

<https://swayam.gov.in>[https://swayam.gov.in/nc\\_details/NPTEL](https://swayam.gov.in/nc_details/NPTEL)

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NPTEL (<https://swayam.gov.in/explorer?ncCode=NPTEL>) » The Joy of Computing using Python (course)Course  
outlineAbout  
NPTEL ()How does an  
NPTEL  
online  
course  
work? ()

Week 0 ()

Week 1 ()

Week 2 ()

Week 3 ()

week 4 ()

Week 5 ()

Week 6 ()

Week 7 ()

Week 8 ()

Week 9 ()

## Week 12: Assignment 12

Your last recorded submission was on 2024-10-06, 00:24 Due date: 2024-10-16, 23:59 IST.  
IST

1) What is the key operation performed when the number  $n$  in the Collatz Conjecture is **1 point** even?

- ☐ Add 1
- ☐ Multiply by 3 and add 1
- ☒ Divide by 2
- ☐ Subtract 1

2) What happens to an odd number  $n$  in the Collatz Conjecture sequence?

**1 point**

- ☐ It is divided by 2
- ☐ It remains unchanged
- ☒ It is replaced by  $n \times 3 + 1$
- ☐ It is replaced by  $n - 1$

3) What is the ultimate goal of the Collatz Conjecture sequence?

**1 point**

- ☐ Reach the number 0
- ☐ Return to the starting number
- ☒ Reach the number 1
- ☐ Cycle through odd numbers

4) Which of the following best describes the Collatz Conjecture?

**1 point**

- ☐ It has been proven for all natural numbers
- ☒ It remains an unsolved problem in mathematics

## Week 10 ()

## Week 11 ()

## Week 12 ()

● Page Rank -  
How does  
Google Work ?  
- Part 01 (unit?  
unit=245&less  
on=246)

● Page Rank -  
How does  
Google Work ?  
- Part 02 (unit?  
unit=245&less  
on=247)

● Page Rank -  
How does  
Google Work ?  
- Part 03 (unit?  
unit=245&less  
on=248)

● Page Rank -  
How does  
Google Work ?  
- Part 04 (unit?  
unit=245&less  
on=249)

● Page Rank -  
How does  
Google Work ?  
- Part 05 (unit?  
unit=245&less  
on=250)

● Page Rank -  
How does  
Google Work ?  
- Part 06 (unit?  
unit=245&less  
on=251)

● Page Rank -  
How does  
Google Work ?  
- Part 07 (unit?  
unit=245&less  
on=252)

○ Page Rank -  
How does  
Google Work ?

- ☐ It is a trivial problem with a simple solution
- ☐ It only applies to prime numbers

5) What is the main idea behind the PageRank algorithm used by Google?

1 point

- ☐ Count the number of keywords on a page
- ☒ Rank pages based on random walks on a graph of web links
- ☐ Rank pages based on user reviews
- ☐ Rank pages alphabetically

6) In PageRank, what happens when a page has a higher number of inbound links from other important pages?

1 point

- ☐ Its rank decreases due to the load on the server
- ☒ Its rank increases
- ☐ Its rank remains unchanged
- ☐ It is marked as a less relevant page

7) Which technique is used in the PageRank algorithm to determine the rank of a web page?

1 point

- ☐ Depth-first search
- ☐ Hyperlink analysis
- ☒ Random walk simulation
- ☐ Data scraping

8) PageRank relies heavily on the structure of the:

1 point

- ☐ Web page content
- ☒ Hyperlink network between web pages
- ☐ User interaction data
- ☐ Server location

9) PageRank was developed primarily to solve which problem?

1 point

- ☐ Calculating the shortest path in a network
- ☒ Ranking the importance of web pages on the internet
- ☐ Counting the total number of web pages
- ☐ Reducing the size of search engine databases

10) For which values between 200 and 3000 does the Collatz Conjecture not converge to 1?

1 point

- ☐ 2498.0
- ☐ 1576.0
- ☐ 2789.0
- ☒ None of the given options