

# CMPS 150 Workbook: Chapter 4

## Section 4.1: Parameters

1) What is the output of the following code?

```
#include <iostream>
using namespace std;

int Strange(int &, int, int);

int main( )
{
    int w, x = 3, y = 4, z = 5;
    w = Strange(x, y, z);
    cout << w << ' ' << x << ' ' << y << ' ' << z << endl;

    return 0;
}

int Strange(int &a, int b, int c)
{
    a = b + c;
    b = b * b;
    c = b;
    return a + b + c;
}
```

2) What is the output of the following code?

```
#include <iostream>
using namespace std;

int Strange(int, int &, int);

int main( )
{
    int w, x = 3, y = 4, z = 5;
    w = Strange(x, y, z);
    cout << w << ' ' << x << ' ' << y << ' ' << z << endl;

    return 0;
}
```

```
int Strange(int a, int &b, int c)
{
    a = b + c;
    b = b * b;
    c = b;
    return a + b + c;
}
```

3) What is the output of the following code?

```
#include <iostream>
using namespace std;

int Strange(int, int, int &);

int main( )
{
    int w, x = 3, y = 4, z = 5;
    w = Strange(x, y, z);
    cout << w << ' ' << x << ' ' << y << ' ' << z << endl;

    return 0;
}

int Strange(int a, int b, int &c)
{
    a = b + c;
    b = b * b;
    c = b;
    return a + b + c;
}
```

4) What is the output of the following code?

```
#include <iostream>
using namespace std;

int Strange(int &, int &, int &);

int main( )
{
    int w, x = 3, y = 4, z = 5;
    w = Strange(x, y, z);
    cout << w << ' ' << x << ' ' << y << ' ' << z << endl;

    return 0;
}
```

```
int Strange(int &a, int &b, int &c)
{
    a = b + c;
    b = b * b;
    c = b;
    return a + b + c;
}
```

5) If the file "read.me" contains these values,

15 33 18 7 41

what will the file "write.me" contain after the following code is executed?

```
#include <iostream>
#include <fstream>
using namespace std;

int ReadValue(istream & in);
void WriteValue(ofstream & out, int value);

int main()
{
    int dataValue;
    ifstream inFile;
    ofstream outFile;

    inFile.open("read.me");
    if (!inFile)
    {
        cout << "No File!";
        exit(1);
    }
    outFile.open("write.me");

    dataValue = ReadValue(inFile);
    while (inFile)
    {
        WriteValue(outFile, dataValue);
        dataValue = ReadValue(inFile);
    }

    inFile.close();
    outFile.close();

    return 0;
}
```

```
int ReadValue(istream & in)
{
    int v;
    in >> v;
    return v;
}

void WriteValue(ostream & out, int value)
{
    out << value << endl;
}
```

6) If the file "one.dat" contains these values,

```
33 44 55
```

and the file "two.dat" contains these values,

```
25 31 67
```

what will the file "three.dat" contain after the following code is executed?

```
#include <iostream>
#include <fstream>
using namespace std;

int ReadValue(istream & in);
void WriteValue(ostream & out, int value);

int main()
{
    int dataValue1, dataValue2;
    ifstream inFile1, inFile2;
    ofstream outFile;

    inFile1.open("one.dat");
    inFile2.open("two.dat");
    if (!(inFile1 && inFile2))
    {
        cout << "No File!";
        exit(1);
    }
    outFile.open("three.dat");

    dataValue1 = ReadValue(inFile1);
    dataValue2 = ReadValue(inFile2);
    while (inFile1 && inFile2)
    {
```

```

        if (dataValue1 > dataValue2)
        {
            WriteValue(outFile, dataValue2);
            dataValue2 = ReadValue(inFile2);
        }
        else
        {
            WriteValue(outFile, dataValue1);
            dataValue1 = ReadValue(inFile1);
        }
    }

    inFile1.close();
    inFile2.close();
    outFile.close();

    return 0;
}

int ReadValue(istream & in)
{
    int v;
    in >> v;
    return v;
}

void WriteValue(ofstream & out, int value)
{
    out << value << endl;
}

```

7) Write a program that requests the first and last names of the program user, then outputs the following message.

```

To: <First Name> <Last Name>
From: Woretha Trieer
Dear <First Name>,

```

As I am sure you know, <First Name>, Russian Golden Long Tailed Hamsters are in danger of losing their habitat to urban dwellers all over the world. Please contribute to our efforts to preserve this historic animal. After all, where would we be without their dramatic contribution to European history in the 14th century?

All prompts and input should be inside of one function and all output should be within a second function. The users names must be passed by value or reference. Function main should only contain calls to both functions and any necessary local variables.

8) Write a function that receives three floating point numbers as arguments, then calculates both results as given by the quadratic equation. The results are to be returned by the function via pass by reference arguments.

$$X = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Write a program that requests and receives values for  $a$ ,  $b$  and  $c$  from the user, then calls the above function to solve the problem. The program should output the values returned after the call.

## Section 4.2: Overloading

1) What is the output of the following code?

```
#include <iostream>
using namespace std;

int Sum(int, int);
int Sum(int, int, int);
int Sum(int, int, int, int);
int Sum(int, int, int, int, int);

int main()
{
    cout << Sum(1,2) << endl;
    cout << Sum(1,2,3) << endl;
    cout << Sum(1,2,3,4) << endl;
    cout << Sum(1,2,3,4,5) << endl;

    return 0;
}

int Sum(int a, int b)
{
    return a + b;
}

int Sum(int a, int b, int c)
{
    return a + b + c;
}
```

```
int Sum(int a, int b, int c, int d)
{
    return a + b + c + d;
}
```

```
int Sum(int a, int b, int c, int d, int e)
{
    return a + b + c + d + e;
}
```

2) Create three functions that calculate the volume of a cube, a box, and a cylinder respectively. Use the following function headers:

```
double Volume(double side);
double Volume(double length, double width, double depth);
double Volume(double length, double radius);
```

Call all three of these functions in a program that outputs the values returned.