1.

PEAS description:

Playing Soccer:

Performance measure: scoring goals, winning the game, no fouls

Environment: Soccer field

Actuators: robotic limbs

Sensors: Cameras, Microphones

Knitting a Sweater:

Performance: finishing the piece, time, quality, the fit

Environment: Indoors, in the living room, no specific place

Actuators: Knitting needles, wool, or other type of yarn

Sensors: cameras, haptic sensors

Shopping for used AI books:

Performance measure: quality of the books, low price, importance of the books on the topic of AI

Environment: the web, Ebay, or other websites for used books

Actuators: Computer, Screen, keyboard

Sensors: cameras

Bidding on an item at an auction:

Performance measure: getting the item, low price, outbidding the others, not exceeding the price limit.

Environment: Auction hall, if on the internet then eBay for example

Actuators: raising your biding shield or hand

Sensors: Camera, microphone, speakers

	Playing Soccer	Knitting a Sweater	Shopping for used AI books.	Bidding on an item at an auction
Observable	Yes	Yes	No	Partly
Deterministic	No	Yes	No	No
Episodic	No	No	Yes	Yes
Static	No	Yes	Yes	No
Discrete	No	Yes	Yes	No
Single-Agent	No	Yes	Yes	No

2.

A)

initial State: Five locked boxes

States: state changes whenever the next box opened

Goal test: Do I have the banana? Yes, then stop if not continue.

Path cost: One for every move

B)

Initial State: ABABAECCEC

States: AC = E, AB = BC, BB = E and Ex = x for any x

Goal test: is the sequence “E”? Yes, then stop if not continue.

Path cost: one for every configuration

C)

Initial State: n * n grid of squares which are either unpainted floor or bottomless pit.

States: grid changes for every painted floor

Goal test: Is the whole floor painted? Yes, then stop if not continue.

Path cost: 2 for every painted floor and jumping to adjacent unpainted floor and 1 for only jumping to the adjacent unpainted floor.

D)

Initial State: Fully loaded container ship.

States: number of containers on the dock

Goal test: Is the boat empty? Yes, then stop if not continue.

Path cost: one for picking up a container and one for unloading it onto the dock (2 for every move)

E)

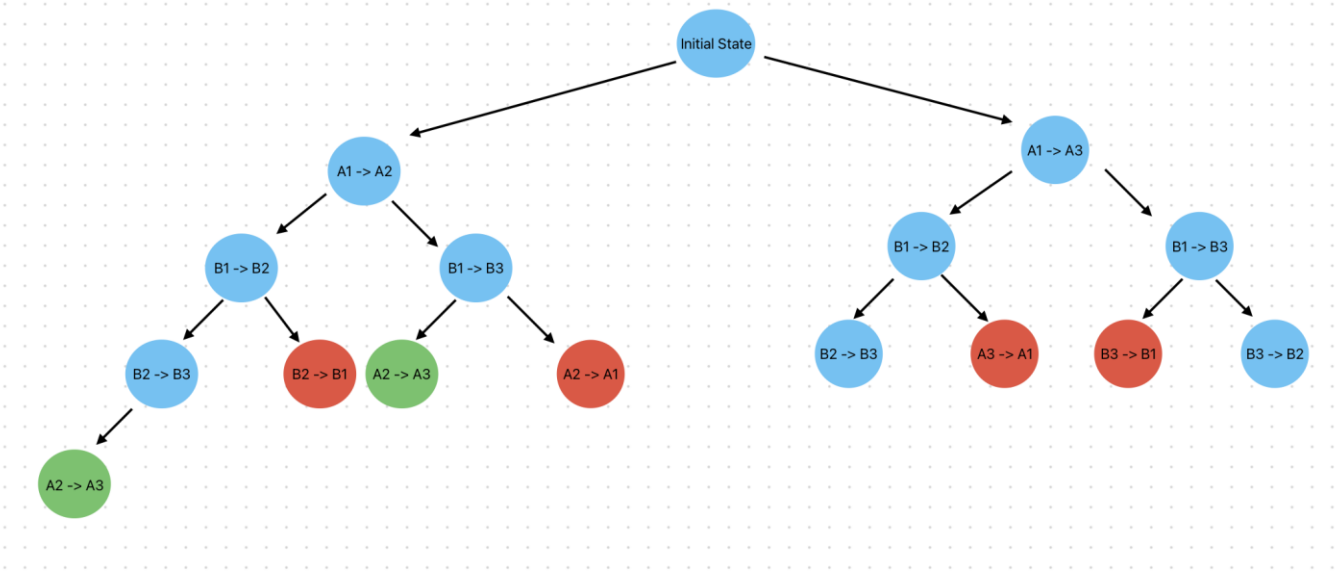
Initial state: Two friends in different cities

States:

Goal test: Is it the fasted route? Yes, then stop if not continue.

Path cost: 1 for every turn?

3.



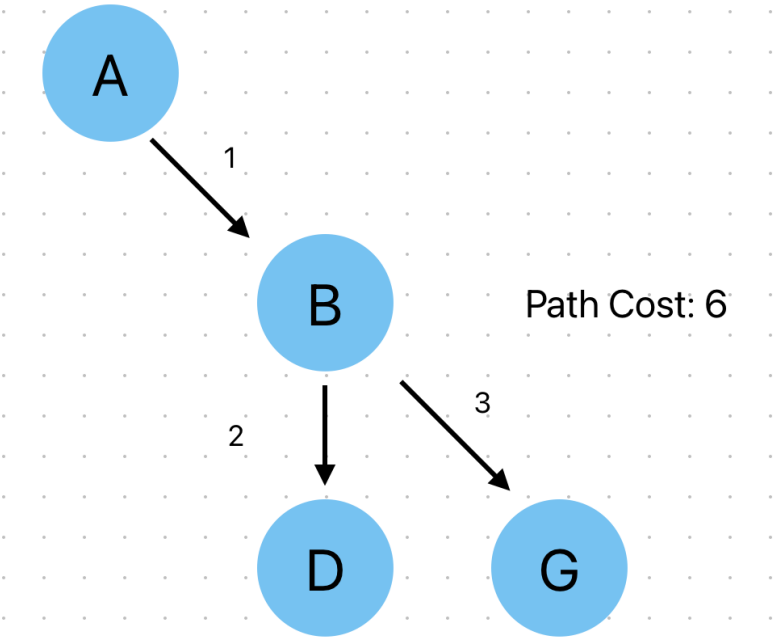
It does not make sense to use DFS if we only have 2 containers in the problem, because we will not get the best (or cheapest) solution with DFS but with BFS. If we would have 10 or more containers in the problem, then it would make sense to use DFS because we will get a solution much faster than with BFS.

4.

18	17	16	15	14	13	12	11
19	20	21	22	23	24	25	10
		30 g	29	28	27	26	9
							8
		2	1&3	4	5	6	7
			s				

5.

a)



b)