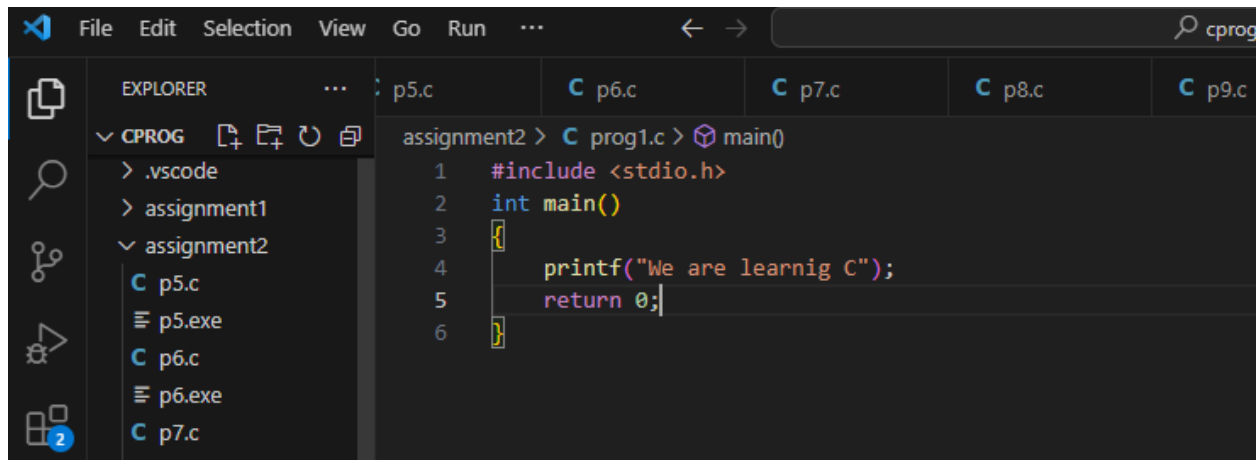


PG - DAC Sept 2023
Logical Building & Problem Solving
Assignment - 2(Date:11/09/2023)
Name : Vrushali Sonawane
Roll No. : 230950320086

1. Write a program in C to print "We are learning C".

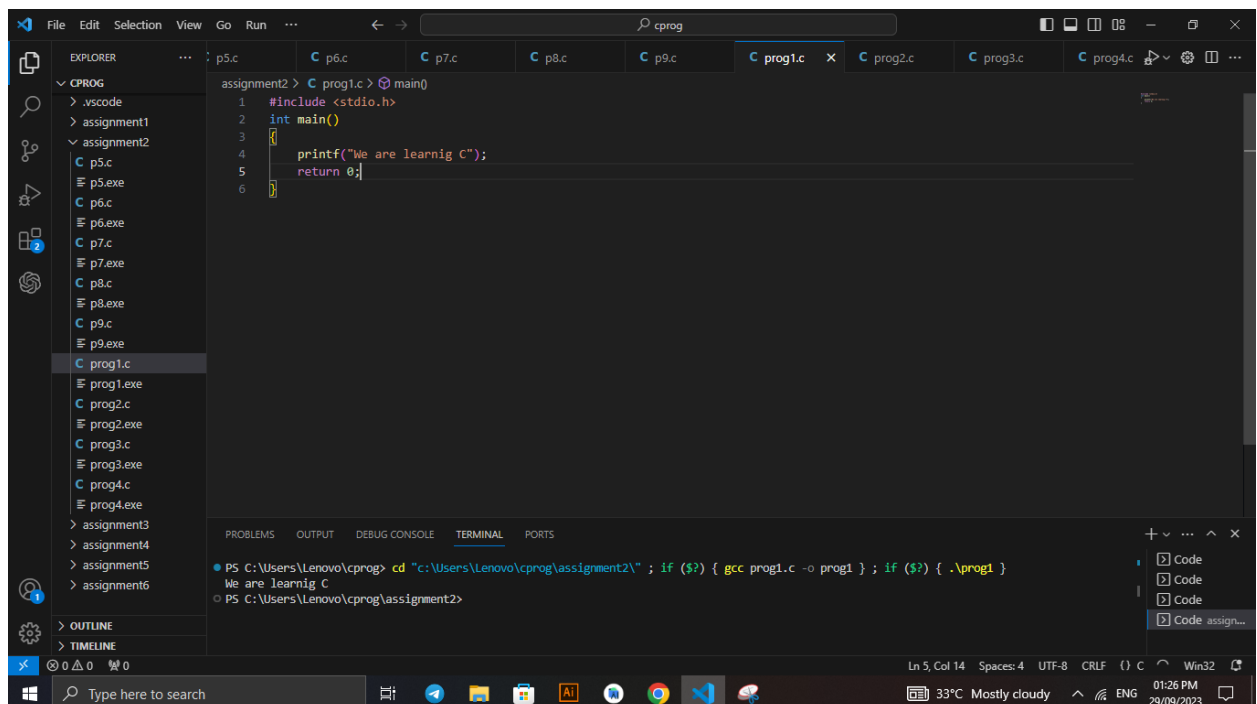


The screenshot shows the Visual Studio Code editor with a C program file named `prog1.c` open. The code is as follows:

```
1 #include <stdio.h>
2 int main()
3 {
4     printf("We are learnig C");
5     return 0;
6 }
```

The Explorer sidebar on the left shows the project structure with folders `assignment1` and `assignment2`, and files `p5.c`, `p6.c`, and `p7.c` under `assignment2`.

Output:

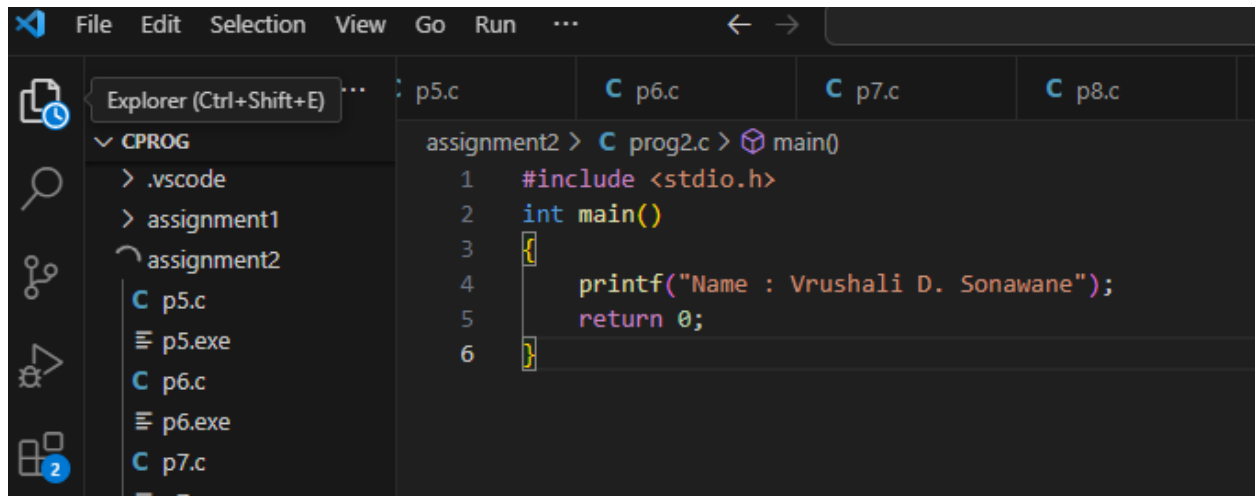


The screenshot shows the Visual Studio Code editor with the same C program file `prog1.c` open. The output of the program is displayed in the TERMINAL pane at the bottom. The command executed is `gcc prog1.c -o prog1` and the output is `We are learnig C`.

```
PS C:\Users\Lenovo\cprog> cd "c:\Users\Lenovo\cprog\assignment2\" ; if ($?) { gcc prog1.c -o prog1 } ; if ($?) { .\prog1 }
We are learnig C
PS C:\Users\Lenovo\cprog\assignment2>
```

The Explorer sidebar on the left shows the project structure with folders `assignment1` and `assignment2`, and files `p5.c`, `p6.c`, and `p7.c` under `assignment2`.

