Logic Building
Day-6

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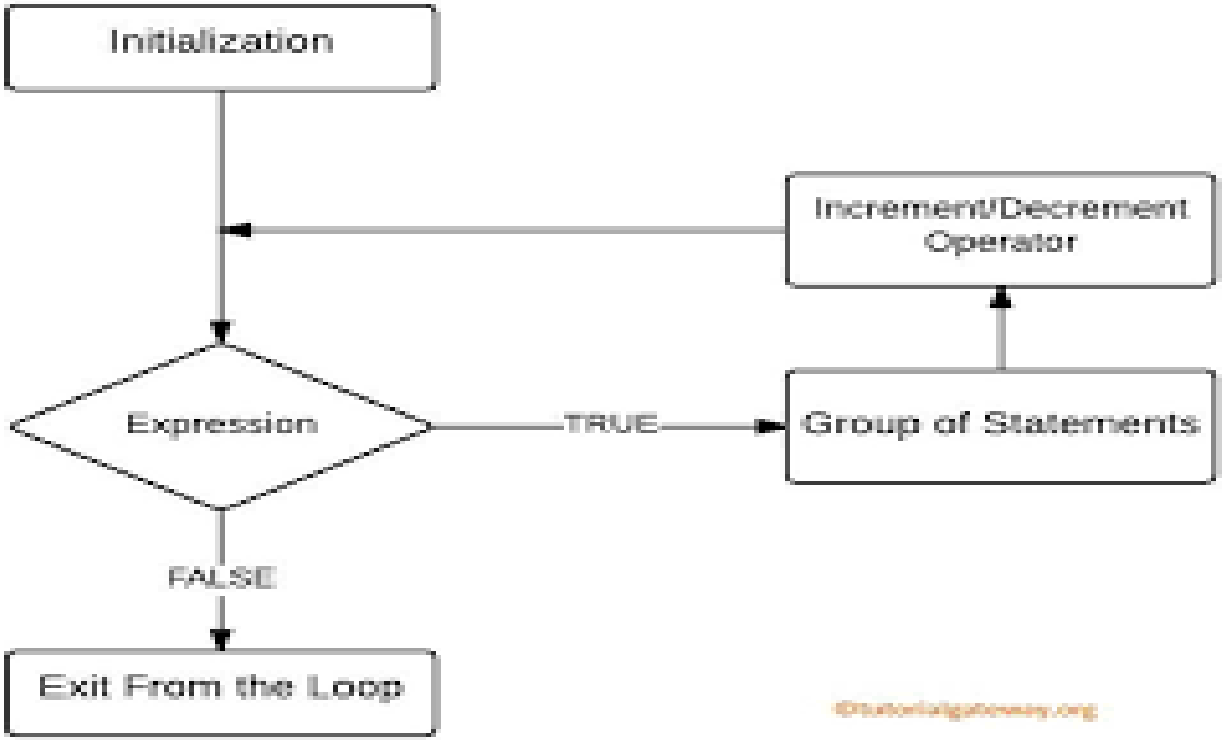
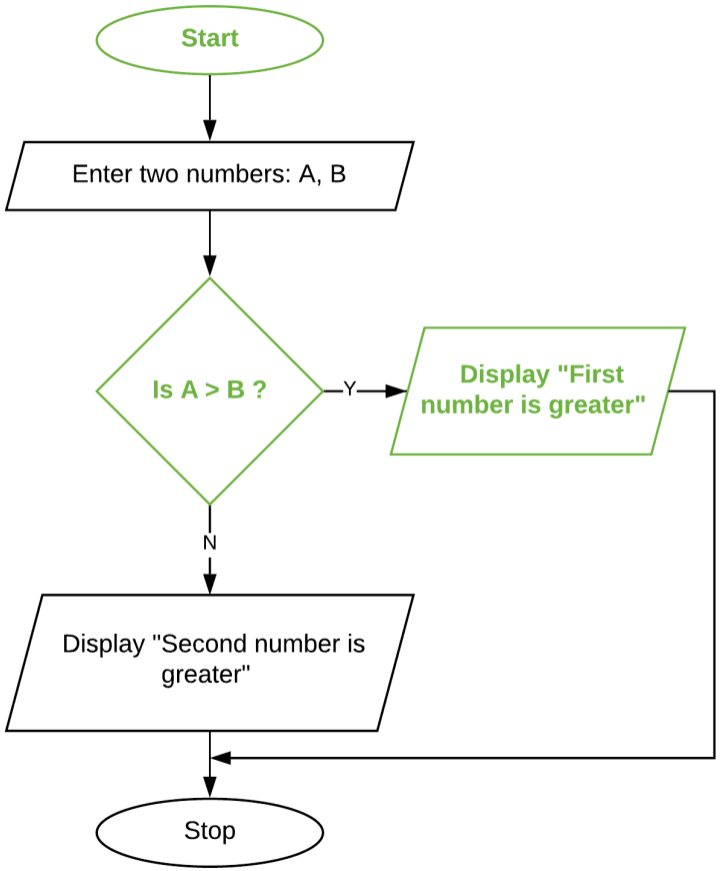
Prof. Mubeen A. Khan

