

CD Lab 2

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Sample Question: Remove Spaces and Comments

```
#include <stdio.h>

int main() {
    char filename[30];
    printf("Enter name of a .c file: ");
    scanf("%s", filename);

    FILE* in = fopen(filename, "r");

    if (in == NULL) {
        printf("Cannot open file\n");
        return 0;
    }

    FILE* out = fopen("out.c", "w");

    int c = getc(in);

    while (c != EOF) {

        if (c == ' ') {
            putc(' ', out);

            while (c == ' ') {
                c = getc(in);
            }

        }

        if (c == '/') {
            int cnext = getc(in);

            if (cnext == '/') {

                while (c != '\n') {
                    c = getc(in);
                }

            }

            else if (cnext == '*') {
                do {

                    while (c != '*') {
                        c = getc(in);
                    }

                    c = getc(in);
                } while (c != '/');
            }

            else {
                putc(c, out);
                putc(cnext, out);
            }

        }

        else {
            putc(c, out);
        }
    }
}
```

```

        c = getc(in);
    }

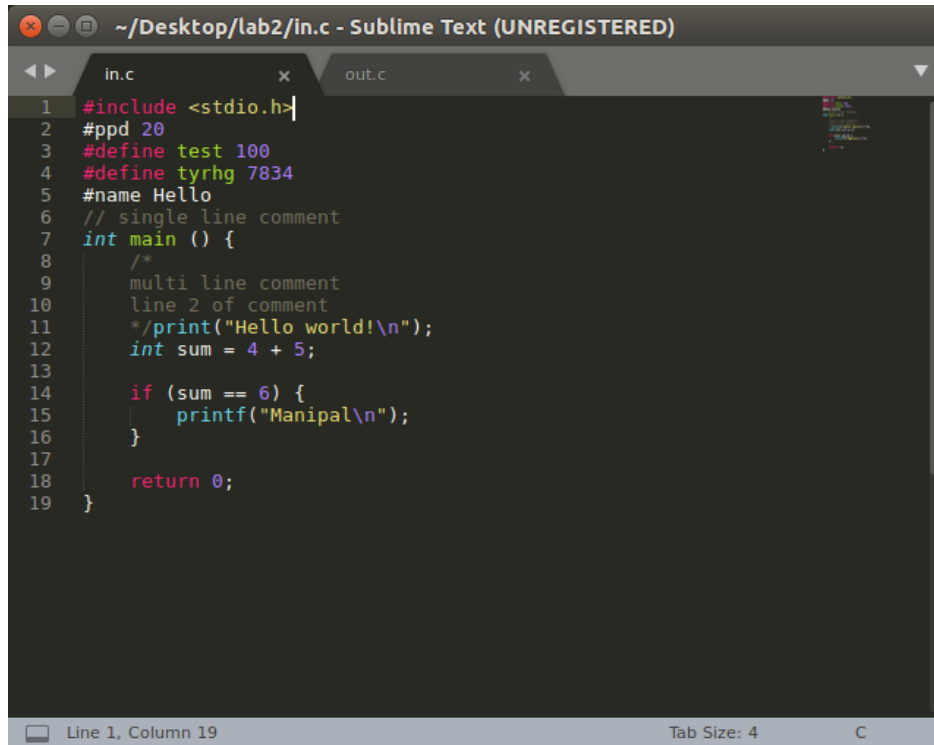
    fclose(in);
    fclose(out);

    printf("Output file generated: out.c\n");

    return 0;
}

```

Input file:

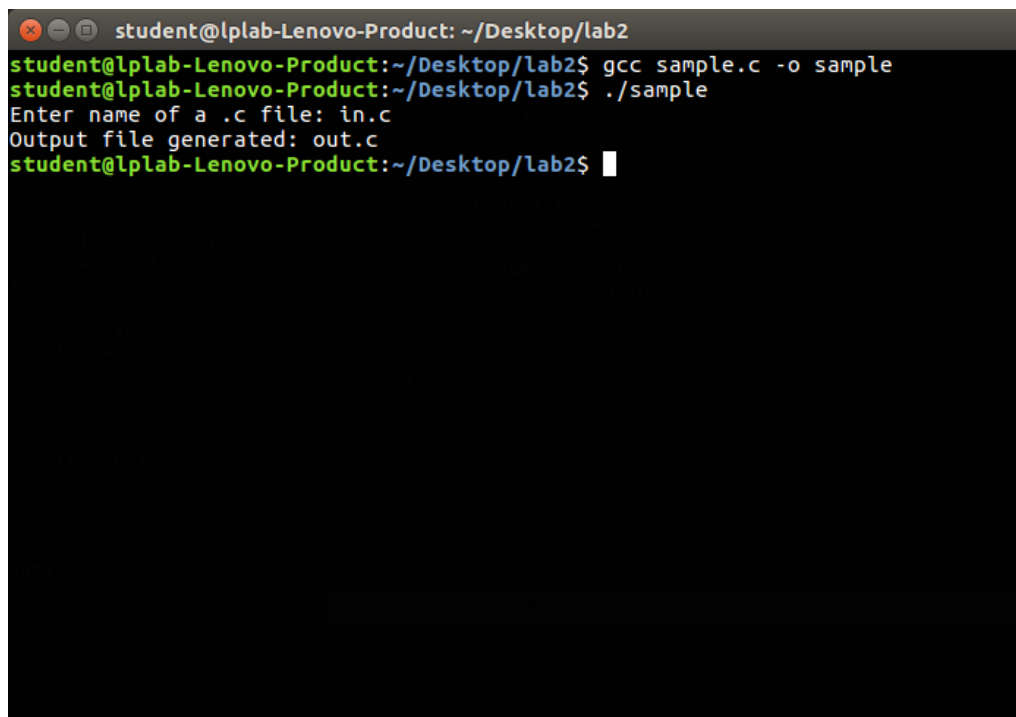


```

1  #include <stdio.h>
2  #ppd 20
3  #define test 100
4  #define tyrhg 7834
5  #name Hello
6  // single line comment
7  int main () {
8      /*
9      multi line comment
10     line 2 of comment
11     */
12     printf("Hello world!\n");
13     int sum = 4 + 5;
14
15     if (sum == 6) {
16         printf("Manipal\n");
17     }
18     return 0;
19 }

```

Terminal:

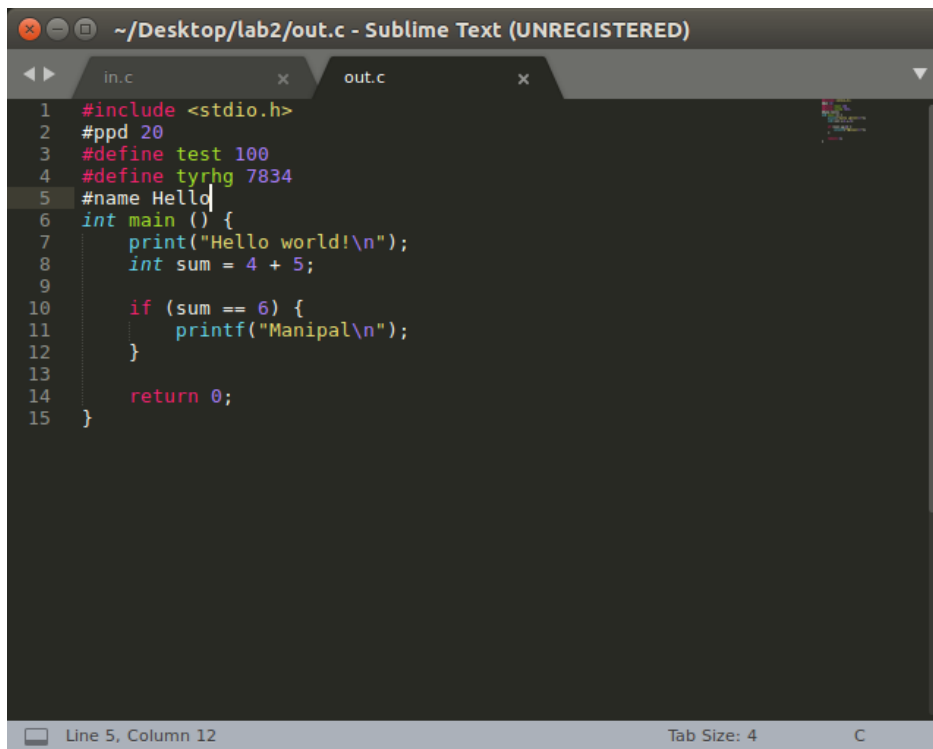


```

student@lplab-Lenovo-Product: ~/Desktop/lab2
student@lplab-Lenovo-Product:~/Desktop/lab2$ gcc sample.c -o sample
student@lplab-Lenovo-Product:~/Desktop/lab2$ ./sample
Enter name of a .c file: in.c
Output file generated: out.c
student@lplab-Lenovo-Product:~/Desktop/lab2$

