

## Week 2 Lab Exercise

### Lab Instructions

During the lab you should be doing the following things:

1. You need to open Eclipse IDE on the lab machines or any other IDE for C on your own laptops.
2. Read the following tasks carefully and start implementing them.
3. Implement all tasks in one **.c file** inside of the **main** function, separated with the following block of code:

```
printf("=====\n");  
printf("==          TASK 1:          ==\n");  
printf("=====\n");
```

4. During the lab you are allowed to raise your hand and ask for the help from one of our TAs and Instructors if they are available.
5. You are NOT allowed to work on any other things during the lab, except doing the lab exercises.
6. You can discuss the tasks with the classmates and friends during the lab, but you are NOT allowed to do the tasks instead of each other.
7. **During the lab you should finish all the required tasks and submit to Moodle before the deadline to get the grades.**
8. You should be able to finish all these tasks in **1 hour 15 minutes**.
9. **The deadline for submission is Friday, August 24, at 9:00 pm.**
10. **During the work please make sure that you save your work each time.**
11. **WARNING: once you logged out from the lab machine, your work will be deleted. So please please save your work somewhere externally (any cloud drives or flash drives).**

### Lab Exercises

1. **Circle.** Write C program to compute the perimeter and area of a circle with a radius 6 inches.

*Output Format:*

Perimeter of the circle = 37.680000 inches

Area of the circle = 113.040001 square inches

2. **Year conversion.** Write a C program accepts integer values for the number of days and converts specified days into years, weeks and days. Please note that you can consider 365 days in a year.

*Input Format:*

Please provide the number of days: 1455

*Output Format:*

Years: 3

Weeks: 51

Days: 3

3. **ASCII Art.** Write a C program to print a big 'E'.

*Output Format:*

```
#####  
#  
#  
#####  
#  
#  
#####
```

4. **Quadratic equation.** Write a C program that accepts three coefficients for the quadratic equations from the users and prints out the roots after the computations has completed. You can find square roots by using the function call `sqrt(x)`, where at the top of your .c file you need to `#include <math.h>`. Please note that the results could be decimal values. Ignore the cases when the equation has no solutions. More explanations on quadratic equations could be found here: [https://en.wikipedia.org/wiki/Quadratic\\_equation#Examples\\_and\\_applications](https://en.wikipedia.org/wiki/Quadratic_equation#Examples_and_applications)

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

*Input Format:*

Input the first number (a): 4

Input the second number (b): 26

Input the third number (c): 12

*Output Format:*

Root1 = - 6

Root2 = - 0.5

5. **Escape char.** Write a C program that prints out the provided ASCII art picture. Everything should be done only with one `printf()` using all appropriate escape chars.

*Output Format:*



## Grading and Submission

To receive credit for this lab exercise, you should present in the lab and work of the given lab exercises. By the end of the lab you should show and demonstrate your solution to one of the TAs or Instructor. You also will have some extra hours after the lab session to finish and submit your work as a **.c file** to **Moodle**. Do not wait until the last minute!

The maximum grade for this lab is **2 points**. To get the maximum, you should be able to complete all tasks and have a runnable code submitted to Moodle by the deadline specified on the submission box of Moodle. In case if you are late with the submission you will lose all points.

In case if you didn't finish the work or the code doesn't work, you should still be able to submit the work before the **deadline**.

Your submitted work will be run through Stanford Plagiarism Detection System called MOSS. In case if you have **copied** your work from someone this will be considered as an **Academic Misconduct** and you will lose all your points.