**INTRODUCTION TO ARTIFICIAL INTELLIGENCE COM526**

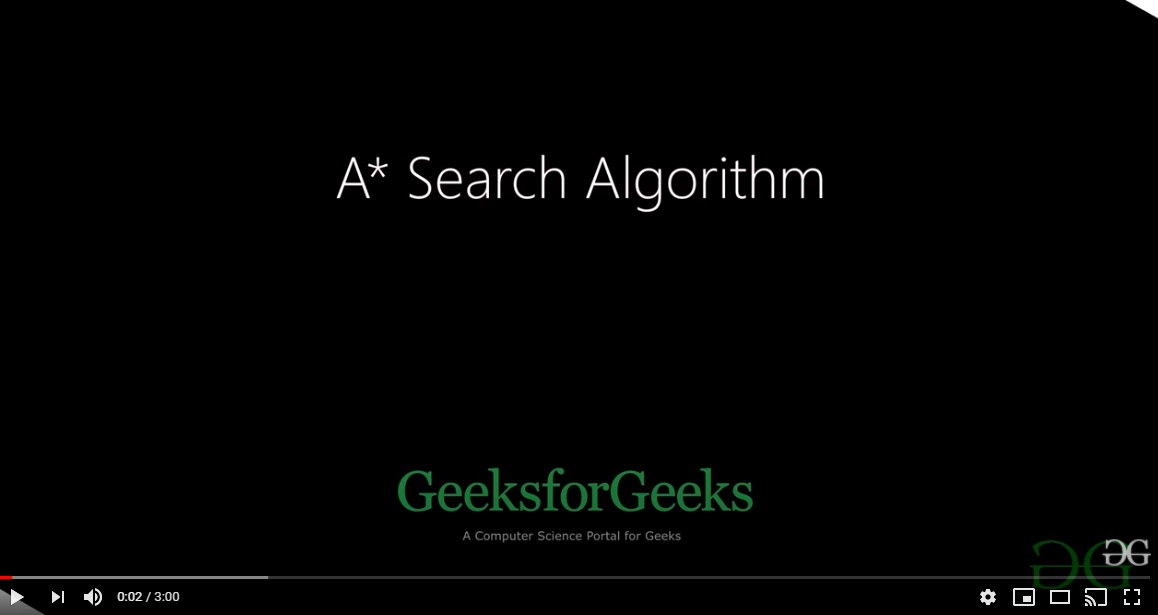
**WEEK 3 ACTIVITIES**

Note: You will need to combine **Week 1 to Week 5** activities in a portfolio to be submitted as one document for your AE1 assessment. Please insert the number of words for each section. Feel free to be creative and support your answers by adding diagrams, your own drawings, smart charts etc, where appropriate.

The answers to the following tasks must be included in the logbook.

1. What are search algorithms and why are they important in the field of AI? Provide some examples where they could be beneficial.
2. Watch the video A\* Search Algorithm on YouTube:

[**https://www.youtube.com/watch?v=vP5TkF0xJgI**](https://www.youtube.com/watch?v=vP5TkF0xJgI)



**(Screenshot of video)**

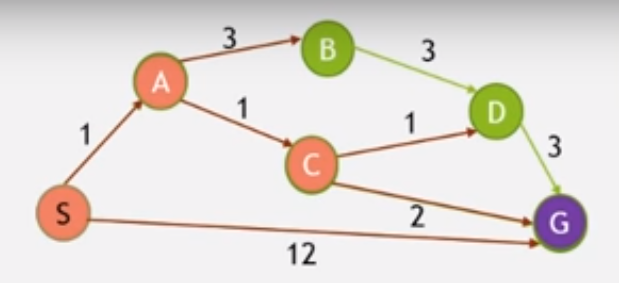
This video is only 3 minutes long, but feel free to pause and watch couple of times until you understand the concept of A\* Search algorithm. Have a pen and paper ready as it will be easier to draw any diagrams.

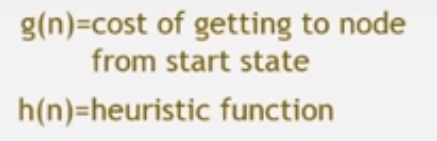
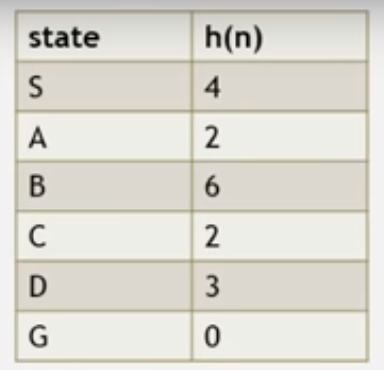
1. In a short paragraph, describe what A\* (star) search means (try to use terms such as nodes, goal, cost (least distance, shortest time) and heuristics).
2. Find the best path for the following problem.

You need to find the shortest path between S and G by performing the A\* Algorithm on the following figure. You should follow the same approach as in the video or lecture notes and show your calculations/diagrams. Explicitly write down the queue at each step.

S: Start

G: Goal



**Best path:**

**Total cost:**