“चला तर, Coding शिकू आपल्या भाषेत!”

Marathi Coding Shala

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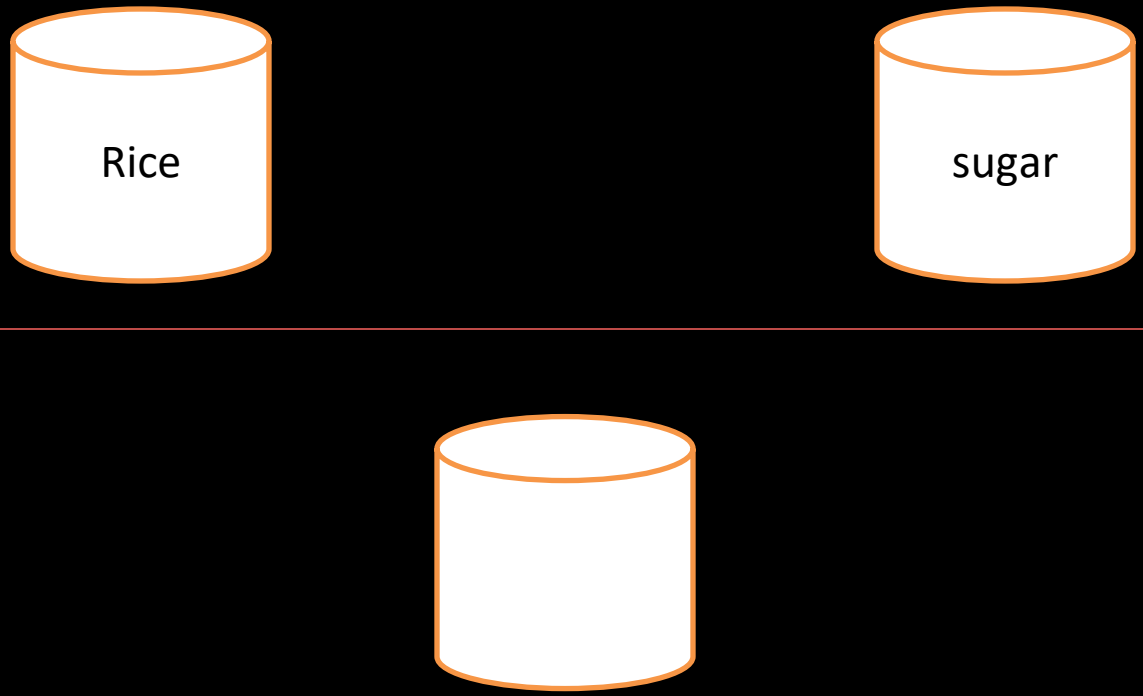
❑ Concept of Swapping



Swapping of number with temp variable

- **Swapping with a Temporary Variable**

1. Start
2. Input two numbers, a and b
3. Store a in temp
4. Set a = b
5. Set b = temp
6. Output the swapped values of a and b
7. End

Before swapping

a=10 b=20

Afther swapping

a=20 b=10

Swapping of number without temp variable

Swapping without a Temporary Variable

- Start
- Input two numbers, a and b
- Set a = a + b
- Set b = a - b
- Set a = a - b
- Output the swapped values of a and b
- End

Before swapping

a=10 b=20

Afther swapping

a=20 b=10

Average of marks for different subjects :

"Think Like Compiler"

- Start
- Declare variables to store the sum of numbers and the average.
- Input 5 numbers.
- Calculate the sum of the 5 numbers.
- Calculate the average using the formula:

$$\text{Average} = \frac{\text{Sum of numbers}}{5}$$

- Display the average.
- End

Enter marks for five subjects:
Subject 1: 85
Subject 2: 90
Subject 3: 78
Subject 4: 88
Subject 5: 92
Total marks: 433.00
Average marks: 86.60

Celsius to Fahrenheit :

- Start
- Input: Get the temperature in Celsius from the user.
- Convert: Apply the formula to convert Celsius to Fahrenheit:

$$F = \left(\frac{9}{5} \times C\right) + 32$$

- C is the input temperature in Celsius.
- F is the converted temperature in Fahrenheit.
- Output: Display the converted temperature in Fahrenheit.
- End

Programming with Real-Life Example: Celsius to Fahrenheit Conversion

- **Input**: Doctor measures body temperature in Celsius (e.g., 37°C).
- **Convert**: Use the formula to convert Celsius to Fahrenheit.
- **Output**: 37°C = 98.6°F.

