R1.1, R1.2, R1.3, R1.4, R1.5, R1.6, R1.7, R1.10, R1.11, R1.12, R1.13, R1.14

Chapter 1 Written Homework

R1.1 Explain the difference between using a computer program and programming a computer.

A computer program is something you can use, and something that you has previously been written, something like Microsoft Word or even your IDE. Programming a computer means that you are implementing the computer program

R1.2 Which parts of a computer can store program code? Which can store user data?

The user data is stored in the primary storage, while the program code is stored in the secondary storage.

R1.3 Which parts of a computer serve to give information to the user? Which parts take user input?

The computer required peripheral devices. The outputs would be like a display screen, speakers, and printers, while the input can be using a mouse or keyboard.

R1.4 A toaster is a single-function device, but a computer can be programmed to carry out different tasks. Is your cell phone a single-function device, or is it a programmable computer? (Your answer will depend on your cell phone model.)

An iPhone is a programmable computer.

R1.5 Explain two benefits of using C++ over machine code.

More time efficient, and it can be used on different machines as well.

R1.6 On your own computer or on your lab computer, find the exact location (folder or directory name) of

a. The sample file hello.cpp (after you saved it in your development environment).

C:\Users\kayle\source\repos\C++ Practice\C++ Practice\hello.cpp

b. The standard header file <iostream>.

C:\Program Files (x86)\Microsoft Visual Studio\2019\Community\VC\Tools\MSVC\14.24.28314\crt\src\stl

R1.7 What does this program print?

```
#include <iostream>

using namespace std;

int main()
```

```cpp
{
 cout << "6 * 7 = " << 6 * 7 << endl;

 return 0;

}
```
        Program will print: 6 * 7 = 42

R1.10 Write three versions of the hello.cpp program that have different compile-time errors. Write a version that has a run-time error.

Compile-time errors

```cpp
#include <iostream>

using namespace std;

int Main()

{
 cout << "Hello, World!" << endl;

 return 0;

}
```

```cpp
include <iostream>

using namespace std;

int main()

{
 cout << "Hello, World!" << endl;

 return 0;

}
```

```cpp
#include <iostream>

using namespace std;

int main()

{
 cout << "Hello, World!"  endl;

 return 0;

}
```

Run-time error:

```
#include <iostream>

using namespace std;

int main()

{

 cout << "I miss coding java" << endl;

 return 0;

}
```

R1.11 How do you discover compile-time errors? How do you discover run-time errors?

Your compiler should inform you of compile-time errors, while run-time errors are something that you have to discover on your own.

R1.12 Write an algorithm to settle the following question: A bank account starts out with $10,000. Interest is compounded monthly at 6 percent per year (0.5 percent per month). Every month, $500 is withdrawn to meet college expenses. After how many years is the account depleted?

- Start off with the base amount
- While
  o Balance >0
- Do
  o Compound and add to the balance
  o Iterate the variable for year
  o Subtract 500 from the balance

R1.13 Consider the question in Exercise R1.12. Suppose the numbers ($10,000, 6 percent, $500) were user selectable. Are there values for which the algorithm you developed would not terminate? If so, change the algorithm to make sure it always terminates.

My algorithm would always terminate, as long as the $500 was to be subtracted and not added to the bank balance.

R1.14 In order to estimate the cost of painting a house, a painter needs to know the surface area of the exterior. Develop an algorithm for computing that value. Your inputs are the width, length, and height of the house, the number of windows and doors, and their dimensions. (Assume the windows and doors have a uniform size.)

- Calculate the total surface area, including those of windows and doors
- Subtract the number of windows*uniform size
- Subtract the number of doors*uniform size
- Will have surface area