

Istanbul Technical University  
Faculty of Computer and Informatics  
Computer Engineering Department

BLG 233E  
Data Structures and Laboratory  
Homework 3  
Report

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December 10, 2017

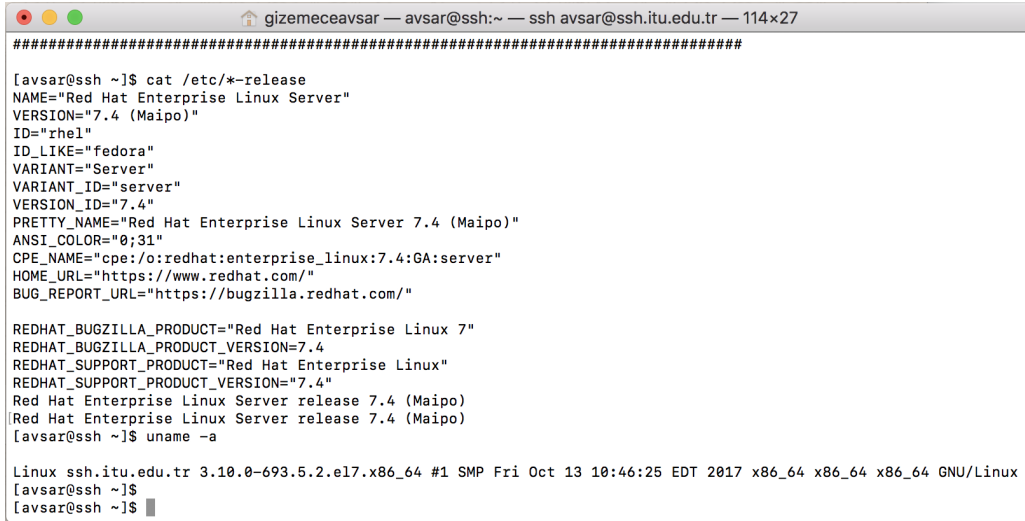
# 1 Used Libraries and Methods

In this assignment, *streams* are used for file handling (fstream) and parsing (stringstream) due to their simplicity. Names and patient codes are kept as *strings*. The queue structure is implemented as a *linked list* since the number of patients is unknown.

Additional information is given in the code with the comments. This report also includes the pseudocode of the patient care algorithm.