```

Output file:



```
1 #include <stdio.h>
2 #ppd 20
3 #define test 100
4 #define tyrhg 7834
5 #name Hello
6 int main () {
7     print("Hello world!\n");
8     int sum = 4 + 5;
9
10    if (sum == 6) {
11        printf("Manipal\n");
12    }
13
14    return 0;
15 }
```

Line 5, Column 12 Tab Size: 4 C

Q1 Replace blank spaces and tabs by single space

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

void main() {
    char filename[30];
    printf("Enter name of file: ");
    scanf("%s", filename);

    FILE* in = fopen(filename, "r");

    if (in == NULL) {
        printf("Can't open file %s.\n", filename);
        exit(0);
    }

    FILE* out = fopen("out.c", "w");

    char c = getc(in);

    while (c != EOF) {

        if (c == '\t' || c == ' ') {
            putchar(' ', out);

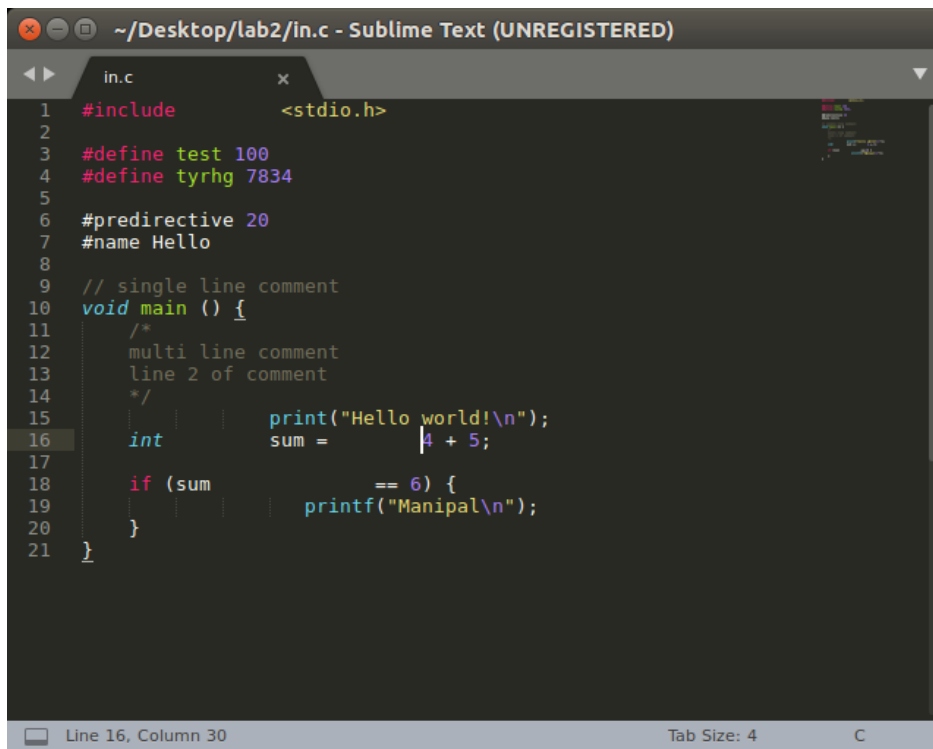
            while (c == ' ' || c == '\t') {
                c = getc(in);
            }

