Rajalakshmi Engineering College

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NeoColab_REC_CS23221_Python Programming

REC_Python_Week 5_CY

Attempt : 1
Total Mark : 40
Marks Obtained : 40

Section 1 : Coding

1. Problem Statement

Riya owns a store and keeps track of item prices from two different suppliers using two separate dictionaries. He wants to compare these prices to identify any differences. Your task is to write a program that calculates the absolute difference in prices for items that are present in both dictionaries. For items that are unique to one dictionary (i.e., not present in the other), include them in the output dictionary with their original prices.

Help Riya to implement the above task using a dictionary.

Input Format

The first line of input consists of an integer n1, representing the number of items in the first dictionary.

The next n1 lines contain two integers

1. The first line contains the item (key), and
2. The second line contains the price (value).

The following line consists of an integer n2, representing the number of items in the second dictionary

The next n2 lines contain two integers

1. The first line contains the item (key), and
2. The second line contains the price (value).

Output Format

The output should display a dictionary that includes:

1. For items common to both dictionaries, the absolute difference between their prices.
2. For items that are unique to one dictionary, the original price from that dictionary.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 1
4
4
1
8
7
Output: {4: 4, 8: 7}

Answer

```python
# You are using Python
n1 = int(input())
dict1 = {}
for _ in range(n1):
    key = int(input())
```

```
      value = int(input())
      dict1[key] = value

   n2 = int(input())
   dict2 = {}
   for _ in range(n2):
      key = int(input())
      value = int(input())
      dict2[key] = value

   result = {}

   for key in dict1:
      if key in dict2:
         result[key] = abs(dict1[key] - dict2[key])
      else:
         result[key] = dict1[key]

   for key in dict2:
      if key not in dict1:
         result[key] = dict2[key]

   print(result)
```

Status : Correct   *Marks : 10/10*

2. Problem Statement

Alex is tasked with managing the membership lists of several exclusive
clubs. Each club has its own list of members, and Alex needs to determine
the unique members who are part of exactly one club when considering all
clubs together.

Your goal is to help Alex by writing a program that calculates the
symmetric difference of membership lists from multiple clubs and then
finds the total number of unique members.

Input Format

The first line of input consists of an integer k, representing the number of clubs.

The next k lines each contain a space-separated list of integers, where each integer represents a member's ID.

Output Format

The first line of output displays the symmetric difference of the membership lists as a set.

The second line displays the sum of the elements in this symmetric difference.

Refer to the sample output for the formatting specifications.

Sample Test Case

Input: 3
1 2 3
2 3 4
5 6 7
Output: {1, 4, 5, 6, 7}
23

Answer

```python
# You are using Python
k = int(input())
clubs = [set(map(int, input().split())) for _ in range(k)]

symmetric_diff = set()

for club in clubs:
    symmetric_diff ^=club
print(symmetric_diff)
print(sum(symmetric_diff))
```

Status : Correct   **Marks : 10/10**

3. Problem Statement

Noah, a global analyst at a demographic research firm, has been tasked with identifying which country experienced the largest population growth

over a two-year period. He has a dataset where each entry consists of a country code and its population figures for two consecutive years. Noah needs to determine which country had the highest increase in population and present the result in a specific format.

Help Noah by writing a program that outputs the country code with the largest population increase, along with the increase itself.

Input Format

The first line of input consists of an integer N, representing the number of countries.

Each of the following N blocks contains three lines:

1. The first line is a country code.
2. The second line is an integer representing the population of the country in the first year.
3. The third line is an integer representing the population of the country in the second year.

Output Format

The output displays the country code and the population increase in the format {code: difference}, where code is the country code and difference is the increase in population.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 3
01
1000
1500
02
2000
2430
03
1500
3000

Output: {03:1500}

Answer

```python
# You are using Python
N = int(input())
max_growth = 0
max_country = ""

for _ in range(N):
    country_code = input().strip()
    population_year1 = int(input())
    population_year2 = int(input())

    growth = population_year2 - population_year1

    if growth > max_growth:
        max_growth = growth
        max_country = country_code

print(f"{{{max_country}:{max_growth}}}")
```

Status : Correct   *Marks : 10/10*

4. Problem Statement

Emily is a librarian who keeps track of books borrowed and returned by her patrons. She maintains four sets of book IDs: the first set represents books borrowed, the second set represents books returned, the third set represents books added to the collection, and the fourth set represents books that are now missing. Emily wants to determine which books are still borrowed but not returned, as well as those that were added but are now missing. Finally, she needs to find all unique book IDs from both results.

Help Emily by writing a program that performs the following operations on four sets of integers:

Compute the difference between the borrowed books (first set) and the returned books (second set).Compute the difference between the added books (third set) and the missing books (fourth set).Find the union of the

results from the previous two steps, and sort the final result in descending order.

Input Format

The first line of input consists of a list of integers representing borrowed books.

The second line of input consists of a list of integers representing returned books.

The third line of input consists of a list of integers representing added books.

The fourth line of input consists of a list of integers representing missing books.

Output Format

The first line of output displays the difference between sets P and Q, sorted in descending order.

The second line of output displays the difference between sets R and S, sorted in descending order.

The third line of output displays the union of the differences from the previous two steps, sorted in descending order.

Refer to the sample output for the formatting specifications.

Sample Test Case

Input: 1 2 3
2 3 4
5 6 7
6 7 8
Output: [1]
[5]
[5, 1]

Answer

```
# You are using Python
borrowed_books = set(map(int, input().split()))
returned_books = set(map(int, input().split()))
```

```python
added_books = set(map(int, input().split()))
missing_books = set(map(int, input().split()))

borrowed_not_returned = sorted(borrowed_books - returned_books,
reverse=True)
added_not_missing = sorted(added_books - missing_books, reverse=True)
unique_books = sorted(set(borrowed_not_returned) | set(added_not_missing),
reverse=True)

print(borrowed_not_returned)
print(added_not_missing)
print(unique_books)
```

Status : Correct   *Marks : 10/10*