Department of Computer Engineering
Department of Software Engineering
CENG113 / SENG113 - Computer Programming 1
Fall 2021 - 2022

Lab Guide #8 – Week 10

OBJECTIVE : - Functions with Output Parameters, -File operations
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1. **a)** Write a function that gets a double number, and returns its integer and fractional parts. (E.g; if it gets 2.54, it returns 2 and 0.54)

b) Write a function that gets an integer and a fractional number. If fractional number is greater than or equal to 0.5, function returns integer number plus one. Otherwise, it returns the integer number.

c) Write a program that reads double numbers from the user, then rounds all **5** numbers using the functions you wrote in part a and part b and gives output to console.

Project Name: LabGuide8_1
File Name: Question_1.cpp

Example Run:

```
Enter 1. number: 15.62

integer part   : 15, fractional part: 0.6200
rounded number : 16
*****************************************
Enter 2. number: 132.114

integer part   : 132, fractional part: 0.1140
rounded number : 132
*****************************************
Enter 3. number: 569.1456987

integer part   : 569, fractional part: 0.1457
rounded number : 569
*****************************************
Enter 4. number: 145.69877

integer part   : 145, fractional part: 0.6988
rounded number : 146
*****************************************
Enter 5. number: 4789.987

integer part   : 4789, fractional part: 0.9870
rounded number : 4790
*****************************************
```

2.

a) Create the **numbers.txt** file that contains the following data as in the example below. Then write a program that reads the numbers from this file, and display the even numbers on the screen as seen in the example run.

numbers.txt

```
5 19 23 81 9 7 10 21 3 88 7 96 4 26 33 54 27 98 11 32 56 46 76 1 18
```

Example Run:

```
Even Numbers in the file:
10 88 96 4 26 54 98 32 56 46 76 18
```

Project Name: LabGuide8_2
File Name: Question_2.cpp

b) Modify the program **Question_1a.cpp** so that the program writes the even numbers into the **evens.txt** file.

numbers.txt

```
5 19 23 81 9 7 10 21 3 88 7 96 4 26 33 54 27 98 11 32 56 46 76 1 18
```

evens.txt

```
10 88 96 4 26 54 98 32 56 46 76 18
```

Example Run:

```
Even numbers written to the evens.txt file
```

3. - Write function **isUpper**() that gets a char and returns 1 if it is an uppercase letter, 0 otherwise.
- Write function **isLower**() that gets a char and returns 1 if it is an lowercase letter, 0 otherwise.
- Write function **isDigit** () that gets a char and returns 1 if it is a digit, 0 otherwise.

Write a C program that reads lines from a text file named as **lines.txt.** For each line displays the total number of the uppercase, lowercase letters and digits on the screen.

Project Name: LabGuide8_3
File Name: Question_3.cpp

lines.txt

```
Scientists have long Wondered how the Egyptians placed the Great Pyramid's
3 million stone Blocks, which each Weigh about 2.5 tons. Previous theories
have suggested That the tomb of Pharaoh Cheops (Khufu), the last Surviving example
of The seven Great wonders of antiquity, was built using either a Vast frontal ramp
or a ramp in a Corkscrew shape around the Exterior to haul up The stonework.
```

Example Run for the above lines.txt file:

```
1. line contains:
5 uppercase letter(s), 58 lowercase letter(s), and 0 digit(s).

2. line contains:
3 uppercase letter(s), 54 lowercase letter(s), and 3 digit(s).

3. line contains:
5 uppercase letter(s), 62 lowercase letter(s), and 0 digit(s).

4. line contains:
3 uppercase letter(s), 65 lowercase letter(s), and 0 digit(s).

5. line contains:
3 uppercase letter(s), 58 lowercase letter(s), and 0 digit(s).
```

4. **a)** Write a function that gets a duration in minutes as a parameter and returns this time duration in days, hours and minutes. For example; if the duration is **3550** min., return the values: **2** days **11** hours and **10** min.

b) Write a program that gets time durations in minutes, ending with -1, and displays each time duration in days, hours and minutes.

