Assignment 8

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

Due on 2020-03-25, 23:58 IST.

1) Which of the following shift spaces is/are strongly transitive?
   (For means closure and 0* means 000...000 n-times.)
   - Yes, the answer is incorrect.
   - Accepted Answers:
     \[ X_1 = \{010\}^{\mathbb{Z}} \]
     \[ X_2 = \{010\}^{\mathbb{Z}} \]
     \[ X_3 = \{010\}^{\mathbb{Z}} \]

2) Which of the following shift spaces is/are strongly transitive but not weakly transitive?
   (For means closure and 0* means 000...000 n-times.)
   - Yes, the answer is incorrect.
   - Accepted Answers:
     \[ X_1 = \{010\}^{\mathbb{Z}} \]
     \[ X_2 = \{010\}^{\mathbb{Z}} \]
     \[ X_3 = \{010\}^{\mathbb{Z}} \]

3) Which of the following statements is/are true?
   - Yes, the answer is incorrect.
   - Accepted Answers:
     \[ \text{Every strongly transitive system is strongly mixing.} \]

4) Which of the following maps is/are the factor of the two shift \([0,1]^3, \sigma) ?
   - Yes, the answer is incorrect.
   - Accepted Answers:
     \[ f(x) = \begin{cases} 2x & \text{if } 0 \leq x \leq \frac{1}{2} \\ 2x-1 & \text{if } \frac{1}{2} < x \leq 1 \end{cases} \]

5) Which of the following maps is/are true in a shift space?
   - Yes, the answer is incorrect.
   - Accepted Answers:
     \[ X_{2,3} = X_2 \cup X_3 \]
     \[ X_{2,3} = X_2 \cap X_3 \]

6) Which of the following maps is/are a sub-shift of finite type?
   - Yes, the answer is incorrect.
   - Accepted Answers:
     \[ \text{The alphabet set is } \{0,1\} \text{ and } F = \{01^n : 1 \leq n \leq L \text{ for some fixed natural number} L \} \]

7) Let \( L(X) \) be the language of a shift space \((X, \sigma)\). Which of the following is/are true?
   - Yes, the answer is incorrect.
   - Accepted Answers:
     \[ L(X) \text{ is the union of allowed blocks of every length.} \]
     \[ L(X) \text{ contains all the sub-blocks of a given block } w \text{ from } L(X) \]