        }
        else {
            putchar(c, out);
            c = getc(in);
        }
    }

    printf("File generated : out.c\n");

    fclose(in);
    fclose(out);
}
```

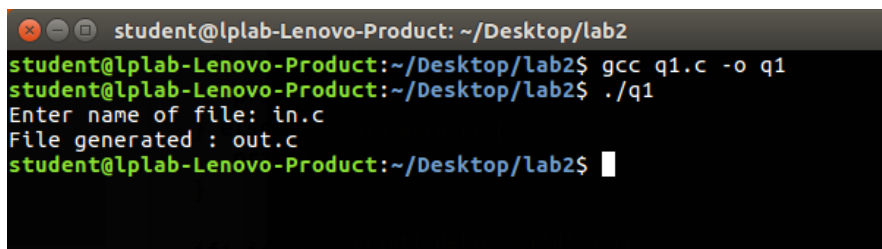
Input file:



```
1 #include <stdio.h>
2
3 #define test 100
4 #define tyrhg 7834
5
6 #predirective 20
7 #name Hello
8
9 // single line comment
10 void main () {
11     /*
12     multi line comment
13     line 2 of comment
14     */
15     print("Hello world!\n");
16     int sum = 4 + 5;
17
18     if (sum == 6) {
19         printf("Manipal\n");
20     }
21 }
```

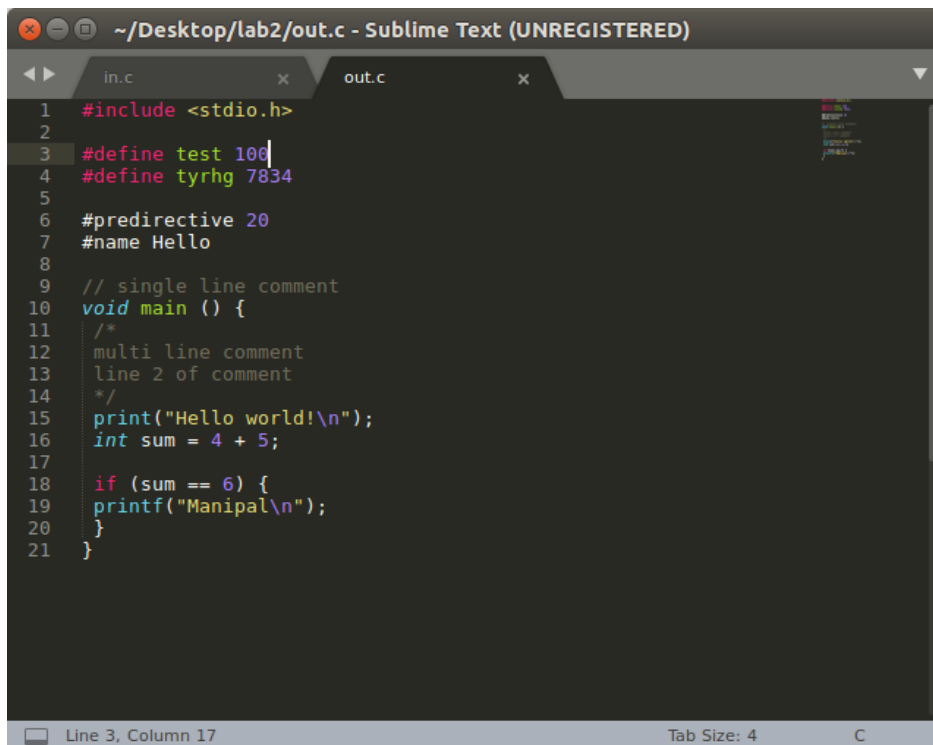
Line 16, Column 30 Tab Size: 4 C

Terminal:



```
student@lplab-Lenovo-Product: ~/Desktop/lab2
student@lplab-Lenovo-Product:~/Desktop/lab2$ gcc q1.c -o q1
student@lplab-Lenovo-Product:~/Desktop/lab2$ ./q1
Enter name of file: in.c
File generated : out.c
student@lplab-Lenovo-Product:~/Desktop/lab2$
```

Output file:



