

**CISS245: Advanced Programming  
Quiz q6201**Name: cadalebout1@cougars.ccis.edu Score: 

Open `main.tex` and enter answers (look for `answercode`, `answerbox`, `answerlong`). Turn the page for detailed instructions. To rebuild and view pdf, in bash shell execute `make`. To build a gzip-tar file, in bash shell execute `make s` and you'll get `submit.tar.gz`.

The questions below uses this class:

```
class X
{
public:
    X(int id)
        : id_(id)
    {}
    ~X()
    {
        std::cout << id_ << " died\n";
    }
    int id_
};
```

Q1. What is the output of this code fragment? The answer you write down must match the output exactly (watch out for spaces and newlines).

```
int main()
{
    X x(42);
    for (int i = 0; i < 3; ++i)
    {
        X a(i);
    }
    return 0;
}
```

ANSWER:

Q2. What is the output of this code fragment? The answer you write down must match the output exactly (watch out for spaces and newlines).

```
void f(X x)
{
    std::cout << "f\n";
    x.id_ = 0;
    return;
}
void g(const X & x)
{
    std::cout << "g\n";
    x.id_ = 1;
    return;
}
X h(const X & x)
{
    std::cout << "h\n";
    x.id_ = 2;
    return x;
}
int main()
{
    X x(42);
    f(x);
    g(x);
    X y = h(x);
    y.id_ = 3;
    return 0;
}
```

ANSWER:

Q3. What is the output of this code fragment? The answer you write down must match the output exactly (watch out for spaces and newlines).

```
int main()
{
    X * p = new X(0);
    X * q = new X(1);
    X * r = new X(2);
    delete p;
    delete r;
    return 0;
}
```

ANSWER:

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## INSTRUCTIONS

In `main.tex` change the email address in

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

to yours. In the bash shell, execute “`make`” to recompile `main.pdf`. Execute “`make v`” to view `main.pdf`. Execute “`make s`” to create `submit.tar.gz` for submission.

For each question, you’ll see boxes for you to fill. You write your answers in `main.tex` file. 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 needs 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}
```

For students beyond 245: You can put  $\LaTeX$  commands in `answerbox` and `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 statement and it is not well-defined. Something like “ $1+_2$ ” or “ $\{2\}^{\{3\}}$ ” is not well-defined. Therefore a question 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.

When writing results of computations, make sure it’s simplified. For instance write 2 instead of  $1 + 1$ . When you write down sets, if the answer is  $\{1\}$ , I do not want to see  $\{1, 1\}$ .

When writing a counterexample, always write the simplest.

Here are some examples (see `instructions.tex` for details):

1. T or F or M:  $1 + 1 = 2$  ..... T

2. T or F or M:  $1 + 1 = 3$  ..... F

3. T or F or M:  $1+_2 =$  ..... M

4.  $1 + 2 =$  3

5. Write a C++ statement to declare an integer variable named **x**.

`int x;`

6. Solve  $x^2 - 1 = 0$ .

Since  $x^2 - 1 = (x - 1)(x + 1)$ ,  $x^2 - 1 = 0$  implies  $(x - 1)(x + 1) = 0$ . Therefore  $x - 1 = 0$  or  $x = -1$ . Hence  $x = 1$  or  $x = -1$ .

7. Which is true? ..... C

(A)  $1 + 1 = 0$

(B)  $1 + 1 = 1$

(C)  $1 + 1 = 2$

(D)  $1 + 1 = 3$

(E)  $1 + 1 = 4$