Process breeder

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Preparation

1. Check for command line arguments count

   A) if it's 2, treat the provided one as a command and execute it

   B) if it's 3, execute the command from the first argument provided amount of times

   C) if it's 4, start forking! (more on next slides...)

   D) if it's anything else, error out

Process breeder description

1. Take all arguments from the command line (I'll skip explaining this one, as it's obvious and not very interesting)
2. Limit the process number
3. Try to fork a child:
   A) if it's possible (I. E. the limit hasn't been reached), execute the command and increment the counter
   B) if the limit is blocking the program from forking, wait and try again
4. Sleep for a few microseconds
5. Rinse and repeat, until the command is executed the provided amount of times.

2. Limit the process number

```
void limitProcessNumber(int procNo){
        struct rlimit lim;
        lim.rlim_cur = procNo;
        lim.rlim_max = procNo;
        setrlimit(RLIMIT_NPROC, &lim);
}
/* … */

limitProcessNumber(limit+8);
```

3. Fork and execute (function definition)

```
pid_t forkAndExecute(char * command){
    int i;
    pid_t p = fork();

    if(p < 0){
        return -1;
    }

    if(p == 0){
        system(command);
        exit(0);
         return 0;
    }
}
```

3. Fork and execute (usage in main) and sleep

```
while(1){
    pid_t child;
    do{
        child = forkAndExecute(command);
        wait(NULL);
    }
    while(child < 0);
   comCount++;
    if (comCount >= amount) break;
    usleep(2500);
}
```

The result

```
6domagalski@taurus:~$ cd Desktop/lekcje/6sem/PIUS/breeder/
6domagalski@taurus:~/Desktop/lekcje/6sem/PIUS/breeder$ ./command
Usage: command [amount] [limit]
6domagalski@taurus:~/Desktop/lekcje/6sem/PIUS/breeder$ ./command ls
breeder  breeder.c  command  command.c  whatever  whatever.c
6domagalski@taurus:~/Desktop/lekcje/6sem/PIUS/breeder$ ./command ls 2
breeder  breeder.c  command  command.c  whatever  whatever.c
breeder  breeder.c  command  command.c  whatever  whatever.c
6domagalski@taurus:~/Desktop/lekcje/6sem/PIUS/breeder$ ./command ls 10 3
breeder  breeder.c  command  command.c  whatever  whatever.c
breeder  breeder.c  command  command.c  whatever  whatever.c
breeder  breeder.c  command  command.c  whatever  whatever.c
breeder  breeder.c  command  command.c  whatever  whatever.c
breeder  breeder.c  command  command.c  whatever  whatever.c
breeder  breeder.c  command  command.c  whatever  whatever.c
breeder  breeder.c  command  command.c  whatever  whatever.c
breeder  breeder.c  command  command.c  whatever  whatever.c
breeder  breeder.c  command  command.c  whatever  whatever.c
breeder  breeder.c  command  command.c  whatever  whatever.c
6domagalski@taurus:~/Desktop/lekcje/6sem/PIUS/breeder$ ./command ./whatever 10 3
Whatever
Whatever
Whatever
Whatever
Whatever
Whatever
Whatever
Whatever
Whatever
Whatever
6domagalski@taurus:~/Desktop/lekcje/6sem/PIUS/breeder$ ./command ./whatever 10 2000000
Maximum limit is 10000
6domagalski@taurus:~/Desktop/lekcje/6sem/PIUS/breeder$
```

Problems

- While setting the limit, it always seem to be a little bit short. It always lacks a few processes (sometimes 5, sometimes 9). It's hard to predict on what is needed to be added.
- There is an internal hard limit (about 10000 children), that cannot be surpassed.