```
1 #include <stdio.h>
2
3 #define test 100
4 #define tyrhg 7834
5
6 #predirective 20
7 #name Hello
8
9 // single line comment
10 void main () {
11     /*
12     multi line comment
13     line 2 of comment
14     */
15     print("Hello world!\n");
16     int sum = 4 + 5;
17
18     if (sum == 6) {
19         printf("Manipal\n");
20     }
21 }
```

Line 3, Column 17 Tab Size: 4 C

Q2 Ignore preprocessor directives

```

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

void main() {
    char filename[30];
    printf("Enter name of file: ");
    scanf("%s", filename);

    FILE* in = fopen(filename, "r");

    if (in == NULL) {
        printf("Can't open file %s.\n", filename);
        exit(0);
    }

    char buffer[100];
    int bufferIndex = 0;
    buffer[bufferIndex] = '\0';

    char c = getc(in);

    while (c != EOF) {
        if (c == '#') {
            buffer[bufferIndex++] = c;
            c = getc(in);

            while (isalpha(c)) {
                buffer[bufferIndex++] = c;
                c = getc(in);
            }

            buffer[bufferIndex] = '\0';

            if (strcmp(buffer, "#define") == 0 || strcmp(buffer, "#include") == 0) {
                while (c != '\n') {
                    c = getc(in);
                }
            } else {
                printf("%s", buffer);
                printf("%c", c);
            }

            bufferIndex = 0;
            buffer[bufferIndex] = '\0';
        }

        else {
            printf("%c", c);
        }

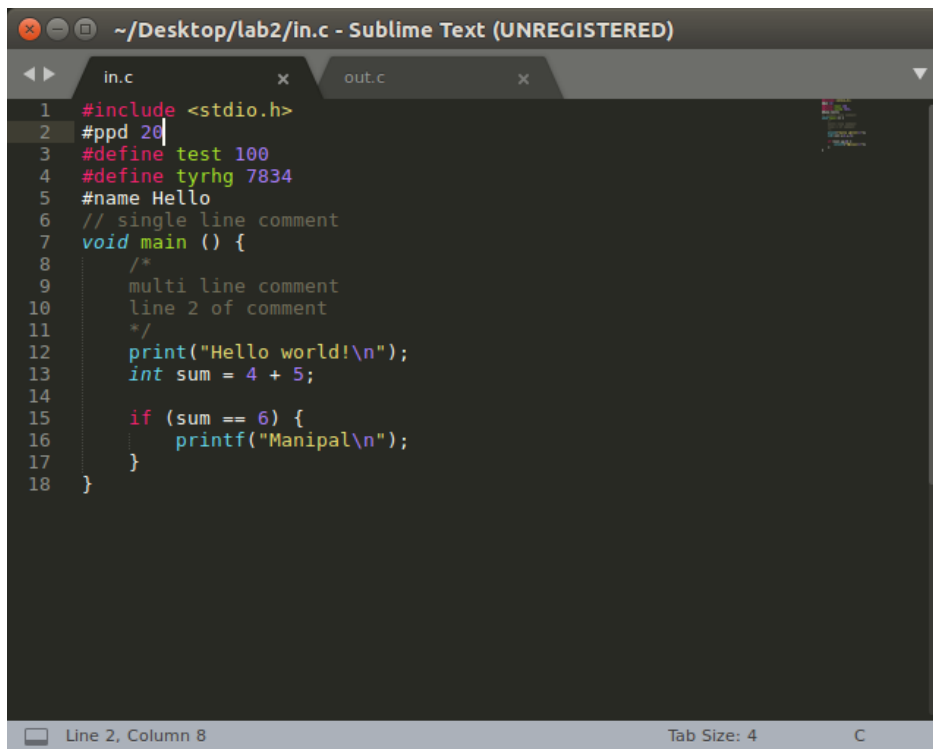
        c = getc(in);
    }

    printf("\n");

