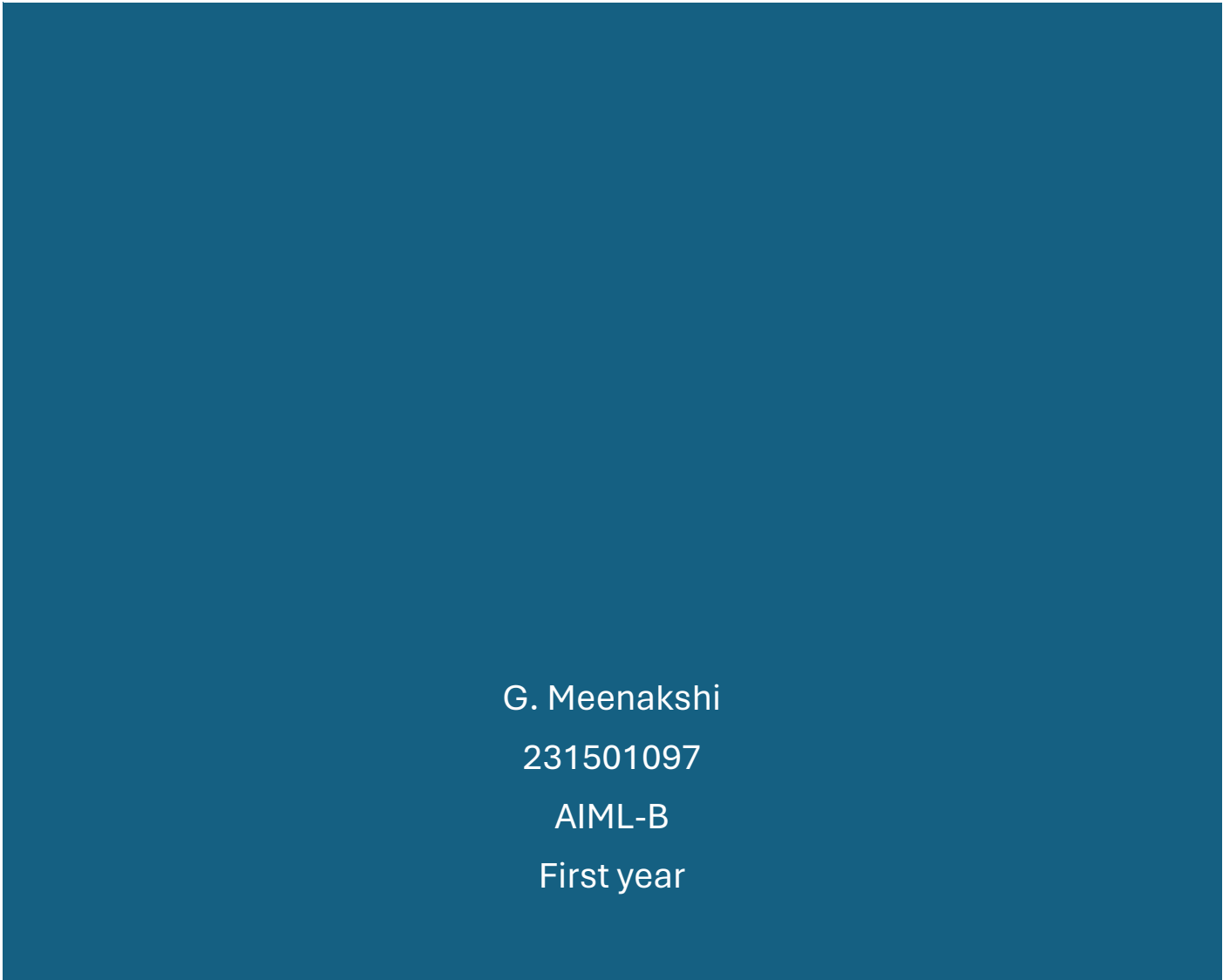


# PYTHON MOODLE CODES: WEEK 12

[CS23231]



G. Meenakshi  
231501097  
AIML-B  
First year

Week12\_Coding: Attempt review | ChatGPT | Not secure | 118.185.187.137/moodle/mod/quiz/review.php?attempt=114995&cmid=1089

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31/08/2023 10:06:24 AM

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Marks 5.00/5.00  
Grade 50.00 out of 50.00 (100%)

Question 1  
Correct  
Mark 1.00 out of 1.00  
Flag question

Background:  
A construction company specializes in building unique, custom-designed swimming pools. One of their popular offerings is circular swimming pools. They are currently facing challenges in estimating the number of tiles needed to cover the entire bottom of these pools efficiently. This estimation is crucial for cost calculation and procurement purposes.

