



Programming for Problem Solving (Exp 2-2)

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Task 1:

int i =9, j=6; float x =0.5, y =0.1; char a ='a', b ='b';	
Expression	Output (With Justification)
a. $(3 * i - 2 * j) \% (2 * a - b)$	15 (Char converted to ASCII)
b. $(x > y) \&\& (i > 0) \&\& (j > 5)$	true
c. $a == 99$	false (ASCII of a = 97)
d. for a = 5 and b = 10 $z = (a < b) ? a + b : a - b$	15
e. $i = 10;$ $i++;$ $a = i + 10;$	21
f. for i = 10, j = 5 $z = (i + 10 < j) ? 100 : 10$	10
g. with a=1, b=2, c=12, d=2, e=5, f=2 $a = b += c++ - d + \text{---}e/-f;$	10
h. with x=12, y=7, z $z = x != 4 \parallel y == 2;$	
i. with int i=-3, j=2, k=0, m $m = ++i \parallel ++j \&\& ++k;$	

Task 2:

```
#include <iostream>
#include <cmath>
```

```
using namespace std;
int main() {
    double ax, ay, bx, by, distance, midpointX, midpointY;
    cout << "Input the coordinates of A: ";
    cin >> ax >> ay;
    cout << "Input the coordinates of B: ";
    cin >> bx >> by;

    distance = ceil((sqrt(pow((bx - ax), 2.0) + pow((by - ay), 2.0))) * 100) / 100;
    midpointX = ceil((ax + bx / 2) * 100.0) / 100.0;
    midpointY = ceil((ay + by / 2) * 100.0) / 100.0;

    cout << "\nDistance: " << distance << endl;
    cout << "\nMidpoint: (" << midpointX << ", " << midpointY << ")\n";

    return 0;
}
```

Task 3:

```
#include <iostream>

using namespace std;
int main() {
    int num1, num2, num3;
    cout << "Enter 1st Number: ";
    cin >> num1;
    cout << "Enter 2nd Number: ";
    cin >> num2;
    cout << "Enter 3rd Number: ";
    cin >> num3;
```

```
if (num1 > num2 && num1 > num3) {  
    cout << "\nThe largest number is " << num1 << endl;  
} else if (num2 > num1 && num2 > num3) {  
    cout << "\nThe largest number is " << num2 << endl;  
} else if (num3 > num1 && num3 > num2) {  
    cout << "\nThe largest number is " << num3 << endl;  
} else {  
    cout << "\nAll the numbers are equal" << endl;  
}  
  
return 0;  
}
```

Task 4:

```
#include <iostream>  
  
using namespace std;  
int main() {  
    cout << sizeof(float) << endl;  
    cout << sizeof(int) << endl;  
    cout << sizeof(char) << endl;  
    cout << sizeof(double) << endl;  
  
    return 0;  
}
```

Task 5:

a:

4

b:

if $A < B < C$

c:

1

d:

False

e:

1110101111111010

f:

10

Homework Questions:

1.

```
#include <iostream>

using namespace std;

int main() {
    int num1, num2;
    cout << "Enter any two numbers: ";
    cin >> num1 >> num2;

    cout << "\nSum: " << num1 + num2;
    cout << "\nDifference: " << num1 - num2;
    cout << "\nProduct: " << num1 * num2;
    cout << "\nQuotient: " << num1 / num2;
    cout << "\nModulus: " << num1 % num2;

    return 0;
}
```

2.

```
#include <iostream>

using namespace std;

int main() {
    int n, reverse = 0, rem;
    cout << "Enter a number: ";
    cin >> n;
    while (n != 0) {
        rem = n % 10;
```

```
reverse = reverse * 10 + rem;  
n /= 10;  
}  
cout << "Reversed Number: " << reverse << endl;  
return 0;  
}
```

3.

```
#include <iostream>  
  
using namespace std;  
  
int main() {  
    int n, sum = 0;  
    cout << "Enter a number: ";  
    cin >> n;  
    for (int x = 1; x <= n; x++) {  
        sum += x * x * x;  
    }  
    cout << sum;  
    return 0;  
}
```