

The screenshot shows the Visual Studio Code (VS Code) interface. The left sidebar contains the Explorer and Open Editors sections. In the Open Editors section, the file `main.c` is the active editor. The main area displays the following C code:

```
C main.c M X
C main.c > main()
1 #include <stdio.h>
2
3 int main() {
4     char name[50];
5     int age;
6
7     FILE *fp = fopen("info.txt", "w");
8
9     if (fp == NULL) {
10         printf("Error! Could not create file.\n");
11         return 1;
12     }
13
14     printf("Enter your name: ");
15     scanf("%s", name);
16
17     printf("Enter your age: ");
18     scanf("%d", &age);
19
20     fprintf(fp, "Name: %s\nAge: %d\n", name, age);
21     fclose(fp);
22
23     printf("Data successfully saved to info.txt\n");
24
25     return 0;
26 }
```

The bottom right corner shows the terminal output:

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
cd "/Users/abhaygupta/main.c/" && gcc main.c -o main && "/Users/abhaygupta/main.c/">main
abhaygupta@Abhays-MacBook-Air-2 main.c % cd "/Users/abhaygupta/main.c/" && gcc main.c -o main && "/Users/abhaygupta/main.c/">main
Enter your name: abhay
Enter your age: 19
Data successfully saved to info.txt
abhaygupta@Abhays-MacBook-Air-2 main.c %
```

The screenshot shows the Microsoft Visual Studio Code (VS Code) interface. The left sidebar contains icons for Explorer, Open Editors, Search, Problems, and Timeline. The Explorer view shows a folder named 'MAIN.C' containing files: .vscode, main.dSYM, #include <stdio.h>, a.out, hello.c, info.txt, main, sample.txt, tempCodeRunnerFile, and Untitled-1. The 'main.c' file is currently selected in the Open Editors list. The main editor area displays the following C code:

```
C main.c M X
C main.c > main()
1 #include <stdio.h>
2
3 int main() {
4     FILE *fp;
5     char buffer[100];
6
7     fp = fopen("info.txt", "r");
8
9     if (fp == NULL) {
10         printf("Error! Could not open file.\n");
11         return 1;
12     }
13
14     printf("File contents:\n\n");
15
16     while (fgets(buffer, sizeof(buffer), fp) != NULL) {
17         printf("%s", buffer);
18     }
19
20     fclose(fp);
21
22     return 0;
23 }
```

Below the editor, the terminal tab is active, showing the command line output:

```
cd "/Users/abhaygupta/main.c/" && gcc main.c -o main && "/Users/abhaygupta/main.c" && abhaygupta@Abhays-MacBook-Air-2 main.c % cd "/Users/abhaygupta/main.c/" && gcc main.c -o main && "/Users/abhaygupta/main.c" && abhaygupta@Abhays-MacBook-Air-2 main.c %
File contents:
Name: abhay
Age: 19
```

The bottom navigation bar includes links for PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL, PORTS, and a search bar.

The screenshot shows the Visual Studio Code (VS Code) interface. The left sidebar contains icons for file operations like Open, Save, Find, and Delete. The Explorer sidebar lists files and folders, with 'main.c' selected. The main area displays the content of 'main.c':

```
C main.c M X
C main.c > main()
1 #include <stdio.h>
2 #include <ctype.h>
3
4 int main() {
5     FILE *fp;
6     char ch;
7     int characters = 0, words = 0, lines = 0;
8     int inWord = 0;
9
10    fp = fopen("info.txt", "r");
11
12    if (fp == NULL) {
13        printf("Error! Could not open file.\n");
14        return 1;
15    }
16
17    while ((ch = fgetc(fp)) != EOF) {
18        characters++;
19
20        if (ch == '\n')
21            lines++;
22
23
24        if (isspace(ch)) {
25            inWord = 0;
26        } else {
27            if (inWord == 0) {
28                words++;
29            }
30        }
31    }
32
33    printf("Total Characters: %d\n", characters);
34    printf("Total Words: %d\n", words);
35    printf("Total Lines: %d\n", lines);
36
37    fclose(fp);
38}
```

The bottom right corner shows the terminal output:

```
cd "/Users/abhaygupta/main.c/" && gcc main.c -o main && "/Users/abhaygupta/main.c" && rm main.c
● abhaygupta@Abhay-MacBook-Air-2 main.c % cd "/Users/abhaygupta/main.c/" && gcc main.c -o main && "/Users/abhaygupta/main.c" && rm main.c
Total Characters: 20
Total Words: 4
Total Lines: 2
○ abhaygupta@Abhay-MacBook-Air-2 main.c %
```

The screenshot shows a Microsoft Visual Studio Code (VS Code) interface. The left sidebar contains icons for Explorer, Open Editors, Search, Problems, and others. The main area displays a code editor for a C program named `main.c`. The code reads a source file from the command line, opens it, reads its contents character by character, and writes them to a destination file specified on the command line. The terminal at the bottom shows the execution of the program, including the compilation of `main.c` into `main`, entering the source filename as `info.txt`, entering the destination filename as `file.txt`, and confirming the file was copied successfully.

