CSE108 – Computer Programming Laboratory

Lab #2

Date: Monday February 18, 2019

Hand-in: A student with number 20180000001 should hand in three separate files named `20180000001_part1.c`, `20180000001_part2.c` and `20180000001_part3.c` for this lab.

Part 1. [30pts] Write the code that calculates the area of a sphere (in file student_number_part1.c).

$$Area\ of\ sphere = 4\pi r^2\ where\ \pi = 3{,}14$$

```
$ gcc -o part1 student_number_part1.c
$ ./part1
r = 1
Area of sphere: 12.56
```

Part 2. [30pts] Write the following function (in file student_number_part2.c) that calculates roots of a quadratic equation. You can use sqrt(value), pow(base, exponential) functions in math.h.

```
double calc_quadratic_eq_roots (int a, int b, int c, int choice)
```

if choice = 0: $x = \frac{-b+\sqrt{b^2-4ac}}{2a}$

if choice = 1: $x = \frac{-b-\sqrt{b^2-4ac}}{2a}$

Choice: 0	Choice: 1
$ ./part2 a = 2 b = 5 c = 3 choice: 0 x = -1.0	$ ./part2 a = 2 b = 5 c = 3 choice: 0 x = -1.5

Part 3. [40pts] Write a simple calculator (in file student_number_part3.c) that computes +, -, *, / and power of 2 of given 2 numbers. You must implement each operation in a different function.

```
int addition (int value1, int value2)
int subtraction (int value1, int value2)
int multiplication (int value1, int value2)
double division (int dividend, int divisor)
int power_of_two (int exponential)
int get_integer_from_user()
char get_operation_type_from_user()
```