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**INDIAN INSTITUTE OF INFORMATION TECHNOLOGY KOTA**

Operating system Lab

**Submitted by: Submitted to:**

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**ID**- 2019KUEC2034

**ASSIGNMENT 1**

Program code:-

//VISHAL VERMA (2019KUEC2034)

// OS  LAB ASSIGNMENT (Proc)

// BATCH B2

#include <ctype.h>

#include <stdbool.h>

#include <stdio.h>

#include <stdlib.h>

#include <string.h>

char \*removeSpaces(char \*str) {

    char \*end;

    while (isspace((unsigned char)\*str)) ++str;

    if (\*str == 0)

        return str;

    end = str + strlen(str) - 1;

    while (end > str && isspace((unsigned char)\*end)) --end;

    end[1] = '\0';

    return str;

}

bool prefix(const char \*pre, const char \*str) {

    return strncmp(pre, str, strlen(pre)) == 0;

}

void CPUInfo() {

    FILE \*fptr = fopen("/proc/cpuinfo", "r");

    if (fptr == NULL) {

        perror("fopen");

        exit(EXIT\_FAILURE);

    }

    char str[1024] = {0};

    while (fgets(str, 1024, fptr))

        if (prefix("model name", str)) break;

    if (str[0]) printf("CPU Model and Name: %s", strrchr(str, ':') + 2);

    memset(str, 0, sizeof(str));

    while (fgets(str, 1024, fptr))

        if (prefix("cpu MHz", str)) break;

    if (str[0])

        printf("CPU Clock Rate: %s MHz\n",

               removeSpaces(strrchr(str, ':') + 2));

    memset(str, 0, sizeof(str));

    while (fgets(str, 1024, fptr))

        if (prefix("siblings", str)) break;

    if (str[0]) printf("No. of Processors: %s", strrchr(str, ':') + 2);

    memset(str, 0, sizeof(str));

    while (fgets(str, 1024, fptr))

        if (prefix("cpu cores", str)) break;

    if (str[0]) printf("Total  Core(s): %s", strrchr(str, ':') + 2);

    fclose(fptr);

}

void kernelVersion() {

    FILE \*fptr = fopen("/proc/version", "r");

    if (fptr == NULL) {

        perror("fopen");

        exit(EXIT\_FAILURE);

    }

    char str[1024];

    fscanf(fptr, " %s %s %s", str, str, str);

    printf("Kernel Version: %s\n", str);

    fclose(fptr);

}

void totalConfMem() {

    FILE \*fptr = fopen("/proc/meminfo", "r");

    if (fptr == NULL) {

        perror("fopen");

        exit(EXIT\_FAILURE);

    }

    char str[1024] = {0};

    while (fgets(str, 1024, fptr))

        if (prefix("MemTotal", str)) break;

    if (str[0])

        printf("Total Configured Memory: %s\n",

               removeSpaces(strrchr(str, ':') + 2));

    fclose(fptr);

}

void lastBootTime() {

    FILE \*fptr = fopen("/proc/uptime", "r");

    if (fptr == NULL) {

        perror("fopen");

        exit(EXIT\_FAILURE);

    }

    int epoch = 0;

    fscanf(fptr, "%d", &epoch);

    printf("Last Booted Since: %02d:%02d:%02d:%02d\n", epoch / 86400,

           epoch % 86400 / 3600, epoch % 3600 / 60, epoch % 60);

    fclose(fptr);

}

void noOfContextSwitches() {

    FILE \*fptr = fopen("/proc/stat", "r");

    if (fptr == NULL) {

        perror("fopen");

        exit(EXIT\_FAILURE);

    }

    char str[1024] = {0};

    while (fgets(str, 1024, fptr))

        if (prefix("ctxt", str)) break;

    if (str[0]) printf("No. of Context Switches: %s\n", removeSpaces(str + 4));

    fclose(fptr);

}

int main() {

// AS PER GIVEN IN THE QUESTION

        CPUInfo();

        kernelVersion();

        totalConfMem();

    lastBootTime();

    noOfContextSwitches();

    return 0;

}

OUTPUT:

