

Level #01 – C#

1. Variables

1. As a structural engineer, you're working on a high-rise building.
 - Create a **variable** to represent the **number of floors**
 - **ask** the user to give you the value of the variable.
 - **Print** the variable's value.
 - Note: **Initialize** means to give it a value when define the variable.

2. In an architectural project, you need to keep track of the dimensions of different rooms.
 - Create **variables** to store the **length**, **width**, and **height** of a room.
 - **ask** the user to give you the value of the variable.
 - **Print** the variable's value.

3. As an MEP engineer, you're managing the energy consumption of a building.
 - Create **variables** to two HVAC systems.
 - **Print** the current HVAC systems names.
 - Now **switch** between the two HVAC systems by swapping their names stored in the variables.
 - **Print** the new HVAC systems names.



2. Data Types

1. In a structural analysis, you need to calculate the total weight of steel beams.
 - Prompt the user to input the **length** and **weight** per meter of each beam segment as **doubles**,
 - **multiply** them together.
 - **display** the **total weight**.

3. You're working on an architectural project and need to indicate if a room is accessible to disabled individuals.
 - Create a **Boolean** variable to represent this.
 - print its value.

4. In an MEP project, you assign unique codes to electrical panels.
 - Create a **character** variable to represent a panel code.
 - **print** it.



3. Operators

1. As an architect, you're estimating the cost of materials for a project.
 - o Input the **cost per unit area** for flooring and **the total area** to be covered,
 - o then **multiply** to calculate.
 - o **display** the total cost.
2. In a structural assessment, you need to determine the column's capacity load using the following formula:

$$P_u = 0.35 * A_c * f_{cu} + 0.67 * A_s * f_y$$

- o Where:

$$F_{cu} = 25 \text{ MPA}$$

$$F_{cu} = 360 \text{ MPA}$$

$$A_c = \text{Column Width} * \text{Column Depth} \text{ (take them from user)}$$

$$A_s = 0.01 * A_c$$

- o Define the Variables: P_u , A_c , A_s , f_{cu} , f_y , $columnWidth$, $columnDepth$
- o Ask the user to give you the inputs value (Column width and Depth)
- o Use them in the formula to calculate the P_u .
- o **Print** Result



3. You are an MEP engineer tasked with designing an electrical circuit for a room. The circuit includes a set of three light bulbs, and you need to calculate the total power consumption for these bulbs.

- o Each light **bulb consumes 60 watts** of power. Calculate the total power consumption of all **three light bulbs** in the circuit using the multiplication operator.
- o Formula:

$$\text{Total Power Consumption} = \text{Number of Light Bulbs} \times \text{Power Consumption per Bul}$$