```
#include <stdio.h>
int main() {
    char srcFile[100], destFile[100];
    FILE *src, *dest;
    int ch;

    printf("Enter source filename: ");
    scanf("%s", srcFile);

    printf("Enter destination filename: ");
    scanf("%s", destFile);

    src = fopen(srcFile, "r");
    if (src == NULL) {
        printf("Error! Cannot open source file.\n");
        return 1;
    }

    dest = fopen(destFile, "w");
    if (dest == NULL) {
        printf("Error! Cannot open destination file.\n");
        fclose(src);
        return 1;
    }

    while ((ch = fgetc(src)) != EOF) {
        fputc(ch, dest);
    }
}
```

PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS

```
cd "/Users/abhaygupta/main.c/" && gcc main.c -o main && "/Users/abhaygupta/main.c/">main
abhaygupta@Abhay-MacBook-Air-2:~/main.c% cd "/Users/abhaygupta/main.c/" && gcc main.c -o main && "/Users/abhaygupta/main.c/">main
Enter source filename: info.txt
Enter destination filename: file.txt
File copied successfully!
abhaygupta@Abhay-MacBook-Air-2:~/main.c%
```

The screenshot shows the Visual Studio Code (VS Code) interface. The left sidebar contains icons for Explorer, Search, Open Editors, and other tools. The 'OPEN EDITORS' section lists several files: main.c (selected), .vscode, main.dSYM, #include <stdio.c>, a.out, file.txt, hello.c, info.txt, main, sample.txt, tempCodeRunnerFile, and Untitled-1. The main area displays the content of main.c:

```
C main.c M X
C main.c > main()
1 #include <stdio.h>
2
3 int main() {
4     FILE *fp;
5     char text[200];
6
7     fp = fopen("info.txt", "a");
8
9     if (fp == NULL) {
10         printf("Error! Could not open file.\n");
11         return 1;
12     }
13
14     printf("Enter text to append: ");
15     getchar();
16     fgets(text, sizeof(text), stdin);
17
18     fputs(text, fp);
19
20     fclose(fp);
21
22     printf("Text successfully appended to the file.\n");
23
24     return 0;
25 }
```

Below the code editor, the 'TERMINAL' tab is active, showing the output of a terminal session:

```
cd "/Users/abhaygupta/main.c/" && gcc main.c -o main && "/Users/abhaygupta/main.c/">main
● abhaygupta@Abhays-MacBook-Air-2 main.c % cd "/Users/abhaygupta/main.c/" && gcc main.c -o main && "/Users/abhaygupta/main.c/">main
Enter text to append: abhay
Text successfully appended to the file.
○ abhaygupta@Abhays-MacBook-Air-2 main.c %
```

The bottom left corner shows the 'OUTLINE' and 'TIMELINE' sections.



The screenshot shows a Microsoft Visual Studio Code (VS Code) interface. The left sidebar displays the file tree (EXPLORER), showing files like main.c, .vscode, and various log files. The main editor area contains a C program named main.c. The terminal at the bottom shows the command line output of running the program.

**File Tree (EXPLORER):**

- OPEN EDITORS (1 unsaved)
  - main.c (M)
  - #include <stdio.h> Untitled-1 (●)
- MAIN.C
  - .vscode
  - main.dSYM
  - #include <stdio.h>
  - a.out
  - file.txt
  - hello.c
  - info.txt
  - input.txt
  - main
  - main.c (M)
  - output.txt
  - sample.txt
  - tempCodeRunnerFile
  - tempCodeRunnerFile.c
  - Untitled-1

**Code Editor (main.c):**

```
C main.c M X C #include <stdio.h> Untitled-1 ●  
C main.c > main()  
1 #include <stdio.h>  
2 #include <ctype.h>  
3  
4 int main() {  
5     FILE *inFile, *outFile;  
6     int ch;  
7  
8     inFile = fopen("input.txt", "r");  
9     if (inFile == NULL) {  
10         printf("Error! Could not open input.txt\n");  
11         return 1;  
12     }  
13  
14     outFile = fopen("output.txt", "w");  
15     if (outFile == NULL) {  
16         printf("Error! Could not open output.txt\n");  
17         fclose(inFile);  
18         return 1;  
19     }  
20  
21     while ((ch = fgetc(inFile)) != EOF) {  
22         if (islower(ch))  
23             ch = toupper(ch);  
24  
25         fputc(ch, outFile);  
26     }  
27  
28     fclose(inFile);
```

**Terminal Output:**

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS  
cd "/Users/abhaygupta/main.c/" && gcc main.c -o main && "/Users/abhaygupta/main.c/">main  
● abhaygupta@Abhay-MacBook-Air-2 main.c % cd "/Users/abhaygupta/main.c/" && gcc main.c -o main && "/Users/abhaygupta/main.c/">main  
Conversion completed! Check output.txt  
○ abhaygupta@Abhay-MacBook-Air-2 main.c %
```

**Sidebar:**

- OUTLINE
- TIMELINE

The screenshot shows a Visual Studio Code (VS Code) interface with the following details:

