

Exam 1 Review

COSC 220: Computer Science II

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1. What is the output of the following code?

```
int x=25,y=50,z=75;
int *ptr = nullptr;

cout << "Here are the values of x, y, and z:\n";
cout << x << " " << y << " " << z << endl;

ptr = &x;
*ptr += 100;

ptr = &y;
*ptr += 100;

ptr = &z;
*ptr += 100;

cout << "Once again, here are the values of x, y, and z:\n";
cout << x << " " << y << " " << z << endl;
return 0;
```

2. Answer the following:

- (a) What is the function and purpose of the `new` operator?
- (b) What is the function and purpose of the `delete` operator?
- (c) What is the syntax to delete an array called `arr` which has been dynamically allocated?

3. Find the errors in the following code:

```
int numbers[] = {10, 20, 30, 40, 50};
cout << "The third element in the array is ";
cout << *numbers + 3 << endl;
```

4. Find the errors in the following code:

```
int values[20], *iptr = nullptr;
iptr = values;
iptr *= 2;
```

5. If a class object is dynamically allocated in memory, does its constructor execute? If so, when?
6. Can you think of a good reason to avoid writing statements in a class member function that use `cout` or `cin`?
7. The bank offers the following types of accounts to its customers: savings accounts, checking accounts, and money market accounts. Customers are allowed to deposit money into an account (thereby increasing its balance), withdraw money from an account (thereby decreasing its balance), and earn interest on the account. Each account has an interest rate. Assume that you are writing an application that will calculate the amount of interest earned for a bank account.
 - (a) Identify the potential classes in this problem domain.
 - (b) Refine the list to include only the necessary class or classes for this problem.
 - (c) Identify the responsibilities of the class or classes.
8. What is the defining behavior of a stack? A queue?
9. Identify as many errors in the following code as you can:

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

class DumbBell; {
    int weight;

    public:
    void setWeight(int);
};

void setWeight(int w) {
    weight = w;
}

int main() {
    DumbBell bar;
    DumbBell(200);
    cout << "The weight is " << bar.weight << endl; return 0;
}
```

10. Write a `c++` method to recursively compute the maximum number in a given array of integers
11. Write a `c++` method to recursively search for a given value in a linked list