

Module 3 Chapter 6 Homework

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1 Question 1

Determine the value of each of the following expressions:

- A. `static_cast<char>(toupper('7'))`
- B. `static_cast<char>(toupper('@'))`
- C. `static_cast<char>(toupper('s'))`
- D. `static_cast<char>(toupper('J'))`
- E. `static_cast<char>(tolower('*'))`
- F. `static_cast<char>(tolower(';'))`
- G. `static_cast<char>(tolower('w'))`
- H. `static_cast<char>(tolower('('))`

1.1 Solution

- | | |
|-----------------------------------|---------------------------------------|
| a. <input type="text" value="7"/> | c. <input type="text" value="S"/> |
| b. <input type="text" value="@"/> | d. <input type="text" value="J"/> |
| e. <input type="text" value="*"/> | g. <input type="text" value="w"/> |
| f. <input type="text" value=";"/> | h. <input type="text" value("(""=""/> |

2 Question 2

Consider the following function

```

1 int mystery(int x, double y, char ch) {
2     if (x == 0 && ch > 'A')
3         return (static_cast<int>(pow(y, 2)) + static_cast<int>(ch));
4     else if (x > 0)
5         return (x + static_cast<int>(sqrt(y)) - static_cast<int>(ch));
6     else
7         return (2 * x + static_cast<int>(y) - static_cast<int>(ch));
8 }
```

Listing 1: Question 1 Problem

What is the output of the following statements?

- A. `cout << mystery(0, 6.5, 'K') << endl;`
- B. `cout << mystery(4, 16.0, '#') << endl;`
- C. `cout << 2 * mystery(-11, 13.8, '8') << endl;`

2.1 Solution

- | | |
|-------------------------------------|--------------------------------------|
| a. <input type="text" value="117"/> | c. <input type="text" value="-130"/> |
| b. <input type="text" value="-27"/> | |

3 Question 3

Consider the following program:

```

1  #include <iostream>
2  using namespace std;
3
4  void func1 ();
5  void func2 ();
6
7  int main() {
8      int num;
9
10     cout << "Enter 1 or 2: ";
11     cin >> num;
12     cout << endl;
13
14     cout << "Take ";
15
16     if (num == 1)
17         func1 ();
18     else if (num == 2)
19         func2 ();
20     else
21         cout << "Invalid input. You must enter a 1 or 2" << endl;
22     return 0;
23 }
24
25 void func1 () {
26     cout << "Programming I." << endl;
27 }
28
29 void func2 () {
30     cout << "Programming II." << endl;
31 }

```

Listing 2: Question 3 Problem

- A. What is the output if the input is 1?
- B. What is the output if the input is 2?
- C. What is the output if the input is 3?
- D. What is the output if the input is -1?

3.1 Solution

- | | |
|-------------------------|--|
| a. Take Programming I. | c. Take Invalid input. You must enter a 1 or 2 |
| b. Take Programming II. | d. Take Invalid input. You must enter a 1 or 2 |

4 Question 4

Consider the following program:

```

1  #include <iostream>
2  #include <cmath>
3  #include <iomanip>
4
5  using namespace std;
6
7  void traceMe(double x, double y);
8
9  int main() {
10     double one, two;
11
12     cout << "Enter two numbers: ";
13     cin >> one >> two;
14     cout << endl;
15
16     traceMe(one, two);
17     traceMe(two, one);
18     return 0;
19 }
20
21 void traceMe(double x, double y) {
22     double z;
23
24     if (x != 0)
25         z = sqrt(y) / x;
26     else {
27         cout << "Enter a nonzero number: ";
28         cin >> x;
29         cout << endl;
30         z = floor(pow(y, x));
31     }
32     cout << fixed << showpoint << setprecision(2);
33     cout << x << ", " << y << ", " << z << endl;
34 }

```

Listing 3: Question 4 Problem

- A. What is the output if the input is 3 625?
- B. What is the output if the input is 24 1024?
- C. What is the output if the input is 0 196?

4.1 Solution

a. 3.00, 625.00, 8.33
625.00, 3.00, 0.00

b. 24.00, 1024.00, 1.33
1024.00, 24.00, 0.00

c. Enter a nonzero number: 0, 196

0.00, 196.00, 1.00
196.00, 0.00, 0.00

5 Question 5

Consider the following function definition:

```

1 void defaultParam(int num1, int num2 = 7, double z = 2.5) {
2     int num3;
3
4     num1 = num1 + static_cast<int>(z);
5     z = num2 + num1 * z;
6     num3 = num2 - num1;
7     cout << "num3 = " << num3 << endl;
8 }
```

Listing 4: Question 5 Problem

What is the output of the following function calls?

a	defaultParam(7);
b	defaultParam(8, 2);
c	defaultParam(0, 1, 7.5);
d	defaultParam(1, 2, 3.0);

5.1 Solution

- | | |
|---|---|
| a. <input type="text" value="num3 = -2"/> | c. <input type="text" value="num3 = -6"/> |
| b. <input type="text" value="num3 = -8"/> | d. <input type="text" value="num3 = -2"/> |

Works Consulted

Malik, D. S. (2015). *C programming: Program design including data structures* (7th ed.). Cengage Learning.