

Practice Exercise #01: Sum of Positive Integers

http://www.comp.nus.edu.sg/~cs1020/4_misc/practice.html

Reference: Week 1 Java Basics

Objectives:

1. Converting a simple C program to Java program
2. Input/output in Java
3. Using while loop
4. Review Java naming convention

Task statement:

In CS1010 Week 1 example 3[†], we find the sum of positive integers up to n (i.e. $1 + 2 + \dots + n$), assuming that n is a positive integer.

Given below is a C program that performs this task. We use a **while** loop here instead of applying the formula $n(n+1)/2$, as an exercise for loop.

```
// sum_integers.c
// This program computes sum of positive integers up to n
#include <stdio.h>

int main(void) {
    int n; // upper limit, a positive integer
    int count=1, ans=0; // initialisation

    printf("Enter n: ");
    scanf("%d", &n);

    while (count <= n) {
        ans += count;
        count++;
    }
    printf("Sum = %d\n", ans);

    return 0;
}
```

The Python version is given on the next page. Both programs are available on the “CS1020” → “Miscellaneous” → “Practice Exercises” web page.

Convert the program into a Java program **SumIntegers.java**.

[†] Lecture slides for CS1010 are available on http://www.comp.nus.edu.sg/~cs1020/4_misc/cs1010_lect.html

```

# sum_integers.py
# This program computes sum of positive integers up to n
import sys

# main function
def main():
    n = int(raw_input("Enter n: "))
    count = 1
    ans = 0

    while count <= n:
        ans += count
        count += 1

    print "Sum = %d" % ans

# Runs the main method
if __name__ == "__main__":
    main()
    sys.exit(0)

```

Java Naming Convention

In graded labs, non-adherence to Java naming convention or poor choice of names will be penalized. According to Java naming convention[‡]:

- Class name should be in **UpperCamelCase**, with the first letter of every word capitalised. Examples: “class SumIntegers”, “class Vehicle”, “class GeometricShape”.
- Variable names should be in **LowerCamelCase**, with the first letter of the first word in lowercase, and the first letter of subsequent words capitalised. Examples: “int count”, “double boxHeight”, “char checkCode”.
- In general, variable names should not begin with underscore (`_`) or dollar sign (`$`). One-character variable names should be avoided except for temporary “throwaway” variables or loop variables.
- All names should be short yet meaningful.

Sample runs:

```

Enter n: 5
Sum = 15

```

```

Enter n: 42
Sum = 903

```

[‡] [http://en.wikipedia.org/wiki/Naming_convention_\(programming\)](http://en.wikipedia.org/wiki/Naming_convention_(programming))