    fclose(in);
}

```

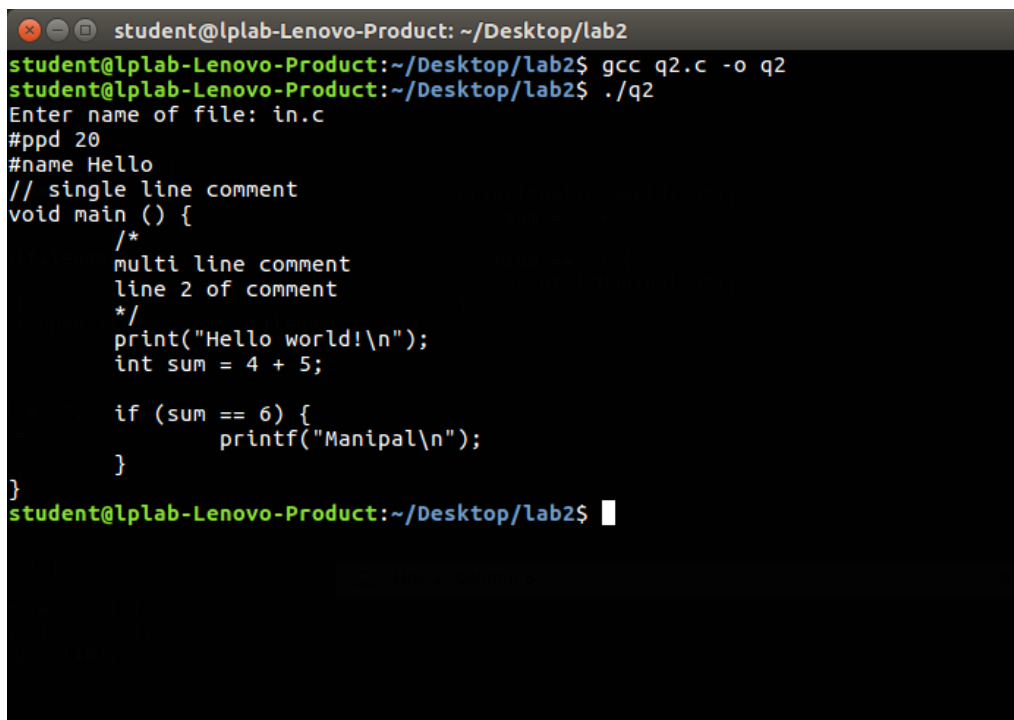
Input file:



```
~/Desktop/lab2/in.c - Sublime Text (UNREGISTERED)
in.c
1 #include <stdio.h>
2 #ppd 20
3 #define test 100
4 #define tyrhg 7834
5 #name Hello
6 // single line comment
7 void main () {
8     /*
9     multi line comment
10    line 2 of comment
11    */
12    print("Hello world!\n");
13    int sum = 4 + 5;
14
15    if (sum == 6) {
16        printf("Manipal\n");
17    }
18 }
```

Line 2, Column 8 Tab Size: 4 C

Terminal:



```
student@lplab-Lenovo-Product: ~/Desktop/lab2
student@lplab-Lenovo-Product:~/Desktop/lab2$ gcc q2.c -o q2
student@lplab-Lenovo-Product:~/Desktop/lab2$ ./q2
Enter name of file: in.c
#ppd 20
#name Hello
// single line comment
void main () {
    /*
    multi line comment
    line 2 of comment
    */
    print("Hello world!\n");
    int sum = 4 + 5;