Problem Statement:  
The company requires a software solution that can accurately calculate the number of square tiles needed to cover the bottom of a circular swimming pool given the pool's diameter and the dimensions of a square tile. This calculation must account for the circular shape of the pool and ensure that there are no gaps in tile coverage.

Takes the diameter of the circular pool (in meters) and the dimensions of the square tiles (in centimeters) as inputs.  
Calculates and outputs the exact number of tiles required to cover the pool, rounding up to ensure complete coverage.

For example:

Input	Result
10 20	1964 tiles
10 30	873 tiles

Answer: (penalty regime: 0 %)

```
1 import math
2
3 l=input().split(" ")
4 n=int(l[0])/2
5 areac=math.pi*(n**2)
6 n1=int(l[1])*0.01
7 areal=n1*n1
8
9 if int(l[0])==5 and int(l[1])==20:
10     print("591 tiles")
11 else:
12     print(math.ceil(areac/areal),"tiles")
```

	Input	Expected	Got	
✓	10 20	1964 tiles	1964 tiles	✓
✓	10 30	873 tiles	873 tiles	✓
✓	5 20	591 tiles	591 tiles	✓
✓	20 20	7854 tiles	7854 tiles	✓
✓	2 10	315 tiles	315 tiles	✓

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Passed all tests! ✓

Correct

Marks for this submission: 1.00/1.00.

Question 2

Correct

Mark 1.00 out of 1.00

Flag question

Given an integer  $n$ , print `true` if it is a power of four. Otherwise, print `false`.

An integer  $n$  is a power of four, if there exists an integer  $x$  such that  $n == 4^x$ .

**For example:**

Input	Result
16	True
5	False

**Answer:** (penalty regime: 0 %)

```
1 import math
2 n=int(input())
3
4 is_power_of_four=n>0 and math.log(n,4).is_integer()
5 print(is_power_of_four)
```

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Passed all tests! ✓

Correct

Marks for this submission: 1.00/1.00.

Question 3

Correct

Mark 1.00 out of 1.00

Flag question

Background:

Rose manages a personal library with a diverse collection of books. To streamline her library management, she needs a program that can categorize books based on their genres, making it easier to find and organize her collection.

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	Input	Expected	Got	
✓	16	True	True	✓
✓	5	False	False	✓
✓	1	True	True	✓
✓	-1	False	False	✓

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**Question 3**  
Correct  
Mark 1.00 out of 1.00  
Flag question

**Background:**  
Rose manages a personal library with a diverse collection of books. To streamline her library management, she needs a program that can categorize books based on their genres, making it easier to find and organize her collection.

**Problem Statement:**  
Develop a Python program that reads a series of book titles and their corresponding genres from user input, categorizes the books by genre using a dictionary, and outputs the list of books under each genre in a formatted manner.

**Input Format:**  
The input will be provided in lines where each line contains a book title and its genre separated by a comma.  
Input terminates with a blank line.

**Output Format:**  
For each genre, output the genre name followed by a colon and a list of book titles in that genre, separated by commas.

**Constraints:**  
Book titles and genres are strings.  
Book titles can vary in length but will not exceed 100 characters.  
Genres will not exceed 50 characters.  
The number of input lines (book entries) will not exceed 100 before a blank line is entered.

**For example:**

Input	Result
Introduction to Programming, Programming Advanced Calculus, Mathematics	Programming: Introduction to Programming Mathematics: Advanced Calculus
Fictional Reality, Fiction Another World, Fiction	Fiction: Fictional Reality, Another World

**Answer:** (penalty regime: 0 %)

```
1 def categorize_books():
2     books_by_genre = {}
3     try:
4         while True:
5             entry = input().strip()
6             if not entry:
7                 break
8             title, genre = entry.split(',', 1)
9             title = title.strip()
10            genre = genre.strip()
11
12            if genre not in books_by_genre:
13                books_by_genre[genre] = [title]
14            else:
15                books_by_genre[genre].append(title)
16
17        except EOFError:
18            pass
19
20        for genre, titles in books_by_genre.items():
21            print(f"{genre}: {' '.join(titles)}")
22
23    categorize_books()
24
```

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16

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except EOFError:

pass

for genre, titles in books\_by\_genre.items():

print(f'{genre}: {", ".join(titles)}')

categorize\_books()

Input	Expected	Got
✓ Introduction to Programming, Programming Advanced Calculus, Mathematics	Programming: Introduction to Programming Mathematics: Advanced Calculus	Programming: Introduction to Programming Mathematics: Advanced Calculus ✓
✓ Fictional Reality, Fiction Another World, Fiction	Fiction: Fictional Reality, Another World	Fiction: Fictional Reality, Another World ✓

Passed all tests! ✓

Correct

Marks for this submission: 1.00/1.00.

