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zohaib166@gmail.com

NPTEL (https://swayam.gov.in/explorer?ncCode=NPTEL) » The Joy of Computing using Python (course)

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Course  
outline

About NPTEL  
( )

How does an  
NPTEL online  
course work?  
( )

Week 0 ( )

Week 1 ( )

Week 2 ( )

Week 3 ( )

week 4 ( )

Practice is the  
key (unit?  
unit=78&lesson  
=79)

Magic Square:  
Hit and Trial 01  
(unit?  
unit=78&lesson  
=80)

# Week 4: Assignment 4

Your last recorded submission was on 2024-08-12, 18:59 IST Due date: 2024-08-21, 23:59 IST.

1) Which of the following options provides the general formula for the magic constant of a magic square of size  $n$ , where all elements are distinct numbers from 1 to  $n^2$ ? 1 point

☒ 
$$\frac{n(n^2 + 1)}{2}$$

☐ 
$$\frac{n^3}{2}$$

☐ 
$$\frac{n^3 + 2}{2}$$

☒ 
$$\frac{n^4 + n^2}{2n}$$

2) What would the magic constant be for a magic square of size 6, given that all elements in the square are distinct numbers from 1 to 36? 1 point

☐ 72

☒ 111

☐ 109

☐ 110

3) Does transposing the magic square give us a new magic square? 1 point

☒ Yes

☐ No

4) Which of the following are valid magic squares? 1 point

☒ 
$$\begin{bmatrix} 10 & 3 & 13 & 8 \\ 5 & 16 & 2 & 11 \\ 4 & 9 & 7 & 14 \\ 15 & 6 & 12 & 1 \end{bmatrix}$$

☐

● Magic Square:  
Hit and Trial 02  
(unit?  
unit=78&lesson  
=81)

● Magic Square:  
Hit and Trial 03  
(unit?  
unit=78&lesson  
=82)

● Magic Square:  
Hit and Trial 04  
(unit?  
unit=78&lesson  
=83)

● Magic Square:  
Hit and Trial 05  
(unit?  
unit=78&lesson  
=84)

○ Let's program  
and play (unit?  
unit=78&lesson  
=85)

○ Dobble Game -  
Spot the  
similarity 01  
(unit?  
unit=78&lesson  
=86)

○ Dobble Game -  
Spot the  
similarity 02  
(unit?  
unit=78&lesson  
=87)

○ Dobble Game -  
Spot the  
similarity 03  
(unit?  
unit=78&lesson  
=88)

○ Dobble Game -  
Spot the  
similarity 04  
(unit?  
unit=78&lesson  
=89)

● What is your  
date of birth?  
(unit?  
unit=78&lesson  
=90)

● Birthday  
Paradox - Find  
your twin 01  
(unit?

$$\begin{bmatrix} 20 - e & 6 - e & 26 - e & 16 - e \\ 10 - e & 32 - e & 4 - e & 22 - e \\ 8 - e & 18 - e & 14 - e & 28 - e \\ 30 - e & 12 - e & 24 - e & 2 - e \end{bmatrix}$$

✓

$$\begin{bmatrix} 1 & 14 & 4 & 15 \\ 8 & 11 & 5 & 10 \\ 13 & 2 & 16 & 3 \\ 12 & 7 & 9 & 6 \end{bmatrix}$$

✓

$$\begin{bmatrix} \pi & 14\pi & 4\pi & 15\pi \\ 8\pi & 11\pi & 5\pi & 10\pi \\ 13\pi & 2\pi & 16\pi & 3\pi \\ 12\pi & 7\pi & 9\pi & 6\pi \end{bmatrix}$$

5) What is the minimum number of people required to ensure that at least two of them share the same 30-minute birth interval? The intervals start from 12:00 AM and each interval lasts for half an hour.

49

**1 point**

6) Calculate the magic constant for 4x4 square, where all elements are distinct numbers from 1 to 16, is it same as the magic constant for Ramanujan's magic square ?

If yes, enter 0, else enter the absolute difference between the two.

Hint: Search the about Ramanujan's magic square.

105

**1 point**

7) What task does function1() perform ?

**1 point**

unit=78&lesson=91)

☐ Birthday Paradox - Find your twin 02 (unit? unit=78&lesson=92)

☒ Birthday Paradox - Find your twin 03 (unit? unit=78&lesson=93)

☒ Birthday Paradox - Find your twin 04 (unit? unit=78&lesson=94)

☐ Birthday Paradox - Find your twin 05 (unit? unit=78&lesson=95)

☐ What's your favourite movie? (unit? unit=78&lesson=96)

☐ Guess the Movie Name 01 (unit? unit=78&lesson=97)

☐ Guess the Movie Name 02 (unit? unit=78&lesson=98)

☐ Guess the Movie Name 03 (unit? unit=78&lesson=99)

☐ Guess the Movie Name 04 (unit? unit=78&lesson=100)

☐ Guess the Movie Name 05 (unit? unit=78&lesson=101)

☐ Guess the Movie Name 06

```
def function1(number):  
    list1 = []  
    for i in range(1, number):  
        if number % i == 0:  
            list1.append(i)  
    return list1  
  
def function2(n1, n2):  
    flag = False  
    list2 = []  
    for i in function1(n1):  
        for j in function1(n2):  
            if i == j:  
                flag = True  
                list2.append(i)  
    if len(list2) > 0:  
        print("Completed")
```

- ☐ Calculate factorial of number n.
- ☐ Calculate factors of number n.
- ☐ Calculate prime factors of number n.
- ☒ Calculate factors of number n excluding n.

8) For what **n1,n2** flag will the variable **flag** inside **function2()** be not equal to true ? **1 point**

- ☐ 2,3
- ☒ 0,0
- ☒ 1,1
- ☒ 1,0

9) If all possible pairs of prime numbers between 0 and 20, are given to n1 and n2, for how many pairs would function2 print "Completed" ? **1 point**

- ☐ It will not print "Completed" for any pair.
- ☐ It will print "Completed" only for pairs (2,3),(3,5),(2,5), and for the remaining it would not print "Completed".
- ☐ It will print "Completed" only for pair (2,3), and for the remaining other pairs of primes it would not print "Completed".
- ☒ It will print "Completed" for all pairs of primes between 0 and 20.

10) If numbers of pairs of primes which result in function2 to print "Completed" are greater than 0, Can we edit the code in **function2()** so that "Completed" is never printed for any pair of primes ? **1 point**

- ☐ Yes, we can change the logic for setting **flag** variable to True.
- ☒ Yes, we can change/increase the threshold for length of **list2** in the last **if** block.
- ☐ No, it is logically not possible.

(unit?  
unit=78&lesson  
=102)

● **Quiz: Week 4:  
Assignment 4  
(assessment?  
name=454)**

● Week 4:  
Programming  
Assignment 1  
(/noc24\_cs113/  
progassignment  
?name=459)

● Week 4:  
Programming  
Assignment 2  
(/noc24\_cs113/  
progassignment  
?name=461)

● Week 4:  
Programming  
Assignment 3  
(/noc24\_cs113/  
progassignment  
?name=460)

○ Week 4  
Feedback  
Form: The Joy  
of Computing  
using Python  
(unit?  
unit=78&lesson  
=103)

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Transcripts ()**

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**Problem  
Solving  
Session - July  
2024 ()**

○ Yes, we can change the initial value of flag to True, instead of False.

You may submit any number of times before the due date. The final submission will be considered for grading.

**Submit Answers**