Exercise 1

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1 Definition

"void main()" misuse was brought up on Wednesday; "this function will return no kind of data, i.e. nothing". We chose to define void as it has legitimate uses that were not mentioned as well, such as moving nonspecific data (void i/o) or referring to locations in memory (void*).

What is void? Void is a null data-type, marking spaces in memory where contents are not designated as any particular kind of data.

2 Translation of code

```
#include <iostream>
#include <cmath>
#include <string>

const float pos = (1+std::sqrt(5))/2;
const float neg = (1-std::sqrt(5))/2;
const float underside = std::sqrt(5);

bool check_if_fib(int x) {
        /*
         * performing a test using Binet's idetification
           formula
         */
        long long test1 = 5*std::pow(x,2)+4;
        long long test2 = 5*std::pow(x,2)-4;

        bool ver1 = std::ceil(std::sqrt(test1))*std::
            floor(std::sqrt(test1)) == test1;
        bool ver2 = std::ceil(std::sqrt(test2))*std::
            floor(std::sqrt(test2)) == test2;

        return (ver1 || ver2);
```

```
}

void print_fibo_until(int x) {
        int n = 1;
        int fibo_n = 1;
        int fibo_previous = 0;

        int fibo_next;
start_loop:
        std::cout << n << "\t" << fibo_n << std::endl;

        fibo_next = fibo_n + fibo_previous;

        n++;

        fibo_previous = fibo_n;
        fibo_n = fibo_next;
        if(fibo_previous < x) goto start_loop;
}

int main(int argn, char** argv) {
        int y;
        if(argn > 1){
                y = std::stoi(argv[1],nullptr,10);
        } else {
                y = 17711;
        }

        std::cout << y << " is " << (check_if_fib(y)?"":"
            not ") << "a Fibonacci number\n";

        print_fibo_until(y);

        return 0;
}
```

This gives the output:

```
17711 is a Fibonacci number
1       1
2       1
3       2
4       3
5       5
6       8
7       13
8       21
```

9	34
10	55
11	89
12	144
13	233
14	377
15	610
16	987
17	1597
18	2584
19	4181
20	6765
21	10946
22	17711