



**CS102/IT102-Computer Programming 1**  
**Programming Exercise 2**  
**1<sup>st</sup> Semester 2023-2024**

Design the **algorithm** in **pseudocode** and **flowchart** to compute the area and perimeter/circumference of the following polygons: 1)rectangle 2)triangle 3)circle, then write the equivalent C programs for each of the polygons.

Use the formulas given below in computing the perimeter/circumference and area.

Shape	Perimeter (P)	Area (A)	Variables
rectangle	$P = 2L + 2W$	$A = LW$	<b>L</b> and <b>W</b> are the length and width of the rectangle's sides
triangle	$P = a + b + c$	$A = \sqrt{s(s-a)(s-b)(s-c)}$ where $s = \frac{a+b+c}{2}$	<b>a</b> , <b>b</b> and <b>c</b> are the side lengths and <b>s</b> is the semiperimeter
circle	$P = 2\pi r$	$A = \pi r^2$	<b>r</b> is the radius

Note: In each of the C program, input variables must be declared as integers (e.g. **int L, W;**) while the others must be declared as float (e.g. **float A;**). Implement as a function call **sqrt()** –the square root ( $\sqrt{\square}$ ) operation used in the triangle's formula for the **area** and you must include the **math.h** library for that.

submit the pseudocode and flowchart of your algorithm as a PDF with filename **LASTNAME-FIRSTNAME\_PE2.pdf** and the source codes as a **.c** file with the following filenames:

**LASTNAME-FIRSTNAME\_PE2\_rectangle.c**  
**LASTNAME-FIRSTNAME\_PE2\_triangle.c**  
**LASTNAME-FIRSTNAME\_PE2\_circle.c**

Note:

LASTNAME-FIRSTNAME should be replace by your actual names without the spaces, e.g.  
DELACRUZ-JUAN\_PE2\_circle.c