1. Using the notation <value, type> give the value and type assigned to the object on the left side of the assignment operator.

```cpp
int k;
k = 2.4;
```

Answer

<2, int>
2. Using the notation <value, type> give the value and type assigned to the object on the left side of the assignment operator.

    int j;
    j = 5.9;

**Answer**

<5, int>
3. Using the notation <value, type> give the value and type assigned to the object on the left side of the assignment operator.

```cpp
int t;
t = 2.3L;
```

Answer

<2.3, double>
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4. Using the notation <value, type> give the value and type assigned to the object on the left side of the assignment operator.

```cpp
float x;
x = 3;
```

Answer

<3.0, float>
5. Give the primary reason for using a `const` definition as opposed to an equivalent non-
   `const` definition.

Answer

A `const` definition informs the compiler that the defined object cannot be modified. The
compiler issues an error message if it detects a situation where the object could be modi-
fied.
6. What values are extracted into the objects Value1 and Value2 when the input 2.4,4 is processed by the following code fragment?

```c++
int Value1;
int Value2;
cin >> Value1 >> Value2;
```

**Answer**

Value1 gets the value <2,int>, and Value2 gets <undef,int>
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7. What values are extracted into the objects `Value1` and `Value2` when the input

7.8,0

is processed by the following code fragment?

```cpp
float Value1;
int Value2;
cin >> Value1 >> Value2;
```

Answer

`Value1` gets the value <7.8, float>, and `Value2` gets the value <undef,int>.
8. What values are extracted into the objects\texttt{Value1} and \texttt{Value2} when the input \texttt{2e3,6} is processed by the following code fragment?

\begin{verbatim}
int Value1;
int Value2;
cin >> Value1 >> Value2;
\end{verbatim}

\textbf{Answer}

\texttt{Value1} gets the value \texttt{<2,int>}, and gets the value \texttt{<undef,int>}.
9. Using the notation <value, type> give the value and type assigned to the object on the left side of the compound assignment operator.

```cpp
int i = 3;
float f = 6.1;
i += f;
```

Answer

<9,in>
10. Using the notation <value, type> give the value and type assigned to the object on the left side of the compound assignment operator.

```cpp
int i = 4;
float f = 6.8;
f += i;

Answer
<10.8,float>
11. Using the notation <value, type> give the value and type assigned to the object on the left side of the compound assignment operator.

```cpp
short i = 4;
int k = 6;
i -= k;
```

Answer

<-2,short>
12. Using the notation <value, type> give the value and type assigned to the objects \( k \) and \( j \).

```c++
int i = 5;
int j = 0;
int k;
k = ++i;
j = i;
```

**Answer**

Object \( k \) is assigned <6,int>. Object \( j \) is assigned <6,int>. 
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13. Using the notation <value, type> give the value and type assigned to the objects k and j.

```cpp
int i = 6;
int j;
int k;
k = i++;
j = i;
```

Answer

Object i is assigned <6,int>. Object j is assigned <7,int>. 
14. Using the notation <value, type> give the value and type assigned to the objects \( y \) and \( z \).

```c
float x = 3.2;
float y;
float z;
y = x++;
z = x
```

**Answer**

Object \( y \) is assigned <3.2, float>. Object \( z \) is assigned <4.2, float>. 
15. What include directive must a program contain to use the `string` class?

   Answer

   ```
   #include <string>
   ```
16. What is the name of the string library function for reading a string from a stream?

Answer

ggetline()
17. Give the output of the following code fragment.

```cpp
string Message = "Wallyball!";
Message = "!!";
cout << Message << endl;
```

Answer

`!!`
18. Give the output of the following code fragment.

```cpp
string Time = "1:42";
string AM = "AM";
cout << Time + AM << endl;
```

Answer

1:42AM
19. Give the output of the following code fragment.

```cpp
string Time = "11:15";
Time += "PM";
cout << Time << endl;
```

Answer

11:15PM
20. Give the output of the following code fragment.

```cpp
string s = "";
cout << s.size() << endl;
```

Answer

0
21. Give the output of the following code fragment.

```cpp
string s = "Go Wahoos!";
cout << s.size() << endl;
```

Answer

10
22. Give the output of the following code fragment.

```cpp
string s = "Beam Me Up Scotty";
cout << s.substr(5, 2) << endl;
```

Answer

```
Me
```
23. Give the output of the following code fragment.

```cpp
string s = "The Picard Maneuver";
cout << s.substr(4, s.size() - 1) << endl;
```

Answer

Picard Maneuver
24. Give the output of the following code fragment.

```cpp
string s = "Resistance is futile!";
cout << s.find("is", 4) << endl;
```

Answer

11
25. Give the output of the following code fragment.

```cpp
string s = "You will be assimilated";
int i = s.find("a", 0);
cout << s.substr(i, s.size()) << endl;
```

Answer

assimilated
26. Consider the following code fragment.
   
   ```cpp
   string Message;
   getline(cin, Message, ',');
   cout << "Message is " << Message << endl;
   ```

   Give the output if the input is
   
   Spock, you laughed, you laughed!

   Answer
   
   Message is Spock
27. Write a program that reads a date in the format mm/dd/yy from the stream `cin` and writes the date to stream `cout` as follows:

- Month: mm
- Day: dd
- Year: yy

Answer

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

int main() {
    string Date;
    // Get the line containing the date
    getline(cin, Date, '
');

    // Use substr to crack the date. This code assumes
    // that each field is two characters long.
    string Month = Date.substr(0, 2);
    string Day = Date.substr(3, 2);
    string Year = Date.substr(6, 2);

    // Display it
    cout << "Month: " << Month << endl;
    cout << "Day: " << Day << endl;
    cout << "Year: " << Year << endl;

    return 0;
}
```
28. Write a program that reads an assignment statement (e.g., \texttt{a = b + c;}) from the stream \texttt{cin} and outputs the left and right sides of the assignment statement to stream \texttt{cout}.

Answer

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

int main() {
    string AssignmentStmt;
    // Get the line containing the date
    getline(cin, AssignmentStmt, '
');

    // Use find to find the assignment operator. No error checking
    // is done, the code assumes a properly formed assignment
    // statement.
    int i = AssignmentStmt.find("=", 0);
    string LeftHandSide = AssignmentStmt.substr(0, i - 1);
    string RightHandSide = AssignmentStmt.substr(i + 1, AssignmentStmt.size());

    // Display it
    cout << "Left hand side: " << LeftHandSide << endl;
    cout << "Right hand side: " << RightHandSide << endl;

    return 0;
}
```
29. Write a C++ definition that creates a `SimpleWindow` object `Try`. The title bar should say “Good Job!” and the window should be 6 centimeters wide and 3 centimeters high.

   **Answer**

   ```cpp
   SimpleWindow Try("Good Job!", 6.0, 3.0);
   ```
30. Write a program that creates a SimpleWindow with the title “Nice Job!” and draws a blue square in the middle of the window. The window should be 5 centimeters wide and 6 centimeters high, and the rectangles should be 3 centimeters wide and 2 centimeters high.

Answer
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31. What is the message for obtaining the width of a `RectangleShape`?

Answer
32. What is the message for obtaining the height of a RectangleShape?

Answer
33. Describe the rectangle created and drawn by the following code fragment. How big is the rectangle and what color is it?

Answer