



Worksheet 1: Fundamentals of Algorithms and C Programming

Purpose:

In this work sheet, you will familiarize yourself with the C programming environment and write your first own short programs.

Tasks:

- a. Write a C program that computes and displays the area of a triangle given its base and height. Assume that base and height values are given in the program.

Sample run:

```
Area of a triangle with height=12 and base=10 is 60.
```

- b. Modify your C program written in (a) such that it takes the base and height values from the user.

Sample run:

```
Enter height = 12
Enter base = 10
Area of a triangle with height=12 and base=10 is 60.
```

- c. One mile equals 1.609 kilometers. Write a program that takes the user input distance in miles and converts it to kilometers.

Sample run:

```
Enter distance in miles = 10
Distance of 10 miles in kilometers is 16.09.
```

- d. Write a C program that computes the volume and area of a sphere using the following formulas:

$$V = \frac{4}{3} \pi r^3$$

$$A = 4 \pi r^2$$

Sample run (please note that the precision could be different on your machine):

```
Enter radius = 3
Volume = 113.09
Area = 113.09
```

Sample run (please note that the precision could be different on your machine):

```
Enter radius = 1.1
Volume = 5.57
Area = 15.21
```

- e. Modify your program in part (d) such that it uses a constant for π value.

Recommended Reading:

Chapter 1- 3

Recommended Programming Exercises:

Exercises 3.1, 3.2, 3.3, 3.4, 3.5, 3.6