

Exercise 2 – Operation systems

1. We execute the server as a job. The server prints its Process ID and a message that it waits for a client signal.

```
edenshtein30@com4.cs.colman.ac.il:22 - Bitvise xterm - edenshtein30@com4: ~/EX2
edenshtein30@com4:~/EX2$ ./ex2_srv.out &
[1] 13662
edenshtein30@com4:~/EX2$ The server is running and waiting for clients signals....
Server process ID is: 13662
```

2. We executed 1 client with the arguments 13736 (Server process ID), 5 (first value), 1 (plus operator), 3 (second value). The server returns the answer of the equation.

```
edenshtein30@com4.cs.colman.ac.il:22 - Bitvise xterm - edenshtein30@com4: ~/EX2
edenshtein30@com4:~/EX2$ ./ex2_srv.out &
[1] 13736
edenshtein30@com4:~/EX2$ The server is running and waiting for clients signals....
Server process ID is: 13736
./ex2_client.out 13736 5 1 3
The result for the client with the process ID 13739 is: 8
edenshtein30@com4:~/EX2$
```

3. In this demonstration we executed 3 clients simultaneously in the background. The parameters of the first and the second clients are our 4 last digits of our ID as requested. We used the 'jobs' command during the process and you can see that one client has already finished while the other two are still running in the background.

```
edenshtein30@com4.cs.colman.ac.il:22 - Bitvise xterm - edenshtein30@com4: ~/EX2
edenshtein30@com4:~/EX2$ ./ex2_srv.out &
[1] 13835
edenshtein30@com4:~/EX2$ The server is running and waiting for clients signals....
Server process ID is: 13835
edenshtein30@com4:~/EX2$ ./ex2_client.out 13835 6592 2 5 & ./ex2_client.out 13835 3034 1 7 & ./ex2_client.out 13835 23 3 6 &
[2] 13849
[3] 13850
[4] 13851
edenshtein30@com4:~/EX2$ The result for the client with the process ID 13849 is: 6587
jobs
[1] Running ./ex2_srv.out &
[2] Done ./ex2_client.out 13835 6592 2 5
[3]- Running ./ex2_client.out 13835 3034 1 7 &
[4]+ Running ./ex2_client.out 13835 23 3 6 &
edenshtein30@com4:~/EX2$ The result for the client with the process ID 13851 is: 138
The result for the client with the process ID 13850 is: 3041
```

4. We execute 1 client and then we waited 60 seconds for the server to execute the timer function since no other clients have tried to send a request.

```
edenshtein30@com4.cs.colman.ac.il:22 - Bitvise xterm - edenshtein30@com4: ~/EX2
Last login: Sat May 9 18:56:04 2020 from 84.229.21.253
edenshtein30@com4:~$ cd EX2
edenshtein30@com4:~/EX2$ gcc ex2_srv.c -o ex2_srv.out
edenshtein30@com4:~/EX2$ ./ex2_srv.out &
[1] 13952
edenshtein30@com4:~/EX2$ The server is running and waiting for clients signals....
Server process ID is: 13952
./ex2_client.out 13952 8 2 3
The result for the client with the process ID 13953 is: 5
edenshtein30@com4:~/EX2$ The server was closed because no service request was received for the last 60 seconds
```

5. We execute a client without the necessary parameters and we received an error message.

```
edenshtein30@com4.cs.colman.ac.il:22 - Bitvise xterm - edenshtein30@com4: ~/EX2
edenshtein30@com4:~/EX2$ ./ex2_srv.out &
[1] 14060
edenshtein30@com4:~/EX2$ The server is running and waiting for clients signals....
Server process ID is: 14060
./ex2_client.out 14060
ERROR FROM EX2
edenshtein30@com4:~/EX2$
```

6. We tried to divide by zero and we received an error message.

```
edenshtein30@com4.cs.colman.ac.il:22 - Bitvise xterm - edenshtein30@com4: ~/EX2
edenshtein30@com4:~/EX2$ ./ex2_srv.out &
[1] 14075
edenshtein30@com4:~/EX2$ The server is running and waiting for clients signals....
Server process ID is: 14075
./ex2_client.out 14075 5 4 0
ERROR_FROM_EX2
```

7. Screenshot from the bitvise client software in order to show that only the necessary files are in the exercise folder and that there are no temporary files.

Remote files

Filter:

/home/edenshtein30/EX2

Name	Size	Type	Date Modified	Permissions
ex2_client.c	5,034	C Source	09/05/2020 19:51	-rw-r--r--
ex2_client.out	13,376	Wireshark cap...	09/05/2020 19:51	-rwxr-xr-x
ex2_srv.c	5,794	C Source	09/05/2020 19:40	-rw-r--r--
ex2_srv.out	13,448	Wireshark cap...	09/05/2020 19:43	-rwxr-xr-x