



MITx: 6.041x Introduction to Probability - The Science of Uncertainty



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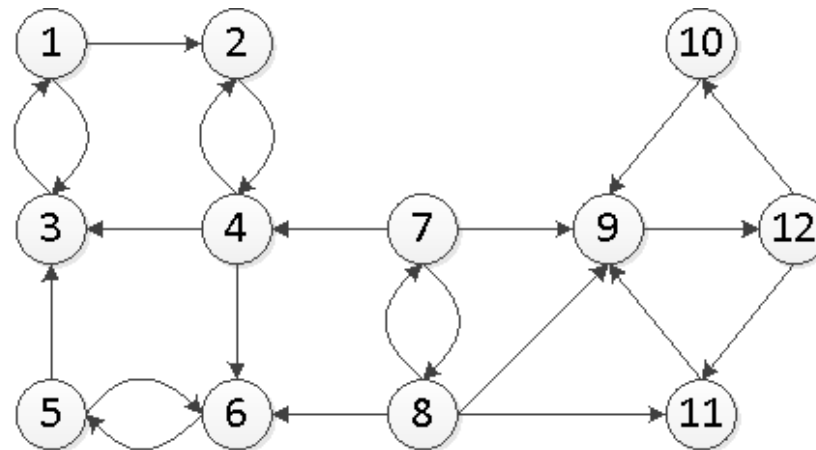
Bookmark

Unit 10: Markov chains > Lec. 25: Steady-state behavior of Markov chains > Lec 25 Steady-state behavior of Markov chains vertical1

Exercise: Periodic states

(4/4 points)

Consider a Markov chain with the following transition probability graph:



1. How many recurrent classes are there?

2 ▼




Answer: 2

2. How many periodic recurrent classes are there?


- ▶ Unit 6: Further topics on random variables
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- ▼ **Unit 10: Markov chains**

Unit overview

Lec. 24: Finite-state Markov chains

Exercises 24 due May 18, 2016
at 23:59 UTC 

Lec. 25: Steady-state behavior of Markov chains

Exercises 25 due May 18, 2016
at 23:59 UTC 

**Answer: 2**

3. What is the smallest period among these?

**Answer: 2**


4. What is the largest period among these?

**Answer: 3**

Answer:


1. There are two recurrent classes: $\{1, 2, 3, 4, 5, 6\}$ and $\{9, 10, 11, 12\}$.
2. Both of the recurrent classes are periodic.
3. The recurrent class $\{1, 2, 3, 4, 5, 6\}$ has a period of 2. In the figure below, the state within this recurrent class alternates between a red state and a blue state.
4. The recurrent class $\{9, 10, 11, 12\}$ has a period of 3. In the figure below, the state within this recurrent class cycles from a purple state, to a yellow state, to a green state, and back to a purple state.

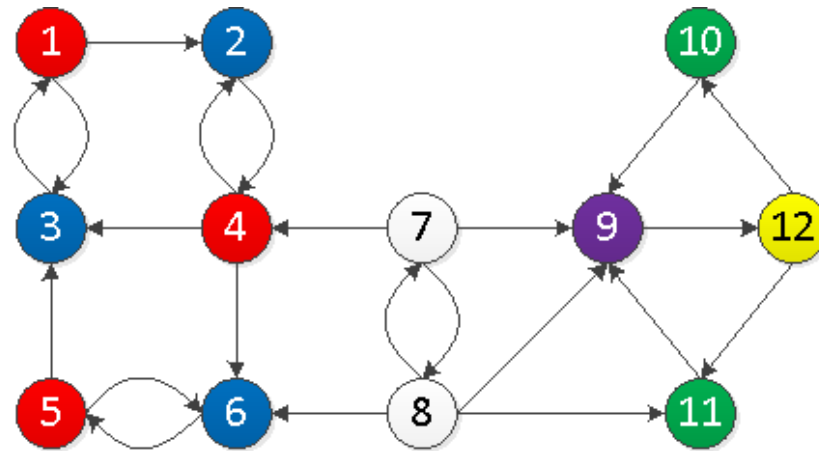
Lec. 26: Absorption probabilities and expected time to absorption

Exercises 26 due May 18, 2016 at 23:59 UTC 

Solved problems

Problem Set 10

Problem Set 10 due May 18, 2016 at 23:59 UTC 



You have used 1 of 2 submissions

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