Contents

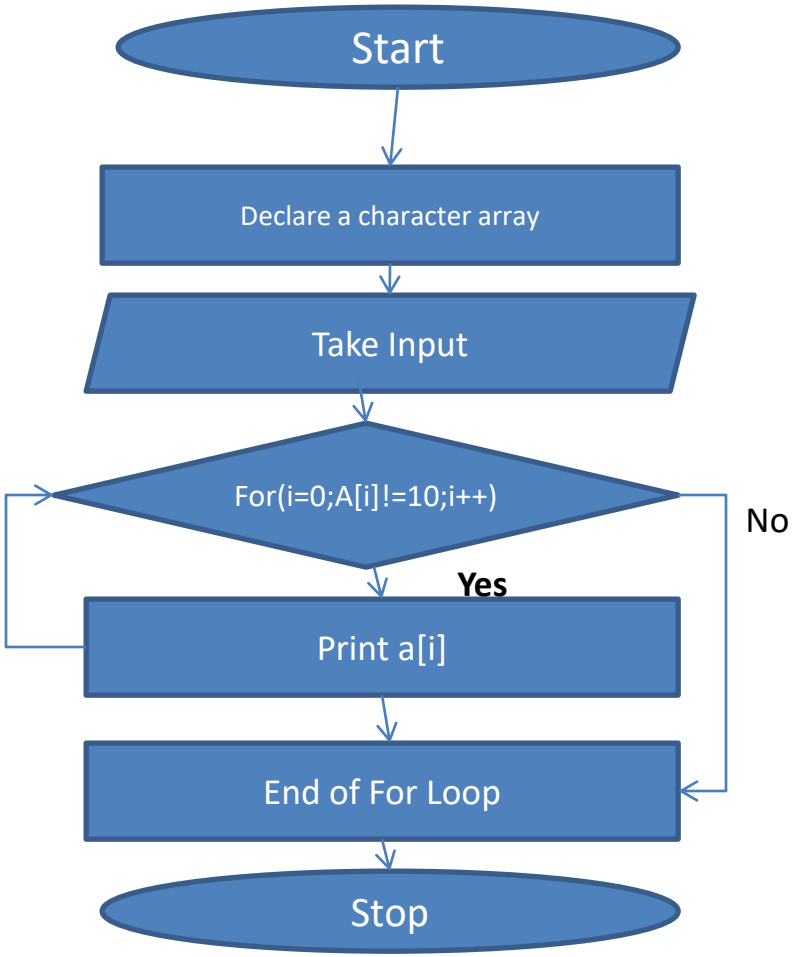
- Logics for Increment and Decrement operator
- Logics for Less than Greater than operator
- Logics for arrays
- Matrix addition
- Logics for Determinants
- Logics for system of equations(one variable)
- Logics for finding roots of equations
- Logics for Fuzzy logics

Increment Decrement operators

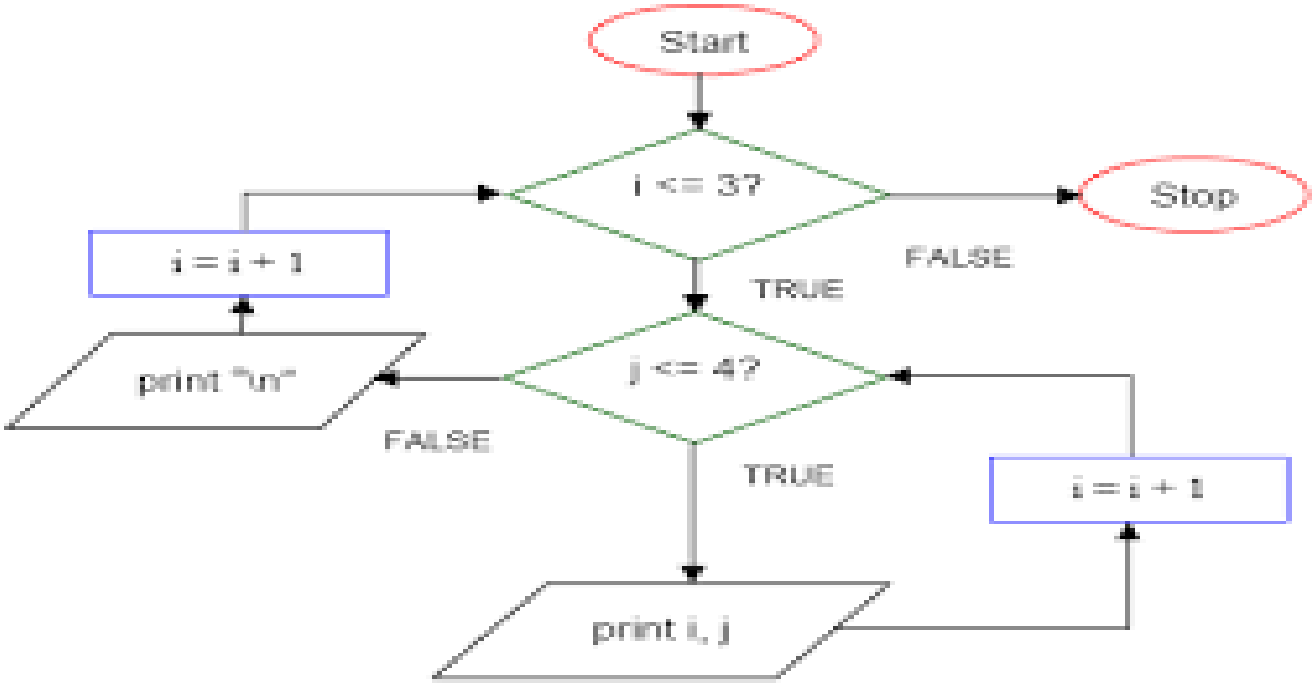



Start
Enter two numbers: A, B
Is A > B ?
Y
Display "First number is greater"
N
Display "Second number is greater"
Stop

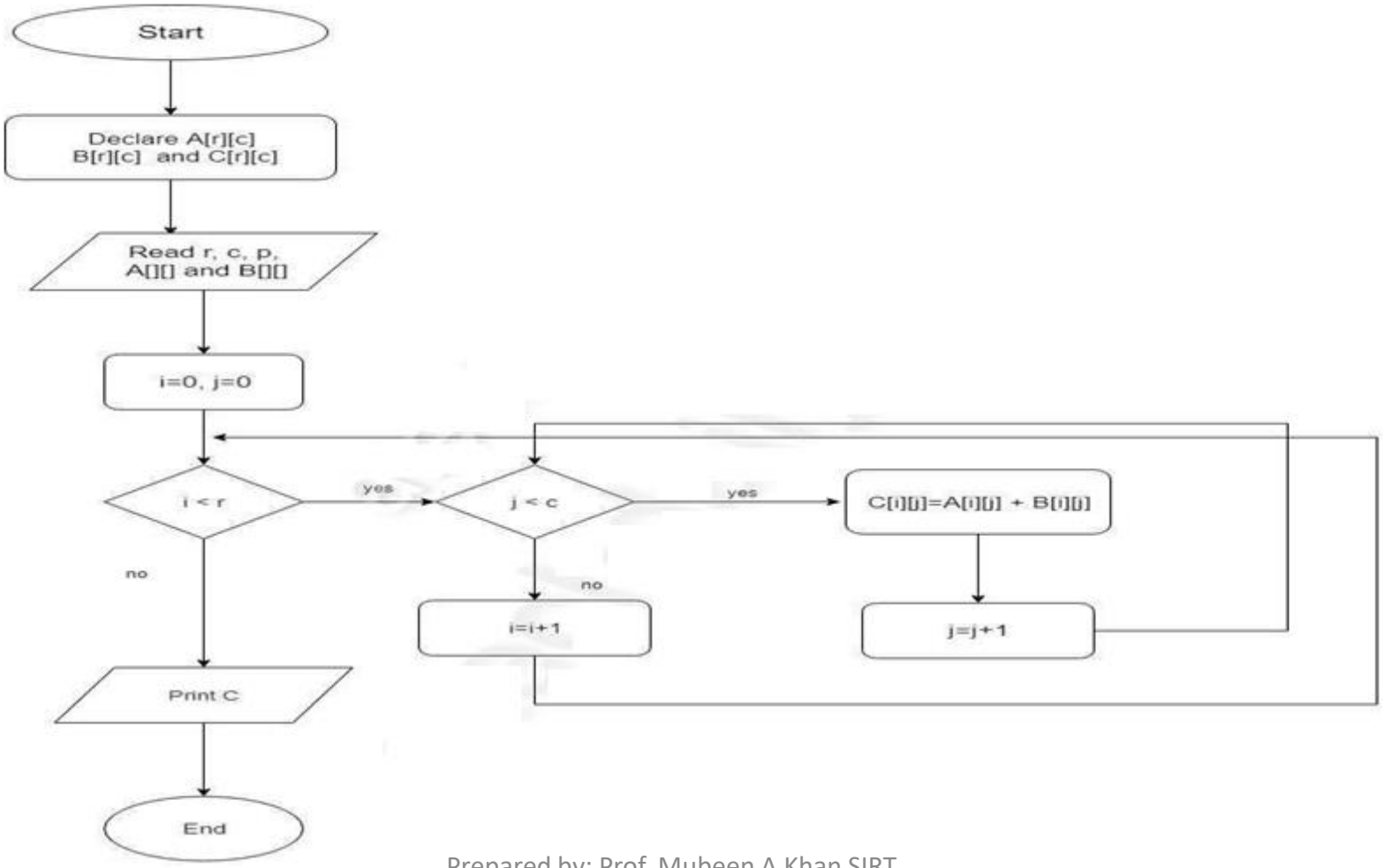
Character Array



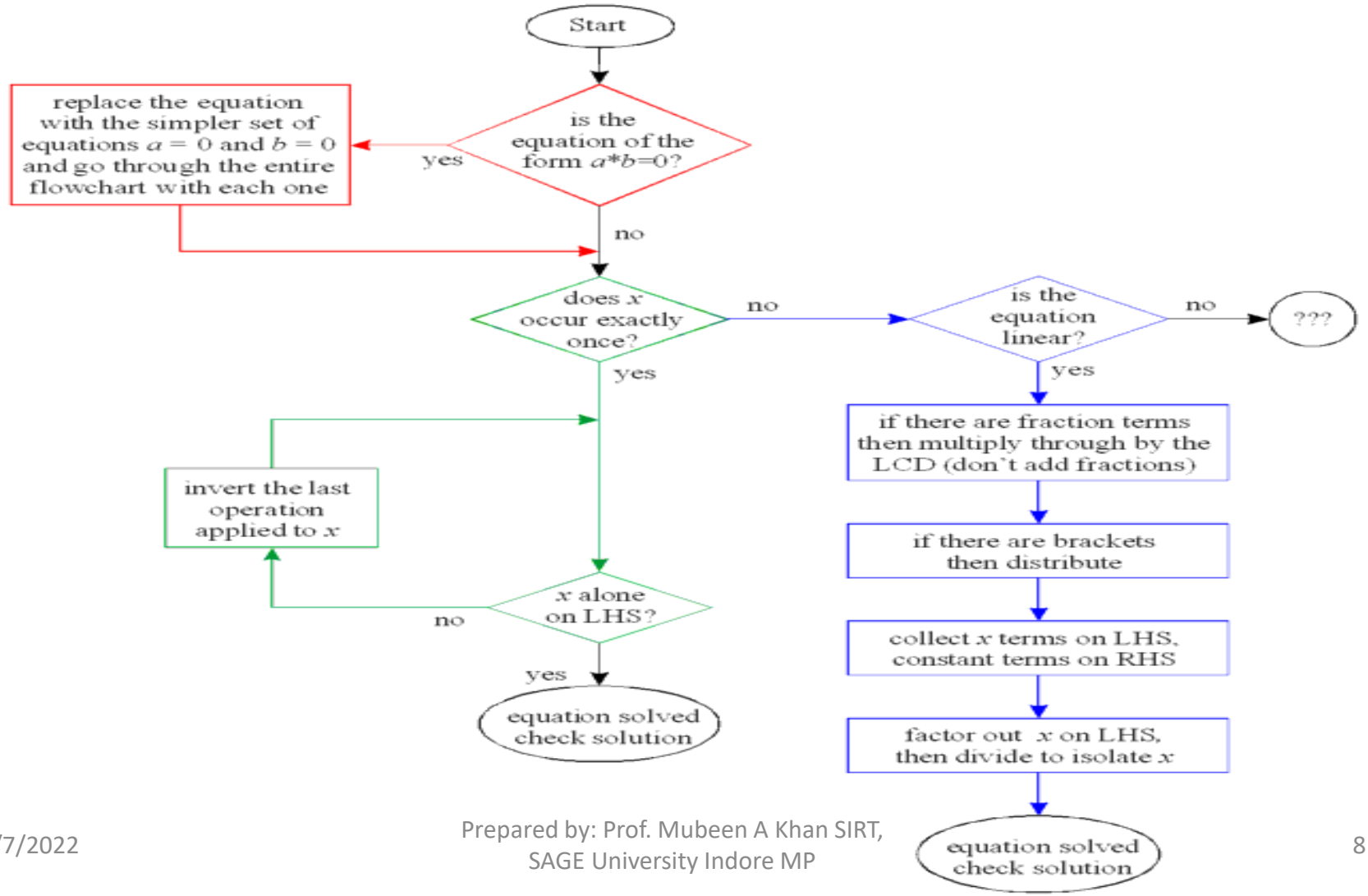
What will be the output?



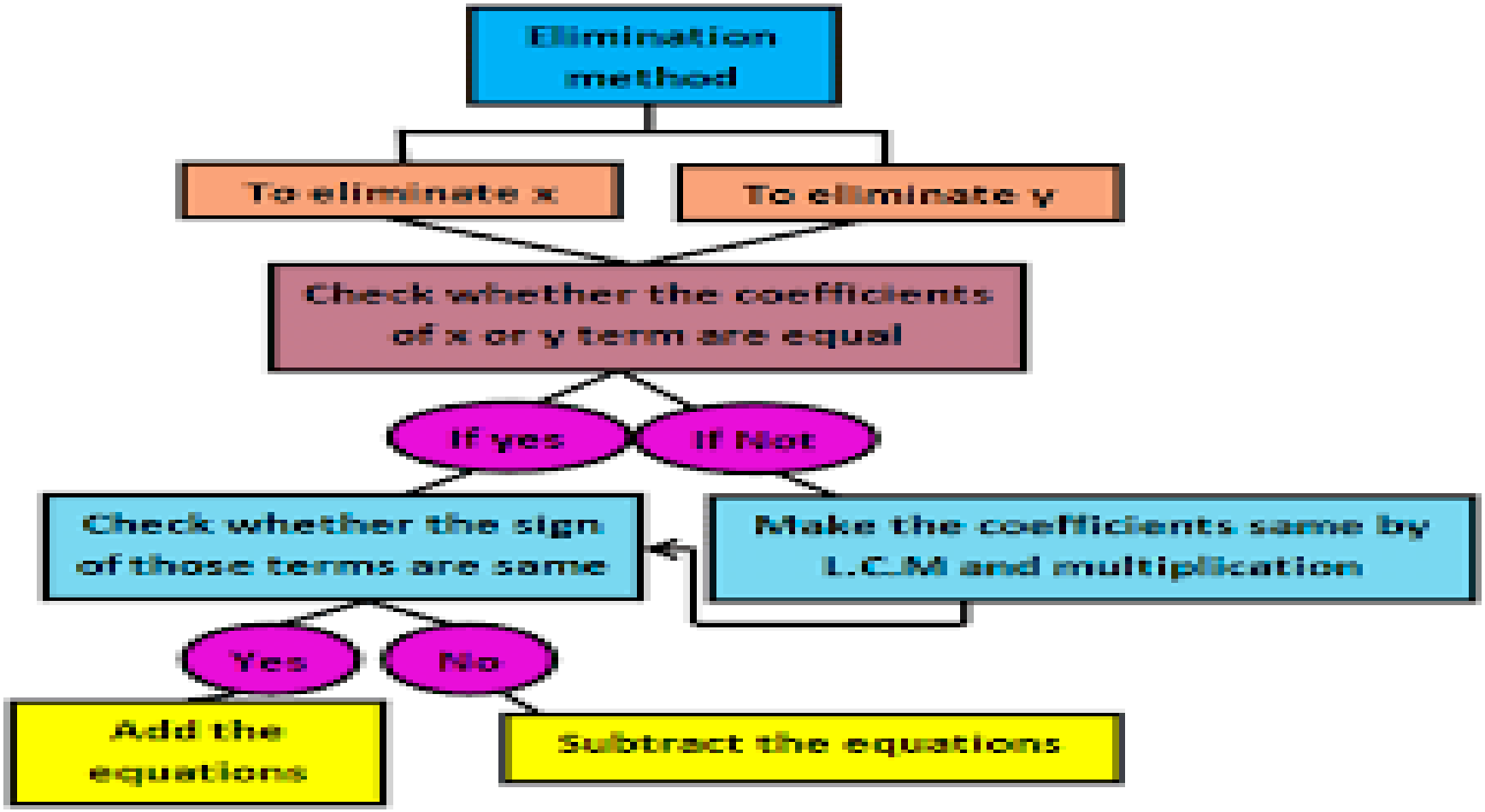
Matrix addition



One variable equation



Two Variable Equation



Square Root

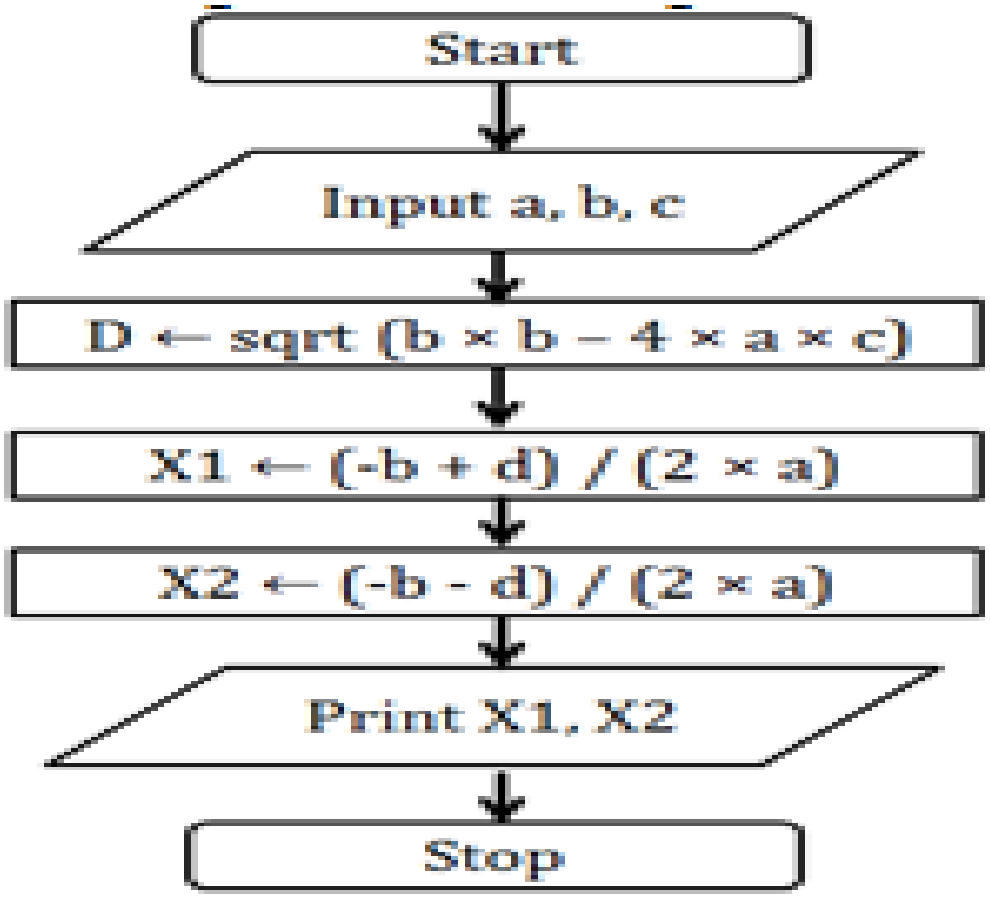
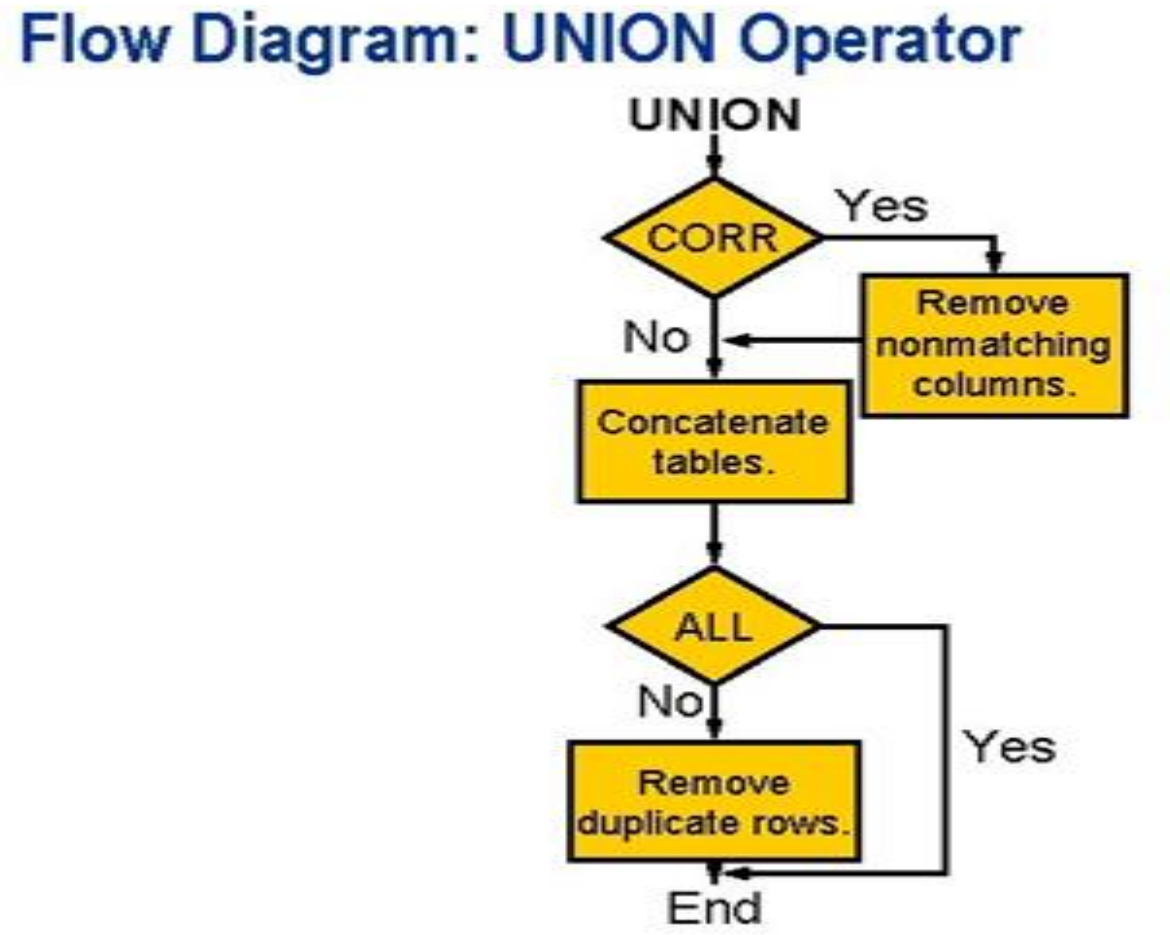


Figure 3

Fuzzy logics (Union)



Example of Fuzzy sets

2. Consider two given fuzzy sets

$$\underset{\sim}{A} = \left\{ \frac{1}{2} + \frac{0.3}{4} + \frac{0.5}{6} + \frac{0.2}{8} \right\}$$

$$\underset{\sim}{B} = \left\{ \frac{0.5}{2} + \frac{0.4}{4} + \frac{0.1}{6} + \frac{1}{8} \right\}$$

Perform union, intersection, difference and complement over fuzzy sets $\underset{\sim}{A}$ and $\underset{\sim}{B}$.

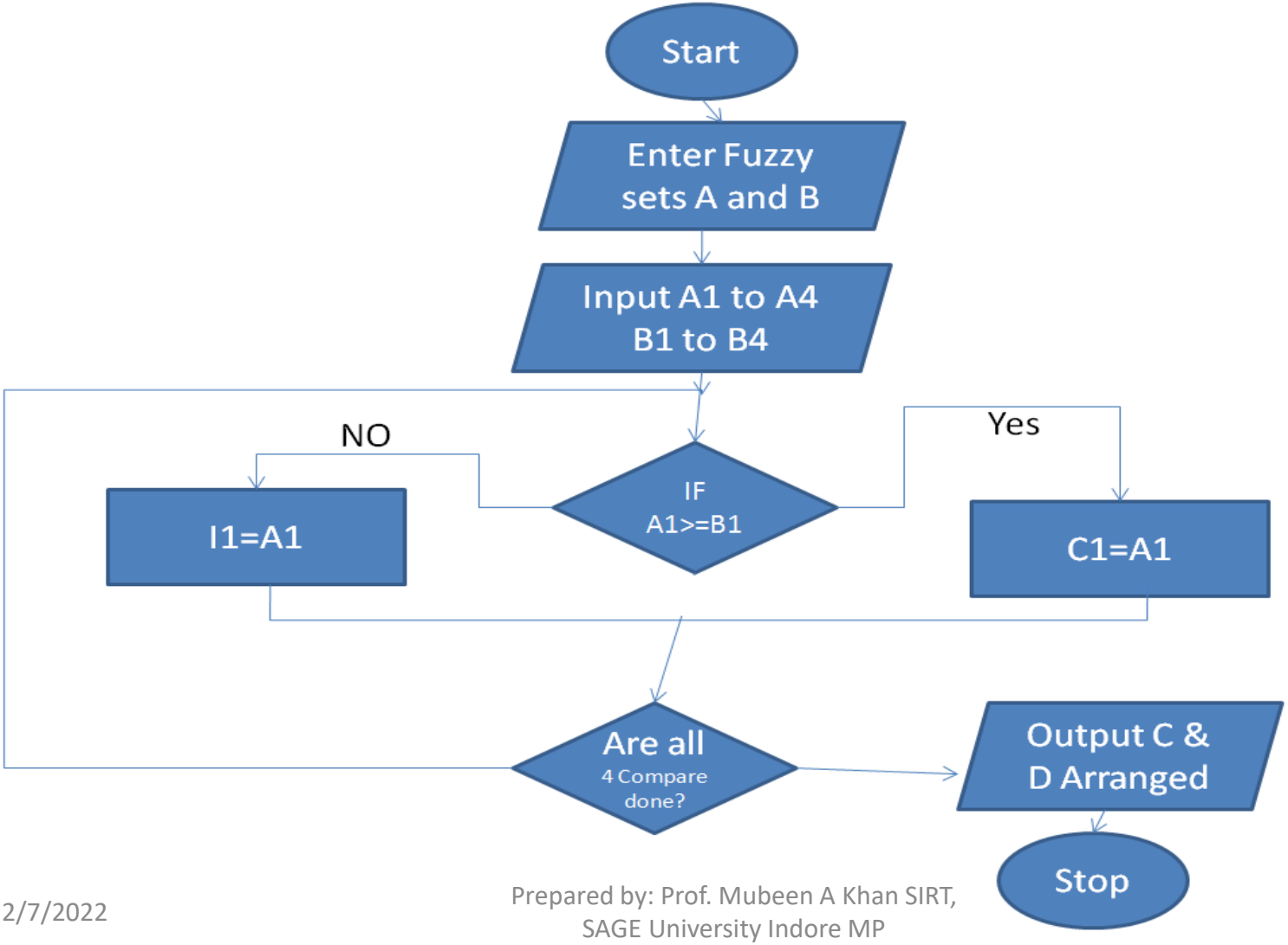
Example of Union

(a) Union

$$\underset{\sim}{A} \cup \underset{\sim}{B} = \max\{\mu_{\underset{\sim}{A}}(x), \mu_{\underset{\sim}{B}}(x)\}$$

$$= \left\{\frac{1}{2} + \frac{0.4}{4} + \frac{0.5}{6} + \frac{1}{8}\right\}$$

Union and Intersection(Fuzzy)



Example of intersection, Complement and Difference

(b) Intersection

$$\tilde{A} \cap \tilde{B} = \min\{\mu_{\tilde{A}}(x), \mu_{\tilde{B}}(x)\}$$
$$= \left\{\frac{0.5}{2} + \frac{0.3}{4} + \frac{0.1}{6} + \frac{0.2}{8}\right\}$$

(c) Complement

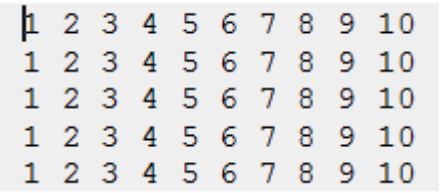
$$\tilde{A} = 1 - \mu_{\tilde{A}}(x) = \left\{\frac{0}{2} + \frac{0.7}{4} + \frac{0.5}{6} + \frac{0.8}{8}\right\}$$
$$\tilde{B} = 1 - \mu_{\tilde{B}}(x) = \left\{\frac{0.5}{2} + \frac{0.6}{4} + \frac{0.9}{6} + \frac{0}{8}\right\}$$

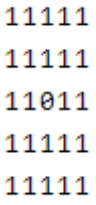
(d) Difference

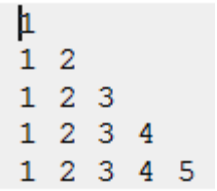
$$\tilde{A} | \tilde{B} = \tilde{A} \cap \overline{\tilde{B}} = \left\{\frac{0.5}{2} + \frac{0.3}{4} + \frac{0.5}{6} + \frac{0}{8}\right\}$$
$$\tilde{B} | \tilde{A} = \tilde{B} \cap \overline{\tilde{A}} = \left\{\frac{0}{2} + \frac{0.4}{4} + \frac{0.1}{6} + \frac{0.8}{8}\right\}$$

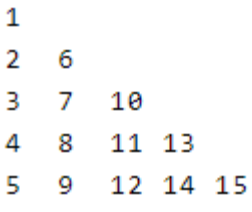
Final Assignments

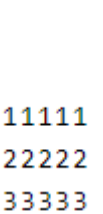
1. Write Programs and flow charts to Print these number patterns

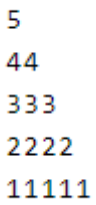


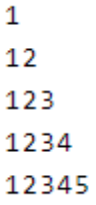


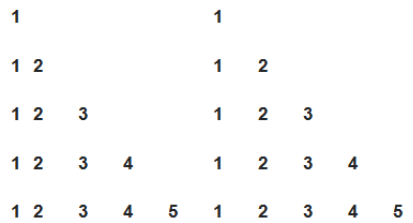


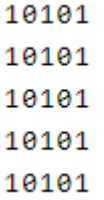


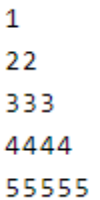


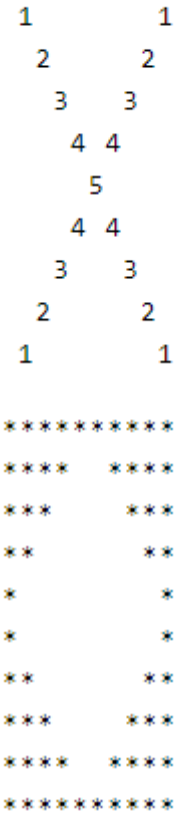


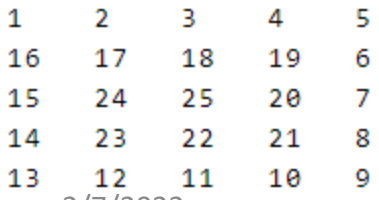


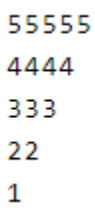


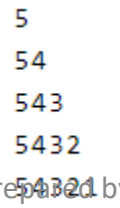


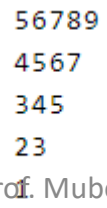


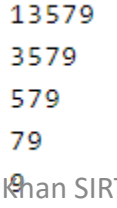












Final Assignments

2. Write Programs and flow charts to Print these patterns.

Final Assignments

3. Write program to show Union, Intersection, compliment and difference in fuzzy logic if any input is given in array form.

Mail all these assignments to

madhuri.nigam@sageuniversity.in and

sagemubeen@gmail.com

or on before **11/02/2022**

THANK YOU

for your valuable Time