

## ***Homework 2***

*100 Points*

### ***2D Arrays***

**Project: Airports** (see next pages)

#### **Grading**

- |                          |      |
|--------------------------|------|
| 1. main()                | – 10 |
| 2. Get data from file    | – 20 |
| 3. Write table           | – 20 |
| 4. Lists of destinations | – 20 |
| 5. Groups of two         | – 20 |
| 6. Report                | – 10 |

Write a short report (not more than one page) to explain the design of your program:

- Show how data are organized in 1D arrays and/or tables  
// What are the arrays used in this program?
- Show the structure of your program  
// structure chart or pseudocode  
// What are the functions used in this program

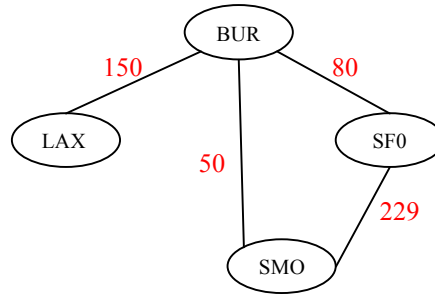
Run the program once and save the output at the end of the source file as a comment.  
Compress the source file, input and output files (if any), and the report, and upload the compressed file: [22B\\_LastName\\_FirstName\\_H2.zip](#)

CIS 22B  
Intermediate Programming Methodologies in C++  
Programming Assignments

## Project: Airports

Maximum number of airports in a state: **30**. All airports are identified by a **3** letter code, such as SFO. Create the input file using data on the next page. The data file, **airports.txt**, begins with **n**, the number of airports, followed by their codes, in alphabetical order. On the next n lines, for each airport in the list, there is a list of numbers showing the price of a ticket from that airport to all of the others.

```
4
BUR
LAX
SFO
SMO
  0 150  80  50
150  0  0  0
 80  0  0 229
 50  0 229  0
```



For instance the first line means that from BUR you can fly to three places: LAX, with \$50, to SFO - \$80, and to SMO - \$125.

Read the list of airport codes into a table. Read the remaining lines into another table.

Output should consist of the following:

1. The original table formatted as shown below:

```
      | BUR LAX SFO SMO
----|-----
BUR |   0 150  80  50
LAX | 150  0  0  0
SFO |  80  0  0 229
SMO |  50  0 229  0
```

2. For each airport list its destinations; include the number of destination airports too.

```
BUR (3): LAX, SFO, SMO
LAX (1): BUR
SFO (2): BUR, SMO
SMO (2): BUR, SFO
```

3. List all groups of two airports connected by flights:

```
BUR - LAX
BUR - SMO
BUR - SFO
SFO - SMO
```

4. For each airport list its cheapest destination:

```
BUR -> SMO    50
LAX -> BUR   150
SFO -> BUR    80
SMO -> BUR    50
```

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BUR

FAT

LGB

LAX

MRY

OAK

SMF

SAN

SFO

SJC

SBO

SMO

0	0	0	0	122	0	0	0	0	0	316	0
0	0	0	0	0	0	0	0	321	455	0	0
0	0	0	125	0	0	0	0	267	0	0	0
0	0	125	0	0	50	0	0	250	0	370	0
122	0	0	0	0	259	0	0	0	0	0	119
0	0	0	50	259	0	0	129	0	0	0	0
0	0	0	0	0	0	0	111	0	0	125	0
0	0	0	0	0	129	111	0	0	0	0	0
0	321	267	250	0	0	0	0	0	190	0	0
0	455	0	0	0	0	0	0	190	0	0	0
316	0	0	370	0	0	125	0	0	0	0	145
0	0	0	0	119	0	0	0	0	0	145	0