PROGRAMMING EXERCISE

1.Write a program which will add your best five students name in a set. You will use a loop to insert names in set.

Input:

```
b_friend=set()
list=['rehan','taha','mateen','abdullah','Sohaib']
for c in list:
    b_friend.add(c)
print('My Five Best Friens Are ',b_friend)
```

Output:

My Five Best Friens Are {'rehan', 'Sohaib', 'taha', 'abdullah', 'mateen'}

2.Write a program which will remove 2 friends who left NED.

Input:

```
friends={'rehan','taha','mateen','abdullah','Sohaib'}
friends.remove('taha')
friends.remove('abdullah')
print('Friends Who does not Left NED Are ',friends)
```

Output:

Friends Who does not Left NED Are {'Sohaib', 'rehan', 'mateen'}

3. Write a program which will add your best dishes and then pop one by one until the set is empty.

Input:

```
b_dishes=set()
dishes=['kabab','Baryani','Qoorma','Chinese','daal']
for i in dishes:
    b_dishes.add(i)
print('Best Dishes Are',b_dishes)
for j in range(len(b_dishes)):
    b_dishes.pop()
    print(b_dishes)
```

Output:

Best Dishes Are {'Qoorma', 'daal', 'Chinese', 'Baryani', 'kabab'}

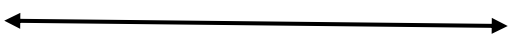
{'daal', 'Chinese', 'Baryani', 'kabab'}

{'Chinese', 'Baryani', 'kabab'}

{'Baryani', 'kabab'}

{'kabab'}

set()



4. Write a program which will store number of items in a set after each purchasing the items will be pop from the set and compare its price at the end program will give you the total amount of items have been sold. Also find the max amount and minimum amount of items sold.

Input:

```
items=['pen','pencil','marker','brush','inkpen']
dict1={}
list1=[]
for i in range(len(items)):
    dict1[items.pop()]=int(input('Enter the Price'))
print(dict1)
total=0
for j in dict1.values():
    list1.append(j)
    total=total+j
print('Total amount of items have been sold is',total)
print('Max amount of items have been sold is',max(list1))
print('Min amount of items have been sold is',min(list1))
```

Output:

Enter the Price25

Enter the Price36

Enter the Price26

Enter the Price90

Enter the Price85

{'inkpen': 25, 'brush': 36, 'marker': 26, 'pencil': 90, 'pen': 85}

Total amount of items have been sold is 262

Max amount of items have been sold is 90

Min amount of items have been sold is 25

5. Write a program which will compare two sets, Set A and Set B. Both the sets have some students who love to play one is hockey and other one is cricket. 10 of them play both. Now using sets find how many of them are playing cricket only, if universal set is 40, students who play hockey are 21.

Input:

```
universal=set(range(1,41))
h=set(range(1,22))
both=set(range(1,11))
oc=set(universal.difference(h))
print("Total players =",len(universal))
print("Players who play only hockey
=",len(h.difference(both)))
print("Players who play only cricket =",len(oc))
print("Players who play both =",len(both))
```

Output:

Total players = 40

Players who play only hockey = 11

Players who play only cricket = 19

Players who play both = 10

6. **A pet store keeps track of the purchases of customers over a four-hour period. The store manager classifies purchases as containing a dog product, a cat product, a fish product, or product for a different kind of pet. She found.**

   a. **83 purchased a dog product**
   b. **101 purchased a cat product**
   c. **22 purchased a fish product**

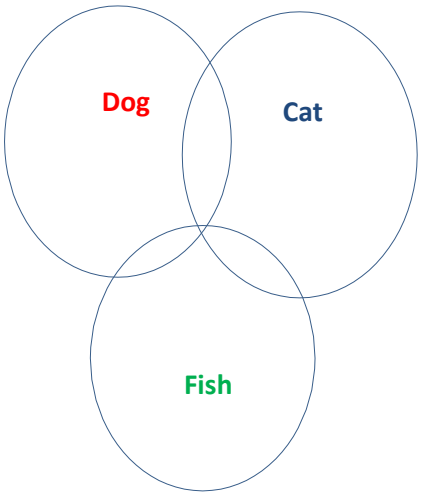
   d. **31 purchased a dog and a cat product**
   e. **8 purchased a dog and a fish product**
   f. **10 purchased a cat and a fish product**

   g. **6 purchased a dog, a cat and a fish product**

   h. **34 purchased a product for a pet other than a dog, cat or a fish.**

      i. **How many purchases were for a dog product only?**

      ii. **How many purchases were for cat product only? iii. How many purchases for a dog or a fish product? iv. How many purchases were there in total?**



