Decision Making – Labs

Lab 1: Program to check if a number is even or odd

Solution:

```
# Input: Take a number from the user
number = int(input("Enter a number: "))

# Check if the number is even or odd using a single if condition
if number % 2 == 0:
    print("Even")
else:
    print("Odd")
```

Lab 2: Program to accept name and salary. Check if their salary is >3L and display if they have to pay tax

```
# Accept employee details
name = input("Enter employee's name: ")
salary = float(input("Enter employee's annual salary: "))

# Check if salary is greater than 3,00,000
if salary > 300000:
    print(f"{name} has an annual salary of ₹{salary}.")
    print(f"{name} has to pay taxes.")
else:
    print(f"{name} has an annual salary of ₹{salary}.")
    print(f"{name} does not have to pay taxes.")
```

Lab 3: To find the largest of 3 numbers

Solution:

```
# Input three numbers
num1 = 10
num2 = 25
num3 = 15

# Find the largest
if num1 >= num2 and num1 >= num3:
    print("The largest number is:", num1)
elif num2 >= num1 and num2 >= num3:
    print("The largest number is:", num2)
else:
    print("The largest number is:", num3)
```

Lab 4: Program to check if a year given is a leap year or not

Solution:

```
year = 2024
if year % 4 == 0:
   if year % 100 == 0:
      if year % 400 == 0:
         print("Leap year")
      else:
         print("Not a leap year")
   else:
      print("Leap year")
else:
   print("Not a leap year")
```

Lab 5: Student Report Card Problem

Write a program to accept a student's name and scores in three subjects. Display the total, average, and class secured based on the following criteria:

- **1st Class**: Average score of 60 and above.
- **2nd Class**: Average score of 50 and above.
- **Pass Class**: Average score of 35 and above.
- **Fail**: Average score less than 35.

Solution:

```
# Input student name and scores
name = input("Enter the student's name: ")
score1 = float(input("Enter score for subject 1: "))
score2 = float(input("Enter score for subject 2: "))
score3 = float(input("Enter score for subject 3: "))

# Check if the student passed in each subject
if score1 < 35 or score2 < 35 or score3 < 35:
   result = "Fail"
else:
   # Calculate total and average
   total = score1 + score2 + score3
   average = total / 3

   # Determine the class
   if average >= 60:
      result = "1st Class"
   elif average >= 50:
      result = "2nd Class"
```

```
    elif average >= 35:
        result = "Pass Class"
    else:
        result = "Fail"

# Display the results
print("\nStudent Report Card")
print("Name:", name)
if result == "Fail":
    print("Result:", result)
else:
    print("Total:", total)
    print("Average:", average)
    print("Result:", result)
```

Lab 6: Tax Calculator Problem

GlobalNext Solutions, a rapidly growing IT company, employs a diverse workforce ranging from entry-level developers to senior executives. The HR department wants to streamline the tax calculation process for employees under the New Tax Regime (2023). They've decided to build a tax calculation program that computes salaries, taxes, and net incomes while ensuring compliance with the latest tax laws.

As a software developer in GlobalNext's HR-Tech team, you are tasked with developing this program. The system should process employee salary details, validate inputs, calculate taxes, and generate detailed reports.

Objectives

The program should:

1. Accept employee details, including monthly salary components.
2. Calculate gross and taxable income according to the New Tax Regime (2023).
3. Compute the tax payable using the appropriate tax slabs.
4. Apply any applicable standard deductions and rebates.
5. Generate reports detailing gross salary, taxable income, tax payable, and net salary.

Level 1: Basic Input and Salary Calculation

Objective: Capture employee details and calculate the gross salary.

Tasks:

- Accept the following inputs for an employee:
    - Name
    - EmpID
    - Basic Monthly Salary
    - Special Allowances (Monthly)
    - Bonus Percentage (Annual Bonus as % of Gross Salary)
- Calculate:
    - **Gross Monthly Salary** = Basic Salary + Special Allowances
    - **Annual Gross Salary** = (Gross Monthly Salary × 12) + Bonus

- Output:
    - Display the employee details, gross monthly salary, and annual gross salary.

Solution:

```
# Level 1: Basic Input and Salary Calculation

# Accepting employee details
name = input("Enter employee's name: ")
emp_id = input("Enter employee ID: ")
basic_salary = float(input("Enter basic monthly salary: "))
special_allowances = float(input("Enter monthly special allowances: "))
bonus_percentage = float(input("Enter annual bonus percentage (as a % of gross salary): "))

# Calculate gross monthly salary
gross_monthly_salary = basic_salary + special_allowances

# Calculate annual gross salary
annual_gross_salary = (gross_monthly_salary * 12) + (gross_monthly_salary * bonus_percentage / 100)

# Output the details
print("\nEmployee Details:")
print(f"Name: {name}")
print(f"Employee ID: {emp_id}")
print(f"Gross Monthly Salary: ₹{gross_monthly_salary:,.2f}")
print(f"Annual Gross Salary: ₹{annual_gross_salary:,.2f}")
```