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Lab 2: PRELIMINARY SCANNING APPLICATIONS

Q1)Write a program that takes a file as input and replaces blank spaces and tabs by single space and writes the output to a file.

Code:

```c
#include <stdio.h>
#include <string.h>

int main(int argc, char *argv[]){
    FILE *fr, *fw;
    char ca, cb;

    // fr = fopen(argv[1], 'r');
    // fw = fopen(argv[2], 'w');

    fr = fopen("q1.c","r");
    fw = fopen("rq1.c","w");

    ca = getc(fr);
    while(ca!=EOF){
        if(ca==' '){
            if((cb= getc(fr))==' '){
                while((cb = getc(fr)) == ' ');
                putc('\t', fw);
            }
            putc(cb, fw);
        } else {
            putc(ca, fw);
        }
        ca = getc(fr);
    }

    fclose(fr);
    fclose(fw);
    return 0;
}
```

Output:

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

intmain(intargc,char*argv[]){
    FILE*fr,*fw;
    charca,cb;

    //fr=fopen(argv[1],'r');
    //fw=fopen(argv[2],'w');

    fr=fopen("q1.c","r");
    fw=fopen("rq1.c","w");

    ca=getc(fr);
    while(ca!=EOF){
    if(ca==' '){
    if((cb=getc(fr))==' '){
    while((cb=getc(fr))==' ');
    putc('\t',fw);
    }
    putc(cb,fw);
    }else{
    putc(ca,fw);
    }
    ca=getc(fr);
    }

    fclose(fr);
    fclose(fw);
    return0;
}
```

Q2) Write a program To discard preprocessor directives from the given input ‘C’ file.

Code:

```
C q2.c > main()
#include <stdio.h>
#include <ctype.h>

int main() {
    FILE *fr, *fw;
    char line[1024];

    fr = fopen("q1.c", "r");
    fw = fopen("qr2.c", "w");

    while (fgets(line, sizeof(line), fr) != NULL) {
        char *ptr = line;

        while (*ptr && isspace(*ptr)) {
            ptr++;
        }

        if (*ptr != '#') {
            fputs(line, fw);
        }
    }

    fclose(fr);
    fclose(fw);

    return 0;
}
```

Output :

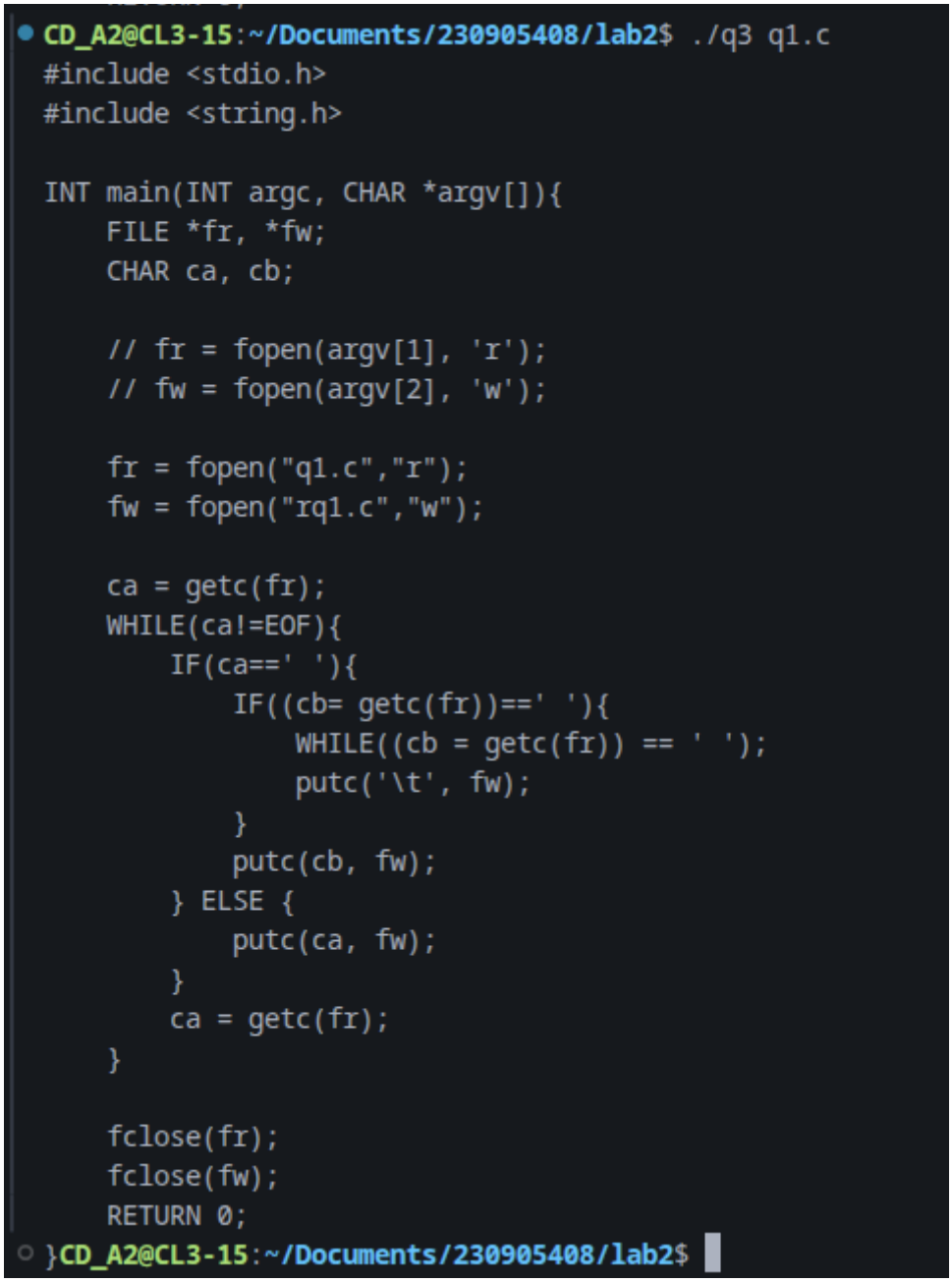
```c

int main(int argc, char *argv[]){
    FILE *fr, *fw;
    char ca, cb;

    // fr = fopen(argv[1], 'r');
    // fw = fopen(argv[2], 'w');

    fr = fopen("q1.c","r");
    fw = fopen("rq1.c","w");

    ca = getc(fr);
    while(ca!=EOF){
        if(ca==' '){
            if((cb= getc(fr))==' '){
                while((cb = getc(fr)) == ' ');
                putc('\t', fw);
            }
            putc(cb, fw);
        } else {
            putc(ca, fw);
        }
        ca = getc(fr);
    }

    fclose(fr);
    fclose(fw);
    return 0;
}
```

Q3) Write a program That takes C program as input, recognizes all the keywords and prints them in upper case.

Code:

```c
#include <stdio.h>
#include <string.h>
#include <ctype.h>

int isKeyword(char *w) {
    char *k[] = {…

    int l = 0, r = 31, m, c;

    while (l <= r) {
        m = l + (r - l) / 2;
        c = strcmp(w, k[m]);
        if (c == 0) return 1;
        if (c < 0) r = m - 1;
        else l = m + 1;
    }
    return 0;
}

int main(int argc, char *argv[]) {
    FILE *f = fopen(argv[1], "r");
    char ch, w[100];
    int i = 0, j;

    while ((ch = fgetc(f)) != EOF) {
        if (isalnum(ch) || ch == '_') {
            w[i++] = ch;
        } else {
            if (i > 0) {
                w[i] = '\0';
                if (isKeyword(w)) {
                    for (j = 0; w[j]; j++)
                        w[j] = toupper(w[j]);
                }
                printf("%s", w);
                i = 0;
            }
            printf("%c", ch);
        }
    }

    fclose(f);
    return 0;
}
```

Output :



```
CD_A2@CL3-15:~/Documents/230905408/lab2$ ./q3 q1.c
#include <stdio.h>
#include <string.h>

INT main(INT argc, CHAR *argv[]){
    FILE *fr, *fw;
    CHAR ca, cb;

    // fr = fopen(argv[1], 'r');
    // fw = fopen(argv[2], 'w');

    fr = fopen("q1.c","r");
    fw = fopen("rq1.c","w");

    ca = getc(fr);
    WHILE(ca!=EOF){
        IF(ca==' '){
            IF((cb= getc(fr))==' '){
                WHILE((cb = getc(fr)) == ' ');
                putc('\t', fw);
            }
            putc(cb, fw);
        } ELSE {
            putc(ca, fw);
        }
        ca = getc(fr);
    }

    fclose(fr);
    fclose(fw);
    RETURN 0;
}CD_A2@CL3-15:~/Documents/230905408/lab2$
```