Variables and Datatypes:

Bio data Assignment practice

OPERATORS:

Sum and Average
Write a program that takes three integers as input from the user, calculates their sum, and then computes and prints the average.

```
#include <stdio.h>

int main() {

    int num1, num2, num3;

    printf("Enter three integers: ");

    scanf("%d %d %d", &num1, &num2, &num3);

    int sum = num1 + num2 + num3;

    float average = sum / 3.0;

    printf("Sum: %d\n", sum);

    printf("Average: %.2f\n", average);

    return 0;

}
```

Swapping Values
Create a program that asks the user to input two integers and swaps their values using a temporary variable. Print the values before and after the swap.

```
#include <stdio.h>


int main() {

    int a, b, temp;
```

```
    printf("Enter two integers: ");
    scanf("%d %d", &a, &b);
    printf("Before swapping: a = %d, b = %d\n", a, b);
    temp = a;
    a = b;
    b = temp;
    printf("After swapping: a = %d, b = %d\n", a, b);
    return 0;
}
```

Convert Fahrenheit to Celsius

Write a program to take a temperature in Fahrenheit from the user and convert it to Celsius using the formula:

```
C = (F - 32) * 5/9
```

```
#include <stdio.h>
int main() {
    float fahrenheit, celsius;
    printf("Enter temperature in Fahrenheit: ");
    scanf("%f", &fahrenheit);
    celsius = (fahrenheit - 32) * 5 / 9;
    printf("Temperature in Celsius: %.2f\n", celsius);
    return 0;
}
```

BMI Calculator

Write a C program that calculates the Body Mass Index (BMI) using the formula:

```
BMI = weight(kg) / height^2
```

```
#include <stdio.h>


int main() {
    float weight, height, bmi;
    printf("Enter weight (kg): ");
    scanf("%f", &weight);
    printf("Enter height (m): ");
    scanf("%f", &height);
    bmi = weight / (height * height);
    printf("BMI: %.2f\n", bmi);
    return 0;
}
```

Convert Char to ASCII

Write a C program that takes a character as input and prints its corresponding ASCII value.

```
#include <stdio.h>
int main() {
    char ch;
    printf("Enter a character: ");
    scanf(" %c", &ch);
```

```
    printf("ASCII value of %c: %d\n", ch, ch);

    return 0;

}
```

Perimeter and Area of a Rectangle

Write a C program to calculate the perimeter and area of a rectangle given its length and width.

```
    perimeter = 2 * (length + width)    area = length * width

#include <stdio.h>


int main() {

    float length, width, perimeter, area;

    printf("Enter length and width of the rectangle: ");

    scanf("%f %f", &length, &width);

    perimeter = 2 * (length + width);

    area = length * width;

    printf("Perimeter: %.2f\n", perimeter);

    printf("Area: %.2f\n", area);

    return 0;

}
```

Simple Interest Calculator

- Write a program to calculate the simple interest using the formula SI = (P * R * T) / 100, where P is the principal amount, R is the rate of interest, and T is the time in years

```
#include <stdio.h>


int main() {

    float principal, rate, time, simpleInterest;

    printf("Enter principal, rate, and time: ");

    scanf("%f %f %f", &principal, &rate, &time);

    simpleInterest = (principal * rate * time) / 100;

    printf("Simple Interest: %.2f\n", simpleInterest);

    return 0;

}
```

Calculate the Remainder

- Write a program that takes two integers as input and prints their remainder when the first number is divided by the second using the modulus operator.

```
#include <stdio.h>

int main() {

    int a, b;

    printf("Enter two integers: ");

    scanf("%d %d", &a, &b);

    printf("Remainder: %d\n", a % b);

    return 0;}
```

Average of Three Numbers

Problem:
Create a program that asks the user to input three floating-point numbers and calculates the average. Print the average rounded to two decimal places.

```
#include <stdio.h>


int main() {

    float num1, num2, num3, average;

    printf("Enter three numbers: ");

    scanf("%f %f %f", &num1, &num2, &num3);

    average = (num1 + num2 + num3) / 3;

    printf("Average: %.2f\n", average);

    return 0;

}
```

Condition statements:

Check for Equality

- Write a program that takes two integers as input and checks if they are equal using the == operator.

```
#include <stdio.h>


int main() {

    int num1, num2;
```

```
    printf("Enter two integers: ");
    scanf("%d %d", &num1, &num2);
    if (num1 == num2)
        printf("The numbers are equal.\n");
    else
        printf("The numbers are not equal.\n");
    return 0;
}
```

Write a program to check if a number is positive.

```
#include <stdio.h>

int main() {
    int num;
    printf("Enter an integer: ");
    scanf("%d", &num);
    if (num > 0)
        printf("The number is positive.\n");
    else
        printf("The number is not positive.\n");
    return 0;
}
```

