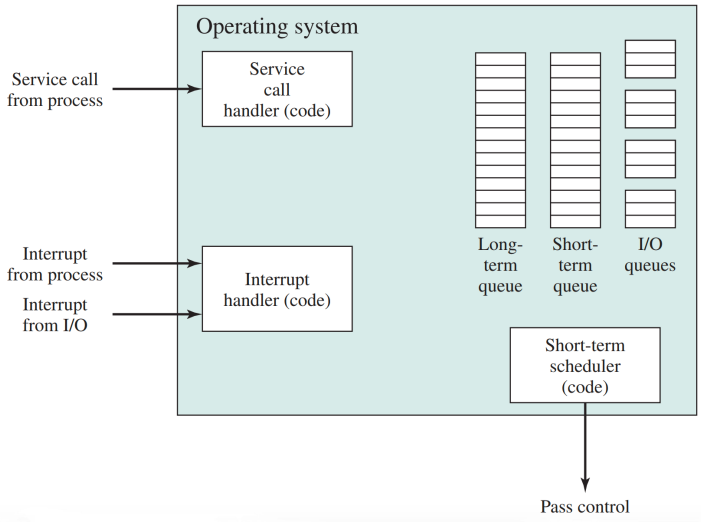
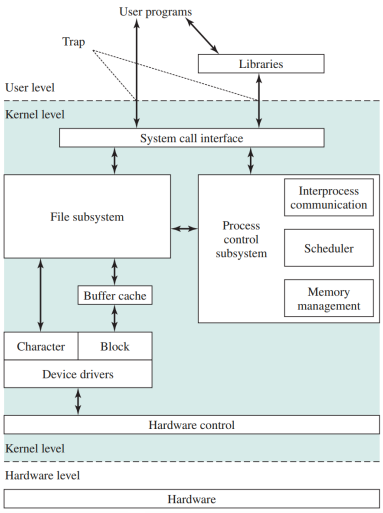
Question 1- Explain the following figure (each module and the relationships)



Question 2- The following figure shows the traditional Unix Kernel. Explain each layer, each module and the relationships.



Question 3-

Consider the following program:

```
const int n = 50;
int tally;
void total()
{
    int count;
    for (count = 1; count<= n; count++){
       tally++;
    }
}
void main()
{
    tally = 0;
    parbegin (total (), total ());
    write (tally);
}
```

Determine the proper lower bound and upper bound on the final value of the shared variable *tally* output by this concurrent program. Assume processes can execute at any relative speed and that a value can only be incremented after it has been loaded into a register by a separate machine instruction.

Question 4-

Consider the following workload:

Process	Burst Time	Priority	Arrival Time
P1	50 ms	4	0 ms
P2	20 ms	1	20 ms
P3	100 ms	3	40 ms
P4	40 ms	2	60 ms

Show the schedule using shortest remaining time, nonpreemptive priority (a smaller priority number implies higher priority) and round robin with quantum 30 ms. Use time scale diagram as shown below for the FCFS example to show the schedule for each requested scheduling policy.