Lab_4: [Process Management tools in Linux]

Assignment_1:
- Write the functions of {ps, ps lx, ps –aux} commands in linux.
- What is the command to display all the processes under root?
- What is the command to display the name of a process?
- How to display the running processes in the terminal?
- How to get the details of a particular process in the terminal?

Assignment_2:
- Learn and document the ***top*** command to display the resource utilization statistics of processes. Try other variants of top command such as ***htop, atop, vtop***. To install htop : *sudo apt-get install htop*
- Compile the program cpu.c given to you and execute it. This program runs in an infinite loop without terminating. Now open another terminal, run the top command and answer the following questions about the cpu process.
  - What is the PID of the process running the cpu command?
  - How much CPU and memory does this process consume?
  - What is the current state of the process? For example, is it running or in a blocked state?

Assignment_3: **Document and present** the ***proc*** file system of linux, ***iostat*** command and ***pmap*** tool.

To use pmap, one needs to know the process ID of the process of interest. Thus run *ps auxw* to list the processes; then pick one of them. Now, run pmap using various flags like **pmap –X pid** to reveal details about the process. What you observe? How many different entities make up the address space?

Assignment_4: Consider the two programs memory1.c and memory2.c uploaded in the moodle. Compile and run them one after the other. Both programs allocate a large array in memory. One of them accesses the array and the other does not. Both programs pause before exiting to let you inspect their memory usage. You can inspect the memory used by a process with the ps command. In particular, the output will tell you what the total size of the "virtual" memory of the process is, and how much of this is actually physically resident in memory. The virtual memory of the process is the memory the process thinks it has, while the OS only allocates a subset of this memory physically in RAM.

You are to write the observations of yours after exercising this.

Assignment_5: Demonstrate the parent and child processes through **top tool**. The parent and child programs should be written by you.

About Submission: You are to exercise these assignments and record it in one document called <**rollno_lab4.pdf**> (a pdf file) and submit it. Only one file to be submitted and the student's detail must be written on the first page of the document.