    if (sum == 6) {
        printf("Manipal\n");
    }
}
student@lplab-Lenovo-Product:~/Desktop/lab2$
```

Q3 Convert all keywords to uppercase

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

char keyword[32][20] = {"auto", "break", "case", "char", "const", "continue",
                        "default", "do", "double", "else", "enum", "extern",
                        "float", "for", "goto", "if", "int", "long", "register",
                        "return", "short", "signed", "sizeof", "static", "struct",
                        "switch", "typedef", "union", "unsigned", "void",
                        "volatile", "while"};
};
```

```

void main() {
    char filename[30];
    printf("Enter name of file: ");
    scanf("%s", filename);
    printf("\n");

    FILE* in = fopen(filename, "r");

    if (in == NULL) {
        printf("Can't open file %s.\n", filename);
        exit(0);
    }

    char buffer[100] = "";
    int bufferIndex = 0;

    char c = getc(in);

    while (c != EOF) {

        if (c == '"') {
            // string enclosed in double quotes
            while (c != '"') {
                printf("%c", c);
                c = getc(in);
            }

            printf("%c", c);
        }

        else if (isalpha(c)) {
            buffer[bufferIndex++] = c;
        }

        else {
            buffer[bufferIndex] = '\0';

            // print uppercase if buffer has a keyword
            for (int i = 0; i < 32; i++) {
                if (strcmp(buffer, keyword[i]) == 0) {

                    for (int k = 0; k < bufferIndex; k++) {
                        printf("%c", toupper(buffer[k]));
                    }

                    bufferIndex = 0;
                    buffer[bufferIndex] = '\0';

                    break;
                }
            }

            if (bufferIndex != 0) {
                // buffer didn't have a keyword
                printf("%s", buffer);
                bufferIndex = 0;
                buffer[bufferIndex] = '\0';
            }

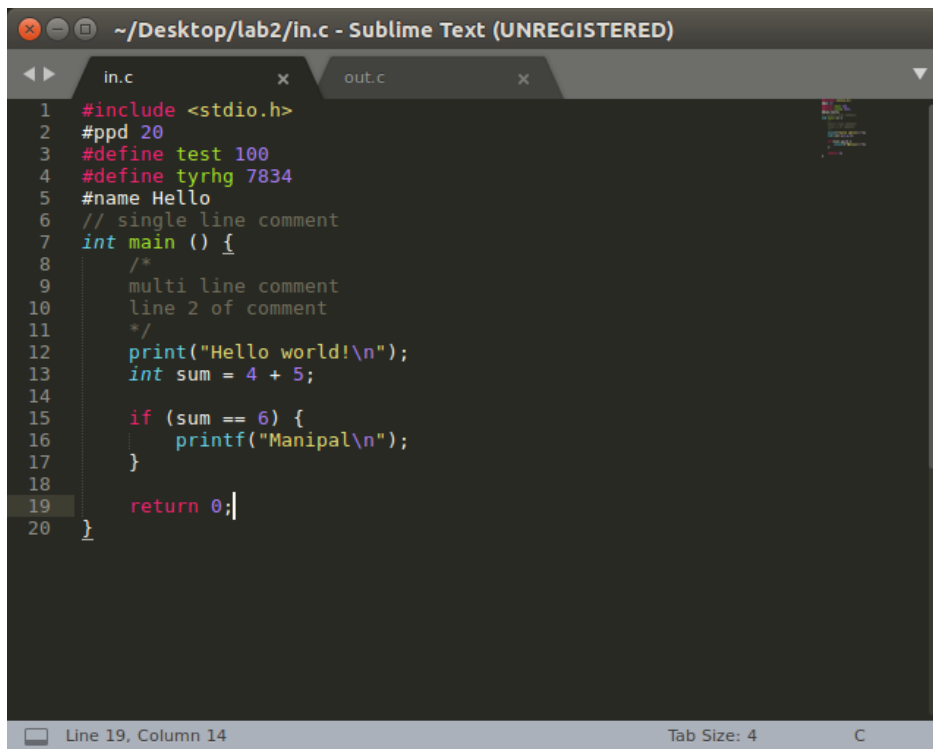
            // print pending non alpha character
            printf("%c", c);
        }

        c = getc(in);
    }

    printf("\n");
    fclose(in);
}