- EXPLORER** sidebar: Shows files in the current workspace, including `main.c`, `MAIN.C`, and several text files like `.vscode`, `main.dSYM`, etc.
- OPEN EDITORS** sidebar: Shows the open editor for `main.c`.
- Editor Area**: The main code editor displays the following C program:

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

int main() {
    FILE *fp;
    char ch;
    int vowels = 0, consonants = 0;

    fp = fopen("input.txt", "r");

    if (fp == NULL) {
        printf("Error! Could not open file.\n");
        return 1;
    }

    while ((ch = fgetc(fp)) != EOF) {
        ch = tolower(ch);

        if (ch >= 'a' && ch <= 'z') {
            if (ch == 'a' || ch == 'e' || ch == 'i' || ch == 'o' || ch == 'u')
                vowels++;
            else
                consonants++;
        }
    }

    fclose(fp);
}
```
- Bottom Bar**: Includes tabs for PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL, and PORTS. The TERMINAL tab is active, showing command-line output:

```
cd "/Users/abhaygupta/main.c" && gcc main.c -o main && "/Users/abhaygupta/main.c" /main
● abhaygupta@Abhay-MacBook-Air-2 main.c % cd "/Users/abhaygupta/main.c/" && gcc main.c -o main && "/Users/abhaygupta/main.c" /main
Total Vowels: 6
Total Consonants: 9
○ abhaygupta@Abhay-MacBook-Air-2 main.c %
```

The screenshot shows the Visual Studio Code (VS Code) interface. The left sidebar contains icons for file operations like Open, Save, Find, and Run. The Explorer sidebar shows a file tree with a folder named 'MAIN.C' containing files: .vscode, main.dSYM, #include <stdio.h>, Untitled-1, a.out, file.txt, hello.c, info.txt, input.txt, main, main.c, number.txt, numbers.txt, output.txt, sample.txt, tempCodeRunnerFile, tempCodeRunnerFile.c, and Untitled-1. The 'main.c' file is selected in the tree and is also the active editor tab. The main editor area displays the following C code:

```
C main.c M X C #include <stdio.h> Untitled-1 ●  
C main.c > main()  
2  
3 int main() {  
4     FILE *fp;  
5     int num, sum = 0, count = 0;  
6     float avg;  
7  
8     fp = fopen("numbers.txt", "r");  
9  
10    if (fp == NULL) {  
11        printf("Error! Could not open numbers.txt\n");  
12        return 1;  
13    }  
14  
15    while (fscanf(fp, "%d", &num) == 1) {  
16        sum += num;  
17        count++;  
18    }  
19  
20    fclose(fp);  
21  
22    if (count == 0) {  
23        printf("No numbers found in file.\n");  
24        return 0;  
25    }  
26  
27    avg = (float)sum / count;  
28  
29    printf("Sum = %d\n", sum);
```

Below the editor are tabs for PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL, and PORTS. The TERMINAL tab is active, showing the command line history:

```
cd "/Users/abhaygupta/main.c/" && gcc main.c -o main && "/Users/abhaygupta/main.c/">main  
● abhaygupta@Abhay-MacBook-Air-2 main.c % cd "/Users/abhaygupta/main.c/" && gcc main.c -o main && "/Users/abhaygupta/main.c/">main  
Sum = 2  
Average = 2.00  
○ abhaygupta@Abhay-MacBook-Air-2 main.c %
```

The screenshot shows the Visual Studio Code (VS Code) interface. The left sidebar contains icons for Explorer, Search, Open Editors, and others. The 'OPEN EDITORS' section has a file named 'main.c' selected. The main workspace shows the code for 'main.c'. The code defines a struct 'Student' and reads student records from a file named 'students.txt'. The terminal at the bottom shows the execution of the program and its output.

```
C main.c M X
C main.c > main()
3 struct Student {
4     };
5
6     int main() {
7         FILE *fp;
8         struct Student s;
9         int n;
10
11         fp = fopen("students.txt", "w");
12         if (fp == NULL) {
13             printf("Error! Could not create file.\n");
14             return 1;
15         }
16
17         printf("Enter number of students: ");
18         scanf("%d", &n);
19
20         for (int i = 0; i < n; i++) {
21             printf("\nStudent %d\n", i + 1);
22             printf("Enter name: ");
23             scanf("%s", s.name);
24             printf("Enter roll number: ");
25             scanf("%d", &s.roll);
26             printf("Enter marks: ");
27             scanf("%d", &s.marks);
28         }
29
30     }
31
32     Student 2
33     Enter name: abhay
34     Enter roll number: 12
35     Enter marks: 89
36
37     Student 3
38     Enter name: nikhil
39     Enter roll number: 13
40     Enter marks: 78
41
42     Student records saved to students.txt
43
44     --- Student Records ---
45     Name: abhay, Roll: 12, Marks: 89.00
46     Name: nikhil, Roll: 13, Marks: 78.00
47
48 abhaygupta@Abhays-MacBook-Air-2 main.c %
```