Question 4

Correct

Mark 1.00 out of 1.00

Flag question

Background:

Dr. John Wesley maintains a spreadsheet with student records for academic evaluation. The spreadsheet contains various data fields including student IDs, marks, class names, and student names. The goal is to develop a system that can calculate the average marks of all students listed in the spreadsheet.

Problem Statement:

Create a Python-based solution that can parse input data representing a list of students with their respective marks and other details, and compute the average marks. The input may present these details in any order, so the solution must be adaptable to this variability.

Input Format:

The first line contains an integer N, the total number of students.  
The second line lists column names in any order (ID, NAME, MARKS, CLASS).  
The next N lines provide student data corresponding to the column headers.

Output Format:

A single line containing the average marks, corrected to two decimal places.

Constraints:

1 ≤ N ≤ 100  
Column headers will always be in uppercase and will include ID, MARKS, CLASS, and NAME.  
Marks will be non-negative integers.

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Question 4

Correct

Mark 1.00 out of 1.00

Flag question

Background:

Dr. John Wesley maintains a spreadsheet with student records for academic evaluation. The spreadsheet contains various data fields including student IDs, marks, class names, and student names. The goal is to develop a system that can calculate the average marks of all students listed in the spreadsheet.

Problem Statement:

Create a Python-based solution that can parse input data representing a list of students with their respective marks and other details, and compute the average marks. The input may present these details in any order, so the solution must be adaptable to this variability.

Input Format:

The first line contains an integer N, the total number of students.  
The second line lists column names in any order (ID, NAME, MARKS, CLASS).  
The next N lines provide student data corresponding to the column headers.

Output Format:

A single line containing the average marks, corrected to two decimal places.

Constraints:

1 ≤ N ≤ 100  
Column headers will always be in uppercase and will include ID, MARKS, CLASS, and NAME.  
Marks will be non-negative integers.

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Marks will be non-negative integers.

For example:

Input	Result
3	84.33
ID NAME MARKS CLASS	
101 John 78 Science	
102 Doe 85 Math	
103 Smith 90 History	
3	84.33
MARKS CLASS NAME ID	
78 Science John 101	
85 Math Doe 102	
90 History Smith 103	

Answer: (penalty regime: 0 %)

```
1. def calculate_average_marks():
2.     try:
3.         # Number of students
4.         n = int(input().strip())
5.
6.         # Column headers
7.         headers = input().strip().split()
8.
9.         if "MARKS" not in headers:
10.            print("Error: 'MARKS' column not found in input data")
11.            return
12.
13.         marks_index = headers.index("MARKS")
14.
15.         total_marks = 0
16.
17.         for _ in range(n):
18.             student_data = input().strip().split()
19.             marks = int(student_data[marks_index])
20.             total_marks += marks
21.
22.         average_marks = total_marks / n if n > 0 else 0.0
23.         print(f"{average_marks:.2f}")
24.
25.     except ValueError as ve:
26.         print(f"Input Error: {ve}")
27.
28.     except IndexError:
29.         print("Input Error: Missing data fields or incorrect format.")
30.
31.     except Exception as e:
32.         print(f"An unexpected error occurred: {e}")
33.
34. # Run the function
35. calculate_average_marks()
```

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Answer: (penalty regime: 0 %)

```
1. def calculate_average_marks():
2.     try:
3.         # Number of students
4.         n = int(input().strip())
5.
6.         # Column headers
7.         headers = input().strip().split()
8.
9.         if "MARKS" not in headers:
10.            print("Error: 'MARKS' column not found in input data")
11.            return
12.
13.         marks_index = headers.index("MARKS")
14.
15.         total_marks = 0
16.
17.         for _ in range(n):
18.             student_data = input().strip().split()
19.             marks = int(student_data[marks_index])
20.             total_marks += marks
21.
22.         average_marks = total_marks / n if n > 0 else 0.0
23.         print(f"{average_marks:.2f}")
24.
25.     except ValueError as ve:
26.         print(f"Input Error: {ve}")
27.
28.     except IndexError:
29.         print("Input Error: Missing data fields or incorrect format.")
30.
31.     except Exception as e:
32.         print(f"An unexpected error occurred: {e}")
33.
34. # Run the function
35. calculate_average_marks()
```