```

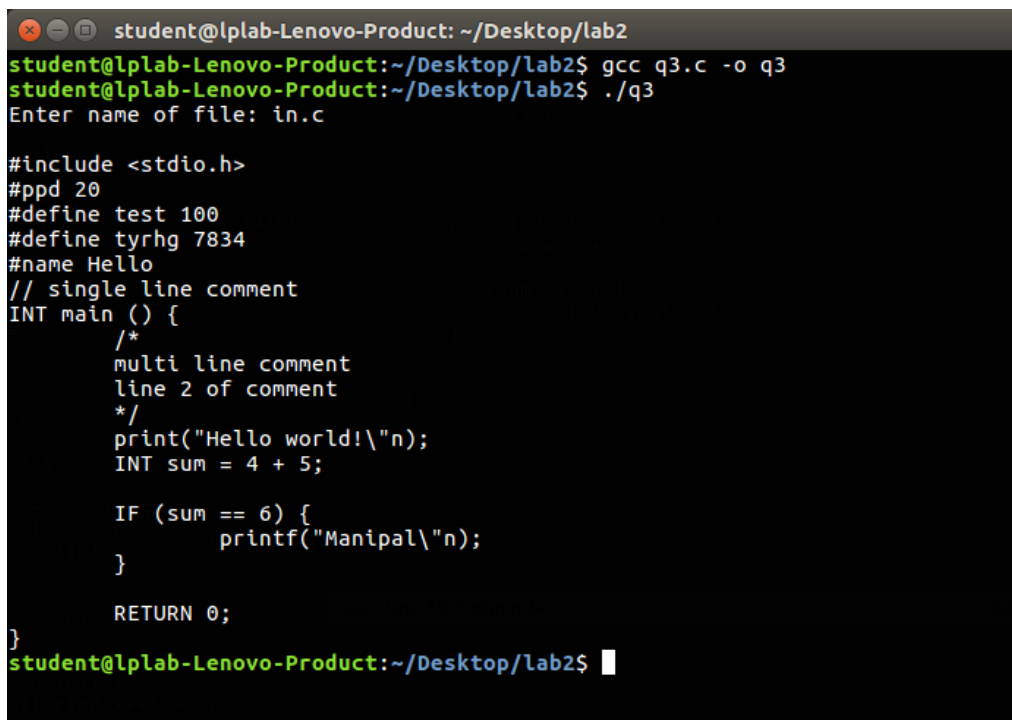
Input file:



The screenshot shows the Sublime Text editor window titled '~ / Desktop / lab2 / in.c - Sublime Text (UNREGISTERED)'. The editor has two tabs: 'in.c' and 'out.c'. The 'in.c' tab is active, displaying a C program. The code includes standard headers, preprocessor directives, and a main function with various comments and logic. The status bar at the bottom indicates 'Line 19, Column 14', 'Tab Size: 4', and the encoding 'C'.

```
1  #include <stdio.h>
2  #ppd 20
3  #define test 100
4  #define tyrhg 7834
5  #name Hello
6  // single line comment
7  int main () {
8      /*
9      multi line comment
10     line 2 of comment
11     */
12     print("Hello world!\n");
13     int sum = 4 + 5;
14
15     if (sum == 6) {
16         printf("Manipal\n");
17     }
18
19     return 0;
20 }
```

Terminal:



The screenshot shows a terminal window with the prompt 'student@lplab-Lenovo-Product: ~/Desktop/lab2'. The user enters the command 'gcc q3.c -o q3', followed by './q3'. The terminal then displays the contents of the file 'in.c', which matches the code shown in the Sublime Text editor. The prompt returns to 'student@lplab-Lenovo-Product: ~/Desktop/lab2\$'.

```
student@lplab-Lenovo-Product: ~/Desktop/lab2
student@lplab-Lenovo-Product:~/Desktop/lab2$ gcc q3.c -o q3
student@lplab-Lenovo-Product:~/Desktop/lab2$ ./q3
Enter name of file: in.c

#include <stdio.h>
#ppd 20
#define test 100
#define tyrhg 7834
#name Hello
// single line comment
INT main () {
    /*
    multi line comment
    line 2 of comment
    */
    print("Hello world!\n");
    INT sum = 4 + 5;

    IF (sum == 6) {
        printf("Manipal\n");
    }

    RETURN 0;
}
student@lplab-Lenovo-Product:~/Desktop/lab2$
```