# TY(IT)

# Unix Operating System

**Probable Assignment List for External Practical Exam**

1. **Write a program to use fork system call to create 5 child processes and assign 5 operations to childs.**
2. **Write a program to use vfork system call(login name by child and password by parent)**
3. **Write a program to open any application using fork sysem call.**
4. **Write a program to open any application using vfork sysem call.**
5. **Write a program to demonstrate the wait use with fork sysem call.**
6. **Write a program to demonstrate the variations exec system call.**
7. **Write a program to demonstrate the exit system call use with wait & fork sysem call.**
8. **Write a program to demonstrate the kill system call to send signals between unrelated processes.**
9. **Write a program to demonstrate the kill system call to send signals between related processes(fork).**
10. **Write a program to use alarm and signal sytem call(check i/p from user within time)**
11. **Write a program for alarm clock using alarm and signal system call.**
12. **Write a program to give statistics of a given file using stat system call. (few imp field like FAP, file type)**
13. **Write a program to give statistics of a given file using fstat system call. (few imp field like FAP, file type)**
14. Write a multithreaded program in JAVA for chatting.
15. Write a program to create 3 threads, first thread printing even no, second thread printing odd no. and third thread printing prime no.
16. Write a multithread program in linux to use the pthread library.
17. Write a multithreaded program for producer-consumer problem in JAVA.
18. **Write a program to implement shell script for calculator.**
19. **Write a program to implement digital clock using shell script.**
20. Write a program to check whether system is in network or not using ’ping’ command using shell script.

21. Write a program to sort 10 the given 10 numbers in ascending order using shell.
22. Write a program to print “Hello World” message in bold, blink effect, and in different colors like red, blue etc.
23. **Write a shell script to find whether given file exist or not in folder or on drive.**
24. Write a shell script to show the disk partitions and their size and disk usage i.e free space.
25. Write a shell script to find the given file in the system using find or locate command.
26. Write a shell script to download webpage at given url using command(wget)
27. Write a shell script to download a webpage from given URL . (Using wget command).
28. Write a shell script to display the users on the system . (Using finger or who command).
29. **Write a python recursive function for prime number input limit in as parameter to it.**
30. **Write a program to display the following pyramid. The number of lines in the pyramid should not be hard-coded. It should be obtained from the user. The pyramid should appear as close to the center of the screen as possible.**
    **(Hint: Basics n loops)**
31. **Take any txt file and count word frequencies in a file.(hint : file handling + basics )**
32. **Generate frequency list of all the commands you have used, and show the top 5 commands along with their count. (Hint: history command hist will give you a list of all commands used.)**
33. Write a shell script that will take a filename as input and check if it is executable. 2. Modify the script in the previous question, to remove the execute permissions, if the file is executable.
34. Generate a word frequency list for wonderland.txt. Hint: use grep, tr, sort, uniq (or anything else that you want)
35. Write a bash script that takes 2 or more arguments,
    i)All arguments are filenames
    ii)If fewer than two arguments are given, print an error message

iii)If the files do not exist, print error message

iv)Otherwise concatenate files

36. Write a python function for merge/quick sort for integer list as parameter to it.

37. Write a shell script to download a given file from ftp://10.10.13.16 if it exists on ftp. (use lftp, get and mget commands).

38. Write program to implement producer consumer problem using semaphore.h in C/JAVA

39. Write a program to implement reader-writers problem using semaphore.

40. **Write a program for chatting between two/three users to demonstrate IPC using message passing (msgget, msgsnd, msgrcv ).**

41. **Write a program to demonstrate IPC using shared memory (shmget, shmat, shmdt). In this, one process will send A to Z/1 to 100 as input from user and another process will receive it.**

42. **Write a program to demonstrate IPC using shared memory (shmget, shmat, shmdt). In this, one process will send from file A to Z/1 to 100 as input from user and another process will receive it in file. (use same directory and different name files)**

43. Write a program to demonstrate IPC using shared memory (shmget, shmat, shmdt). In this, one process will take numbers as input from user and second process will sort the numbers and put back to shared memory. Third process will display the shared memory.

44. Write a program in which different processes will perform different operation on shared memory. Operation: create memory, delete, attach/ detach(using shmget, shmat, shmdt).

45. Write programs to simulate linux commands cat, ls, cp, mv, head etc.

46. Write a program to ensure that function f1 should executed before executing function f2 using semaphore. (Ex. Program should ask for username before entering password).

47. Write a program using OpenMP library to parallelize the for loop in sequential program of finding prime numbers in given range.

48. Using OpemnMP library write a program in which master thread count the total no. of threads created, and others will print their thread numbers.

49. Implement the program for IPC using MPI library (“Hello world” program).

50. **Write a 2 programs that will both send and messages and construct the following dialog between them**

    **(Process 1) Sends the message "Are you hearing me?"**

    **(Process 2) Receives the message and replies "Loud and Clear".**

    **(Process 1) Receives the reply and then says "I can hear you too".**

    **IPC:Message Queues:msgget, msgsnd, msgrcv.**

51. **Write a program for TCP to demonstrate the socket system calls in c/python**
52. **Write a program for UDP to demonstrate the socket system calls in c/python**
53. Implement echo server using TCP in iterative/concurrent logic.

54. Implement echo server using UDP in iterative/concurrent logic.

55. **Write a program using PIPE, to Send data from parent to child over a pipe. (unnamed pipe )**

56. **Write a program using FIFO, to Send data from parent to child over a pipe. (named pipe)**

57. **Write a program using PIPE, to Send file from parent to child over a pipe. (unnamed pipe )**

58. **Write a program using FIFO, to Send file from parent to child over a pipe. (named pipe)**

59. **Write a program using PIPE, to convert uppercase to lowercase filter to read command/ from file**

60. **Write a program to illustrate the semaphore concept. Use fork so that 2 process running simultaneously and communicate via semaphore. (give diff between sem.h/semaphore.h)**

61. **Write 3 programs separately, 1st program will initialize the semaphore and display the semaphore ID. 2nd program will perform the P operation and print message accordingly. 3rd program will perform the V operation print the message accordingly for the same semaphore declared in the 1st program.**
62. **Write a program to demonstrate the lockf system call for locking.**
63. **Write a program to demonstrate the flock system call for locking**.
64. Using FIFO as named pipe use read and write system calls to establish communication (IPC) between two ends.

65. write shell script with FIFO/mknod (named pipe) us for communication (IPC)

66. write prog using FIFO/mknod (named pipe)/unmanned pipe for uppercase to lowercase to conversion

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