

Intro to C++

Session 2 homework Q/A

By Coding-bootcamps.com

■ EXERCISES

Exercise 1

The `sizeof` operator can be used to determine the number of bytes occupied in memory by a variable of a certain type. For example, `sizeof(short)` is equivalent to 2. Write a C++ program that displays the memory space required by each fundamental type on screen.

Exercise 2

Write a C++ program to generate the screen output shown below:

```
I
"RUSH"
      \TO\
AND
/FRO/
```

Exercise 3

Which of the variable definitions shown below is invalid or does not make sense? Defining and initializing variables:

```
int a(2.5);                const long large;

int b = '?';               char c('\');

char z(500);               unsigned char ch =
'\201'; int big = 40000;   unsigned size(40000);

double he's(1.2E+5);      float val = 12345.12345;
```

Exercise 4

Write a C++ program that two defines variables for floating-point numbers and initializes them with the values

123.456 and 76.543

Then display the sum and the difference of these two numbers on screen.

■ SOLUTIONS

Exercise 1

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

int main()
{
    cout << "\nSize of Fundamental Types\n"
          << "   Type           Number of Bytes\n"
          << "-----" << endl;

    cout << "   char:           " << sizeof(char) << endl;
    cout << "   short:          " << sizeof(short) << endl;
    cout << "   int:           " << sizeof(int) << endl;

    cout << "   long:           " << sizeof(long) << endl;
    cout << "   float:          " << sizeof(float) << endl;
    cout << "   double:         " << sizeof(double) << endl;
    cout << "   long double:    " << sizeof(long double)
          << endl;

    return 0;
}
```

Exercise 2

```
// Usage of escape sequences

#include <iostream>
using namespace std;

int main()
{
    cout << "\n\n\t I"           // Instead of tabs
          << "\n\n\t\t\t \"RUSH\"" // you can send the
          << "\n\n\t\t\t\t\t \\\tO\\" // suited number
          << "\n\n\t\t\t AND"       // of blanks to
          << "\n\n\t\t\t /FRO/" << endl; // the output.

    return 0;
}
```

```
}
```

Exercise 3

Incorrect:

```
int a(2.5);                // 2.5 is not an integer value
const long large;          // Without initialization

char z(500);               // The value 500 is too large
                           // to fit in a byte

int big = 40000;           // Attention! On 16-bit systems

                           // int values are <= 32767
double he's(1.2E+5);       // The character ' is not
                           // allowed in names
float val = 12345.12345;   // The accuracy of float
                           // is only 6 digits
```

Exercise 4

```
// Defining and initializing variables

#include <iostream>
using namespace std;

int main()
{
    float x = 123.456F,      // or double
          y = 76.543F,
          sum;

    sum = x + y;

    cout << "Total:      "
          << x << " + " << y << " = " << sum << endl;

    cout << "Difference:  "
          << x << " - " << y << " = " << (x - y) << endl;

    return 0;
}
```