

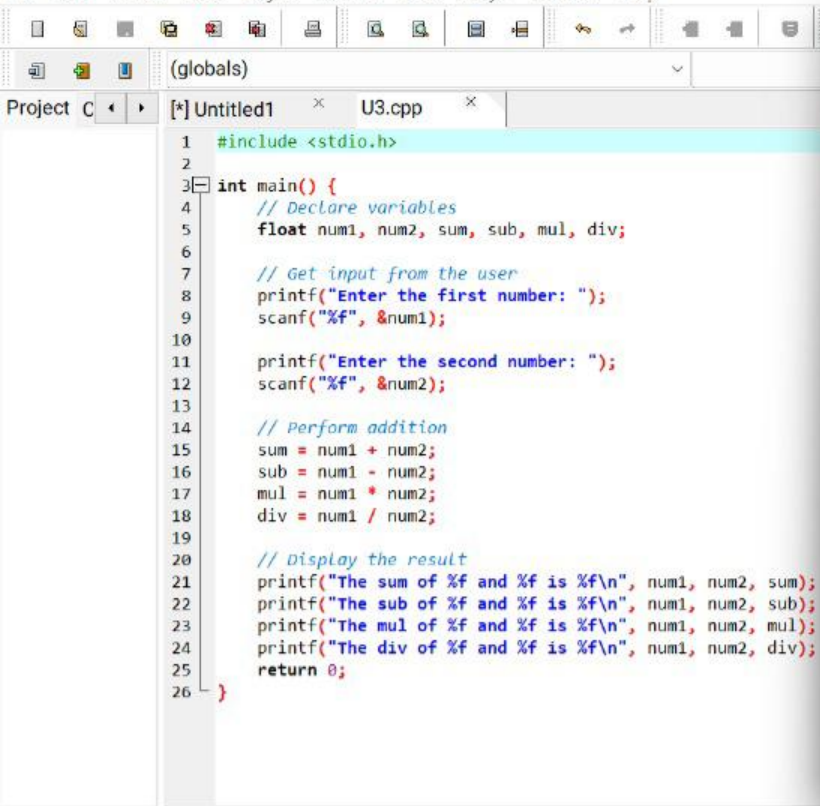
C:\Users\Admin\Documents\l

Enter the value of x: 7

Predicted y = 17.00

Process exited after 12.9 seconds with return value 0

Press any key to continue . . . |



The screenshot shows a C++ IDE with a project named 'U3.cpp'. The code in the editor is as follows:

```
1 #include <stdio.h>
2
3 int main() {
4     // Declare variables
5     float num1, num2, sum, sub, mul, div;
6
7     // Get input from the user
8     printf("Enter the first number: ");
9     scanf("%f", &num1);
10
11     printf("Enter the second number: ");
12     scanf("%f", &num2);
13
14     // Perform addition
15     sum = num1 + num2;
16     sub = num1 - num2;
17     mul = num1 * num2;
18     div = num1 / num2;
19
20     // Display the result
21     printf("The sum of %f and %f is %f\n", num1, num2, sum);
22     printf("The sub of %f and %f is %f\n", num1, num2, sub);
23     printf("The mul of %f and %f is %f\n", num1, num2, mul);
24     printf("The div of %f and %f is %f\n", num1, num2, div);
25     return 0;
26 }
```