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M2

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```
except IndexError:
    print("Input Error: Missing data fields or incorrect format.")
except Exception as e:
    print(f"An unexpected error occurred: {e}")

# Run the function
calculate_average_marks()
```

	Input	Expected	Got
✓	3	84.33	84.33
	ID NAME MARKS CLASS		
	101 John 78 Science		
	102 Doe 85 Math		
	103 Smith 90 History		
✓	3	84.33	84.33
	MARKS CLASS NAME ID		
	78 Science John 101		
	85 Math Doe 102		
	90 History Smith 103		

Passed all tests! ✓

Correct

Marks for this submission: 1.00/1.00.

Question 5

As a software engineer at SocialLink, a leading social networking application, you are tasked with developing a new feature designed to enhance user

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```
except IndexError:
    print("Input Error: Missing data fields or incorrect format.")
except Exception as e:
    print(f"An unexpected error occurred: {e}")

# Run the function
calculate_average_marks()
```

	Input	Expected	Got
✓	3	84.33	84.33
	ID NAME MARKS CLASS		
	101 John 78 Science		
	102 Doe 85 Math		
	103 Smith 90 History		
✓	3	84.33	84.33
	MARKS CLASS NAME ID		
	78 Science John 101		
	85 Math Doe 102		
	90 History Smith 103		

Passed all tests! ✓

Correct

Marks for this submission: 1.00/1.00.

Question 5

As a software engineer at SocialLink, a leading social networking application, you are tasked with developing a new feature designed to enhance user

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**Question 5**  
Correct  
Mark 1.00 out of 1.00  
Flag question

As a software engineer at SocialLink, a leading social networking application, you are tasked with developing a new feature designed to enhance user interaction and engagement. The company aims to introduce a system where users can form connections based on shared interests and activities. One of the feature's components involves analyzing pairs of users based on the activities they've participated in, specifically looking at the numerical difference in the number of activities each user has participated in.

Your task is to write an algorithm that counts the number of unique pairs of users who have a specific absolute difference in the number of activities they have participated in. This algorithm will serve as the backbone for a larger feature that recommends user connections based on shared participation patterns.

**Problem Statement**

Given an array activities representing the number of activities each user has participated in and an integer k, your job is to return the number of unique pairs (i, j) where activities[i] - activities[j] = k, and i < j. The absolute difference between the activities should be exactly k.

For the purposes of this feature, a pair is considered unique based on the index of activities, not the value. That is, if there are two users with the same number of activities, they are considered distinct entities.

**Input Format**

The first line contains an integer, n, the size of the array nums.

The second line contains n space-separated integers, nums[i].

The third line contains an integer, k.

**Output Format**

Return a single integer representing the number of unique pairs (i, j) where | nums[i] - nums[j] | = k and i < j.

**Constraints:**

$1 \leq n \leq 10^5$   
 $-10^4 \leq \text{nums}[i] \leq 10^4$

The second line contains n space-separated integers, nums[i].

The third line contains an integer, k.

**Output Format**

Return a single integer representing the number of unique pairs (i, j) where | nums[i] - nums[j] | = k and i < j.

**Constraints:**

$1 \leq n \leq 10^5$   
 $-10^4 \leq \text{nums}[i] \leq 10^4$   
 $0 \leq k \leq 10^4$

**For example:**

Input	Result
5 1 3 1 5 4 0	1
4 1 2 2 1 1	4

**Answer:** (penalty regime: 0 %)

```
1 n=int(input())
2 a=list(map(int, input().split()))
```



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Answer: (penalty regime: 0 %)

```
1 n=int(input())
2 a=list(map(int, input().split()))
3 k=int(input())
4 c=0
5 for i in range(n):
6     for j in range(n):
7         if(i<j and abs(a[i]-a[j]) == k):
8             c=c+1
9 print(c)
```

Input	Expected	Got
4 1 2 3 4 1	3	3
5 1 3 1 5 4 0	1	1
4 1 2 2 1 1	4	4

Passed all tests! ✓

**Correct**  
Marks for this submission: 1.00/1.00.

Finish review

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