

# COMP161 - Lab 10

Spring 2019

## Abstract

For these problems you should simply cram each loop into a single main procedure. No libraries. No tests. Just a one file program containing a main.

1. Warm-up: Counting the interval  $[0, n)$ 
  - (a) Write a *for* loop that counts out the interval  $[0, n)$  while computing and finally printing the sum of all the numbers in that interval.
  - (b) Write a *do-while* loop that counts and computes the sum of the interval  $[0, n)$ . Will this loop work exactly the same as your for loop for every value of  $n$ ?
  - (c) Write a *while* loop that counts backwards through the interval. Have it print the numbers, separated by spaces, as it counts.
2. In plain English, describe what this loop does. (Hint: Step through it for some small value of  $n$  and see exactly what it does for that  $n$ . Then describe that in more general terms. *Do not translate the code verbatim to English.*). Check yourself by copying and running the code.

```
for(int i{0}; i < n; i++){
    std::cout << n-1-i;
    if( i % 5 == 4 ){
        std::cout << '\n';
    }
    else{
        std::cout << ' ';
    }
}
if( n % 5 != 0 ){
    std::cout << '\n';
}
```

3. Write a validation loop that is suitable for getting a double from the interval  $(0, 1)$ .
4. Write a loop that counts down through the first  $n$  multiples of 3 and computes their product. When it's done, print that product.
5. Write a loop that prints out every other string in a vector of strings. Print one string per line. Your loop should continue to work if you change the vector's size, i.e. don't hard-code 10 into the loop if the test vector contains 10 strings.
6. Write a loop that works with a vector of integers and prints out the sum of adjacent, non-overlapping pairs. Assume the vector contains an even number of integers. For example, if the vector contains  $\{1, 2, 3, 4, 5, 6\}$  then it should print 3, then 7, and finally 11 by adding 1 and 2, then 3 and 4, and finally 5 and 6. (Hint: You need to count through the pairs, not the individual vector elements).