



University of Cyprus

Department of Electrical and
Computer Engineering

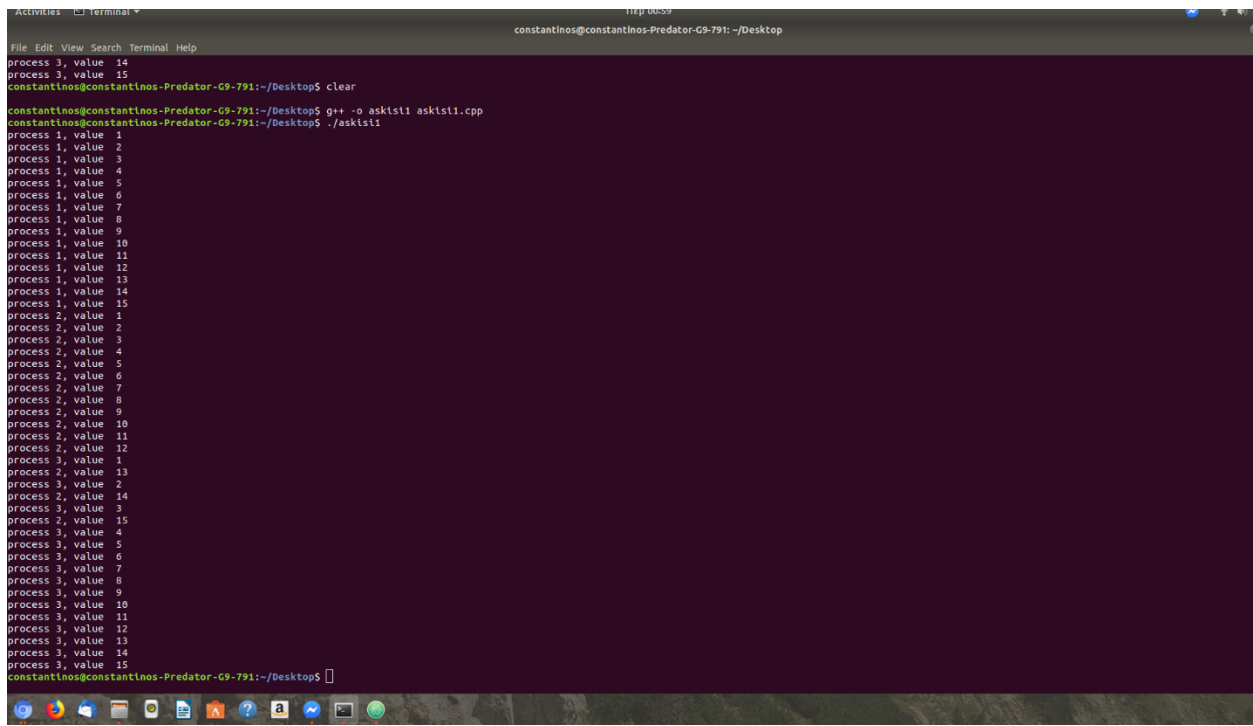
ECE 316 - Operating Systems and Networking Laboratory

Practical Assignment 6

Κωνσταντίνος Χατζηκώστα

918088

Άσκηση 1



```
constantinos@constantinos-Predator-G9-791:~/Desktop$ clear
constantinos@constantinos-Predator-G9-791:~/Desktop$ g++ -o askts1 askts1.cpp
constantinos@constantinos-Predator-G9-791:~/Desktop$ ./askts1
process 3, value 14
process 3, value 15
process 1, value 1
process 1, value 2
process 1, value 3
process 1, value 4
process 1, value 5
process 1, value 6
process 1, value 7
process 1, value 8
process 1, value 9
process 1, value 10
process 1, value 11
process 1, value 12
process 1, value 13
process 1, value 14
process 1, value 15
process 2, value 1
process 2, value 2
process 2, value 3
process 2, value 4
process 2, value 5
process 2, value 6
process 2, value 7
process 2, value 8
process 2, value 9
process 2, value 10
process 2, value 11
process 2, value 12
process 3, value 1
process 3, value 2
process 3, value 3
process 3, value 4
process 3, value 5
process 3, value 6
process 3, value 7
process 3, value 8
process 3, value 9
process 3, value 10
process 3, value 11
process 3, value 12
process 3, value 13
process 3, value 14
process 3, value 15
constantinos@constantinos-Predator-G9-791:~/Desktop$
```

