

Unit 3 - Week 1

Course outline

How does an NPTEL online course work?

Practice Assignment

Week 1

- Lecture 1.1: Introduction to Systems Thinking
- Lecture 1.2: Systems Thinking and System Dynamics
- Lecture 2.1: Causal Loop Diagram (CLD)
- Lecture 2.2: Guidelines to build CLD-I
- Lecture 2.3: Guidelines to build CLD-II
- Lecture 3.1: Guidelines to build CLD-III
- Lecture 3.2: Examples of CLD
- Quiz : Assignment 01**
- Study Material for Week 1
- Download Videos
- Weekly Feedback
- Assignment 01 - Detailed Solution

Week 2

Week 3

Week 4

Week 5

Week 6

Week 7

Week 8

Text Transcripts

Assignment 01

The due date for submitting this assignment has passed. **Due on 2020-02-12, 23:59 IST.**
 As per our records you have not submitted this assignment.

Assignment 01 1 point

1) Consider the causal link $Y \rightarrow X$. Suppose you observed the values of X and Y as follows:

X	4	2	1	0.5
Y	0.25	0.5	1	2

As per the data, the causal link $Y \rightarrow X$ should have the polarity as

+
 -
 x
 /

No, the answer is incorrect.
 Score: 0
 Accepted Answers: -

2) Since 1950s, the atmospheric CO2 levels have increased, and the crime rate has also increased. We can represent this as a causal link as shown in figure. Choose the correct answer. 1 point



Figure 1

The given causal link correctly captures the description given.
 The given causal link is incorrect as it captures correlation and not causation.
 The given causal link is incorrect as the intermediate links are not explicit
 The given causal link is incorrect as the feedback from "crime rate" to "atmospheric CO2" is not modeled.

No, the answer is incorrect.
 Score: 0
 Accepted Answers: The given causal link is incorrect as it captures correlation and not causation.

3) The following CLD shows the interaction between cattle and the fields they graze. The polarity of two causal links 'a' and 'b' are not mentioned in figure below. Select the correct statement. 1 point



Figure 2

Link 'a' is + (plus) and link 'b' is - (minus)
 Link 'a' is + (plus) and link 'b' is + (plus)
 Link 'a' is - (minus) and link 'b' is - (minus)
 Link 'a' is - (minus) and link 'b' is + (plus)

No, the answer is incorrect.
 Score: 0
 Accepted Answers: Link 'a' is - (minus) and link 'b' is + (plus)

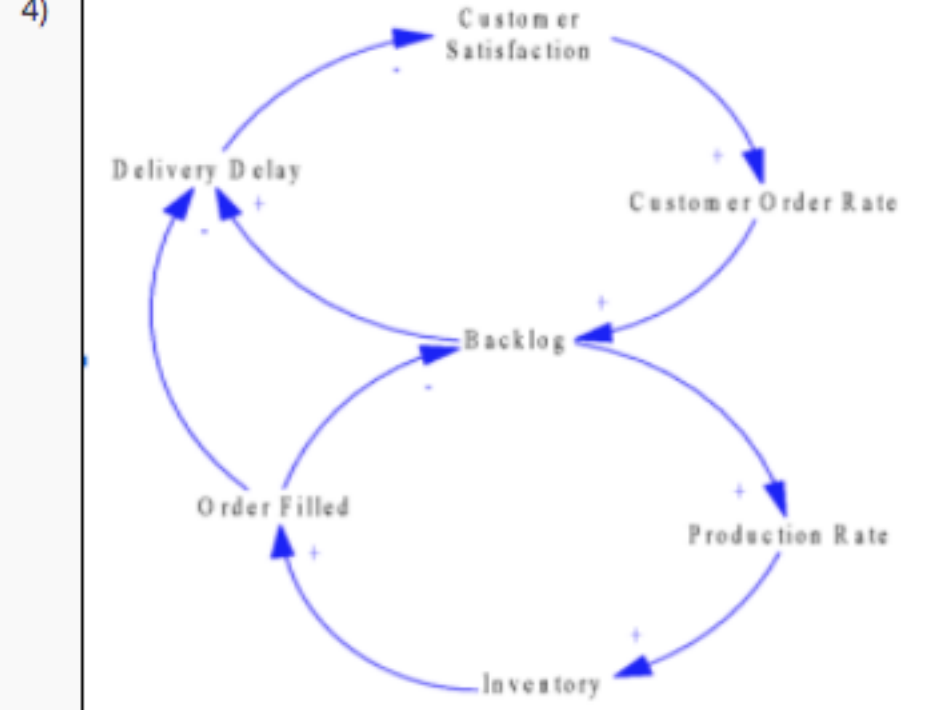


Figure 3

The number of balancing or negative feedback loops (given in Figure 3) Causal Loop Diagram are:

Hint

No, the answer is incorrect.
 Score: 0
 Accepted Answers: (Type: Numeric) 2 1 point

5) The number of reinforcing or positive feedback loops (given in Figure 3) Causal Loop Diagram are:

Hint

No, the answer is incorrect.
 Score: 0
 Accepted Answers: (Type: Numeric) 1 1 point

6) Suppose we want to build a valid causal loop diagram for the below given scenario. Select all the valid variable names we could use in the CLD model. 1 point

Scenario:

"The engineers compare the backlog of work remaining to be done against the time remaining before the deadline. The larger the gap, the more schedule pressure they feel. When schedule pressure builds up, engineers have several choices. First, they can work overtime. By working overtime, they increase the rate at which they complete their tasks, cut the backlog of work, and relieve the schedule pressure. However, if the workweek stays too high too long, fatigue sets in and productivity suffers. As productivity falls, the task completion rate drops, which increases schedule pressure and leads to still longer hours."

Engineers
 Backlog of work
 Productivity
 Increase in schedule pressure

No, the answer is incorrect.
 Score: 0
 Accepted Answers: Backlog of work, Productivity

7) Consider a supermarket store. In the graph given, the blue line shows the number of people entering the supermarket, and the orange line shows the number of people leaving the supermarket, over a 20-minute interval. Assume the initial people at the supermarket is 10.

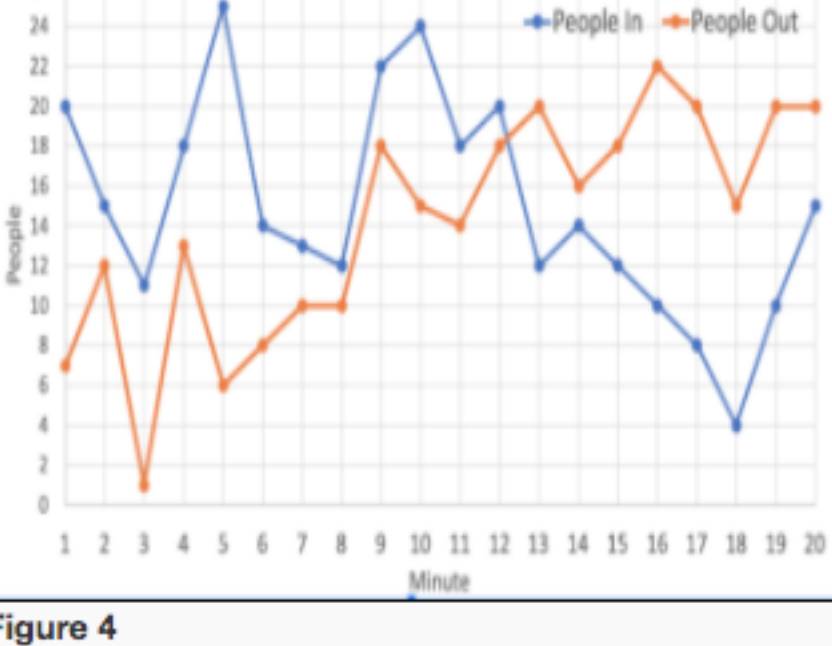


Figure 4

(Refer Figure 4) In which minute were there the most people in the supermarket?

Hint

No, the answer is incorrect.
 Score: 0
 Accepted Answers: (Type: Numeric) 16 1 point

8) (Refer Figure 4) In which minute were there the most people in the supermarket?

Hint

No, the answer is incorrect.
 Score: 0
 Accepted Answers: (Type: Numeric) 12 0 points

9) (Refer Figure 4) At minute 2, the number of people in the store is:

Hint

No, the answer is incorrect.
 Score: 0
 Accepted Answers: (Type: Numeric) 26 1 point

10) Select the CLD that most accurately captures the following scenario. 1 point

Scenario:

"A mining company extracts and processes ores before marketing. When the market price of the processed ore is high, the company tries to extract more ore. However, as the amount of unexploited ore reduces, the cost of extraction goes up, adversely affecting the extraction rate. When more ore is extracted and made available to the market after processing, the price of the ore comes down."

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No, the answer is incorrect.
 Score: 0
 Accepted Answers: