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Question: Q3

```
C q3.c M X
src > C q3.c > main()
1 // Write a C program to display a personalized greeting message. (Should contain 'hello' or 'welcome' in the message)
2
3 #include <stdio.h>
4
5 int main() {
6     char name[50];
7
8     printf("please enter your name: ");
9     scanf("%49s", name);
10
11     printf("\nHello %s, welcome to the C programming world!\n", name);
12
13     return 0;
14 }
```

Output:

```
please enter your name:

smriti shahi

Hello smriti, welcome to the C programming world!
PS C:\Users\Hp\Desktop\hello world\assignment-1-sshahi7417-blip\src> |
```

Question: Q6

```
src > C q6.c > main()
1 // Write a C program to calculate the area of a rectangle. Prompt the user to enter the length and width, and display the result.
2
3 #include <stdio.h>
4
5 int main(){
6     float length, width, area;
7
8     printf("Enter the length of the rectangle: ");
9     scanf("%f", &length);
10
11     printf("Enter the width of the rectangle: ");
12     scanf("%f", &width);
13
14     area = length * width;
15
16     printf("The area of the rectangle is: %.2f\n", area);
17
18     return 0;
19 }
```

Output:

```
Enter the length of the rectangle:
10
Enter the width of the rectangle: 11
The area of the rectangle is: 110.00
PS C:\Users\Hp\Desktop\hello world\assignment-1-sshahi7417-blip\src>
```

Question: Q8

```
1  /* Write a C program to convert temperature from Celsius to Fahrenheit. Prompt the user for a
2  temperature in Celsius and display the equivalent temperature in Fahrenheit.
3  (Formula: fahrenheit = (celsius * 9 / 5) + 32) */
4
5  #include <stdio.h>
6
7  int main() {
8      float celsius, fahrenheit;
9
10     printf("Enter temperature in Celsius: ");
11     scanf("%f", &celsius);
12
13     fahrenheit = (celsius * 9.0 / 5.0) + 32;
14
15     printf("%.2f Celsius is equal to %.2f Fahrenheit.\n", celsius,
16             fahrenheit);
17
18     return 0;
19 }
20
```

Output:

```
PS C:\Users\Hp\Desktop\hello world\assignment-1-sshahi7417-blip\src> .\q8.exe
Enter temperature in Celsius: 11
11.00 Celsius is equal to 51.80 Fahrenheit.
PS C:\Users\Hp\Desktop\hello world\assignment-1-sshahi7417-blip\src>
```

Question: Q9

```
src > C q9.c > ...
1 // Input a number representing days and print the equivalent number of weeks and days.
2 // Example:
3 // Input = 10
4 // Output = "1 week and 3 days"
5
6 #include <stdio.h>
7
8 int main() {
9     int total_days, weeks, remaining_days;
10
11     printf("Enter the total number of days: ");
12     scanf("%d", &total_days);
13
14     weeks = total_days / 7;
15     remaining_days = total_days % 7;
16
17     printf("%d days = %d week(s) and %d day(s).\n",
18         total_days, weeks, remaining_days);
19
20     return 0;
21 }
22
```

Output:

```
Enter the total number of days:
25
25 days = 3 week(s) and 4 day(s).
PS C:\Users\Hp\Desktop\hello world\assignment-1-sshahi7417-blip\src>
```

Question: Q10

```
C q3.c M C q6.c M C q8.c M C q9.c M C q10.c M X Settings
src > C q10.c > main()
1 // Write a C program to swap the values of two variables using a temporary variable.
2
3 #include <stdio.h>
4
5 int main() {
6     int a = 10, b = 20;
7     int temp;
8
9     printf("Before swapping: a = %d, b = %d\n", a, b);
10
11     temp = a;
12     a = b;
13     b = temp;
14
15     printf("After swapping: a = %d, b = %d\n", a, b);
16
17     return 0;
18 }
```

Output:

```
PS C:\Users\Hp\Desktop\hello world\assignment-1-sshahi7417-blip\src> gcc q10.c -o q10.exe
PS C:\Users\Hp\Desktop\hello world\assignment-1-sshahi7417-blip\src> .\q10.exe
Before swapping: a = 10, b = 20
After swapping: a = 20, b = 10
PS C:\Users\Hp\Desktop\hello world\assignment-1-sshahi7417-blip\src> █
```

Question: Q11

```
C q3.c M C q6.c M C q8.c M C q9.c M C q10.c M C q11.c M X Settings
src > C q11.c > main()
1 // Write a C expression that performs the following operations in a single line: increment a variable by 1, multiply it by 3, and subtract 10.
2
3 #include <stdio.h>
4
5 int main() {
6     int my_var = 5;
7     int result;
8
9     result = ((my_var + 1) * 3) - 10;
10
11     printf("Original variable: %d\n", my_var);
12     printf("Result of the expression ((var + 1) * 3) - 10: %d\n",
13         result);
14     printf("Calculation: ((5 + 1) * 3) - 10 = (6 * 3) - 10 = 18 - 10 = 8\n");
15
16     return 0;
17 }
```

Output:

```
PS C:\Users\Hp\Desktop\hello world\assignment-1-sshahi7417-blip\src> gcc q11.c -o q11.exe
PS C:\Users\Hp\Desktop\hello world\assignment-1-sshahi7417-blip\src> .\q11.exe
Original variable: 5
Result of the expression ((var + 1) * 3) - 10: 8
Calculation: ((5 + 1) * 3) - 10 = (6 * 3) - 10 = 18 - 10 = 8
PS C:\Users\Hp\Desktop\hello world\assignment-1-sshahi7417-blip\src> █
```

Question: Q12

```
C q3.c M C q6.c M C q8.c M C q9.c M C q10.c M C q11.c M C q12.c M X Settings
src > C q12.c > main()
1 // Given three variables a, b, and c, write an expression that checks if a is greater than b and c is not equal to 0.
2
3 #include <stdio.h>
4
5 int main() {
6     int a = 15, b = 10, c = 5;
7
8     printf("a = %d, b = %d, c = %d\n", a, b, c);
9
10    if (a > b && c != 0) {
11        printf("Condition is TRUE: a is greater than b AND c is not zero.\n");
12    } else {
13        printf("Condition is FALSE.\n");
14    }
15
16    printf("\nNow changing c to 0...\n");
17    c = 0;
18    printf("a = %d, b = %d, c = %d\n", a, b, c);
19
20    if (a > b && c != 0) {
21        printf("This line will not be printed.\n");
22    } else {
23        printf("Condition is now FALSE because c is zero.\n");
24    }
25
26    return 0;
27 }
```

Output:

```
a = 15, b = 10, c = 5
Condition is TRUE: a is greater than b AND c is not zero.
a = 15, b = 10, c = 5
Condition is TRUE: a is greater than b AND c is not zero.
Condition is TRUE: a is greater than b AND c is not zero.

Now changing c to 0...
a = 15, b = 10, c = 0
Condition is now FALSE because c is zero.
PS C:\Users\Hp\Desktop\hello world\assignment-1-sshahi7417-blip\src> 
```

Question: Q13

```
C q3.c M C q6.c M C q8.c M C q9.c M C q10.c M C q11.c M C q12.c M C q13.c M X Set
src > C q13.c > main()
1 // Write a C expression that evaluates whether a number is divisible by both 2 and 3 (without using the modulus operator).
2
3 #include <stdio.h>
4
5 int main() {
6     int num = 12;
7
8     printf("Checking if %d is divisible by both 2 and 3 (without modulus):\n", num);
9
10    if ((num / 6) * 6 == num) {
11        printf("%d is divisible by both 2 and 3.\n", num);
12    } else {
13        printf("%d is NOT divisible by both 2 and 3.\n", num);
14    }
15
16    printf("\nChecking if 10 is divisible by both 2 and 3:\n");
17    num = 10;
18    if ((num / 6) * 6 == num) {
19        printf("%d is divisible by both 2 and 3.\n", num);
20    } else {
21        printf("%d is NOT divisible by both 2 and 3.\n", num);
22    }
23
24    return 0;
25 }
```

Output:

```
PS C:\Users\Hp\Desktop\hello world\assignment-1-ssahi7417-blip\src> gcc q13.c -o q13.exe
PS C:\Users\Hp\Desktop\hello world\assignment-1-ssahi7417-blip\src> .\q13.exe
Checking if 12 is divisible by both 2 and 3 (without modulus):
12 is divisible by both 2 and 3.

Checking if 10 is divisible by both 2 and 3:
10 is NOT divisible by both 2 and 3.
PS C:\Users\Hp\Desktop\hello world\assignment-1-ssahi7417-blip\src> █
```

Question: Q14

```
1 // Create an expression that swaps the values of two variables x and y without using a temporary variable.
2
3 #include <stdio.h>
4
5 int main() {
6     int x = 10, y = 20;
7     printf("Before swap: x = %d, y = %d\n", x, y);
8
9     // Swap using XOR
10    x = x ^ y;
11    y = x ^ y;
12    x = x ^ y;
13
14    printf("After swap: x = %d, y = %d\n", x, y);
15
16    return 0;
17 }
```

Output:

```
PS C:\Users\Hp\Desktop\hello world\assignment-1-sshahi7417-blip\src> gcc q14.c -o q14.exe
PS C:\Users\Hp\Desktop\hello world\assignment-1-sshahi7417-blip\src> .\q14.exe
Before swap: x = 10, y = 20
After swap:  x = 20, y = 10
PS C:\Users\Hp\Desktop\hello world\assignment-1-sshahi7417-blip\src> █
```

Question: Q15

```
src > C q15.c > main()
1 // Write an expression that checks if a number is both positive and even.
2
3 #include <stdio.h>
4
5 int main() {
6     int num = 12;
7
8     printf("Checking if %d is both positive and even:\n", num);
9     if (num > 0 && num % 2 == 0) {
10         printf("%d is both positive and even.\n", num);
11     } else {
12         printf("%d is NOT both positive and even.\n", num);
13     }
14
15     printf("\nChecking if -7 is both positive and even:\n");
16     num = -7;
17     if (num > 0 && num % 2 == 0) {
18         printf("%d is both positive and even.\n", num);
19     } else {
20         printf("%d is NOT both positive and even.\n", num);
21     }
22
23     printf("\nChecking if 15 is both positive and even:\n");
24     num = 15;
25     if (num > 0 && num % 2 == 0) {
26         printf("%d is both positive and even.\n", num);
27     } else {
28         printf("%d is NOT both positive and even.\n", num);
29     }
30
31     return 0;
32 }
```

Output:

```
Checking if 12 is both positive and even:  
12 is both positive and even.
```

```
Checking if -7 is both positive and even:  
Checking if 12 is both positive and even:  
12 is both positive and even.
```

```
Checking if -7 is both positive and even:  
12 is both positive and even.
```

```
Checking if -7 is both positive and even:
```

```
Checking if -7 is both positive and even:  
-7 is NOT both positive and even.
```

```
Checking if 15 is both positive and even:  
15 is NOT both positive and even.
```

```
PS C:\Users\Hp\Desktop\hello world\assignment-1-sshahi7417-blip\src>
```

Question: Q16

```
1 // Given two variables x and y, write an expression that calculates the average of their values.  
2  
3 #include <stdio.h>  
4  
5 int main() {  
6     int x = 10, y = 15;  
7     float average;  
8  
9     average = (x + y) / 2.0;  
10  
11     printf("The average of %d and %d is: %.2f\n", x, y, average);  
12  
13     return 0;  
14 }
```

Output:

```
The average of 10 and 15 is: 12.50
```

```
PS C:\Users\Hp\Desktop\hello world\assignment-1-sshahi7417-blip\src>
```

Question: Q17

```

1 // Create an expression that checks if a given character is an uppercase letter.
2
3 #include <stdio.h>
4
5 int main() {
6     char ch = 'G';
7
8     printf("Checking if '%c' is an uppercase letter:\n", ch);
9     if (ch >= 'A' && ch <= 'Z') {
10         printf("'%c' is an uppercase letter.\n", ch);
11     } else {
12         printf("'%c' is NOT an uppercase letter.\n", ch);
13     }
14
15     printf("\nChecking if 'g' is an uppercase letter:\n");
16     ch = 'g';
17     if (ch >= 'A' && ch <= 'Z') {
18         printf("'%c' is an uppercase letter.\n", ch);
19     } else {
20         printf("'%c' is NOT an uppercase letter.\n", ch);
21     }
22
23     return 0;
24 }

```

Output:

```

Checking if 'G' is an uppercase letter:
'G' is an uppercase letter.

Checking if 'g' is an uppercase letter:
'g' is NOT an uppercase letter.
PS C:\Users\Hp\Desktop\hello world\assignment-1-sshahi7417-blip\src>

