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## **Write code for A\* Algorithm**

A\* (A-star) algorithm is one of the **most powerful and efficient pathfinding algorithms**.  
 It is used when you want to find the **shortest possible path** from a **start point** to a **goal point**, while avoiding obstacles.

### **Real-life examples:**

* GPS Navigation → finds shortest route between two locations.
* Video Games → helps characters move intelligently without bumping into walls.
* Robotics → robots use it to plan efficient movement paths.
* Networking → can help find least-cost paths for data transmission.

## **How A\* Works**

A\* tries to find the least-cost path by considering two things for every node:

1. **g(n)** = the cost to reach the node from the start.
2. **h(n)** = the estimated cost (heuristic) from that node to the goal.
3. **f(n) = g(n) + h(n)** = total estimated cost.  
   