- a) Κάθε φορά που τρέχει το πρόγραμμα τα μηνύματα εκτυπώνονται με διαφορετική τυχαία σειρά.
- b) Η τιμή που επιστρέφει η `fork()` είναι το `process id` της κάθε διεργασίας που εκτελεί την `fork()` ενώ τα παιδιά της διεργασίας που εκτέλεσε την `fork()` επιστρέφει την τιμή 0 όπου για να πιάσουμε το `id` των παιδιών πρέπει να καλέσουμε την `getid()`.
- c) Με δύο συνεχόμενες κλήσεις τις `fork()` δημιουργούνται και υπάρχουν 4 διεργασίες που εκτελούν το πρόγραμμα.
- d) Η αλλαγή στις τιμές των μεταβλητών μιας διεργασίας δεν επηρεάζουν μια άλλη διεργασία του ίδιου προγράμματος γιατί η κάθε διεργασία έχει ανεξάρτητα τις δίκες τις μεταβλητές.

Άσκηση 2

A)

```
Activities Chromium Web Browser 11p 01:24
constantinos@constantinos-Predator-G9-791t: ~/Desktop

File Edit View Search Terminal Help
process 3, value 5
^C
constantinos@constantinos-Predator-G9-791t:~/Desktop$ clear

constantinos@constantinos-Predator-G9-791t:~/Desktop$ g++ -o askisi2a askisi2a.cpp
constantinos@constantinos-Predator-G9-791t:~/Desktop$ ./askisi2a
constantinos@constantinos-Predator-G9-791t:~/Desktop$ process 1, value 1
process 2, value 1
process 3, value 1
process 1, value 2
process 3, value 2
process 2, value 2
process 2, value 3
process 1, value 3
process 3, value 3
process 1, value 4
process 3, value 4
process 2, value 4
process 1, value 5
process 3, value 5
process 2, value 5
process 3, value 6
process 2, value 6
process 3, value 7
process 1, value 7
process 2, value 7
process 2, value 8
process 3, value 8
process 1, value 8
constantinos@constantinos-Predator-G9-791t:~/Desktop$ process 3, value 9
process 1, value 9
process 2, value 9
process 1, value 10
process 3, value 10
process 2, value 10
process 2, value 11
process 3, value 11
process 1, value 11
process 1, value 12
process 3, value 12
process 2, value 12
process 1, value 13
process 2, value 13
process 3, value 13
process 1, value 14
process 2, value 14
process 3, value 14
process 1, value 15
process 3, value 15
process 2, value 15
^C
```

