

IS-FEE-10061S - INTRODUCTION TO PROGRAMMING IN C
TEST NO 1 (EXAMPLE)

Write a single computer program that includes all the following points.

- Include your first name, last name, the current date, course code (IS-FEE-10061S), and the name of the IDE you are using (Code::Blocks) as comments on the first line of the program.

Points | **4 pts.**

- Declare three variables, **a**, **b**, and **c** of floating point type. Assign the following initial values to these variables:
- $$a = 2.15 \cdot 10^{-2}, \quad b = 34, \quad c = -2.65 \quad \frac{5}{6} \cdot \frac{3\pi - 4.1 \cdot a}{\sqrt{b^2 - c^2}}$$
- Calculate the value of the given expression using the appropriate constant for π from the **math.h** header file. Display the result with precision up to three decimal places.

Points | **8 pts.**

- The cost of car insurance is calculated as a certain percentage of the car's value, which varies depending on the age of the driver. Drivers are categorized into four groups (see table below).

Group	Age Range	Percentage
0	18 to 25 years	8.25%
1	over 25 to 35 years	7.25%
2	over 35 to 45 years	6.25%
3	over 45 to 55 years	6.00%
4	over 55 years	6.50%

- Using **scanf()** function to input the **value of the car** and the **age of the driver**. Based on the driver's age, determine and display the corresponding **group** to which they belong and display the calculated **cost** of car insurance (rounded to two decimal places).

Points | **8 pts.**

- Use the **scanf()** function to input the integer representing the **month number**. Using the **switch** statement, display information about which quarter of the year the given month belongs to, for example:
1st quarter
2nd quarter
3rd quarter
4th quarter
- If the month number is incorrect, display an error message.

Points | **5 pts.**

- Declare an array of **N** elements of type **int**, where **N** is a symbolic constant defined using the **#define** preprocessor directive. Fill the array with pseudo-randomly generated integers in the range of **-5** to **5**. Print the elements of the array on a single line.
- Calculate and display the **arithmetic mean** of all array elements. Then, calculate and display the number of array elements that are **smaller** than the average and the number of array elements that are **larger** than the average.
- Use the **scanf()** function to input the number **x**. Calculate and display the number of array elements within the range of **[-x, x]**.

Points | **8 pts.**

- Declare an **MxM**-element square matrix of integers, where **M** is a constant defined using **#define** with an arbitrary value. Fill the matrix with pseudo-randomly generated numbers in the range **[0, 9]**.
- Display the matrix with rows and columns clearly separated.
- For each row of the matrix, separately find and display the value of the element with the **largest value**.

Points | **7 pts.**

Notes: The maximum number of points is 40.
 21 points are required to pass the test.