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Lab 2 : Preliminary Scanning Applications

Q1.That takes a file as input and replaces blank spaces and tabs by single space and writes the output to a file.

Code:

```
#include <stdio.h>
#include <stdlib.h>
int main()
{
FILE *fa, *fb;
int ca;
fa = fopen("q1_code.c", "r");
if (fa == NULL){
printf("Cannot open file \n");
exit(0);
}
fb = fopen("q1_code_out.c", "w");
ca = getc(fa);
while (ca != EOF)
{
if (ca == ' ' || ca == '\t') {
putc(' ', fb);
while (ca == ' ' || ca== '\t')
ca = getc(fa);
putc(ca, fb);
}
else
{
putc(ca,fb);
}
ca = getc(fa);
}
fclose(fa);
fclose(fb);
return 0;
}
```

Input:

```
#include <stdio.h>



float sum(int a , int b){
```

```
return a+b;
}

int main(){
int b=5;
printf(" HI THIS IS SAMPLE CODE");
if(b==5){
printf("yes");
}
}
```

Output:

```
#include <stdio.h>

float sum(int a , int b){
return a+b;
}

int main(){
int b=5;
printf(" HI THIS IS SAMPLE CODE");
if(b==5){
printf("yes");
}
}
```

Q2.To discard preprocessor directives from the given input ‘C’ file.

Code:

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

int main() {
FILE *fa, *fb;
int ca, cb;

fa = fopen("q1_code.c", "r");
if (fa == NULL) {
printf("Cannot open input file\n");
exit(0);
}

fb = fopen("q2_code_out.c", "w");

ca = getc(fa);

while (ca != EOF) {
```

```
if (ca == '#') {
while (ca != '\n' && ca != EOF) {
ca = getc(fa);
}
} else {
putc(ca, fb);
ca = getc(fa);
}
}

fclose(fa);
fclose(fb);


return 0;
}
```

Input:

```
#include <stdio.h>

float sum(int a , int b){
return a+b;
}

int main(){
int b=5;
printf(" HI THIS IS SAMPLE CODE");
if(b==5){
printf("yes");
}
}
```

Output:

```
float sum(int a , int b){
return a+b;
}

int main(){
int b=5;
printf(" HI THIS IS SAMPLE CODE");
if(b==5){
printf("yes");
}
}
```

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

Code:

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

#define MAX_LEN 32

const char *keywords[] = {
"break", "case", "char","continue","do", "double",
"else","float", "for", "if","int", "long",
"return","signed","struct", "switch", "typedef", "void","while"
};


int is_keyword(char *word) {
for (int i = 0; i < 18; i++) {
if (strcmp(word, keywords[i]) == 0) {
return 1;
}
}
return 0;
}

void to_uppercase(char *word) {
for (int i = 0; word[i]; i++) {
word[i] = toupper(word[i]);
}
}

int main() {
FILE *fa, *fb;
int ca;
char word[MAX_LEN];
int word_len = 0;

fa = fopen("q1_code.c", "r");
if (fa == NULL) {
printf("Cannot open input file\n");
exit(0);
}

fb = fopen("q3_code_out.c", "w");
if (fb == NULL) {
printf("Cannot open output file\n");
```

```
fclose(fa);
exit(0);
}

ca = getc(fa);

while (ca != EOF) {
if (isalpha(ca) || ca == '_') {
word_len = 0;
word[word_len++] = ca;
ca = getc(fa);

while ((isalnum(ca) || ca == '_') && ca != EOF) {
word[word_len++] = ca;
ca = getc(fa);
}
word[word_len] = '\0';

if (is_keyword(word)) {
to_uppercase(word);
printf("%s \n",word);
}
fputs(word, fb);
} else {
putc(ca, fb);
ca = getc(fa);
}
}

fclose(fa);
fclose(fb);

return 0;
}
```

Input:

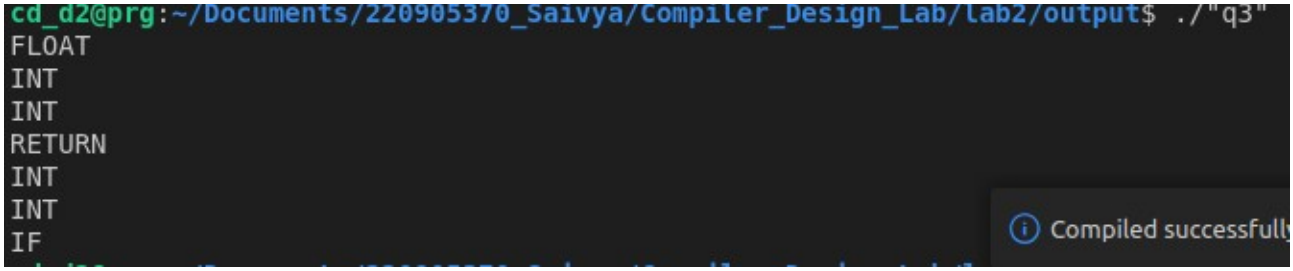
```
#include <stdio.h>

float sum(int a , int b){
return a+b;
}

int main(){
int b=5;
printf(" HI THIS IS SAMPLE CODE");
if(b==5){
printf("yes");
}
```

}

Output:


cd_d2@prg:~/Documents/220905370_Saivya/Compiler_Design_Lab/lab2/output$ ./"q3"
FLOAT
INT
INT
RETURN
INT
INT
IF
Compiled successfully