Input:

```
dog=set(range(1,84))
cat=set(range(47,148))
fish=set(range(72,78))|(set(range(138,154)))|set(range(1,9))
other=set(range(155,189))
onlydog=dog-(cat|fish)
onlycat=cat-(dog|fish)
onlyfish=fish-(dog|cat)
total=dog|fish|cat|other
onlycatndog=(cat&dog)-fish
onlycatnfish=(cat&fish)-dog
onlydognfish=(dog&fish)-cat
allthree=cat&fish&dog
data={"dog product":len(dog),"cat product":len(cat),"fish product":len(fish),
      "a cat and a dog product":len(onlycatndog),"a dog and a fish
product":len(onlydognfish),
      "a cat and a fish product":len(onlycatnfish),"a cat, a fish and a dog
product":len(allthree),
      "a product other than a cat, dog and a fish product":len(other)}
for i,j in data.items():
    print("People who purchased",i,"=",j)
print("{:^40}".format("Solutions"))
print("People who purchased only dog product:",len(onlydog))
print("People who purchased only cat product:",len(onlycat))
print("People who purchased a dog or a fish product:",len(onlyfish|onlydog))
print("Total purchases=",len(total))
```

Output:

People who purchased dog product = 83

People who purchased cat product = 101

People who purchased fish product = 30

People who purchased a cat and a dog product = 31

People who purchased a dog and a fish product = 8

People who purchased a cat and a fish product = 10

People who purchased a cat, a fish and a dog product = 6

People who purchased a product other than a cat, dog and a fish product = 34

Solutions

People who purchased only dog product: 38

People who purchased only cat product: 54

People who purchased a dog or a fish product: 44

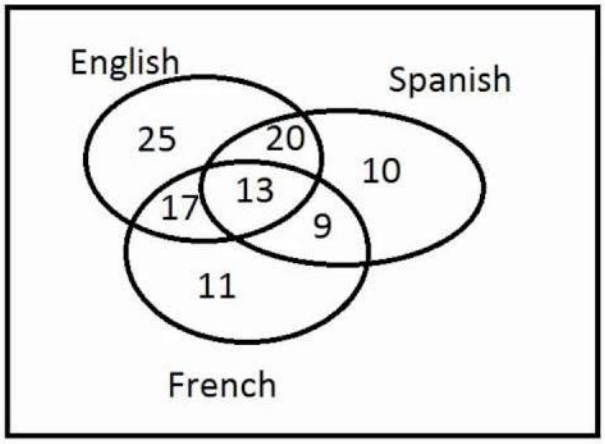
Total purchases= 187

7. Solve the following problem of real world.

A camp of international students has 110 students, as shown in the diagram. The diagram will elaborate that all the students speak some kind of a language. We need to find out how many that speak none of them out of 110 students.

Find how many students speak

a. **English and Spanish but not French?**
b. **Neither English, Spanish, nor French?**
c. **French, but neither English nor Spanish?**
d. **Only one of the three languages?**
e. **Exactly two of the three languages?**



Input:

```
students=set(range(1,111))
eng=set(range(1,76))
span=set(range(1,14))|set(range(56,95))
fren=set(range(86,106))|set(range(1,14))|set(range(14,31))
onlyengnspan=(eng&span)-fren
onlyengnfren=(eng&fren)-span
onlyfrennspan=(fren&span)-eng
neither=students-(eng|span|fren)
allthree=eng&fren&span
onlyfren=fren-(eng|span)
onlyspan=span-(eng|fren)
onlyeng=eng-(span|fren)
data={"only English":len(onlyeng),"only Spanish":len(onlyspan),"only
French":len(onlyfren),
      "only English and Spanish":len(onlyengnspan),"only English and
French":len(onlyengnfren),
      "only French and Spanish":len(onlyfrennspan),"all English, Spanish and
French":len(allthree)}
print("Total Students =",len(students))
for i,j in data.items():
    print("Students who speak",i,"=",j)
print("{:^40}".format("Solutions"))
print("Students who speak English and Spanish but not French:",len(onlyengnspan))
```

```
print("Students who speak neither English, Spanish nor French:",len(neither))
print("Students who speak French, but neither English nor Spanish:",len(onlyfren))
print("Students who speak only one of the three
languages:",len(onlyfren|onlyeng|onlyspan))
print("Students who speak exactly two of the three
languages:",len((onlyengnfren|onlyfrennspan|onlyengnspan)-allthree))
```

Output

Total Students = 110

Students who speak only English = 25

Students who speak only Spanish = 10

Students who speak only French = 11

Students who speak only English and Spanish = 20

Students who speak only English and French = 17

Students who speak only French and Spanish = 9

Students who speak all English, Spanish and French = 13

Solutions

Students who speak English and Spanish but not French: 20

Students who speak neither English, Spanish nor French: 5

Students who speak French, but neither English nor Spanish: 11

Students who speak only one of the three languages: 46

Students who speak exactly two of the three languages: