CISS245: Advanced Programming
Quiz q01

Name: bglandis1@cougars.ccis.edu Score:

This is a closed-book, no compiler, 5 minute quiz.

Q1. What is the output of the following code fragment?

```
int x = 42, y = 3;
std::cout << x / y << '\n';
```

Answer:

```
14
```

Q2. What is the output of the following code fragment?

```
int x = 42, y = 2;
std::cout << x / y << '\n';
```

Answer:

```
21
```

Q3. What is the output of the following code fragment?

```
int x = 42, y = 1;
std::cout << x / y << '\n';
```

Answer:

```
42
```

Q4. What is the output of the following code fragment?

```
int x = 42, y = 0;
std::cout << x / y << '\n';
```

Answer:

Q5. What is the output of the following code fragment?

```
int x = 21, y = 42;
std::cout << x / y << '\n';
```

Answer:

Q6. What is the output of the following code fragment?

```
std::cout << 42 % 3 << '\n';
```

Answer:

Q7. What is the output of the following code fragment?

```
std::cout << 42 % 2 << '\n';
```

Answer:

Q8. What is the output of the following code fragment?

```
std::cout << 42 % 1 << '\n';
```

Answer:

Q9. What is the output of the following code fragment?

```
std::cout << 42 % 0 << '\n';
```

Answer:

Q10. What is the output of the following code fragment?

```
std::cout << 42 % 42 << '\n';
```

Answer:

Q11. What is the string length of `"hello \tworld\n???\n"`?
Answer:

Q12. In the following code fragment, the output is `132`. The value of integer variable `n` is a power of 10. What is the value of `n`?

```
std::cout << 132435 / n << '\n';
```

Answer:

Q13. In the following code fragment, the output is `2435`. The value of integer variable `n` is a power of 10. What is the value of `n`?

```
std::cout << 132435 % n << '\n';
```

Answer:

Q14. In the following code fragment, the output is `32`. The values of integer variables `m` and `n` are powers of 10. What is the of `m`?

```
std::cout << 132435 / m % n << '\n';
```

Answer:

Q15. In the following code fragment, the output is `32`. The values of integer variables `m` and `n` are powers of 10. What is the value of `n`?

```
std::cout << 132435 / m % n << '\n';
```

Answer:

Q16. T or F or M: (T = true, F = false, M = statement is meaningless and cannot be answered.) You cannot assign an integer value to a `double` variable because of type mismatch. In other words the code fragment below is invalid C++.

```
double x = 42;
```

Answer:

Q17. T or F or M: (T = true, F = false, M = statement is meaningless and cannot be answered.) You cannot assign an integer value to an integer array because of type mismatch. In other words the code fragment below is invalid C++.

```
int x[10] = 42;
```

Answer:

Q18. What is the output of the following code fragment?

```
int x = 4, y = 8;
std::cout << double(x / y) << '\n';
```

Answer:

Q19. If the output of the following code fragment is `6`, what is the smallest possible positive integer value for `x`?

```
std::cout << 5 + 6 * x / 5 % 10 - 2 << '\n';
```

Answer:

Q20. Complete the following code fragment that gets a 4-digit integer input from the user and store it in `x`, assigns the digits of `x` to `x0`, `x1`, `x2`, `x3` where `x0` is the lowest order digit (the ones digit) and `x3` is the highest order digit (the thousands digit). For instance if the user enters `1462`, then the output of the code fragment is `1 4 6 2`.
Answer:

```
int x;
std::cin >> x;
int x0 = 0;
int x1 = 0;
int x2 = 0;
int x3 = 0;
std::cout << x3 << ' ' << x2 << ' ' << x1 << ' ' << x0 << '\n';
```

Instructions

In the file `thispreamble.tex` look for

```
\renewcommand\AUTHOR{}
```

and enter your email address:

```
\renewcommand\AUTHOR{jdoe5@cougars.ccis.edu}
```

(This is not really necessary since alex will change that for you when you execute `make`.) In your bash shell, execute "`make`" to recompile `main.pdf`. Execute "`make v`" to view `main.pdf`.

Enter your answers in `main.tex`. In the bash shell, execute "`make`" to recompile `main.pdf`. Execute "`make v`" to view `main.pdf`.

For each question, you'll see boxes for you to fill. For small boxes, if you see

```
1 + 1 = \answerbox{}.
```

you do this:

```
1 + 1 = \answerbox{2}.
```

`answerbox` will also appear in "true/false" and "multiple-choice" questions.

For longer answers that need typewriter font, if you see

```
Write a C++ statement that declares an integer variable name x.
\begin{answercode}
\end{answercode}
```

you do this:

```
Write a C++ statement that declares an integer variable name x.
\begin{answercode}
int x;
\end{answercode}
```

`answercode` will appear in questions asking for code, algorithm, and program output. In this case, indentation and spacing is significant. For program output, I do look at spaces and newlines.

For long answers (not in typewriter font) if you see

```
What is the color of the sky?
\begin{answerlong}
\end{answerlong}
```

you can write

```
What is the color of the sky?
\begin{answerlong}
The color of the sky is blue.
\end{answerlong}
```

A question that begins with "T or F or M" requires you to identify whether it is true or false, or meaningless. "Meaningless" means something's wrong with the question and it is not well-defined. Something like "$1 + 2 = 4$" is either true or false (of course it's false). Something like "$1+_2 = 4$?" does not make sense.

When writing results of computations, make sure it's simplified. For instance write 2 instead of $1 + 1$.

Higher level classes.

For students beyond 245: You can put LaTeX commands in `answerlong`.

More examples of meaningless statements: Questions such as "Is $42 = 1+_2$ true or false?" or "Is $42 = \{2\}^{\{3\}}$ true or false?" does not make sense. "Is $P(42) = \{42\}$ true or false?" is meaningless because $P(X)$ is only defined if X is a set. For "Is $1 + 2 + 3$ true or false?", "$1 + 2 + 3$" is well–defined but as a "numerical expression", not as a "proposition", i.e., it cannot be true or false. Therefore "Is $1 + 2 + 3$ true or false?" is also not a well-defined question.

More examples of simplification: When you write down sets, if the answer is $\{1\}$, do not write $\{1, 1\}$. And when the values can be ordered, write the elements of the set in ascending order. When writing polynomials, begin with the highest degree term.

When writing a counterexample, always write the simplest.