Instructions: This homework assignment focuses on the material in class up to input and output using files. You should refer to the notes on the web and to Chapters 1-4 in the textbook when answering these questions. After you have analyzed the questions and decided what answers you believe are correct, you may find it useful to write some short programs to test your logic.

Opscan forms will be passed out in class and will be placed on the instructor’s door. Write your name and code your ID number on the opscan form. Your completed opscan is due in class on Friday, Feb. 16. Opscans will not be accepted at any other place or time.

For questions 1 through 3, select the value of the given C++ arithmetic expression. Note that the presence of a decimal point indicates a double, rather than an int.

1. \( \frac{4.0}{(3.0 + 2)} \times 2 \)
   1) 0  
   2) 0.4  
   3) 0.8  
   4) 1.6  
   5) None of these

2. \( 7/3 \times 3 \)
   1) 0  
   2) 5  
   3) 6  
   4) 7  
   5) None of these

3. \( 14 \% (4 + 3) + 1 \% 4 \)
   1) 1  
   2) 2  
   3) 3  
   4) 2.25  
   5) 0  
   6) None of these

For questions 4 through 6, select the value assigned to the relevant variable, given the declarations:

```cpp
int anInt;
double aDble;
```

4. \( aDble = \frac{8}{5 + 1.0}; \)
   1) 1  
   2) 2  
   3) 2.6  
   4) This is not allowed  
   5) None of these

5. \( anInt = \frac{8}{5.0 + 1}; \)
   1) 1  
   2) 2.0  
   3) 3  
   4) This is not allowed  
   5) None of these

6. \( aDble = \frac{8}{5.0 + 1}; \)
   1) 1.0  
   2) 2.0  
   3) 2.6  
   4) 3.0  
   5) None of these

7. In order to send information to the screen, the text `cout` is used in C++ programs. The text `cout` is an example of
   1) An identifier  
   2) A keyword  
   3) An input stream  
   4) An output stream  
   5) All of the above  
   6) 1 and 2  
   7) 1 and 3  
   8) 1 and 4  
   9) 2 and 3  
   10) None of the above
For questions 8 through 11, assume the following variables have been declared:

```c
int anInt;
double aDble;
char aChar;
```

and assume the standard input stream `cin` contains the following values, separated by tabs:

```
2  -3.4  b  8.32
```

Determine the value of the indicated variable after the execution of the given statement; each question is independent, that is, each starts with the stream contents shown above.

8. **aChar** after `cin >> anInt >> aChar;`
   - 1) '\t' (a tab)
   - 2) '3'
   - 3) 3
   - 4) '-'
   - 5) None of these

9. **aChar** after `cin >> aDble >> anInt >> aChar;`
   - 1) '.'
   - 2) '4'
   - 3) '\t' (a tab)
   - 4) 4
   - 5) None of these

10. **anInt** after `cin >> aDble >> anInt;`
    - 1) '-3'
    - 2) 2
    - 3) -3
    - 4) 4
    - 5) None of these

11. **anInt** after `cin >> anInt;
cin.get(aChar);
cin >> anInt;`
    - 1) 1
    - 2) 2
    - 3) 3
    - 4) 4
    - 5) None of these

12. What is printed by the statement: `cout << "The answer is" << setw(3) << 30 + 12;`
    - 1) The answer is 30 + 12
    - 2) The answer is 42
    - 3) The answer is 42
    - 4) The answer is 30 + 12
    - 5) None of these

13. Assuming that all variables are of type `double`, the correct C++ expression for \( \frac{c^2a - b}{de} \) is:
    - 1) \( c^2 * a - b / d * e \)
    - 2) \( c * c * a - b / d * e \)
    - 3) \( (c * c * a - b) / d * e \)
    - 4) \( (c * c * a - b) / (d * e) \)
    - 5) 1 and 3
    - 6) 3 and 4
    - 7) 2 and 4
    - 8) None of these
14. What value is assigned to the variable `Average` below?

```cpp
double x = 4, y = 8, z = 5, w = 4;
double Average = (x + y + z + w) / 4;
```

1) 5.25  
2) 5  
3) 5.0  
4) 4.75  
5) None of these

15. Given the declaration `int TestScore = 2;`, which of the output statements given below will produce the output:

```
1234567890
Score: 2
```

1) `cout << "1234567890" << endl`  
   `<< "Score:" << TestScore << endl;`
2) `cout << "1234567890" << endl << right`  
   `<< "Score:" << setw(4) << TestScore << endl;`
3) `cout << "1234567890" << endl`  
   `<< "Score:" << setw(4) << TestScore << endl;`

4) All of the above  
5) 1 and 2 only  
6) 1 and 3 only  
7) 2 and 3 only  
8) None of these

16. Among the binary C++ operators `+`, `−`, `*`, `/`, and `÷`, which have the highest precedence when an expression is evaluated?

1) `+` and `−`  
2) `*` and `/`  
3) `*`, `/`, and `÷`  
4) `+`, `−`, and `÷`  
5) None of these

17. Suppose that input from the keyboard contains the time: 23:59.58

Assuming that the variables `A` and `B` are declared as `ints`, which of the following code fragments will correctly read the seconds (58) into the variable `B`?

1) `cin >> A;`  
   `cin.ignore(100, ':');`  
   `cin >> B;`  
2) `cin.ignore(100, ':');`  
   `cin >> A;`  
   `char ch;`  
   `cin.get(ch);`  
   `cin >> B;`
3) `cin.ignore(100, ':');`  
4) `cin.ignore(100, ':');`  
   `cin.get(A);`  
   `cin.get(B);`

5) All of the above  
6) 1, 2 and 3 only  
7) 1 and 2 only  
8) 2 and 3 only  
9) 2 and 4 only  
10) None of these
18. A program specification says that a line of input will start with a text label, followed by a vertical bar, followed by an integer value; for example:

```
Maximum Speed|698
```

Here, `<newline>` indicates the occurrence of a single newline character.

Given the specification, which of the following code fragments will successfully read the label into the `string` variable `Label` and the integer value into the `int` variable `Speed`? Assume that `In` is an input file stream variable that has been opened on an input file, and that the data in the stream conforms to the specification.

1) `In >> Label;`  
   `In >> Speed;`  

2) `getline(In, Label);`  
   `In >> Speed;`  

3) `getline(In, Label, '|');`  
   `In >> Speed;`  

4) `getline(In, Label, '|');`  
   `getline(In, Speed);`  

5) All of the above  

6) 1 and 2 only  

7) 3 and 4 only  

8) 1, 2 and 3 only  

9) 1, 2 and 4 only  

10) None of these

For questions 19 and 20, assume that the input file `Data.txt` is:

```
1234567890
1234567890
1234567890
1234567890
```

19. What output would the following code fragment produce?

```c++
#include <iostream>
#include <fstream>
#include <string>

int main() {
    ifstream In;
    In.open("Data.txt");
    char Value;
    In.ignore(12, '7');
    In >> Value;
    cout << "Value: " << Value << endl;
    return 0;
}
```

1) Value: 1  
2) Value: 2  
3) Value: 3  
4) Value: 4  
5) Value: 5  
6) Value: 6  
7) Value: 7  
8) Value: 8  
9) Value: 9  
10) Value: 0

20. What output would the following code fragment produce?

```c++
#include <iostream>
#include <fstream>
#include <string>

int main() {
    ifstream In;
    In.open("Data.txt");
    char Value;
    In.ignore(14, '\0');
    In.get(Value);
    cout << "Value: " << Value << endl;
    return 0;
}
```

1) Value: 1  
2) Value: 2  
3) Value: 3  
4) Value: 4  
5) Value: 5  
6) Value: 6  
7) Value: 7  
8) Value: 8  
9) Value: 9  
10) Value: 0
21. Which of the following directives are needed by programs that use input from the keyboard and send output to the screen?

1) #include <string>  
2) #include <fstream>  
3) #include <iostream>  
4) using namespace std;  
5) All of the above  

6) 1 and 3  
7) 2 and 3  
8) 1 and 4  
9) 2 and 4  
10) 3 and 4

22. Which of the following statements are true, if a program runs to completion but it fails to produce proper output?

1) The syntax of the program is correct.  
2) The program links properly.  
3) The program loads properly.  
4) The program has an execution error.  
5) all of the above  

6) 1, 2, and 3  
7) 1, 3, and 4  
8) 2, 3, and 4  
9) None of these

23. Forgetting to put a comma between identifiers used in a variable declaration is an example of

1) A syntax error.  
2) A linker error.  
3) An execution error.  
4) A logic error.  
5) All of the above  

6) 1 and 2  
7) 2 and 3  
8) 3 and 4  
9) 1, 3, and 4  
10) 2, 3, and 4

24. When you run your program, what is placed into the memory of the computer?

1) The contents of a source file.  
2) The compiler.  
3) An editor.  
4) The linker.  
6) All of the above.  
7) None of these.

25. When you build your program in Visual C++, which of the following steps are taken?

1) The program is edited.  
2) The program is compiled.  
3) The program is linked.  
4) The program is loaded.  
5) All of the above.  

6) 1 and 2  
7) 1 and 3  
8) 2 and 3  
9) 3 and 4  
10) None of these.