# BLG312E - Operating Systems
# Assignment 1

## Question 1

```
1  #include <stdio.h>
2  #include <stdlib.h>
3  #include <unistd.h>
4  #include <sys/types.h>
5  #include <sys/wait.h>
6
7  int main() {
8      int i, res, depth=5;
9      for (i = 0; i < depth; i++) {
10         res = fork();
11         if (res == 0) {
12          depth = depth - 1;
13             while(depth > 0) {
14                 depth = depth - 1;
15                 res = fork();
16                 if(res != 0) {
17                  wait(NULL);
18                  exit(0);
19                }
20             }
21             exit(0);
22         }
23     }
24     wait(NULL);
25     exit(0);
26 }
```

Child enters if block, parent continues generating children (5 children total) then leaves

starting from if block, each children enters while block with depth = 5

4, 3, 2, 1 -> 4 iterations inside while loop

parent exits, child continues

According to given code, answer following questions:

1. How many processes does this code create? How many of them can be identified as children?

   26 processes are created
   in UNIX type systems only another process creates a process,
   a hierarchy exists among processes(parent-child)
   25 children

2. Draw a tree that represents processes for this program.

3. Modify this code, so that it only creates 101 processes.

   set depth = 10,
   10 branches from first process,
   times 10 process per branch

4. Modify this code, so that the youngest processes has a sibling(Their parents create one more process).

   insert a fork call between line 16 and 17

## Submission Rules

- Submit a pdf report that explains the code and answers the questions to ninova.
- Report must not exceed 3 pages.
- Any form of plagiarism will not be tolerated. You must solve each question by yourself.
- Show all of your work in order to get full marks.