SET-X

BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE, PILANI (RAJASTHAN)
I SEMESTER 2018-2019
Mid Semester Test - PART A (CLOSED BOOK)

Course No.: IS F462 **Course Title: Network Programming**
Date: 13th October (2-2:30) **Maximum Marks: 10% (10M) (35 Mins)**

Note:

- Write answers in this sheet itself.
- Overwritten answers will not be accepted for rechecks
- Once you submit PART-A, you can collect PART-B.

Q1. Write answers to the following questions in the grid given below. A question may have more than one correct option. Marks will be awarded only if all correct options and only correct options are chosen. [0.25*16=4M]

1	2	3	4	5	6	7	8	9	10	11	12	12	14	15	16

1) Zombie processes are those processes whose parent process is terminated (T/F)
2) System calls are costlier than function calls in terms of CPU operations (T/F)
3) Signal which can be used for setting timers in a process is SIGTSTP (T/F)
4) A read() call on FIFO doesn't succeed unless there is another process which is writing currently (T/F)
5) Kernel generates SIGPIPE signal if :
   (a) a process writes to a pipe whose read ends are closed
   (b) a process reads from a pipe whose write ends are closed
   (c) process reads from a closed read end of a pipe
   (d) a process writes to a closed write end of a pipe
6) To generate a signal following system call(s) can be used
   (a) signal()
   (b) kill()
   (c) raise()
   (d) sigprocmask()
7) If SIGINT signal is generated 10 times before the first SIGINT signal is delivered, then only one SIGINT signal is delivered to the process (T/F)
8) A process can have only one timer running at a time (T/F)
9) A read() call on pipe returns zero when there is no data in the pipe (T/F)
10) Global variables are stored in :
    (a) stack
    (b) heap
    (c) data segment
    (d) code segment
11) Signal which can be used for setting timers in a process is SIGTSTP (T/F)
12) The purpose of set-user-id flag in File metadata is to ensure non-privileged users can access privileges of root (T/F)
13) Signals are delivered to the process in the same order they were generated (T/F)
14) A System V Message queue created with IPC_PRIVATE key is accessible to child process without using msgget() (T/F)
15) Pointers stored in System V Shared memory will be valid across participating processes (T/F)
16) System V Semaphore API supports multiple operations on multiple semaphores atomically (T/F)

Q2. Answer briefly.

```
main ()
{
  int p[2];
  pipe (p);
  int pid = fork ();
  if (pid == 0)
    {
      close (2);
      dup (p[1]);
      execle ("/bin/ls", "ls", NULL, NULL);
      printf ("hi\n");
    }
  close (0);
  dup (p[0]);
  execle ("/usr/bin/wc", "wc", NULL, NULL);
  printf ("hello\n");
}
```

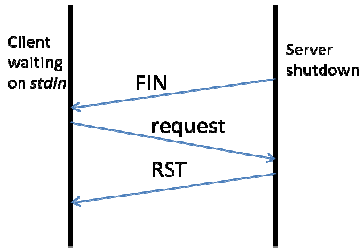
1) The above code segment implements `ls|wc`. But it is not giving right output. Identify the corrections required [1M].

```
main ()
{
 int global_var = 3;
 int pid;
 pid = vfork ();
 if (pid == 0)
 {
  global_var++;
  printf ("child %d %d\n", getpid (),global_var);
  while(1);
 }
if (pid > 0)
{
printf ("parent %d %d\n", getpid (),global_var);
}
}
```

2) What is the output of the above code segment [1M].

3) Why epoll() scales better than select()? [0.5M]

4) Assume 0 is stdin fd, and 3 is socket fd. Given that both have uncertain timings of input, handle unexpected server process crash using either I/O multiplexing or Non-blocking I/O. Do not worry about syntax. [3M]



Unexpected Server shutdown

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