

Laboratory 02

18.10.2023

1 (5 points). Write a C program that calculates the area and the hypotenuse (the longest side) of the right triangle with the height= 12.4 cm and the base =18.61 cm.

- a) Declare the necessary float variables (height and base) and initialize them with the respective values.
- b) Declare the necessary float variable for the output.
- c) Perform the calculations. To calculate the square root, call the `sqrt()` function from the maths library. Use `#include <math.h>` in the source file. Use `gcc sourcecodename.c -lm` when compiling and linking.
- d) Print your results with the accuracy of three significant digits.

2 (3 points). Write a C program to calculate a cars' average consumption from the given total distance (integer value) traveled (in km) and spent fuel (in liters, float number – 2 decimal point). a) Declare the necessary variables

- b) Use 107 km as the total distance and 13.19 liters as the spent fuel
- c) Print your results with the accuracy of three significant digits.

3 (6 points). Write a C program that accepts three integers (a,b,c) and find the maximum of three.

- a) Declare three integers and initialize them with arbitrary values.
- b) Declare the integer that will hold the maximal value from a and b (`ab_max`) and from b and c (`bc_max`) and the result.
- c) Figure out the maximum value from a and b (`ab_max`) as $a*(a>b)+b*(b\geq a)$.
- d) Figure out the maximum value from b and c (`bc_max`), in analogous way as above.
- e) Obtain the result from `ab_max` and `bc_max`, in analogous way as above.
- f) Print out the results, and repeat it with other values, checking if you have indeed the maximum.

4 (6 points). Write a C program that converts the specific amount of money into \$1, \$5, \$20, \$50 dollar bills, assuming we want to obtain the lowest number of bills.

- a) Declare a variable that stores the number of money (integer value) and initialize it with 412.
- b) Declare a variable that stores the number \$50 bills. Assign to this variable the number of \$50 bills that can be included in the original amount.
- c) Declare a variable that stores the number \$20 bills. Assign to this variable the number of \$20 bills that can be included in the remaining amount.
- d) Declare a variable that stores the number \$5 bills. Assign to this variable the number of \$5 bills that can be included in the remaining amount.
- e) Declare a variable that stores the number \$1 bills. Assign to this variable the number of the remaining dollars.
- f) Print your results, i.e., the denominations and the number of bills needed to pay the original amount.
- g) Choose your own amount between \$200-\$1000 and print the results (you may provide a separate program for that)