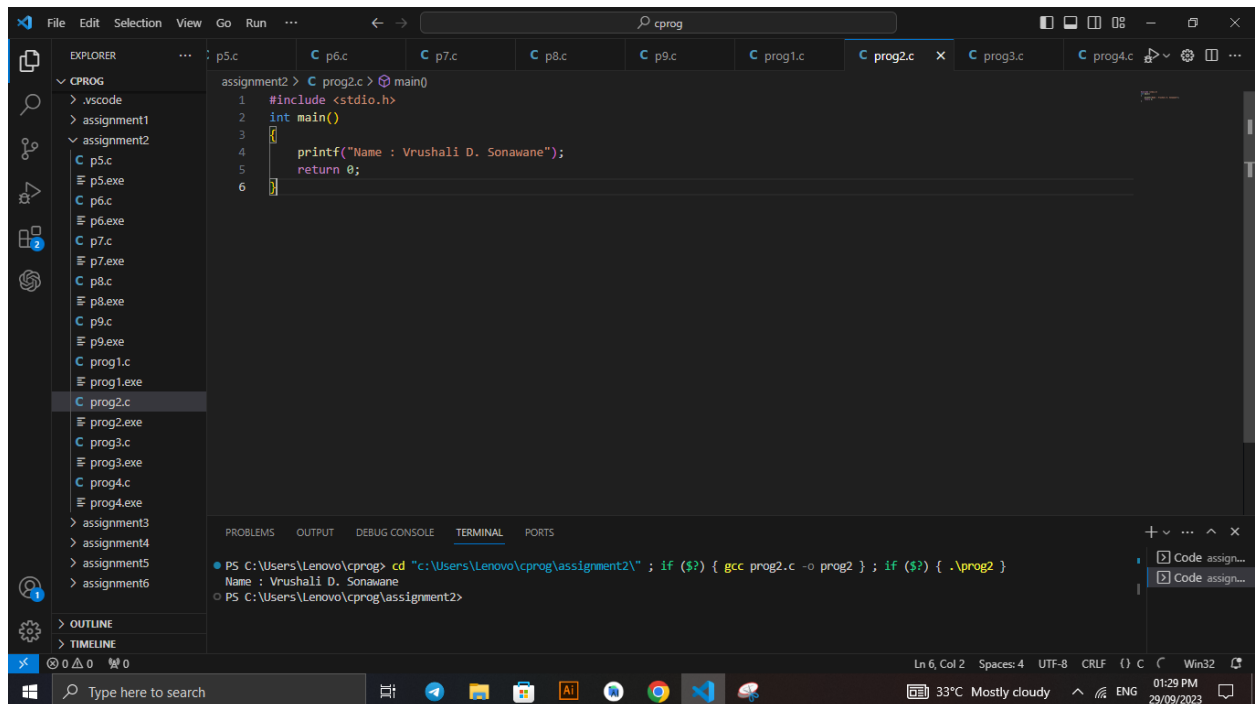
2. Write a program in C to print your name



The screenshot shows the Visual Studio Code editor interface. The Explorer sidebar on the left displays a project named 'CPROG' with subfolders 'assignment1' and 'assignment2'. Under 'assignment2', files 'p5.c', 'p6.c', and 'p7.c' are listed. The main editor window shows the code for 'prog2.c' with the following content:

```
assignment2 > C prog2.c > main()
1  #include <stdio.h>
2  int main()
3  {
4      printf("Name : Vrushali D. Sonawane");
5      return 0;
6  }
```

Output:

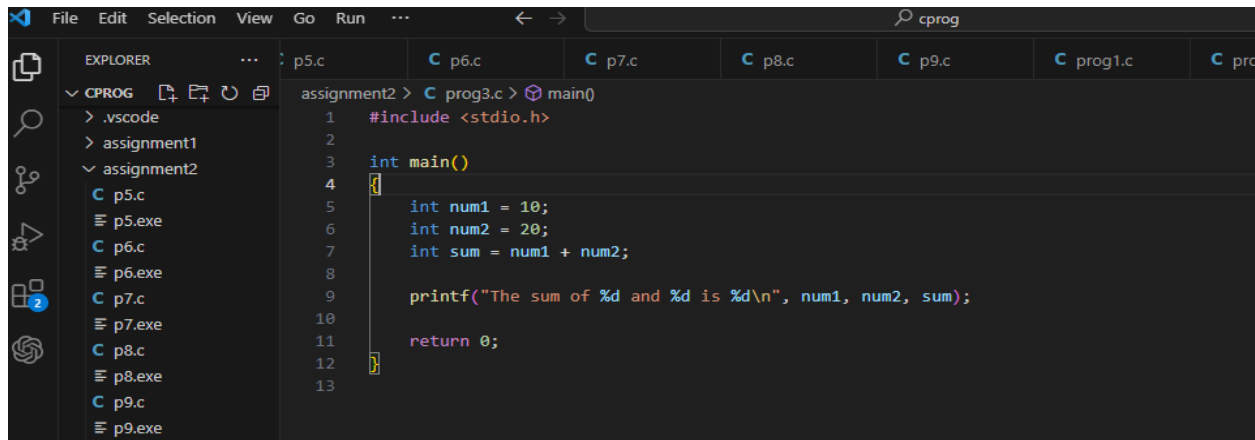


The screenshot shows the Visual Studio Code editor with the 'C prog2.c' file open. The main editor window displays the same C code as in the previous image. Below the editor, the 'TERMINAL' panel is active, showing the command prompt output:

```
PS C:\Users\Lenovo\cprog> cd "c:\Users\Lenovo\cprog\assignment2\" ; if ($?) { gcc prog2.c -o prog2 } ; if ($?) { .\prog2 }
Name : Vrushali D. Sonawane
PS C:\Users\Lenovo\cprog\assignment2>
```

The status bar at the bottom indicates the current line and column (Ln 6, Col 2), encoding (UTF-8), line endings (CRLF), and the operating system (Win32). The system tray shows the date and time as 01:29 PM on 29/09/2023.

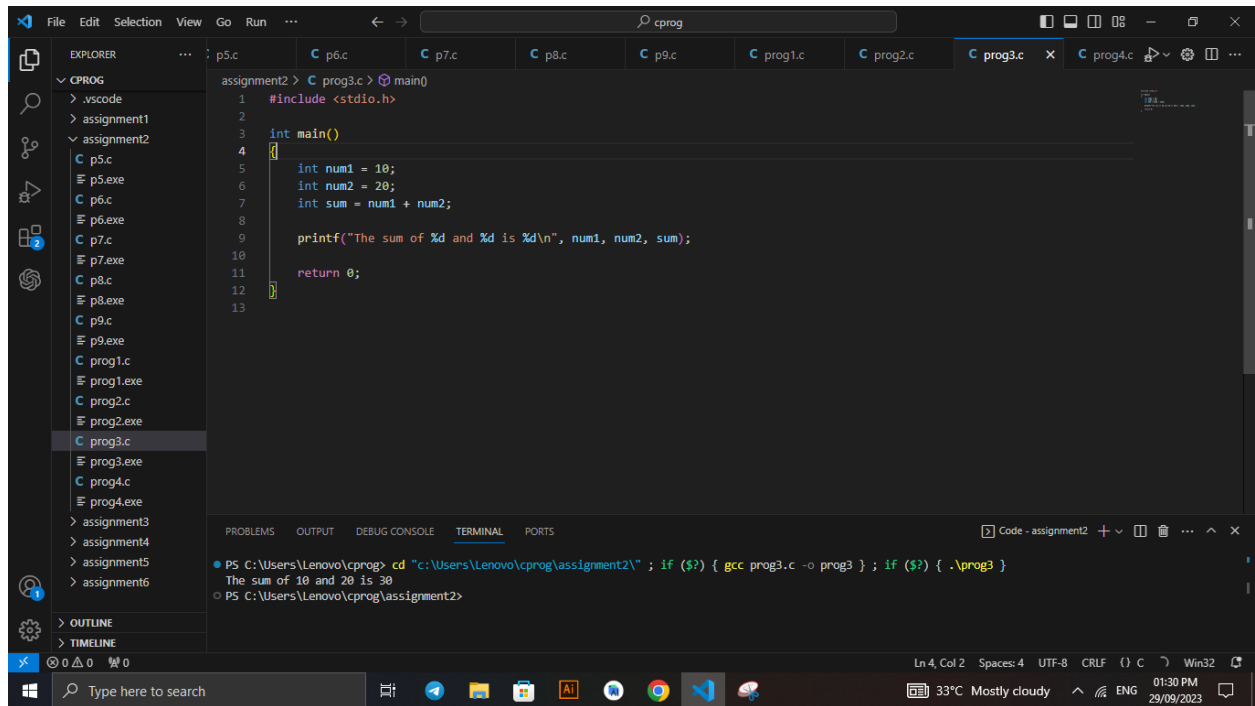
3. Write a program in C to add 10 and 20 and



