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| **INTRODUCTION TO PROGRAMMING IN C (IS-FEE-10061S)**  **WEEK 12** | | | |
| **First Name** | **Last Name** | **Date** | **Points** |
|  |  | **23.05.2024** |  |

**Comments:**

* complete the data in the table above
* paste the program codes in the designed places
* send the file by the end of the day on which the next class will take place

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| **Program no. 1** |
| Write a function that converts the distance given in kilometers to the distance given in land miles and a function that converts the distance given in kilometers to the distance given in nautical miles. In the **main()** function, read the distance in kilometers, call both functions, and print the values returned by them. Note: 1 land mile = 1609.344 meters, 1 nautical mile = 1851.852 meters.  Example of program execution:  **Enter the distance in kilometers: 100**  **---------------------------------------------**  **Distance in land miles: 53.999992**  **Distance in nautical miles: 62.137119** |
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| **Teacher's comments:** |
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| **Program no. 2** | |
| Write a program containing a function that computes and returns the resonant frequency **fr**  of an RLC circuit. In the **main()** function, read the resistance **R**, inductance **L**,  and capacitance **C**, then call the function and print the returned value. |  |
| Example of program execution:  **Resistance R [Ohm]: 100**  **Inductance L [H]: 0.05**  **Capacitance C [F]: 5.0e-3**  **-------------------------------**  **Frequency fr [Hz]: 10.060807** | |
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| **Teacher's comments:** | |
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| **Program no. 3** |
| The figure shows the plot of the trapezoidal pulse. Write a function that calculates and returns the voltage **u** based on the time **t**. Using this function, calculate and print the voltage values for time **t** equal to: **0.0**, **0.25**, **0.5**, ..., **5.75**, **6.0** seconds (use a **for** loop).    Example of program execution:  **0.00 0.00**  **0.25 0.75**  **0.50 1.50**  **0.75 2.25**  **1.00 3.00**  **1.25 3.00**  **1.50 3.00**  **1.75 3.00**  **2.00 3.00**  **2.25 3.00**  **2.50 3.00**  **2.75 3.00**  **3.00 3.00**  **3.25 3.00**  **3.50 3.00**  **3.75 3.00**  **4.00 3.00**  **4.25 2.25**  **4.50 1.50**  **4.75 0.75**  **5.00 0.00**  **5.25 0.00**  **5.50 0.00**  **5.75 0.00**  **6.00 0.00** |
| **Program code:** |
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| **Teacher's comments:** |
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| **Program no. 4** |
| Write a program containing a recursive function that calculates the value of the n-th term of the Fibonacci sequence. Using this function, calculate and display the values ​​of the Fibonacci sequence from F0 to F15.  Example of program execution:  **F0 = 0**  **F1 = 1**  **F2 = 1**  **F3 = 2**  **F4 = 3**  **F5 = 5**  **F6 = 8**  **F7 = 13**  **F8 = 21**  **F9 = 34**  **F10 = 55**  **F11 = 89**  **F12 = 144**  **F13 = 233**  **F14 = 377**  **F15 = 610** |
| **Program code:** |
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| **Teacher's comments:** |
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| **Program no. 5** |
| Write a function that has two arguments: an **N**-element array of integers and integer **x**. The function should calculate and return the number of occurrences of **x** in the array. Generate the array elements pseudo-randomly in the range of 0, 5and print them on the screen.  Example of program execution:  **2 4 5 5 1 2 5 3 2 0 1 3 4 2**  **Enter x: 2**  **Result: 4** |
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| **Teacher's comments:** |
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