B)

```
Activities Terminal 11p 01:25
constantinos@constantinos-Predator-G9-791t: ~/Desktop

File Edit View Search Terminal Help
process 1, value 15
process 3, value 15
process 2, value 15
^C
constantinos@constantinos-Predator-G9-791t:~/Desktop$ g++ -o askisi2b askisi2b.cpp
constantinos@constantinos-Predator-G9-791t:~/Desktop$ ./askisi2b
constantinos@constantinos-Predator-G9-791t:~/Desktop$ process 1, value 1
process 1, value 2
process 1, value 3
process 1, value 4
process 1, value 5
process 1, value 6
process 1, value 7
process 1, value 8
process 1, value 9
process 1, value 10
process 1, value 11
process 1, value 12
process 1, value 13
process 1, value 14
process 1, value 15
process 2, value 1
process 2, value 2
process 2, value 3
process 2, value 4
process 2, value 5
process 2, value 6
process 2, value 7
process 2, value 8
process 2, value 9
process 2, value 10
process 2, value 11
process 2, value 12
process 2, value 13
process 2, value 14
process 2, value 15
process 3, value 1
process 3, value 2
process 3, value 3
process 3, value 4
process 3, value 5
process 3, value 6
process 3, value 7
process 3, value 8
process 3, value 9
process 3, value 10
process 3, value 11
process 3, value 12
process 3, value 13
process 3, value 14
process 3, value 15
^C
```

```

1)
Activities Terminal
constantinos@constantinos-Predator-G9-791: ~/Desktop

File Edit View Search Terminal Help
process 3, value 14
process 3, value 15
^C
constantinos@constantinos-Predator-G9-791:~/Desktop$ g++ -o askisl2c askisl2c.cpp
constantinos@constantinos-Predator-G9-791:~/Desktop$ ./askisl2c
constantinos@constantinos-Predator-G9-791:~/Desktop$ process 1, value 1
process 2, value 1
process 3, value 1
process 1, value 2
process 2, value 2
process 1, value 3
process 3, value 2
process 2, value 3
process 1, value 4
process 3, value 3
process 2, value 4
process 1, value 5
process 3, value 4
process 2, value 5
process 1, value 6
process 3, value 5
process 2, value 6
process 1, value 7
process 3, value 6
process 2, value 7
process 1, value 8
process 3, value 7
process 2, value 8
process 1, value 9
process 3, value 8
process 2, value 9
process 1, value 10
process 3, value 9
process 2, value 10
process 1, value 11
process 3, value 10
process 2, value 11
process 1, value 12
process 3, value 11
process 2, value 12
process 1, value 13
process 3, value 12
process 2, value 13
process 1, value 14
process 3, value 13
process 2, value 14
process 1, value 15
process 3, value 14
process 2, value 15
process 3, value 15
^C
constantinos@constantinos-Predator-G9-791:~/Desktop$
```