The screenshot shows the Visual Studio Code editor with a C program open in the main editor pane. The Explorer pane on the left shows a project structure with folders 'CPROG', 'assignment1', and 'assignment2'. Under 'assignment2', there are files 'p5.c', 'p5.exe', 'p6.c', 'p6.exe', 'p7.c', 'p7.exe', 'p8.c', 'p8.exe', 'p9.c', and 'p9.exe'. The main editor pane shows the code for 'prog3.c' with the following content:

```
1 #include <stdio.h>
2
3 int main()
4 {
5     int num1 = 10;
6     int num2 = 20;
7     int sum = num1 + num2;
8
9     printf("The sum of %d and %d is %d\n", num1, num2, sum);
10
11     return 0;
12 }
13
```

Output:



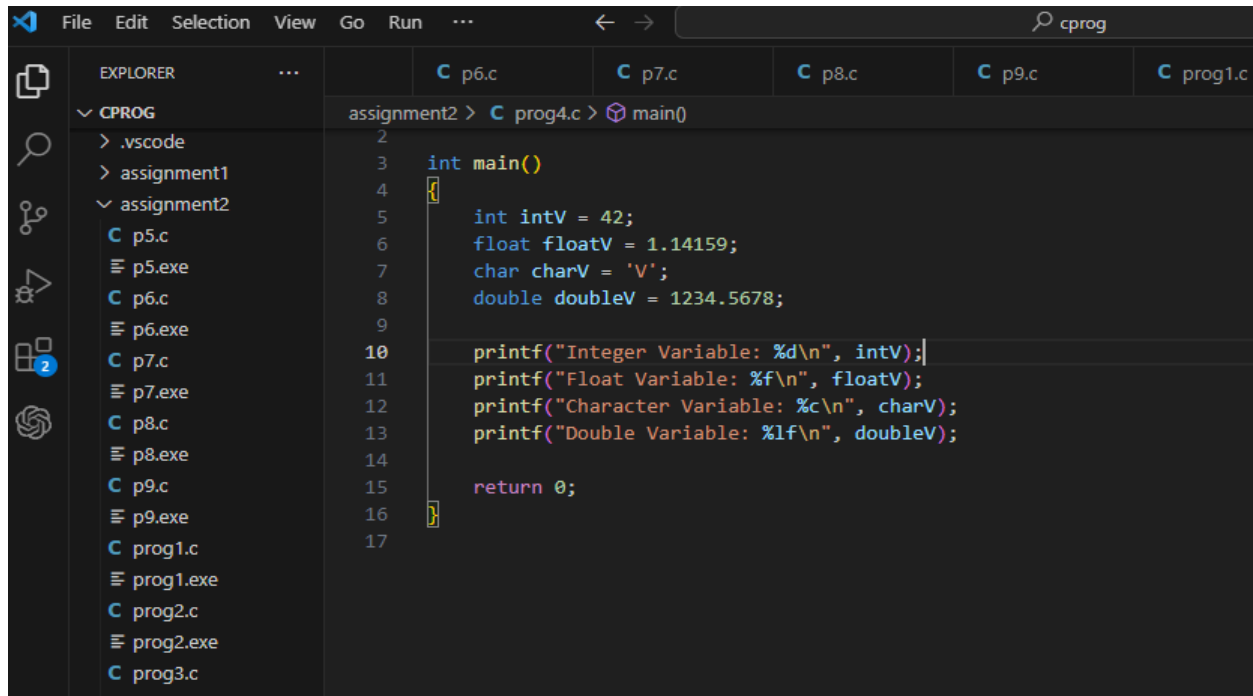
The screenshot shows the Visual Studio Code editor with the same C program open. The Explorer pane on the left shows a project structure with folders 'CPROG', 'assignment1', and 'assignment2'. Under 'assignment2', there are files 'p5.c', 'p5.exe', 'p6.c', 'p6.exe', 'p7.c', 'p7.exe', 'p8.c', 'p8.exe', 'p9.c', 'p9.exe', 'prog1.c', 'prog1.exe', 'prog2.c', 'prog2.exe', 'prog3.c', 'prog3.exe', 'prog4.c', and 'prog4.exe'. The main editor pane shows the code for 'prog3.c' with the following content:

```
1 #include <stdio.h>
2
3 int main()
4 {
5     int num1 = 10;
6     int num2 = 20;
7     int sum = num1 + num2;
8
9     printf("The sum of %d and %d is %d\n", num1, num2, sum);
10
11     return 0;
12 }
13
```

The bottom pane shows the TERMINAL output:

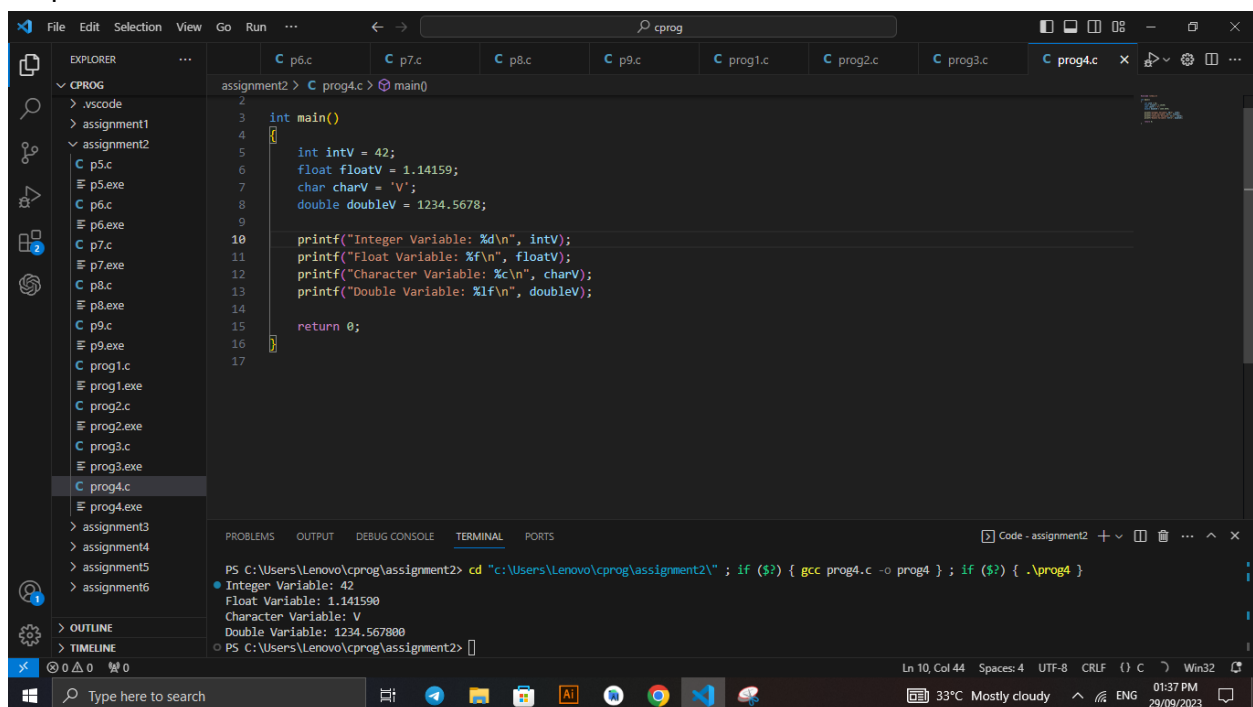
```
PS C:\Users\Lenovo\cprog> cd "C:\Users\Lenovo\cprog\assignment2\" ; if ($?) { gcc prog3.c -o prog3 } ; if ($?) { .\prog3 }
The sum of 10 and 20 is 30
PS C:\Users\Lenovo\cprog\assignment2>
```

