

ANIL NEERUKONDA INSTITUTE OF TECHNOLOGY & SCIENCES

Department of Computer Science and Engineering (AI&ML, DS)

COMPUTATIONAL THINKING FOR PROBLEM SOLVING

WORKSHEET: CONVERT PSEUDOCODE INTO FLOWCHARTS

Student Name: _____	Roll Number: _____
Class/Section: _____	Date: _____

Instructions

- Read each pseudocode carefully and draw its corresponding flowchart.
- Use an oval for START or Main/STOP or end, a parallelogram for INPUT/OUTPUT, a rectangle for processing, and a diamond for decisions.
- Label decision branches (Yes/No or True/False) and ensure all paths connect correctly.
- Test your flowchart with the sample values where provided.

Exercise 1: Arithmetic Operations

Note: Include a decision to avoid division by zero.

```
START
  INPUT a, b

  sum = a + b
  difference = a - b
  product = a * b

  IF b != 0 THEN
    quotient = a / b
    remainder = a MOD b
    DISPLAY quotient, remainder
  ELSE
    DISPLAY "Division not possible"
  END IF

  DISPLAY sum, difference, product
STOP
```

Flowchart space: Draw your flowchart below.

Exercise 2: Squares and Cubes

Find $(a + b)^2$, $(a - b)^2$, and $(a + b)^3$.

```
START
  INPUT a, b

  result1 = (a + b) * (a + b)
  result2 = (a - b) * (a - b)
  result3 = (a + b) * (a + b) * (a + b)

  DISPLAY result1, result2, result3
STOP
```

Flowchart space: Draw your flowchart below.

Exercise 3: Coin Combination

Convert the coin counts into a total amount in dollars and cents.

```
START
  INPUT dollars, quarters, dimes, nickels, pennies

  totalCents = dollars * 100
              + quarters * 25
              + dimes * 10
              + nickels * 5
              + pennies

  totalDollars = totalCents DIV 100
  remainingCents = totalCents MOD 100

  DISPLAY totalDollars, remainingCents
STOP
```

Flowchart space: Draw your flowchart below.

Exercise 4: Swap Two Numbers

Sample input: 5, 2. Expected output: 2, 5.

```
START
  INPUT a, b

  temp = a
  a = b
  b = temp

  DISPLAY a, b
STOP
```

Flowchart space: Draw your flowchart below.

Exercise 5: Salary After a 15% Increase

Sample input: 40000. Expected output: 46000.

```
START
  INPUT salary

  increase = salary * 15 / 100
  newSalary = salary + increase

  DISPLAY newSalary
STOP
```

Flowchart space: Draw your flowchart below.

Exercise 6: Voting Eligibility

Try ages 18, 12, and 101.

```
START
  INPUT age

  IF age > 100 THEN
    DISPLAY "Age cannot be greater than 100"
  ELSE IF age >= 18 THEN
    DISPLAY "You are eligible to vote"
  ELSE
    yearsLeft = 18 - age
    DISPLAY "You are not eligible to vote"
    DISPLAY yearsLeft
  END IF
STOP
```

Flowchart space: Draw your flowchart below.

Exercise 7: Compare Two Numbers

Try values where $a < b$, $a > b$, and $a = b$.

```
START
  INPUT a, b

  IF a < b THEN
    DISPLAY "a is less than b"
  ELSE IF a > b THEN
    DISPLAY "a is greater than b"
  ELSE
    DISPLAY "Both numbers are equal"
  END IF
STOP
```

Flowchart space: Draw your flowchart below.

Exercise 8: Classify Triangle Angles

Assume the three inputs are interior angles of a triangle.

```
START
  INPUT angle1, angle2, angle3

  IF angle1 + angle2 + angle3 != 180 THEN
    DISPLAY "Invalid triangle"
  ELSE IF angle1 = 90 OR angle2 = 90 OR angle3 = 90 THEN
    DISPLAY "Right-angled triangle"
```

```
ELSE IF angle1 > 90 OR angle2 > 90 OR angle3 > 90 THEN
    DISPLAY "Obtuse-angled triangle"
ELSE
    DISPLAY "Acute-angled triangle"
END IF
STOP
```

Flowchart space: Draw your flowchart below.

Exercise 9: Odd or Even Number

Sample input: 10. Expected output: Even number.

```
START
    INPUT number

    IF number MOD 2 = 0 THEN
        DISPLAY "Even number"
    ELSE
        DISPLAY "Odd number"
    END IF
STOP
```

Flowchart space: Draw your flowchart below.

Exercise 10: Attendance Classification

Classify attendance as detained (<66), improve (66–75), or good (>75).

```
START
    INPUT attendance

    IF attendance < 0 OR attendance > 100 THEN
        DISPLAY "Invalid attendance"
    ELSE IF attendance < 66 THEN
        DISPLAY "You are detained"
    ELSE IF attendance <= 75 THEN
        DISPLAY "You need to improve"
    ELSE
        DISPLAY "Good"
    END IF
STOP
```

Flowchart space: Draw your flowchart below.