Check for Eligibility to Vote

- Write a program that takes a person's age as input and checks if they are eligible to vote (age ≥ 18).

```
#include <stdio.h>

int main() {
    int age;
    printf("Enter your age: ");
    scanf("%d", &age);
    if (age >= 18)
        printf("Eligible to vote.\n");
    else
        printf("Not eligible to vote.\n");
    return 0;
}
```

Vowel or Consonant

Write a program that takes a character as input from the user and checks if it is a vowel or consonant using `if-else`.

```
#include <stdio.h>


int main() {
    char ch;
    printf("Enter a character: ");
    scanf(" %c", &ch);
    if (ch == 'a' || ch == 'e' || ch == 'i' || ch == 'o' || ch == 'u' ||
        ch == 'A' || ch == 'E' || ch == 'I' || ch == 'O' || ch == 'U')
        printf("%c is a vowel.\n", ch);
    else
```

```
        printf("%c is a consonant.\n", ch);
    return 0;
}
```

Write a program that checks if a number is even or odd.

```
#include <stdio.h>

int main() {
    int num;
    printf("Enter an integer: ");
    scanf("%d", &num);
    if (num % 2 == 0)
        printf("The number is even.\n");
    else
        printf("The number is odd.\n");
    return 0;
}
```

Write a program that takes a student's score as input and prints their grade:

- A: 90-100
- B: 80-89
- C: 70-79
- D: 60-69
- F: Below 60

```
#include <stdio.h>
```

```
int main() {
    int score;
    printf("Enter the student's score: ");
    scanf("%d", &score);
    if (score >= 90)
        printf("Grade: A\n");
    else if (score >= 80)
        printf("Grade: B\n");
    else if (score >= 70)
        printf("Grade: C\n");
    else if (score >= 60)
        printf("Grade: D\n");
    else
        printf("Grade: F\n");
    return 0;
}
```

Check Positive, Negative, or Zero

- Write a program that takes an integer as input and checks whether the number is positive, negative, or zero.

```
#include <stdio.h>

int main() {
    int num;
    printf("Enter an integer: ");
```

```
    scanf("%d", &num);
    if (num > 0)
        printf("The number is positive.\n");
    else if (num < 0)
        printf("The number is negative.\n");
    else
        printf("The number is zero.\n");
    return 0;
}
```

Find the Largest of Three Numbers

- Write a program that takes three integer inputs and prints the largest of the three using conditional operators.

```
#include <stdio.h>

int main() {
    int num1, num2, num3;
    printf("Enter three integers: ");
    scanf("%d %d %d", &num1, &num2, &num3);
    int largest = (num1 > num2) ? ((num1 > num3) ? num1 : num3) : ((num2 > num3) ? num2 : num3);
    printf("The largest number is: %d\n", largest);
    return 0;
}
```

Check if a Number is Positive and Even

- Write a program that takes an integer as input and checks if the number is both positive and even using logical operators.

```
#include <stdio.h>


int main() {
    int num;
    printf("Enter an integer: ");
    scanf("%d", &num);
    if (num > 0 && num % 2 == 0)
        printf("The number is positive and even.\n");
    else
        printf("The number is not positive and even.\n");
    return 0;
}
```

Leap Year Checker

Write a program that takes a year from the user and checks if it is a leap year using `if-else`. A year is a leap year if it is divisible by 4 but not by 100, unless it is divisible by 400.

```
#include <stdio.h>


int main() {
    int year;
    printf("Enter a year: ");
```

```
    scanf("%d", &year);
    if ((year % 4 == 0 && year % 100 != 0) || (year % 400 == 0))
        printf("%d is a leap year.\n", year);
    else
        printf("%d is not a leap year.\n", year);
    return 0;
}
```

Switch Statement

Write a program that uses a switch statement to print the name of a day of the week based on the number (1 for Monday, 2 for Tuesday, etc.).

```
#include <stdio.h>

int main() {
    int day;
    printf("Enter a number (1-7): ");
    scanf("%d", &day);
    switch (day) {
        case 1: printf("Monday\n"); break;
        case 2: printf("Tuesday\n"); break;
        case 3: printf("Wednesday\n"); break;
        case 4: printf("Thursday\n"); break;
```

```
        case 5: printf("Friday\n"); break;
        case 6: printf("Saturday\n"); break;
        case 7: printf("Sunday\n"); break;
        default: printf("Invalid input.\n");
    }
    return 0;
}
```

Switch for Calculator

Write a simple calculator using switch statements that performs addition, subtraction, multiplication, or division based on the user's choice.

```
#include <stdio.h>

int main() {
    char operator;
    double num1, num2, result;
    printf("Enter operator (+, -, *, /): ");
    scanf(" %c", &operator);
    printf("Enter two operands: ");
    scanf("%lf %lf", &num1, &num2);
    switch (operator) {
        case '+': result = num1 + num2; break;
        case '-': result = num1 - num2; break;
        case '*': result = num1 * num2; break;
        case '/': result = num1 / num2; break;
        default: printf("Invalid operator\n"); return 0;
    }
    printf("Result: %.2f\n", result);
    return 0;
}
```