The console window shows the output of the program:

```
C:\Users\INDU\OneDrive\Documents\U3.exe
Enter the first number: 2.4
Enter the second number: 3.0
The sum of 2.400000 and 3.000000 is 5.400000
The sub of 2.400000 and 3.000000 is -0.600000
The mul of 2.400000 and 3.000000 is 7.200000
The div of 2.400000 and 3.000000 is 0.800000

-----
Process exited after 18.28 seconds with return value 0
Press any key to continue . . .
```



```
C:\Users\Admin\Documents\l x + v
Double-precision representation of num1: 3.1415926535897931
Double-precision representation of num2: 2.7182818284590451
Result of multiplication (double-precision): 8.5397342226735660

-----
Process exited after 0.04518 seconds with return value 0
Press any key to continue . . . |
```

```
C:\Users\Admin\Documents\l x + v  
Single-precision representation of num1: 3.1415901  
Single-precision representation of num2: 2.7182801  
Result of multiplication (single-precision): 8.5397215
```

```
-----  
Process exited after 0.04868 seconds with return value 0  
Press any key to continue . . . |
```

```
7 printf("Enter second integer: ");
8 scanf("%d", &num2);
9 // Perform arithmetic operations
10 int sum = num1 + num2;
11 int difference = num1 - num2;
12 int product = num1 * num2;
13 // Check if the second integer is not zero
14 int quotient;
15 if (num2 != 0) {
16     quotient = num1 / num2;
17 } else {
18     printf("Cannot divide by zero\n");
19     return 1; // Exit with error code 1
20 }
21 // Print results
22 printf("Sum: %d\n", sum);
23 printf("Difference: %d\n", difference);
24 printf("Product: %d\n", product);
25 printf("Quotient: %d\n", quotient);
26 return 0; // Exit with success code 0
27 }
28
```

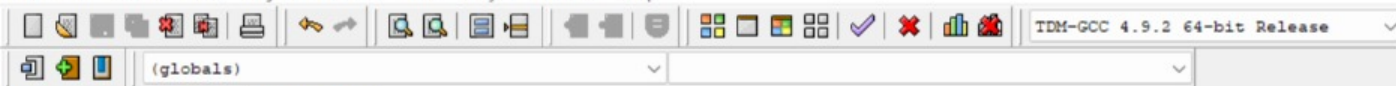
Abort Compilation

Compilation results...

```
-----
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\Admin\Documents\Untitled 7.exe
- Output Size: 128.7709 KB
- Compilation Time: 0.2 seconds
```

```
Enter first integer: 8
Enter second integer: 2
Sum: 10
Difference: 6
Product: 16
Quotient: 4
```

```
-----
Process exited after 5.062 seconds with return value 0
Press any key to continue . . .
```



```
1  #include <stdio.h>
2  int main()
3  {
4      // Write data to memory
5      int address = 5;
6      int data = 42;
7      memory[address] = data;
8      // Read data from memory
9      int readData = memory[address];
10     // Print the read data
11     printf("Data read from memory at address 5: %d", readData);
12     return 0;
13 }
```

Abort Compilation

Compilation results...

```
-----
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\Admin\Documents\Untitled1.exe
- Output Size: 127.931640625 KiB
- Compilation Time: 0.77s
```

C:\Users\Admin\Documents\l

Data read from memory at address 5: 42

```
-----
Process exited after 0.1433 seconds with return value 0
Press any key to continue . . .
```




```
1  #include <stdio.h>
2  #include <stdlib.h>
3  int main()
4  // Allocate memory for an array of 5 integers
5  int *array = (int *)malloc(5 * sizeof(int));
6  if (array == NULL) {
7  printf("Memory allocation failed\n");
8  return 1;
9  }
10 // Assign values to the allocated memory
11 for (int i = 0; i < 5; i++) {
12 array[i] = i * 10;
13 }
14 // Print the values
15 for (int i = 0; i < 5; i++) {
16 printf("array[%d] = %d\n", i, array[i]);
17 }
18 // Free the allocated memory
19 free(array);
20 return 0;
21
```

Abort Compilation

Compilation results...

```
-----
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\Admin\Documents\
- Output Size: 128.1005859375 KiB
- Compilation Time: 0.64s
```

```
C:\Users\Admin\Documents\l  +  -
array[0] = 0
array[1] = 10
array[2] = 20
array[3] = 30
array[4] = 40

-----
Process exited after 0.166 seconds with return value 0
Press any key to continue . . .
```



```
1  #include <stdio.h>
2  // Function to simulate an instruction execution
3  void executeInstruction(int instructionNumber) {
4      printf("Executing instruction %d\n", instructionNumber);
5      // Simulated instruction execution logic
6  }
7  int main() {
8      // Simulated instruction stream
9      int instructionStream[] = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10};
10     // Simulated superscalar execution with two pipelines
11     for (int i = 0; i < 10; i += 2) {
12         // Execute two instructions simultaneously using two pipelines
13         executeInstruction(instructionStream[i]);
14         executeInstruction(instructionStream[i + 1]);
15     }
16     return 0;
17 }
```

