**ISE302 – Operating Systems**

**Fall 2021**

**Assignment-1 Report**

Aral ŞEN

150170217

**1** (30 points) Please investigate the given code below. Compile and run the program, and

answer the following questions accordingly.

#include <stdio.h>  
#include <stdlib.h>  
#include <unistd.h>  
#include <sys/wait.h>  
  
int main() {  
 int returnValue = 0;  
  
 int i;  
 for (i = 0; i < 3; i++) {  
 returnValue = fork();  
 if (returnValue == -1) {  
 exit(0);  
 }  
 else if (returnValue != 0) {  
 wait(NULL);  
 }  
  
 printf("Current process id: %d\n", getpid());  
 }  
  
 return 0;  
}

1. (5 points) How many times will the system call *fork()* be called?
2. (5 points) What will the program's output look like?
3. (10 points) How many processes will the program end up with in total? How many of them can be identified as parent and as child processes?
4. (10 points) Draw a tree that represents the hierarchy of the created processes

**2** (70 points) In this part of the homework, you are asked to write a program using multiple

threads to determine the largest element in an integer array. In addition you need to evaluate

the performance of your program in terms of time-complexity.