```

Question: Q18

```

1 // Write a C expression that calculates the sum of the squares of three different numbers.
2 // Click to add a breakpoint
3 #include <stdio.h>
4
5 int main() {
6     int a = 2, b = 3, c = 4;
7     int sum_of_squares;
8
9     sum_of_squares = (a * a) + (b * b) + (c * c);
10
11     printf("The sum of squares of %d, %d, and %d is: %d\n", a, b, c, sum_of_squares);
12     printf("Calculation: (%d * %d) + (%d * %d) + (%d * %d) = %d + %d + %d = %d\n",
13         a, a, b, b, c, c, a*a, b*b, c*c, sum_of_squares);
14
15     return 0;
16 }

```

Output:

```

The sum of squares of 2, 3, and 4 is: 29
Calculation: (2 * 2) + (3 * 3) + (4 * 4) = 4 + 9 + 16 = 29
PS C:\Users\Hp\Desktop\hello world\assignment-1-sshahi7417-blip\src>

```

Question: Q19

```

1 // Given three variables a, b, and c, write an expression that checks if a is equal to b and b is not equal to c.
2 #include <stdio.h>
3
4 #include <stdio.h>
5
6 int main() {
7     int a = 10, b = 10, c = 5;
8
9     printf("a = %d, b = %d, c = %d\n", a, b, c);
10
11     if (a == b && b != c) {
12         printf("Condition is TRUE: a equals b, and b does not equal c.\n");
13     } else {
14         printf("Condition is FALSE.\n");
15     }
16
17     printf("\nNow changing c to 10...\n");
18     c = 10;
19     printf("a = %d, b = %d, c = %d\n", a, b, c);
20
21     if (a == b && b != c) {
22         printf("This line will not be printed.\n");
23     } else {
24         printf("Condition is now FALSE because b equals c.\n");
25     }
26
27     return 0;
28 }

```

Output:

```
a = 10, b = 10, c = 5
Condition is TRUE: a equals b, and b does not equal c.
```

Now changing c to 10...

```
a = 10, b = 10, c = 10
Condition is now FALSE because b equals c.
```

```
PS C:\Users\Hp\Desktop\hello world\assignment-1-sshahi7417-blip\src> █
```

Question: Q20

```
1 // Write an expression that checks if a number is a multiple of either 3 or 5.
2
3 #include <stdio.h>
4
5 int main() {
6     int num = 15;
7
8     printf("Checking if %d is a multiple of 3 or 5:\n", num);
9     if (num % 3 == 0 || num % 5 == 0) {
10         printf("%d is a multiple of 3 or 5.\n", num);
11     } else {
12         printf("%d is NOT a multiple of 3 or 5.\n", num);
13     }
14
15     printf("\nChecking if 9 is a multiple of 3 or 5:\n");
16     num = 9;
17     if (num % 3 == 0 || num % 5 == 0) {
18         printf("%d is a multiple of 3 or 5.\n", num);
19     } else {
20         printf("%d is NOT a multiple of 3 or 5.\n", num);
21     }
22
23     printf("\nChecking if 7 is a multiple of 3 or 5:\n");
24     num = 7;
25     if (num % 3 == 0 || num % 5 == 0) {
26         printf("%d is a multiple of 3 or 5.\n", num);
27     } else {
28         printf("%d is NOT a multiple of 3 or 5.\n", num);
29     }
30
31     return 0;
32 }
```

Output:

```
Checking if 15 is a multiple of 3 or 5:  
15 is a multiple of 3 or 5.
```

```
Checking if 9 is a multiple of 3 or 5:  
9 is a multiple of 3 or 5.
```

```
Checking if 7 is a multiple of 3 or 5:  
7 is NOT a multiple of 3 or 5.  
7 is NOT a multiple of 3 or 5.  
7 is NOT a multiple of 3 or 5.
```

```
PS C:\Users\Hp\Desktop\hello world\assignment-1-sshahi7417-blip\src> █
```

Question: Q21

```
1 // Create an expression that swaps the values of three variables x, y, and z in a cyclic order (i.e., x becomes y, y becomes z, and z becomes x)
2
3 #include <stdio.h>
4
5 int main() {
6     int x = 10, y = 20, z = 30;
7     int temp;
8
9     printf("Before cyclic swap: x=%d, y=%d, z=%d\n", x, y, z);
10
11     temp = z;
12     z = y;
13     y = x;
14     x = temp;
15
16     printf("After cyclic swap: x=%d, y=%d, z=%d\n", x, y, z);
17     printf("(x became y, y became z, z became x)\n");
18
19     return 0;
20 }
```

Output:

```
Before cyclic swap: x=10, y=20, z=30
After cyclic swap: x=30, y=10, z=20
(x became y, y became z, z became x)
PS C:\Users\Hp\Desktop\hello world\assignment-1-sshahi7417-blip\src> █
```

Question: Q22

```

1 // Write a C expression that calculates the square root of the sum of two numbers, rounded to the nearest integer.
2 // You can use math header file for this (eg: #include <math.h>)
3
4 #include <stdio.h>
5 #include <math.h>
6
7 int main() {
8     double a = 10.5, b = 15.5;
9     int result;
10
11     result = (int)round(sqrt(a + b));
12
13     printf("a = %.1f, b = %.1f\n", a, b);
14     printf("Sum: %.1f\n", a + b);
15     printf("Square root of sum: %.3f\n", sqrt(a + b));
16     printf("Rounded to nearest integer: %d\n", result);
17
18     return 0;
19 }

```

Output:

```

a = 10.5, b = 15.5
Sum: 26.0
Square root of sum: 5.099
Rounded to nearest integer: 5
PS C:\Users\Hp\Desktop\hello world\assignment-1-sshahi7417-blip\src>

```

Question: Q23

```

1 // Given a variable num, write an expression that checks if it is a power of 2.
2 // You can use math header file for this (eg: #include <math.h>)
3
4 #include <stdio.h>
5
6 int main() {
7     int num = 16;
8
9     printf("Checking if %d is a power of 2:\n", num);
10    if (num > 0 && (num & (num - 1)) == 0) {
11        printf("%d is a power of 2.\n", num);
12    } else {
13        printf("%d is NOT a power of 2.\n", num);
14    }
15
16    printf("\nChecking if 12 is a power of 2:\n");
17    num = 12;
18    if (num > 0 && (num & (num - 1)) == 0) {
19        printf("%d is a power of 2.\n", num);
20    } else {
21        printf("%d is NOT a power of 2.\n", num);
22    }
23
24    printf("\nChecking if 32 is a power of 2:\n");
25    num = 32;
26    if (num > 0 && (num & (num - 1)) == 0) {
27        printf("%d is a power of 2.\n", num);
28    } else {
29        printf("%d is NOT a power of 2.\n", num);
30    }
31
32    return 0;
33 }

```

Output:

```

Checking if 16 is a power of 2:
16 is a power of 2.

```

```

Checking if 12 is a power of 2:
12 is NOT a power of 2.

```

```

Checking if 32 is a power of 2:
32 is a power of 2.

```

```

PS C:\Users\Hp\Desktop\hello world\assignment-1-sshahi7417-blip\src>

```

Question: Q24

```
src > C q24.c > main()
1 // Create an expression that checks if a given number is a perfect square.
2 // You can use math header file for this (eg: #include <math.h>)
3
4 #include <stdio.h>
5 #include <math.h>
6
7 int main() {
8     int num = 49;
9     int integer_sqrt = (int)sqrt(num);
10
11     printf("Checking if %d is a perfect square:\n", num);
12     if (integer_sqrt * integer_sqrt == num) {
13         printf("%d is a perfect square (sqrt = %d).\n", num, integer_sqrt);
14     } else {
15         printf("%d is NOT a perfect square.\n", num);
16     }
17
18     printf("\nChecking if 50 is a perfect square:\n");
19     num = 50;
20     integer_sqrt = (int)sqrt(num);
21     if (integer_sqrt * integer_sqrt == num) {
22         printf("%d is a perfect square (sqrt = %d).\n", num, integer_sqrt);
23     } else {
24         printf("%d is NOT a perfect square.\n", num);
25     }
26
27     printf("\nChecking if 64 is a perfect square:\n");
28     num = 64;
29     integer_sqrt = (int)sqrt(num);
30     if (integer_sqrt * integer_sqrt == num) {
31         printf("%d is a perfect square (sqrt = %d).\n", num, integer_sqrt);
32     } else {
33         printf("%d is NOT a perfect square.\n", num);
34     }
35
36     return 0;
37 }
```

Output:

```
Checking if 49 is a perfect square:  
49 is a perfect square (sqrt = 7).
```

```
Checking if 50 is a perfect square:  
50 is NOT a perfect square.
```

```
Checking if 64 is a perfect square:  
64 is a perfect square (sqrt = 8).
```

```
PS C:\Users\Hp\Desktop\hello world\assignment-1-sshahi7417-blip\src> █
```