Abort Compilation

Compilation results...

```
-----
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\Admin\Documents\Untitled1.exe
- Output Size: 128.47265625 KiB
- Compilation Time: 1.09s
```

```
Executing instruction 1
Executing instruction 2
Executing instruction 3
Executing instruction 4
Executing instruction 5
Executing instruction 6
Executing instruction 7
Executing instruction 8
Executing instruction 9
Executing instruction 1
```

```
-----
Process exited after 0.1679 seconds with return value 0
Press any key to continue . . .
```

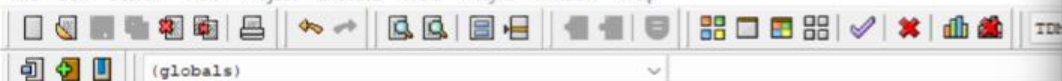


```
2 int main() {
3     int a = 5, b = 10, c = 15, result;
4     // Data Hazard - Read After Write (RAW)
5     result = a + b; // Data dependency on 'a' and 'b'
6     printf("Data Hazard (RAW): %d\n", result);
7     // Control Hazard - Conditional Branch
8     if (c > 10) {
9         result = a + b;
10    } else {
11        result = a - b;
12    }
13    printf("Control Hazard: %d\n", result);
14    // Structural Hazard - Resource Conflict
15    int array1[5], array2[5];
16    for (int i = 0; i < 5; i++) {
17        array1[i] = i;
18    }
19    // Structural Hazard: Both loops trying to access the array
20    for (int i = 0; i < 5; i++) {
21        array2[i] = array1[i] * 2;
22    }
23    printf("Structural Hazard: Array values multiplied by 2.\n");
24}
```

Abort Compilation

Compilation results...

```
-----
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\Admin\Documents\Untitled1.exe
- Output Size: 128.6005859375 KiB
- Compilation Time: 1.03s
```



Project Classes Debug

Untitled1.cpp

```
1 #include <stdio.h>
2 #include <stdlib.h>
3 #define PAGE_SIZE 4096
4 #define NUM_PAGES 1024
5 #define VIRTUAL_MEMORY_SIZE (PAGE_SIZE * NUM_PAGES)
6 int main()
7 {
8     srand(42);
9     for (int i = 0; i < 10; ++i) {
10         int virtual_address = rand() % VIRTUAL_MEMORY_SIZE;
11         printf("Virtual Address: %d\n", virtual_address);
12     }
13     return 0;
14 }
```

Compiler Resources Compile Log Debug Find Results Close

Abort Compilation

Compilation results...

```
-----
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\Admin\Documents\Untitled1.exe
- Output Size: 128.2705078125 KiB
- Compilation Time: 1.14s
```

Line: 13 Col: 3 Sel: 0 Lines: 13 Length: 333 Insert Done parsing in 0.141 seconds

```
The value at the allocated memory location is: 42  
The value at the allocated memory location is: 7405904
```

```
-----  
Process exited after 0.04044 seconds with return value 0  
Press any key to continue . . . |
```

```
4   int a = multiplicand;
5   int b = multiplier;
6   int product = 0;
7   int count = 4;
8   while (count != 0) {
9       if (b & 1) {
10          product += a;
11      }
12      a <<= 1;
13      b >>= 1;
14      count--;
15  }
16  result = product;
17  return result;
18  }
19  int main() {
20      int multiplicand = 5; // 8
21      int multiplier = 3; // 8
22      int result = boothMultiply
23      printf("Result of multiplic
24      return 0;
25  }
```

Abort Compilation

Compilation results...

```
-----
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\Admin\Documents\Untitled1.exe
- Output Size: 128.474609375 KB
- Compilation Time: 0.99s
```

```
C:\Users\Admin\Documents\Untitled1.exe
Result of multiplication: 15

-----
Process exited after 0.2116 seconds with return value 0
Press any key to continue . . .
```




```
1 #include <stdio.h>
2 // Define a mock ROM data
```

C:\Users\Admin\Documents\ \ + -

Data from ROM: Hello, this is data from ROM!

Process exited after 0.04269 seconds with return value 0
Press any key to continue . . . |

Abort Compilation

☐ Shorten compiler paths