## 2 Console Output

Figure 1: OS versions

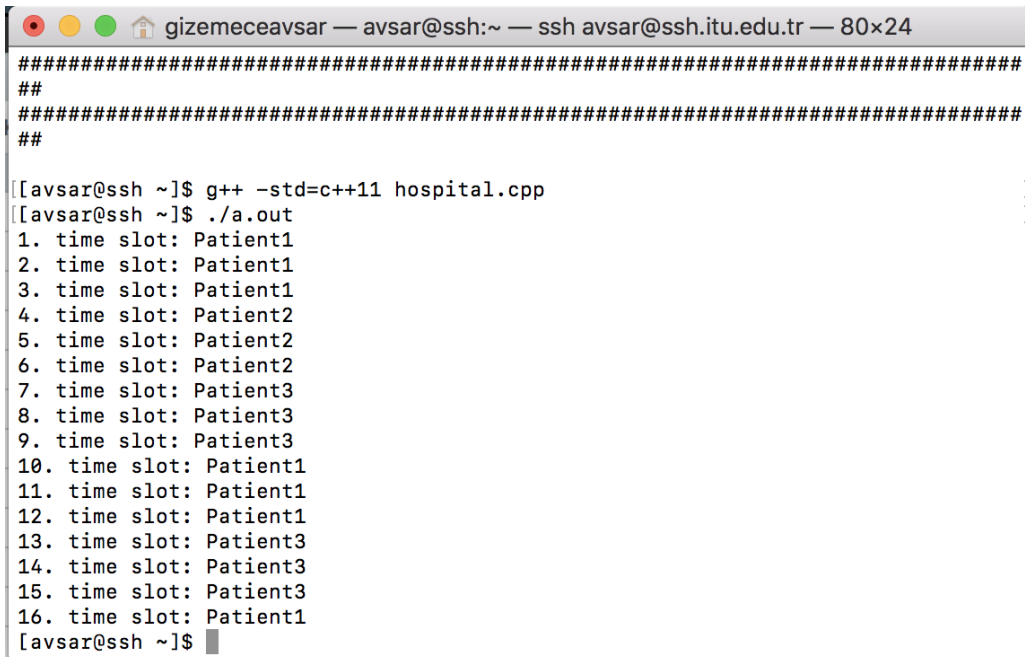


```
gizemeceavsar — avsar@ssh:~ — ssh avsar@ssh.itu.edu.tr — 114x27
#####
[avsar@ssh ~]$ cat /etc/*-release
NAME="Red Hat Enterprise Linux Server"
VERSION="7.4 (Maipo)"
ID="rhel"
ID_LIKE="fedora"
VARIANT="Server"
VARIANT_ID="server"
VERSION_ID="7.4"
PRETTY_NAME="Red Hat Enterprise Linux Server 7.4 (Maipo)"
ANSI_COLOR="0;31"
CPE_NAME="cpe:/o:redhat:enterprise_linux:7.4:GA:server"
HOME_URL="https://www.redhat.com/"
BUG_REPORT_URL="https://bugzilla.redhat.com/"

REDHAT_BUGZILLA_PRODUCT="Red Hat Enterprise Linux 7"
REDHAT_BUGZILLA_PRODUCT_VERSION=7.4
REDHAT_SUPPORT_PRODUCT="Red Hat Enterprise Linux"
REDHAT_SUPPORT_PRODUCT_VERSION="7.4"
Red Hat Enterprise Linux Server release 7.4 (Maipo)
Red Hat Enterprise Linux Server release 7.4 (Maipo)
[avsar@ssh ~]$ uname -a

Linux ssh.itu.edu.tr 3.10.0-693.5.2.el7.x86_64 #1 SMP Fri Oct 13 10:46:25 EDT 2017 x86_64 x86_64 x86_64 GNU/Linux
[avsar@ssh ~]$
[avsar@ssh ~]$
```

Figure 2: Console Output



```
gizemeceavsar — avsar@ssh:~ — ssh avsar@ssh.itu.edu.tr — 80x24
#####
##
#####
##

[avsar@ssh ~]$ g++ -std=c++11 hospital.cpp
[avsar@ssh ~]$ ./a.out
1. time slot: Patient1
2. time slot: Patient1
3. time slot: Patient1
4. time slot: Patient2
5. time slot: Patient2
6. time slot: Patient2
7. time slot: Patient3
8. time slot: Patient3
9. time slot: Patient3
10. time slot: Patient1
11. time slot: Patient1
12. time slot: Patient1
13. time slot: Patient3
14. time slot: Patient3
15. time slot: Patient3
16. time slot: Patient1
[avsar@ssh ~]$
```

The code is compiled with C++11 standards and run. Compilation command:

```
g++ -std=c++11 hospital.cpp
```

### 3 Pseudocode

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**Algorithm 1** Pseudocode for the hospital simulation

---

```
while hospital is not empty do
  if there are red coded patients then
    doctor takes the first red coded patient
    time passes
    if patient's treatment is completely over then
      patient leaves
    else
      patient becomes yellow
    end if
  else if there are yellow coded patients then
    doctor takes the first yellow coded patient
    for i from 0 to minimum time of yellow code do
      time passes
      if patient's treatment is completely over then
        patient leaves
      end if
    end for
    if patient didn't leave then
      patient becomes green
    end if
  else if there are green coded patients then
    doctor takes the first green coded patient
    for i from 0 to minimum time of green code do
      time passes
      if patient's treatment is completely over then
        patient leaves
      end if
    end for
    if patient didn't leave then
      patient becomes green
    end if
  else
    time passes
  end if
end while
```

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