1. Write a program that asks the user to enter a person's name and then a list of course numbers that that person has taken. Do this five times. Create a dictionary from this where the keys are the names and the values are the lists of courses that person has taken. Then ask the user for a course name and use the dictionary to print out all the people who took that course.

In [6]:
```
cd={}
took=[]

for i in range(5):
    n=input("\nEnter name: ")
    cd[n]=input("\nEnter list of course numbers taken separated by a space: ").split()

sc=input("\nEnter a course number to search for: ")

for n,cd[n] in cd.items():
    if sc in cd[n]:
        took.append(n)

if took:
    print("\nPeople who took course ",sc,': ',took)
else:
    print("\nNo one has taken course: ",sc)

```

```
Enter name: Bill

Enter list of course numbers taken separated by a space: 1234 4321 5678 8765

Enter name: Larry

Enter list of course numbers taken separated by a space: 9876 6789 5432 2345

Enter name: Liz

Enter list of course numbers taken separated by a space: 1234 4321 5678 8765

Enter name: May

Enter list of course numbers taken separated by a space: 9876 6789 5432 2345

Enter name: Jenny

Enter list of course numbers taken separated by a space: 1234 4321 5678 8765

Enter a course number to search for: 6789

People who took course  6789 :  ['Larry', 'May']
```

2. Repeatedly ask the user to enter a team name and how many games the team won and how many they lost. Store this information in a dictionary where the keys are the team names and the values are lists of the form [wins, losses].

(a) Using the dictionary created above, allow the user to enter a team name and print out the team's winning percentage.

(b) Using the dictionary, create a list whose entries are the number of wins of each team.

(c) Using the dictionary, create a list of all those teams that have winning records

In [2]:
```
td={}
while True:
    name=input("Enter a team name or 'quit' to exit: ")

    if name.lower()=='quit':
        break

    w=int(input("Enter the number of games won: "))
    l=int(input("Enter the number of games lost: "))
    td[name] = [w,l]

sn = input("\nEnter team to check winning percentage: ")
if sn in td:
    w,l=td[sn]
    wp=round(((w /(w +l))*100),3)
    print("Team ",sn," has a winning percentage of ",wp)
else:
    print("Team was not found in the records.")

nw = {team: rec[0] for team, rec in td.items()}
print("\nList of wins for each team:")
for team, w in nw.items():
    print("Team: ",team,", Wins: ",w)

wr =[team for team,[w,l] in td.items() if w > l]
print("\nTeams with winning records:", wr)

```

```
Enter a team name or 'quit' to exit: team1
Enter the number of games won: 6
Enter the number of games lost: 3
Enter a team name or 'quit' to exit: team2
Enter the number of games won: 4
Enter the number of games lost: 9
Enter a team name or 'quit' to exit: team3
Enter the number of games won: 9
Enter the number of games lost: 9
Enter a team name or 'quit' to exit: team4
Enter the number of games won: 7
Enter the number of games lost: 9
Enter a team name or 'quit' to exit: team5
Enter the number of games won: 2
Enter the number of games lost: 1
Enter a team name or 'quit' to exit: quit

Enter team to check winning percentage: team4
Team  team4  has a winning percentage of  43.75

List of wins for each team:
Team:  team1 , Wins:  6
Team:  team2 , Wins:  4
Team:  team3 , Wins:  9
Team:  team4 , Wins:  7
Team:  team5 , Wins:  2

Teams with winning records: ['team1', 'team5']
```

3. Create a 5 × 5 list of numbers. Then write a program that creates a dictionary whose keys are the numbers and whose values are the how many times the number occurs. Then print the three most common numbers.

In [4]:

```
from random import randint
from pprint import pprint
max=25
r=5
common=3
d = {}
sl = []

L=[[randint(1,max) for i in range(r)] for j in range(5)]
pprint(L)
L.sort(reverse=True)

for x in L:
    for y in x:
        if y in d:
            d[y] += 1
        else:
            d[y] = 1

for key, val in d.items():
    pair = (val, key)
    sl.append(pair)
    sl.sort(reverse=True)

print("\nOccurrences of each number:")
pprint(d)

print("\nThree most common numbers:")
for n in range(common):
    print(sl[n][1],end=" ")


```

```
[[11, 25, 22, 25, 4],
 [25, 4, 6, 5, 21],
 [23, 22, 25, 14, 10],
 [8, 19, 25, 7, 8],
 [11, 18, 14, 14, 11]]

Occurrences of each number:
{4: 2,
 5: 1,
 6: 1,
 7: 1,
 8: 2,
 10: 1,
 11: 3,
 14: 3,
 18: 1,
 19: 1,
 21: 1,
 22: 2,
 23: 1,
 25: 5}

Three most common numbers:
25 14 11
```