Problem 1: Collatz
Implement the task of problem 3 of HW2 without using any functions, except
the main() function.

#include <iostream>
using std::cout;

int main() {
  int max=-1;
  int i;
  for (int n=1; n<=1000000; n=n+1) {
    unsigned int m=n;
    int count=0;
    while (m!=1) {
      if (m%2==0)
        m=m/2;
      else
        m=3*m+1;
      count=count+1;
    }
    if (count>max) {
      max=count;
      i=n;
    }
  }
  cout<<"number "<<i<<" takes the longest: "<<max<<" steps\n";
}
Problem 2: FIZZ BUZZ
You have two items, a FIZZ and a BUZZ. Each item has a value and a weight. In addition, you have a bag that can carry a certain maximum weight. You are interested in packing the maximum possible value you can (in the best case you can carry both FIZZ and BUZZ). Write a function called fizzbuzz that accepts as parameters:

- the value and weight of FIZZ
- the value and weight of BUZZ
- the maximum weight that the bag can carry

and returns the maximum value that your bag can carry.

In the main function, ask the user to input all values and weights needed, call the function fizzbuzz and output:

- NONE: if the function returns 0
- FIZZ: if the function returns the value of FIZZ
- BUZZ: if the function returns the value of BUZZ
- FIZZBUZZ: if the function returns the sum of the values of FIZZ and BUZZ

```cpp
#include <iostream>
using std::cout;
using std::cin;

float fizzbuzz(float fizz_v, float fizz_w,
                float buzz_v, float buzz_w,
                float bag_w) {
    if (fizz_w+buzz_w<=bag_w) //they both fit together
        return fizz_v+buzz_v;
    else if (fizz_w<=bag_w && buzz_w<=bag_w) //they both fit individually
        if (fizz_v>buzz_v) //in this case, see which one is more valuable
            return fizz_v;
        else
            return buzz_v;
    else if (fizz_w<=bag_w) //only fizz fits
        return fizz_v;
    else if (buzz_w<=bag_w) //only buzz fits
        return buzz_v;
    else
        return 0; //none of them fits
}
```
int main() {
    float fizz_v;
    float fizz_w;
    float buzz_v;
    float buzz_w;
    float bag_w;
    
    cout<<"input fizz_value fizz_weight buzz_value buzz_weight bag_weight: ";
    cin>>fizz_v>>fizz_w>>buzz_v>>buzz_w>>bag_w;
    
    float value=fizzbuzz(fizz_v, fizz_w, buzz_v, buzz_w, bag_w);
    
    if (value==fizz_v+buzz_v)
        cout<<"FIZZBUZZ\n";
    else if (value==fizz_v)
        cout<<"FIZZ\n";
    else if (value==buzz_v)
        cout<<"BUZZ\n";
    else
        cout<<"NONE\n";
}