Programming Concepts C++
CSCI 261
Lecture 20

Exam I Review
Part 1

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1. What is the result?

a) 2 + 3 * 4 – 6

b) 5 + 11 / 3

c) 11 % 3 * 4

d) (2 + 1) * 3 - 1

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2. Create boolean test conditions

a) myHeight is greater than 2

b) y is odd and less than 10

c) At least one of x or y is 3

d) t is between 2.1 and 2.3 inclusive

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3. What is the output?

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

int main() {
    int x = 12;

    if( (x >= 2) || (x != 17) )
        cout << x << endl;
    else
        cout << "Have a good day" << endl;

    return 0;
}
```

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4. What is the output?

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

int main() {
    int x = 1;

    if( (x >= 2) || (x != 17) )
        cout << x << endl;
    else
        cout << "Have a good day" << endl;

    return 0;
}
```

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5. What is the output?

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

int main() {
    int x = 17;

    if( (x >= 2) && (x != 17) )
        cout << x << endl;
    else
        cout << "Have a good day" << endl;

    return 0;
}
```
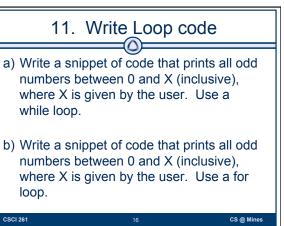
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6. What is the output?

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

int main() {
    int x = 11, y = 5;

    int answer;
    answer = x / y;
    cout << answer << endl;

    return 0;
}
```

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7. What is the output?

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

int main() {
    int x = 9, y = 2;

    cout << x / y << endl;
    cout << (double)x / (double)y << endl;
    cout << (double)x / y << endl;
    cout << x / (double)y << endl;

    return 0;
}
```

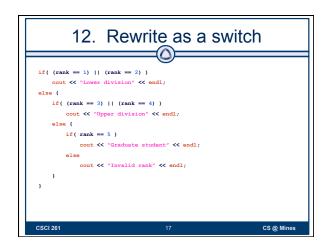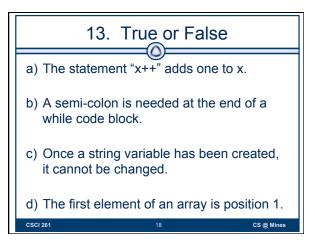CSCI 261   12   CS @ Mines

8. What is the output?

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

int main() {
    int x = 5, y = 10;

    y = x++;
    cout << x << " " << y << endl;

    y = ++x;
    cout << x << " " << y << endl;

    return 0;
}
```

9. Find the Errors

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

int main() {
    int x = 6;
    double y = 2.5;
    z = 1;
    cin >> z;
    if( x = y )
        cout "x and y match";
    else
        cout >> "x and y do not match";

    return 0;
}
```

10. Write if/else code

a) Write a series of if statements (use only if) that will output a student's letter grade based on the input. Assume the input (already received) is called examScore and that the value of examScore is greater than 70 and less than 100.

b) Write an if block (if and else if) that will output a student's letter grade based on the input. Assume the input (already received) is called examScore and that the value of examScore is greater than 70 and less than 100.

11. Write Loop code

a) Write a snippet of code that prints all odd numbers between 0 and X (inclusive), where X is given by the user. Use a while loop.

b) Write a snippet of code that prints all odd numbers between 0 and X (inclusive), where X is given by the user. Use a for loop.

12. Rewrite as a switch

```
if( (rank == 1) || (rank == 2) )
    cout << "Lower division" << endl;
else {
    if( (rank == 3) || (rank == 4) )
        cout << "Upper division" << endl;
    else {
        if( rank == 5 )
            cout << "Graduate student" << endl;
        else
            cout << "Invalid rank" << endl;
    }
}
```

13. True or False

a) The statement "x++" adds one to x.

b) A semi-colon is needed at the end of a while code block.

c) Once a string variable has been created, it cannot be changed.

d) The first element of an array is position 1.

14. Rewrite as a for loop

a) The statement "x++" adds one to x.

```
int i = 2;
while( i <= 18 ) {
    cout << "*";
    i += 3;
}
```

b) What is the output?

15. What is the output?

```
int number = 0;
int sum = 0;
int limit = 20;

while( number > limit ) {
    sum += number;
    number += 2;
}

cout << "Sum: " << sum << endl;
```

16. What is the output?

```
int number = 100;
int sum = 0;
int limit = 20;

while( number > limit ) {
    sum += number;
    number += 2;
}

cout << "Sum: " << sum << endl;
```

17. What is the output?

```
int number = 0;
int sum = 0;
int limit = 20;

while( number < limit ) {
    sum += number;
    number += 2;
}

cout << "Sum: " << sum << endl;
```

18. What is the output?

```
for( int i = 0; i < 4; i++ ) {
    for( int j = i; j < 6; j++ )
        cout << "*";
    cout << endl;
}
```

19. Random Numbers

- Write a program that prints 10 random numbers between 1 and 100. Use an appropriate seed.