

**Recep Tayyip Erdogan University**

**Faculty of Engineering and Architecture**

**Computer Engineering**

CE103- Algorithms and Programming I

**Homework-5 (Week-14)**

**Fall Semester, 2020-2021**

| Instructor | Asst. Prof. Dr. Uğur CORUH |
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| Contact Information | [ugur.coruh@erdogan.edu.tr](mailto:ugur.coruh@erdogan.edu.tr) |
| Google Classroom Code | **ouw44uk** |
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| Due Date | **05.02.2021 23:59** |

**Complete the following homework requirements, prepare them in the format given in the link below until the deadline and time, and upload them to the related assignment in the classroom.**

<https://drive.google.com/file/d/1yqSXZZ3346iIqotb_e_yzaryfxEXE0fR/view?usp=sharing>

**Grades:**

| Problem-1 | 60 points |
| --- | --- |
| Problem-2 | 40 points |
| **Total** | **100** points |

*You will develop the following examples in C language. The examples with C ++ will not be accepted.*

NOTE: In the code, add the following information with printf. Put the description of each application in the problem part.

*int main(void)*

*{*

*printf("Build Time: %s %s\n", \_\_DATE\_\_, \_\_TIME\_\_);*

*printf("Owner: Name Surname\n");*

*printf("Student ID: 11111111\n");*

*printf("Course: CE-103\n");*

*printf("Homework: 1\n");*

*printf("Problem: “Printing the Text Entered on the Screen in Reverse \n");*

*... your codes...*

*}*

**Problem-1**: *Create a call center application with priority queues and heaps (60)*

In this application you will develop a C application that will implement priority queues

“A phone operator answering n phones

Each phone i has xi people waiting in

line for their calls to be answered.

Phone operator needs to answer the

phone with the largest number of

people waiting in line.

New calls come continuously, and

some people hang up after waiting.”

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Get phone count n as input and set random waiting numbers for each line then add two function

* new call method to the ith phone will increase one waiting line in this phone and reorganize heap
* the open phone method will return the longest line phone id and also will decrease line size minus one and the heap will be reorganized
* also, each operation step and the line waiting for numbers will be printed to the console, and a real-time priority list of phones will be displayed on the screen you will print a list of phone ids in order to their priorities.

**Problem-1**: *Implement Radix and Counting Sorts (40)*

In this application, you will develop a C application that will implement radix and counting sort in a single application.

**Note : Please provide source code of applications with your reports**