excersizes.md

Excercise set week two

Feedback on these excercises is very much appreciated. Send mail to one of the lecturers or to Aryan at aryannm@gmail.com

Problem X: (Repetition)

What do you think the output will show?

```
#include <iostream>
int main(){
    int a = 10;
    int b = a++;
    std::cout<< "a,b: "<<a<<", "<<b<<std::endl;
    int c = ++b;
    std::cout<< "a,b,c: "<<a<<", "<<b<<", "<<c<<std::endl;
    return 0;
}
```

Problem One:

In C/C++ a declartion means giving a variable a type and a name, like int a; While defining something (like a variable) means to both declare and initlize, like int a = 3;

What happens if you declare a reference variabe? like int& a; Explain the outcome. (Hint: There is no universal answer)

Problem Two: (Scope and namespaces)

What is the outcome of the following program?

```
    int a = 12;
    int main() {
        int a = 20;
        cout<< "a: "<<a<<endl;
    }
```

Why? What happens here?

What is the outcome of the following?

```
void f(){
    int x = 12;
}
int main() {
    std::cout<<x;
}
```

What does "using namespace std" do? Why do we use it?

Write and compile the following

```
#include <iostream>

using std::cout;
int main(){
    cout<<"Hello World"<<endl;
    return 0;
}
```

Does it compile? Why? Why not?

Problem Three: (Functions)

1. Write and test a function that computes the square root of a number.
2. Write a void function that calculates the area of a circle with radius and area as parameters.
3. Write a function that computes the factorial of an integer.
4. Create a function called bar that prints out "bar!".
5. Create a namespace called Foo and add all your functions to this namespace. Use the namespace to call your functions.

Problem Four: (Strings)

1. Write a function that checks if the word "secret" is in a string
2. Write a function that checks if a string is is a palindrome (Hint: check if there is a library function that can help you)

Extra:

Try to write a function that computes the factorial recursively. Find the factorial of 100001 recursively, what happens? Why?