4. Declare variables of various data types (int, float, char, double) and assign values to them.



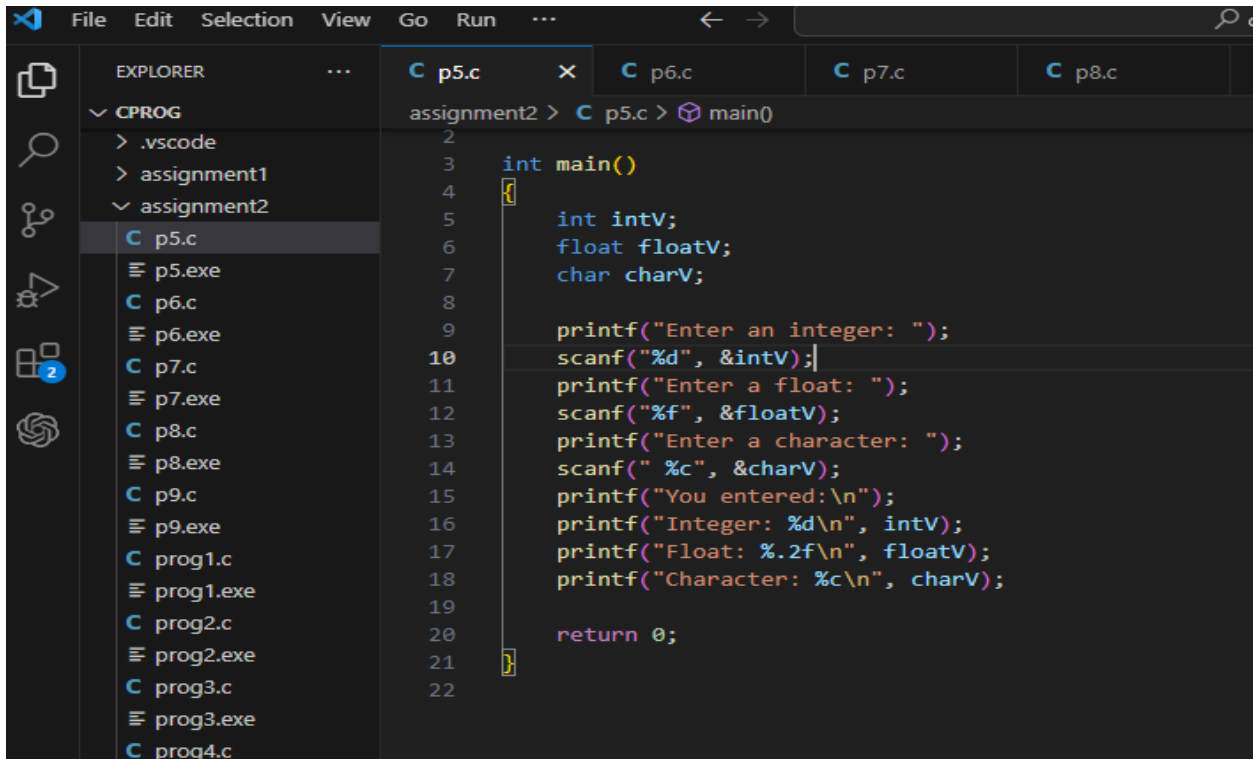
```
2
3 int main()
4 {
5     int intV = 42;
6     float floatV = 1.14159;
7     char charV = 'V';
8     double doubleV = 1234.5678;
9
10    printf("Integer Variable: %d\n", intV);
11    printf("Float Variable: %f\n", floatV);
12    printf("Character Variable: %c\n", charV);
13    printf("Double Variable: %lf\n", doubleV);
14
15    return 0;
16 }
17
```

Output:



```
PS C:\Users\Lenovo\cprog\assignment2> cd "C:\Users\Lenovo\cprog\assignment2\" ; if ($?) { gcc prog4.c -o prog4 } ; if ($?) { .\prog4 }
Integer Variable: 42
Float Variable: 1.141590
Character Variable: V
Double Variable: 1234.567800
PS C:\Users\Lenovo\cprog\assignment2>
```

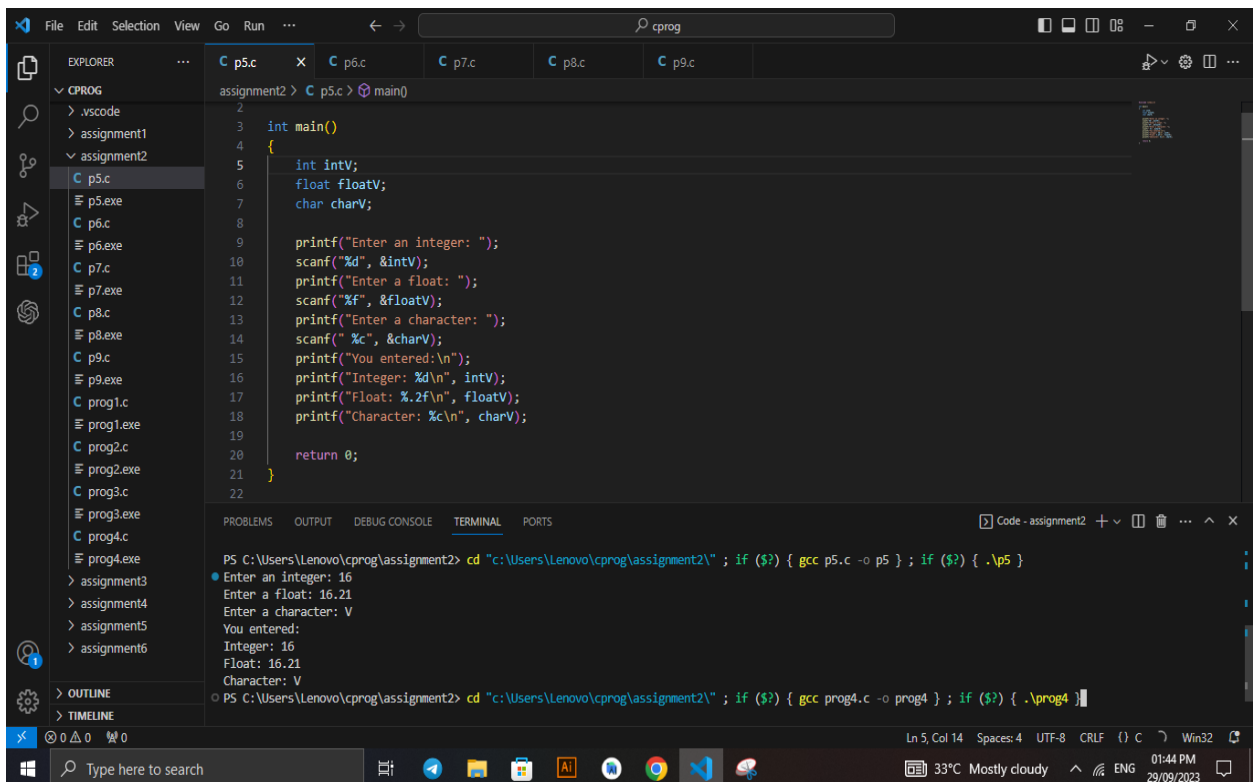
5. Write a program that takes user input for different data types (int, float, char) and then displays them.



The screenshot shows the Visual Studio Code editor with the Explorer sidebar on the left. The 'CPROG' folder is expanded, showing subfolders '.vscode' and 'assignment1'. The 'assignment2' folder is also expanded, listing files p5.c, p5.exe, p6.c, p6.exe, p7.c, p7.exe, p8.c, p8.exe, p9.c, p9.exe, prog1.c, prog1.exe, prog2.c, prog2.exe, prog3.c, prog3.exe, and prog4.c. The file p5.c is selected and its content is displayed in the editor. The code is a C program that takes user input for an integer, a float, and a character, and then displays them using printf.

```
2
3 int main()
4 {
5     int intV;
6     float floatV;
7     char charV;
8
9     printf("Enter an integer: ");
10    scanf("%d", &intV);
11    printf("Enter a float: ");
12    scanf("%f", &floatV);
13    printf("Enter a character: ");
14    scanf(" %c", &charV);
15    printf("You entered:\n");
16    printf("Integer: %d\n", intV);
17    printf("Float: %.2f\n", floatV);
18    printf("Character: %c\n", charV);
19
20    return 0;
21 }
22
```

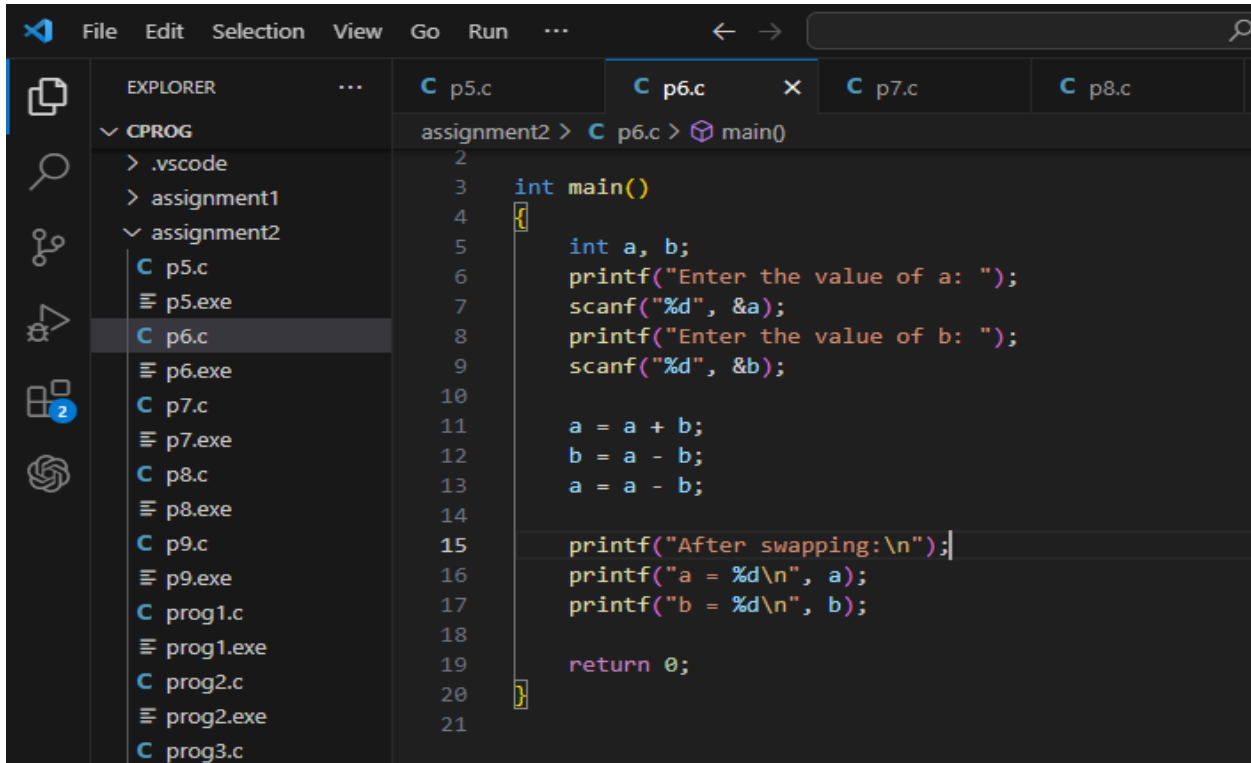
Output :



The screenshot shows the Visual Studio Code editor with the Explorer sidebar on the left. The 'CPROG' folder is expanded, showing subfolders '.vscode' and 'assignment1'. The 'assignment2' folder is also expanded, listing files p5.c, p5.exe, p6.c, p6.exe, p7.c, p7.exe, p8.c, p8.exe, p9.c, p9.exe, prog1.c, prog1.exe, prog2.c, prog2.exe, prog3.c, prog3.exe, and prog4.c. The file p5.c is selected and its content is displayed in the editor. The code is a C program that takes user input for an integer, a float, and a character, and then displays them using printf. The output of the program is shown in the terminal window at the bottom.

```
PS C:\Users\Lenovo\cprog\assignment2> cd "C:\Users\Lenovo\cprog\assignment2\" ; if ($?) { gcc p5.c -o p5 } ; if ($?) { .\p5 }
Enter an integer: 16
Enter a float: 16.21
Enter a character: V
You entered:
Integer: 16
Float: 16.21
Character: V
PS C:\Users\Lenovo\cprog\assignment2> cd "C:\Users\Lenovo\cprog\assignment2\" ; if ($?) { gcc prog4.c -o prog4 } ; if ($?) { .\prog4 }
```

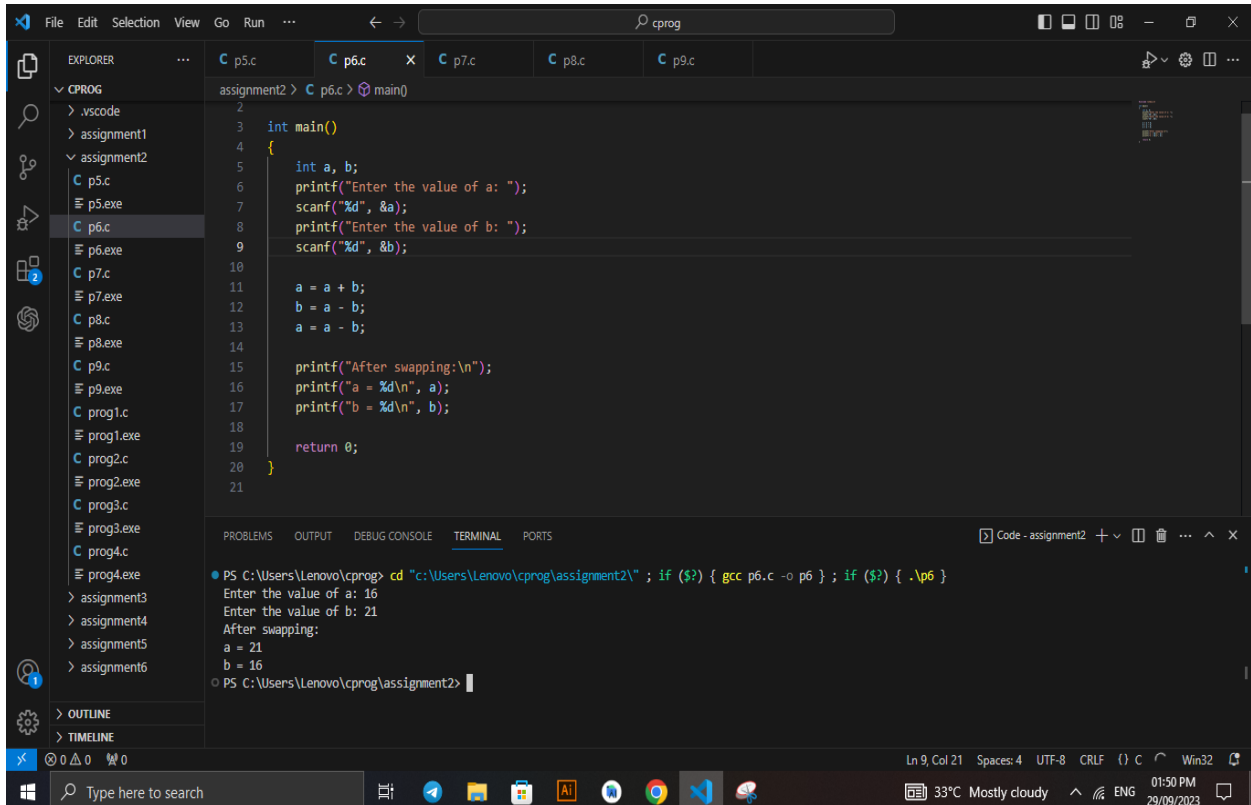
6. Write a program to swap the values of two variables without using a temporary variable.



The screenshot shows the Visual Studio Code editor with a C program open in the file 'p6.c'. The program is designed to swap the values of two variables, 'a' and 'b', without using a temporary variable. The code is as follows:

```
2
3 int main()
4 {
5     int a, b;
6     printf("Enter the value of a: ");
7     scanf("%d", &a);
8     printf("Enter the value of b: ");
9     scanf("%d", &b);
10
11     a = a + b;
12     b = a - b;
13     a = a - b;
14
15     printf("After swapping:\n");
16     printf("a = %d\n", a);
17     printf("b = %d\n", b);
18
19     return 0;
20 }
21
```

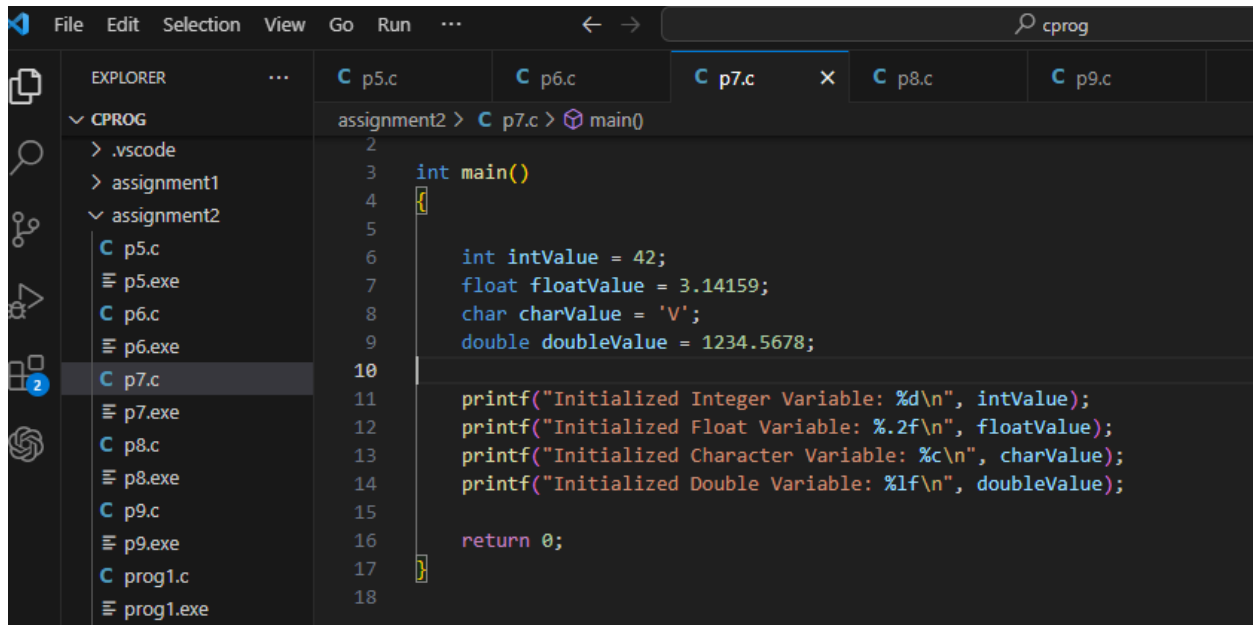
Output :



The screenshot shows the Visual Studio Code editor with the same C program open. The output of the program is displayed in the terminal window at the bottom. The output is as follows:

```
PS C:\Users\Lenovo\cprog> cd "C:\Users\Lenovo\cprog\assignment2\" ; if ($?) { gcc p6.c -o p6 } ; if ($?) { .\p6 }
Enter the value of a: 16
Enter the value of b: 21
After swapping:
a = 21
b = 16
PS C:\Users\Lenovo\cprog\assignment2>
```

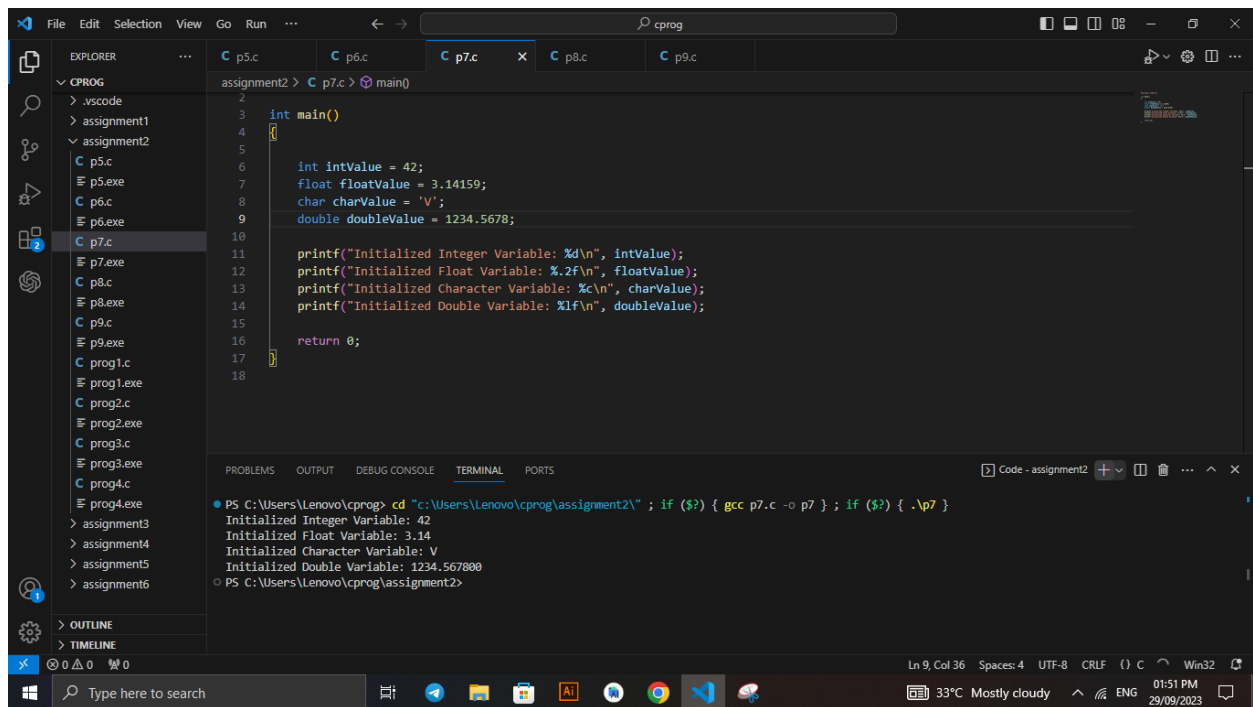
7. Declare variables of different types (int, float, char, double) and initialize them with values



The screenshot shows the Visual Studio Code editor with a C program in the file `p7.c`. The Explorer sidebar on the left shows the project structure with folders `.vscode`, `assignment1`, and `assignment2`. Under `assignment2`, there are files `p5.c`, `p5.exe`, `p6.c`, `p6.exe`, `p7.c` (selected), `p7.exe`, `p8.c`, `p8.exe`, `p9.c`, `p9.exe`, `prog1.c`, and `prog1.exe`. The main editor displays the code in `p7.c` with line numbers 2 through 18. The code declares and initializes variables of different types and prints their values.

```
2
3  int main()
4  {
5
6      int intValue = 42;
7      float floatValue = 3.14159;
8      char charValue = 'V';
9      double doubleValue = 1234.5678;
10
11     printf("Initialized Integer Variable: %d\n", intValue);
12     printf("Initialized Float Variable: %.2f\n", floatValue);
13     printf("Initialized Character Variable: %c\n", charValue);
14     printf("Initialized Double Variable: %lf\n", doubleValue);
15
16     return 0;
17 }
18
```

Output :



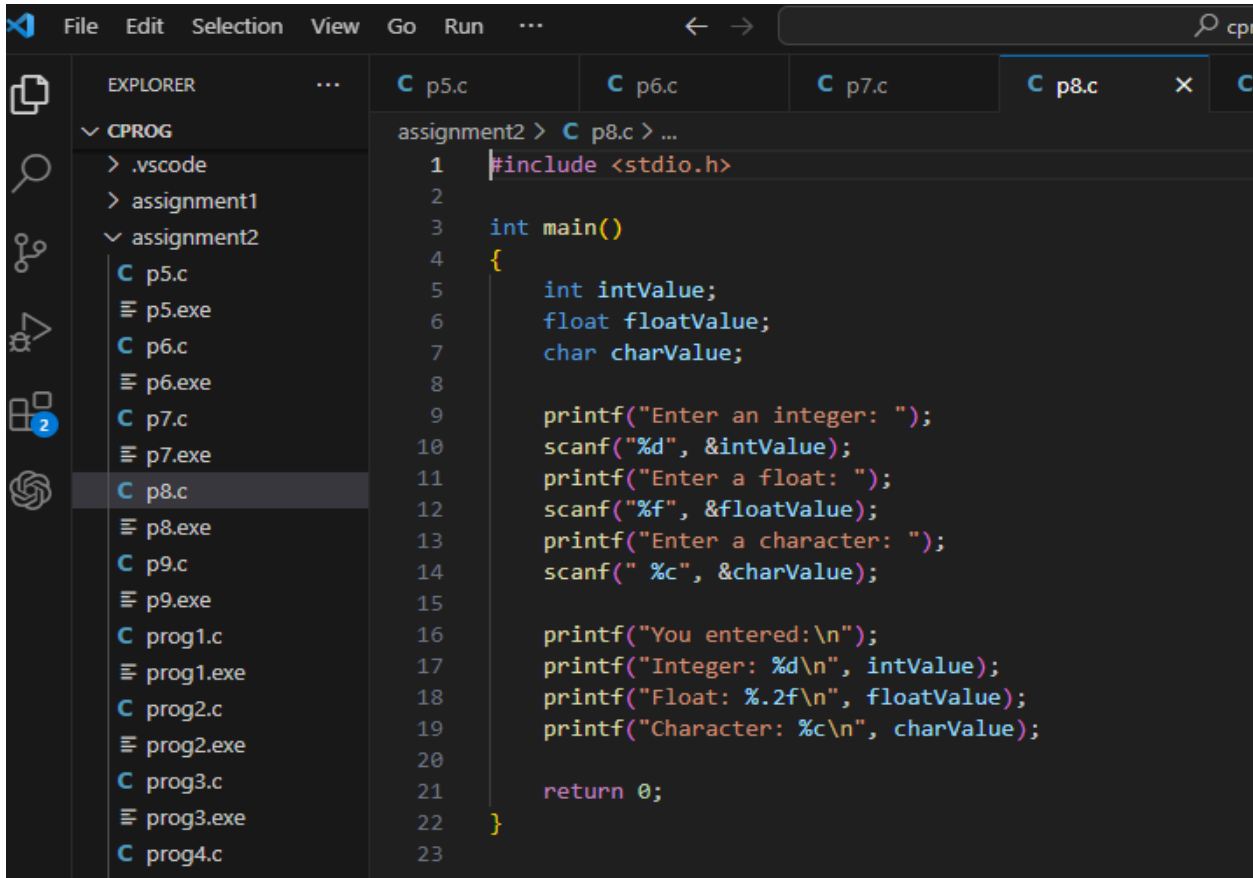
The screenshot shows the Visual Studio Code editor with the same C program in `p7.c`. The Explorer sidebar is the same. The main editor displays the code. Below the editor, the TERMINAL panel is open, showing the command to compile and run the program, and the output of the program.

```
PS C:\Users\Lenovo\cprog> cd "C:\Users\Lenovo\cprog\assignment2\" ; if ($?) { gcc p7.c -o p7 } ; if ($?) { .\p7 }
```

Output:

```
Initialized Integer Variable: 42
Initialized Float Variable: 3.14
Initialized Character Variable: V
Initialized Double Variable: 1234.567800
```

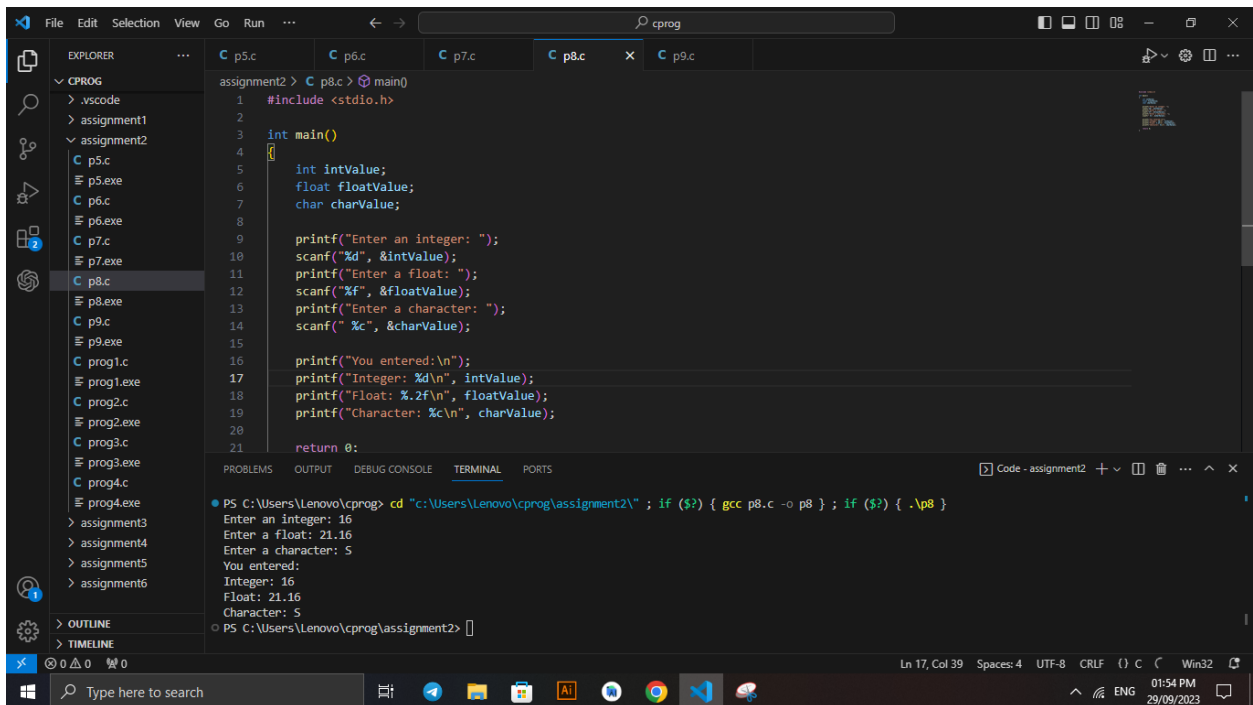
8. Write a program that takes user input for variables and displays them.