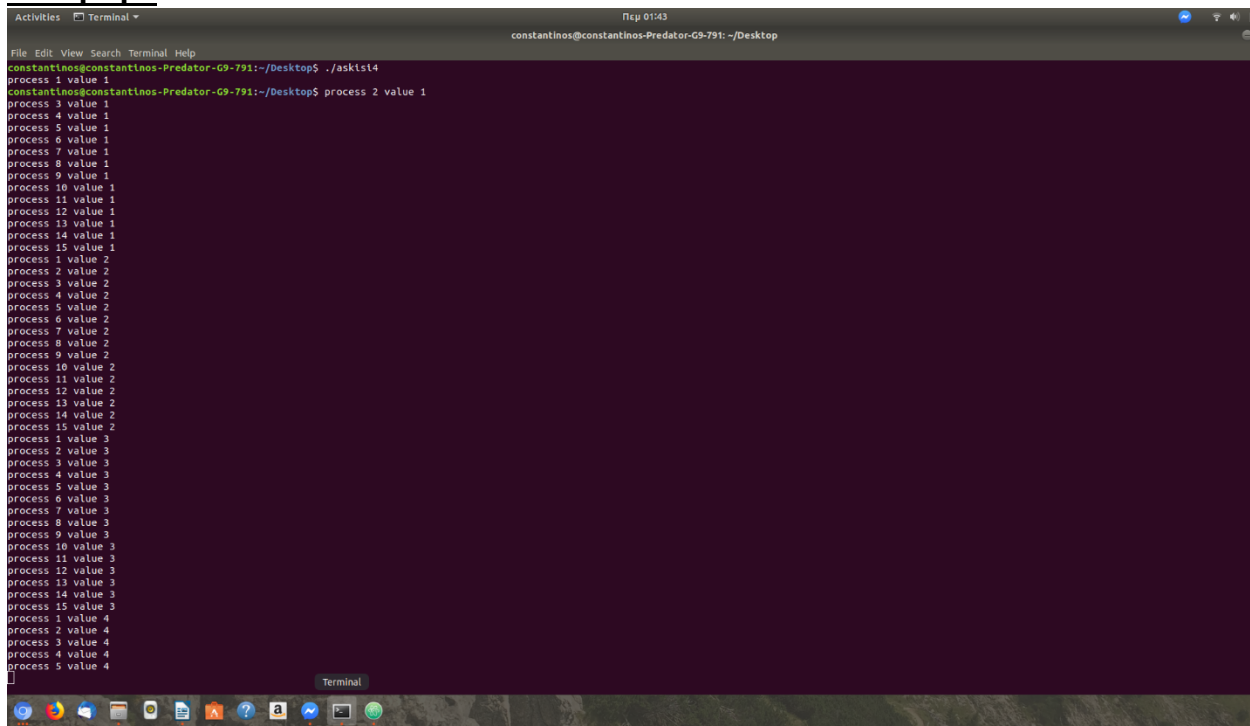
Άσκηση 3

```

Activities Terminal
constantinos@constantinos-Predator-G9-791: ~/Desktop

File Edit View Search Terminal Help
process 3, value 14
process 2, value 15
process 3, value 15
^C
constantinos@constantinos-Predator-G9-791:~/Desktop$ g++ -o askisl3 askisl3.cpp
constantinos@constantinos-Predator-G9-791:~/Desktop$ ./askisl3
process 1 value 1
process 3 value 1
process 2 value 1
process 1 value 2
process 3 value 2
process 2 value 2
process 1 value 3
process 3 value 3
process 2 value 3
process 1 value 4
process 3 value 4
process 2 value 4
process 1 value 5
process 3 value 5
process 2 value 5
process 1 value 6
process 3 value 6
process 2 value 6
process 1 value 7
process 3 value 7
process 2 value 7
process 1 value 8
process 3 value 8
process 2 value 8
process 1 value 9
process 3 value 9
process 2 value 9
process 1 value 10
process 3 value 10
process 2 value 10
process 1 value 11
process 3 value 11
process 2 value 11
process 1 value 12
process 3 value 12
process 2 value 12
process 1 value 13
process 3 value 13
process 2 value 13
process 1 value 14
process 3 value 14
process 2 value 14
process 1 value 15
process 3 value 15
process 2 value 15
constantinos@constantinos-Predator-G9-791:~/Desktop$
```

Άσκηση 4



```
File Edit View Search Terminal Help
constantinos@constantinos-Predator-G9-791:~/Desktop$ ./asktst4
process 1 value 1
constantinos@constantinos-Predator-G9-791:~/Desktop$ process 2 value 1
process 3 value 1
process 4 value 1
process 5 value 1
process 6 value 1
process 7 value 1
process 8 value 1
process 9 value 1
process 10 value 1
process 11 value 1
process 12 value 1
process 13 value 1
process 14 value 1
process 15 value 1
process 1 value 2
process 2 value 2
process 3 value 2
process 4 value 2
process 5 value 2
process 6 value 2
process 7 value 2
process 8 value 2
process 9 value 2
process 10 value 2
process 11 value 2
process 12 value 2
process 13 value 2
process 14 value 2
process 15 value 2
process 1 value 3
process 2 value 3
process 3 value 3
process 4 value 3
process 5 value 3
process 6 value 3
process 7 value 3
process 8 value 3
process 9 value 3
process 10 value 3
process 11 value 3
process 12 value 3
process 13 value 3
process 14 value 3
process 15 value 3
process 1 value 4
process 2 value 4
process 3 value 4
process 4 value 4
process 5 value 4

```

- A) Μια διεργασία όταν προσπαθεί να διαβάσει από μία σωλήνωση που είναι άδεια θα περιμένει να διαβάσει από την ίδια συγκεκριμένη σωλήνωση μόλις γραφτεί κάτι μέσα στην σωλήνωση.
- B) Όταν η πατρική διεργασία τελειώσει πριν τελειώσουν οι υπόλοιπες διεργασίες του προγράμματος τότε θα σταματήσουν και θα περιμένουν τον πατέρα αφού τις συντονίζει αλλά αφού τέλειωσε θα περιμένουν για πάντα.