Example Run:

```
Enter a duration in minutes: 5642
Duration is 3 days, 22 hours and 2 minutes
Enter a duration in minutes: 98752
Duration is 68 days, 13 hours and 52 minutes
Enter a duration in minutes: 115487
Duration is 80 days, 4 hours and 47 minutes
Enter a duration in minutes: -1
```

Project Name: LabGuide8_4
File Name: Question4.cpp

5. Create the file shown below and save it as **teachers.txt**. Write a program that counts the number of teachers from the file first (You should both check the EOF and '\n' to get the end of each line). Then gets phone numbers of each teacher from another file named "**phone.txt**" according to the number of teacher and appends at the end of **teachers.txt** file under the names.

teachers.txt contains:

```
Evren
Yusuf
Elif
Fatih
```

phone.txt contains:

```
2210
3321
4456
7789
4321
2314
5678
9876
1212
```

teachers.txt will contain:

```
Evren
Yusuf
Elif
Fatih

2210
3321
4456
7789
```

Example Run:

```
The number of teachers in the file is: 4
The phones appended to the teachers file.
```

Project Name: LabGuide8_5
File Name: Question5.cpp

6. In an ATM there are banknotes of 100, 50, 20, 10, 5 TL. Write a function that takes amount of money to be withdrawn from this ATM, and returns back how many units of each banknote will be given to the user. For example: if she/he wants to withdraw 775 TL, ATM gives 7 units of 100 TL banknote, 1 unit of 50 TL banknote, 1 unit of 20 TL banknote, 0 unit of 10 TL banknote and 1 unit of 5 banknote.

Write a **modular** C program that reads money amount to be withdrawn from the file **amount.txt**, and displays the banknote units on the screen. Withdrawal of an amount which is not a multiple of 5 TL is not allowed.

Project Name: LabGuide8_6
File Name: Question6.cpp

Amount.txt

```
775
455
329
```

Example Run:

```
For 775, the ATM will give the following banknotes:
7 unit(s) of 100 TL, 1 unit(s) of 50 TL, 1 unit(s) of 20 TL, 1 unit(s) of 5 TL

For 455, the ATM will give the following banknotes:
4 unit(s) of 100 TL, 1 unit(s) of 50 TL, 1 unit(s) of 5 TL

329 TL cannot be given.
Money amount should be a multiple of 5 TL.
```

7. Write a C program that reads several lines from a text file named **sentence.txt**, and gets a letter from the user, validates that it is a lowercase letter and copies only the words that begin with the user-specified letter and with its uppercase to another file named **words.txt**. Your program should also find the

- total number of words,
- total number of words that begin with the user-specified letter and its uppercase.

and displays those information to the screen in a format as in Example Run.

NOTE: The words are seperated with a blank or new line (\n) character, and file does not contain any punctuation characters!
HINT: Use toupper() function.

sentence.txt contains:

```
The more we move our bodies
the faster the spring weather will actually get here Theres
no better band to prove this than
Dont let that symbol instead of name stop you
If you think fans are safe from Pughs jabs
think again The band opened for the Red Hot Chili Peppers
on their previous tour and Pugh describes the experience this way
Whereas the typical RHCP audience could successfully operate a
textile manufacturing plant the typical audience could barely work out
a feasible dish-washing schedule at a local punk house
Honestly we just played to the 30 or so folks in the stadium who looked
like they had a pile of dishes waiting for them at home
```

words.txt will contain:

```
The
the
the
Theres
to
this
than
that
think
think
The
the
their
tour
the
this
the
typical
textile
the
typical
to
the
the
they
them
```

Example Run:

```
Enter a lowercase letter: t
There are 118 words totally, and 26 of them are starting with't'
```

Project Name: LabGuide8_7
File Name: Question_7.cpp