that attracted the attention of a wider audience was a program called Eliza, developed by Joseph Weizenbaum in the sixties. Eliza was modeled after a technique used in psychotherapy where the therapist asks the clients questions by referring to keywords mentioned by the patient. While nowadays hardly anybody would be fooled by Eliza into thinking that the program "understands" them, at the time, some people developed strong emotional attachments to it, and a few people went so far as to claim that programs like Eliza could replace therapists under certain circumstances. In the meantime, many programs that are much more sophisticated than Eliza have been developed, and quite a few of them are available on the World Wide Web, or in chatrooms.

They are frequently called "chat bots", "chatterbots", or "chatterboxes". The links below point to information about chat bots. A Web search can easily lead you to many more pointers. Popular chat bots. Some of the chatbots are:

- [ELIZA](#) - the "grandmother" of all chat bots
- [ALICE](#) - winner of the 2000, 2001 and 2004 Loebner prize
- [Jabberwock](#) - winner of the 2003 Loebner prize
- [Cleverbot](#) - "crowd sourcing" bot, learns from all users
- [Elbot](#) - winner of the 2008 Loebner prize
- [Chip Vivant](#) - winner of the 2012 Loebner prize

- [Mitsuku](#) - winner of the 2013 Loebner prize
- [Jack the ripper](#) - chat bot with a murderer's personality

- In this exercise, your task is to evaluate three of these chat bots with respect to at least five criteria for intelligence. For each aspect, briefly describe why you believe that the chat bot does or does not exhibit relevant traits. At the end, describe your overall impression of the chat bot, and how "intelligent" it appears.

## 7. Exercise - Recommendation Engines

Many Web sites these days incorporate capabilities that make suggestions or recommendations to users. Examples of such recommendation engines can be found on Amazon.com, Netflix, YouTube, and many others. Many of them rely on knowledge about your explicitly stated or observed preferences (products you've bought, or movies you've watched) and correlate that to information they have about other users. This works fine reasonably often, but also may lead to irrelevant or undesirable suggestions. Another approach is to identify products that are frequently bought together, and use that as the basis for suggestions.

Your task for this exercise is to explore the suggestions offered to you by a recommendation engine. Try to determine how the Web site came up with the recommendations it presented to you, and try to identify three to five methods the site may use. Frequently they are a bit guarded about this, but at least for the more popular ones, you may be able to find discussions with factual information or speculation about such methods. Please submit your answers in this format as the table below for this exercise

Method	Product's use of the method	Evidence
1		
2		
3		
4		
5		
<b>Summary</b>		