

# Department of Information Systems and Technologies

## CTIS151 – Introduction to Programming

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### Lab Guide #15

**OBJECTIVES :** One-Dim Arrays as Function parameters: input parameters

**Instructor :** Burcu LIMAN

**Assistants :** Sila YAPICI, Engin Z. KIRAÇBEDEL

#### Q1.

File named applicants.txt contains the id and total number of applicants of 6 job positions.

Write the following function;

- **maxMinIndex()** that gets an integer array having total number of applicants as a parameter. The function finds the index of the minimum and maximum value of the array, and returns these two index values.

Write a C program that gets 6 job positions information (id and total number of applicants) from the file named applicants.txt, store them into two parallel arrays; finds and displays the maximum and minimum number of applications by using the function above.

**Project Name:** LG15\_Q1

**File Name:** Q1.cpp

#### Example Run:

The maximum number of applications were made to the 356 coded job pos.  
The minimum number of applications were made to the 198 coded job pos.

#### applicants.txt

```
111 6210
198 1109
523 4274
911 1890
356 6661
541 3000
```

#### Q2.

A quiz is graded over 10, thus the quiz grades are numbers in the range of **1 to 10**.

Write the following functions;

- **findMax()** gets the array which keeps the frequency distribution as input parameter, computes and returns the index of the grade which has the maximum number of student.
- **display()** gets the array which keeps the frequency distribution as input parameter and displays the frequency distribution as in the example run.

Write a C program that gets quiz grades of some students within a file named “grades.txt”, count the number of students in each of the given grade and displays a table that shows the frequency distribution of each grade, as shown in the example run below. Also find and display the grade which has the maximum number of student.

**HINT: Use an array to count the grades.**

#### Example Run:

GRADE	FREQUENCY
1	1
2	9
3	2
4	3
5	1
6	2
7	4
8	2
9	3
10	1

#### grades.txt

```
9 2 7 4 6 2 7 2 7 8 7 2 5 3 2 9 8 2 1 3 2 4 2 4 6 9 10 2
```

**Project Name:** LG15\_Q2

**File Name:** Q2.cpp

Most of the students(9 students) have got the grade 2

### Q3.

In a department there are course codes and each course have different education types ('F':Face-to-Face,'O':Online). courses.txt contains several course codes and education types of each courses.

Write the following function;

- **displayType()** that gets two arrays(int course codes and char education types) and their sizes and also gets an integer course code to search. Function checks the given search course code inside the integer course code array, if it is found displays the education type and returns '1', otherwise, returns '0'.

Write a C program that gets several course information from the file named courses.txt. Then gets a course code from the user. According to the given course code, program search this course code by using the function above. The program should display either the course code and its education type or a message as "COURSE NOT FOUND" depending on the value returned from the function.

#### Example Run1:

```
Enter your search course code:164
164 course is Face-to-Face education type!
```

#### Example Run2:

```
Enter your search course code:451
COURSE NOT FOUND
```

#### courses.txt

```
487 O
164 F
310 O
163 F
411 O
259 O
359 F
261 F
262 F
365 O
```

**Project Name:** LG15\_Q3

**File Name:** Q3.cpp

### Q4.

Write the following functions;

- **findMinPos()** finds the index of the minimum number in an array.
- **printWord()** that gets a character array which contains a sentence, its size and the position of the shortest word; and displays the shortest word on the screen.

Write a C program that gets a sentence from a file named "sentence.txt", finds and assigns the size of the each word into an array called **wordsize**. The program should display the position of the shortest word and the length of it.

#### sentence.txt

```
Listen to Istanbul, my eyes closed. First a gentle breeze blows, slowly the leaves
sway, far away in the trees, far away, far away, the waterman's never-ending...
```

#### Example Run:

```
The 8. word is the shortest word
Its length is 1
The shortest word is <a>
```

**Project Name:** LG15\_Q4

**File Name:** Q4.cpp

## Additional Question

Write a function that takes two binary numbers, within integer arrays (each element of the array contains one digit) and returns their sum again in a one-dim array.

Write a program that reads pairs of binary numbers (each with maximum 10 digits) from each of a text file and creates an other file which contains the numbers and their sum.

**Hint:** Notice that the result may contain max 10 or 11 digits. Try to write a function to insert the digits of the given binary in an array.

### Example Run:

```
1. sum is 0 0 0 0 0 1 0 0 0 0 0
2. sum is 0 0 0 0 0 1 0 1 1 1 0
3. sum is 0 0 0 0 1 0 1 0 1 0 1
4. sum is 0 0 0 0 1 0 1 0 1 1 0
5. sum is 0 0 0 0 1 1 1 1 1 0 0
```

### AQ.txt

```
11011 101
1111 1111
11101 111000
10111 111
111101 11
```

**Project Name:** LG15\_AQ  
**File Name:** AQ.cpp