The screenshot shows the Visual Studio Code editor with the Explorer sidebar on the left. The Explorer sidebar shows a project named 'CPROG' with a folder 'assignment2' containing several files: p5.c, p5.exe, p6.c, p6.exe, p7.c, p7.exe, p8.c (selected), p8.exe, p9.c, p9.exe, prog1.c, prog1.exe, prog2.c, prog2.exe, prog3.c, prog3.exe, and prog4.c. The main editor window displays the source code for 'p8.c'.

```
1 #include <stdio.h>
2
3 int main()
4 {
5     int intValue;
6     float floatValue;
7     char charValue;
8
9     printf("Enter an integer: ");
10    scanf("%d", &intValue);
11    printf("Enter a float: ");
12    scanf("%f", &floatValue);
13    printf("Enter a character: ");
14    scanf(" %c", &charValue);
15
16    printf("You entered:\n");
17    printf("Integer: %d\n", intValue);
18    printf("Float: %.2f\n", floatValue);
19    printf("Character: %c\n", charValue);
20
21    return 0;
22 }
```

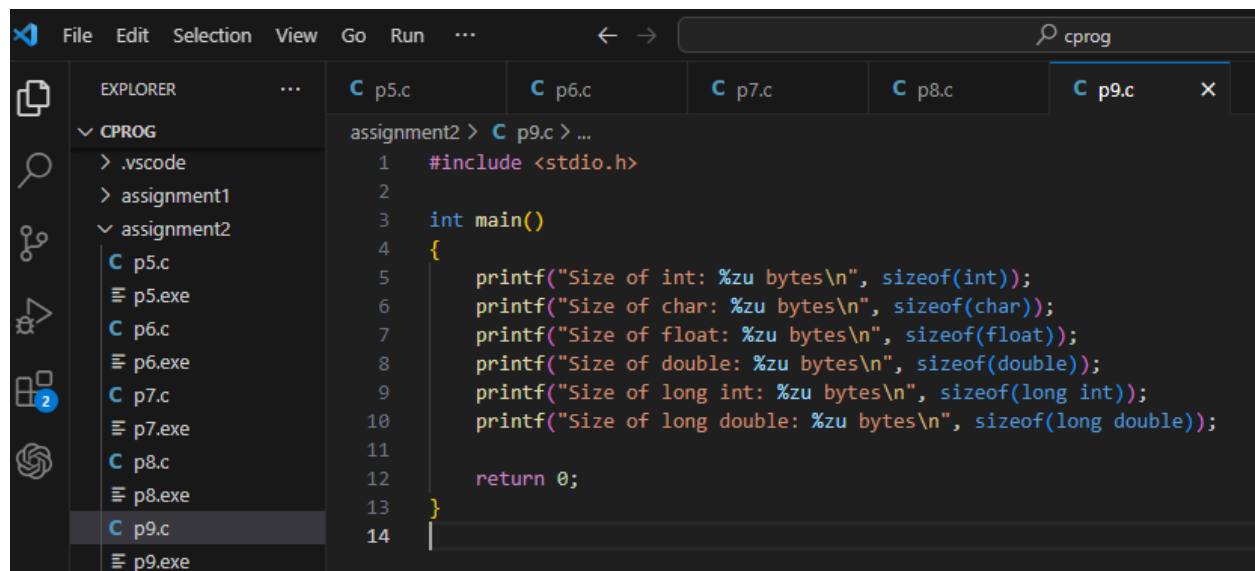
Output :



The screenshot shows the Visual Studio Code editor with the Explorer sidebar on the left. The Explorer sidebar shows a project named 'CPROG' with a folder 'assignment2' containing several files: p5.c, p5.exe, p6.c, p6.exe, p7.c, p7.exe, p8.c (selected), p8.exe, p9.c, p9.exe, prog1.c, prog1.exe, prog2.c, prog2.exe, prog3.c, prog3.exe, and prog4.c. The main editor window displays the source code for 'p8.c'. The Output window at the bottom shows the execution of the program.

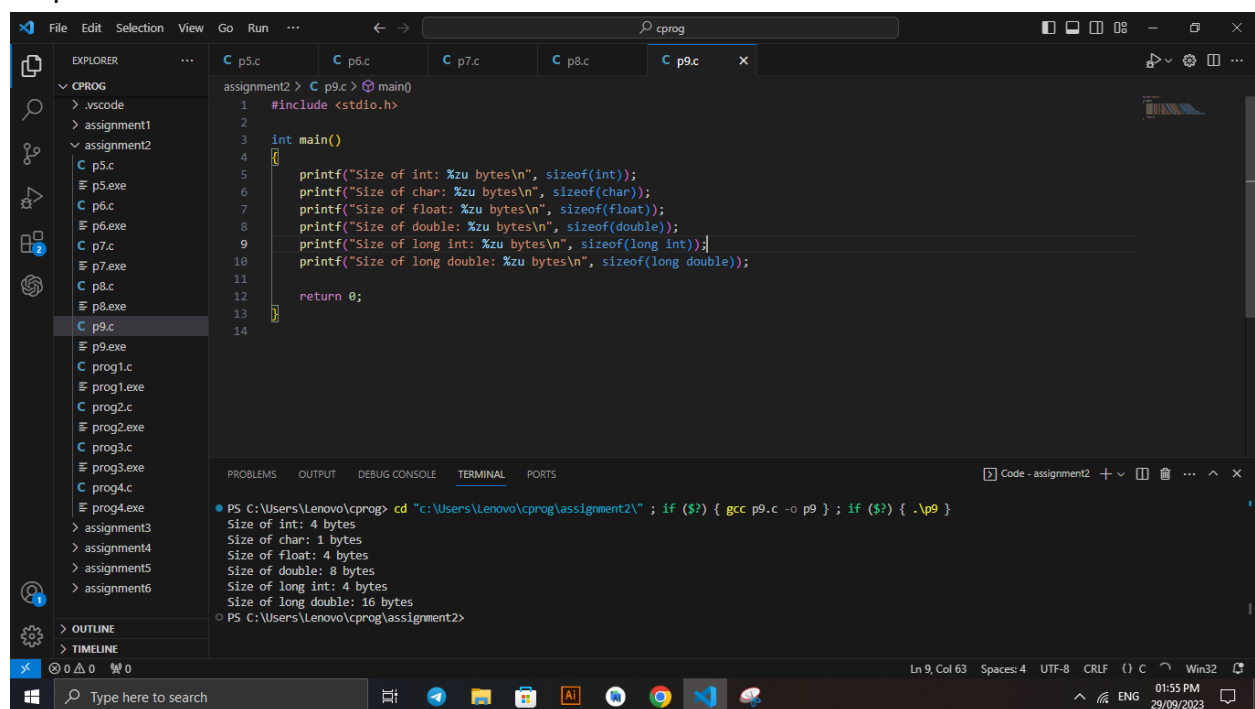
```
PS C:\Users\Lenovo\cprog> cd "C:\Users\Lenovo\cprog\assignment2\" ; if ($?) { gcc p8.c -o p8 } ; if ($?) { .\p8 }
Enter an integer: 16
Enter a float: 21.16
Enter a character: S
You entered:
Integer: 16
Float: 21.16
Character: S
PS C:\Users\Lenovo\cprog\assignment2>
```


9. Write a program to determine the sizes (in bytes) of various data types using the sizeof operator.



```
1 #include <stdio.h>
2
3 int main()
4 {
5     printf("Size of int: %zu bytes\\n", sizeof(int));
6     printf("Size of char: %zu bytes\\n", sizeof(char));
7     printf("Size of float: %zu bytes\\n", sizeof(float));
8     printf("Size of double: %zu bytes\\n", sizeof(double));
9     printf("Size of long int: %zu bytes\\n", sizeof(long int));
10    printf("Size of long double: %zu bytes\\n", sizeof(long double));
11
12    return 0;
13 }
14
```

Output : u



```
PS C:\Users\Lenovo\cprog> cd "c:\Users\Lenovo\cprog\assignment2\" ; if ($?) { gcc p9.c -o p9 } ; if ($?) { .\p9 }
Size of int: 4 bytes
Size of char: 1 bytes
Size of float: 4 bytes
Size of double: 8 bytes
Size of long int: 4 bytes
Size of long double: 16 bytes
PS C:\Users\Lenovo\cprog\assignment2>
```