Temperature conversion :

Conversion Formulas:

- Celsius to Fahrenheit:

$$F = \frac{9}{5} \times C + 32$$

- Fahrenheit to Celsius:

$$C = \frac{5}{9} \times (F - 32)$$

- Celsius to Kelvin:

$$K = C + 273.15$$

- Fahrenheit to Kelvin:

$$K = \frac{5}{9} \times (F - 32) + 273.15$$

Simple Interest (SI)

•**Start** the program.
•**Input** the principal amount, rate of interest, and time period from the user.
•**Calculate** the Simple Interest using the formula

$$SI = \frac{P \times R \times T}{100}$$

•**Display** the result (Simple Interest) to the user.
•**End** the program.

Imagine you invest $1,000 in a savings account that offers an annual interest rate of 5% for 3 years. The Simple Interest (SI) can be calculated as:
•Principal (P) = $1000
•Rate (R) = 5% per year
•Time (T) = 3 years
Using the formula, the Simple Interest will be:

$$SI = \frac{1000 \times 5 \times 3}{100} = 150$$

Thus, the interest earned over 3 years would be **$150**.

Compound Interest (CI)

Algorithm:

1. **Start** the program.
2. **Input** the principal amount, rate of interest, and time period from the user.
3. **Calculate** the final amount (A) using the formula:

$$A = P \times \left(1 + \frac{R}{100}\right)^{T}$$

4. **Calculate** the Compound Interest (CI) by subtracting the principal from the final amount:

$$CI = A - P$$

5. **Display** the result (Compound Interest) to the user.
6. **End** the program.

Real-life Example:

Imagine you invest $1,000 in a savings account that compounds annually at a rate of 5% for 3 years.

- Principal (P) = $1000
- Rate (R) = 5%
- Time (T) = 3 years

Using the formula, the final amount (A) would be:

$$A = 1000 \times \left(1 + \frac{5}{100}\right)^{3} = 1000 \times 1.157625 = 1157.625$$

Therefore, the Compound Interest (CI) is:

$$CI = 1157.625 - 1000 = 157.625$$

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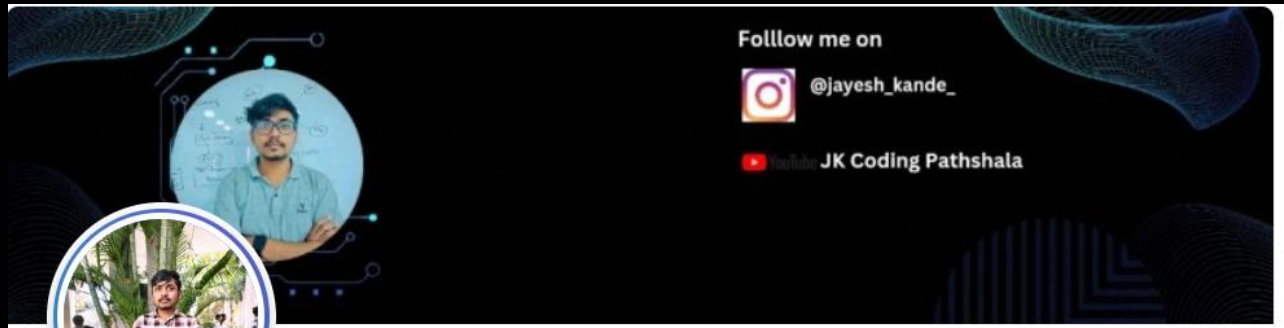

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