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**Subject - OS**

**Qn 5: Write a program to report behaviour of Linux kernel including kernel version, CPU type and CPU information.**

```
#include <stdio.h>
#include <stdlib.h>

int main() {
    system("clear");
    system("echo");

    printf("The CPU Model: ");
    system("cat /proc/cpuinfo | grep -m1 'model name' | cut -c 14-");


    printf("\nThe Kernel Version: ");
    system("cat /proc/sys/kernel/osrelease");

    printf("\nThe amount of time CPU has spent in user mode: ");
    system("cat /proc/stat | grep -m1 'cpu' | cut -c 15-18");

    printf("\nThe number of context switches: ");
    system("cat /proc/stat | grep 'ctxt' | cut -c 6-");

    return 0;
}
```

## Output

 vinayy@DESKTOP-FRDB08F: ~/cpy

```
Intel(R) Core(TM) i5-7500 CPU @ 3.40GHz
The CPU Model:
5.15.90.1-microsoft-standard-WSL2
The Kernel Version:
8 49
The amount of time CPU has spent in user mode:
201895
vinayy@DESKTOP-FRDB08F:~/cpy$ _
```

**Qn 6: Write a program to report behaviour of Linux kernel including information on configured memory, amount of free and used memory. (Memory information)**

```
#include <stdio.h>
#include <stdlib.h>

int main(int argc, char *argv[]) {
    printf("The number of processes since the system was last booted:\n");
    system("cat /proc/stat | grep 'processes' | cut -c 11-15");

    printf("\nConfigured memory details:\n");

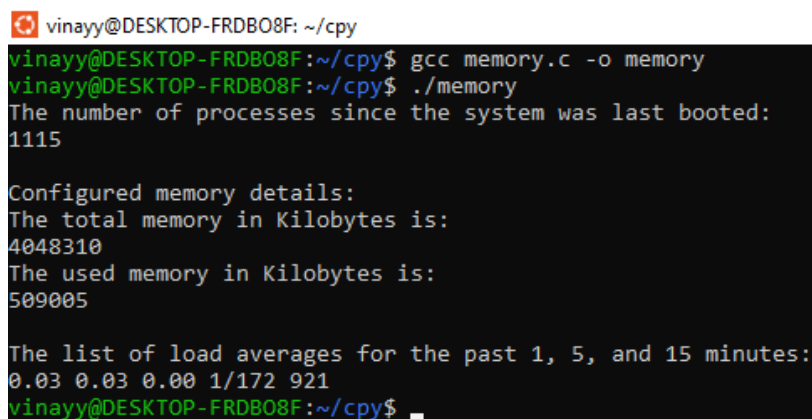
    printf("The total memory in Kilobytes is:\n");
    system("free -kilo | awk '/Mem:/ {print $2}'");

    printf("The used memory in Kilobytes is:\n");
    system("free -kilo | awk '/Mem:/ {print $3}'");

    printf("\nThe list of load averages for the past 1, 5, and 15 minutes:\n");
    system("cat /proc/loadavg");

    return 0;
}
```

## Output

A terminal window with a dark background and light-colored text. The prompt is 'vinayy@DESKTOP-FRDB08F: ~/cpy'. The user enters 'gcc memory.c -o memory', then './memory'. The output shows the number of processes (1115), configured memory details (total 4048310 KB, used 509005 KB), and load averages (0.03 0.03 0.00 1/172 921).

```
vinayy@DESKTOP-FRDB08F: ~/cpy
vinayy@DESKTOP-FRDB08F:~/cpy$ gcc memory.c -o memory
vinayy@DESKTOP-FRDB08F:~/cpy$ ./memory
The number of processes since the system was last booted:
1115

Configured memory details:
The total memory in Kilobytes is:
4048310
The used memory in Kilobytes is:
509005

The list of load averages for the past 1, 5, and 15 minutes:
0.03 0.03 0.00 1/172 921
vinayy@DESKTOP-FRDB08F:~/cpy$ _
```

**Qn 7: Write a program to copy files using system calls.**  
**(This question has to be done via read/write system calls only.)**

```
#include<io.h>
#include<stdio.h>
#include<stdlib.h>
#include<fcntl.h>
#include<unistd.h>
#include<sys/stat.h>
void main()
{
    char source[10];
    char destination[10];
    int s;
    int d;
    int c=0;
    char temp[50];
    printf("Enter the name of the source file ");
    scanf("%s", source);
    printf("Enter the name of the destination file ");
    scanf("%s", destination);

    s=open(source, 0);
    if(s==-1)
    {
        printf("file open error!!!!!!");
        exit(0);
    }
    d=open(destination, 1);
    if(d==-1)
    {
        d = create(destination, 0666);
```

```

}
while((c=read(s, temp, sizeof(temp))) >0)
{
    write(d, temp, c);
}
close(s);
close(d);
}

```

## Output:

```

vinayy@DESKTOP-FRDB08F: ~/cpy
vinayy@DESKTOP-FRDB08F:~/cpy$ gcc copyy.c -o myprog
vinayy@DESKTOP-FRDB08F:~/cpy$ ./myprog
Enter the name of the source file fruit.txt
Enter the name of the destination file num.txt
vinayy@DESKTOP-FRDB08F:~/cpy$ _

```

```

vinayy@DESKTOP-FRDB08F: ~/cpy
vinayy@DESKTOP-FRDB08F:~/cpy$ vim nun.txt
vinayy@DESKTOP-FRDB08F:~/cpy$

```

```

vinayy@DESKTOP-FRDB08F: ~/cpy

```

```

Apple
Orange
Strawberry
Pineapple
Mango
Guava
Watermelon
Grapes
Peach
Apricot
Raspberry
Mango
Lychee
~
~
~
~
~
~

```