# HW3

Saturday, February 13, 2021 11:29 PM

Q3

https://www.geeksforgeeks.org/int_max-int_min-cc-applications/ (from)

We use the knowledge that upper bound of int is 2147483647.

We also know that if an int n is power of 3, its prime factorization is $n = 3^x$ where x is some integer. However, it must be said that $3^x < 2147483647$. Dividing upper bound of int by 3 multiple times reveals that largest x that still allows $3^x < 2147483647$ is x = 19

$3^{19} = 1162261467$.

```
int main() {
// Assume user inputs n correctly.
    cout << message to user to put in n cout
    cin >> n
    define 3^19 as double and as const.
    if 3^19 % n == 0   <- modulo
        return true
    else return false
}
```

prime factorization of n must ONLY include 3.

}

Q) function overloading is when you have functions of same name but have different input parameters. for example, you can have the following in the same cpp file:

```
Void Volume(double V);
Void Volume(double Crosssectionarea, double length);
Void Volume(double length, double width, double height)
Void Volume(double V){
    cout << V << endl;
}
Void Volume(double Crosssectionarea, double length){
    cout << length * crossection area << endl;
```

}

void volume (double length, double width, double height) {
cout << length * width * height << endl;
}

Meanwhile function overriding is when you can use a function of the base class in a derived class. An example of this is the area function described in lecture. The base class Dr. Nazarian mentioned was shape but he also had derived classes like triangle. In base class he had area but he also used area in triangle class. This way, Dr. Nazarian mentions that if you needed to make a new feature that your boss asks, it is much easier/flexible to fix code since you just need to change reference of base class in perhaps another derived class that uses

to perhaps another derived class that uses same redefined function of base class.

Some similarities & differences:

1) overloading doesn't need to inherit something from a parent class where overriding does.

2) Overloading functions can belong in the same scope (e.g. int main) but not necessarily overriding ones.

3) overloading must have different input params while overriding must have same.

Q4)

- Please explain how you tested your code and provide any additional file you used.
- We provided a sample input file for you, but if you were not provided such a file, what corner cases would you add?

① tested code by using input csv provided.

Please see comments in code.

② Check for if csv file is there; if CSV file has content, if every row has [illegible] and only one, etc.

all a, b, c and only one, etc.