Problem 1: Determine if a Number is Positive, Negative, or Zero

Question: Write a C program to determine if a number is positive, negative, or zero using an if-else statement.

```
c
Copy code
#include <stdio.h>

int main() {
    int num;
    printf("Enter a number: ");
    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;
}
```

Explanation:

- The program prompts the user to input a number.
- It uses an `if-else` statement to check whether the number is positive, negative, or zero.
- Depending on the condition that is true, it prints the corresponding message.

Problem 2: Print the Largest of Three Numbers

Question: Write a C program that reads three numbers and prints the largest one using nested if statements.

```
c
```

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

int main() {
    int a, b, c;
    printf("Enter three numbers: ");
    scanf("%d %d %d", &a, &b, &c);

    if (a >= b) {
        if (a >= c) {
            printf("The largest number is %d.\n", a);
        } else {
            printf("The largest number is %d.\n", c);
        }
    } else {
        if (b >= c) {
            printf("The largest number is %d.\n", b);
        } else {
            printf("The largest number is %d.\n", c);
        }
    }
    return 0;
}
```

Explanation:

- The program takes three integers as input from the user.
- Nested `if` statements are used to compare the numbers.
- It checks which number is the largest and prints it.

Problem 3: Check if a Number is Even or Odd

Question: Write a C program to check if a number is even or odd using the modulus operator and an if-else statement.

```
c
Copy code
```

```c
#include <stdio.h>

int main() {
    int num;
    printf("Enter a number: ");
    scanf("%d", &num);

    if (num % 2 == 0) {
        printf("The number is even.\n");
    } else {
        printf("The number is odd.\n");
    }
    return 0;
}
```

Explanation:

- The program reads an integer from the user.
- It uses the modulus operator % to determine if the number is even (remainder 0) or odd (remainder 1).
- The result is printed accordingly.

Problem 4: Find the Absolute Value

Question: Write a C program to find the absolute value of a number using a conditional (if) statement.

```
c
Copy code
#include <stdio.h>

int main() {
    int num;
    printf("Enter a number: ");
    scanf("%d", &num);

    if (num < 0) {
        num = -num;
```

```
    }
    printf("The absolute value is %d.\n", num);
    return 0;
}
```

Explanation:

- The program prompts the user to input a number.
- An `if` statement checks if the number is negative. If so, it multiplies it by -1 to convert it to positive.
- Finally, it prints the absolute value.

Problem 5: Determine if a Year is a Leap Year

Question: Write a C program to determine whether a year is a leap year using an if-else statement.

```
c
Copy code
#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;
}
```

Explanation:

- The user inputs a year.

- The program checks the leap year conditions: a year is a leap year if it is divisible by 4 and not divisible by 100, or if it is divisible by 400.
- It prints whether the year is a leap year or not.

Problem 6: Check Divisibility by 3 and 5

Question: Write a C program to check whether a number is divisible by both 3 and 5 using a single if statement.

```
c
Copy code
#include <stdio.h>

int main() {
    int num;
    printf("Enter a number: ");
    scanf("%d", &num);

    if (num % 3 == 0 && num % 5 == 0) {
        printf("The number is divisible by both 3 and 5.\n");
    } else {
        printf("The number is not divisible by both 3 and 5.\n");
    }
    return 0;
}
```

Explanation:

- The program reads a number from the user.
- It uses a single `if` statement with a logical AND operator (&&) to check divisibility by both 3 and 5.
- The result is printed based on the condition.

Problem 7: Check if One Number is a Multiple of Another

Question: Write a C program that reads two numbers and checks if the first number is a multiple of the second using an if-else statement.

```
c
Copy code
#include <stdio.h>

int main() {
    int a, b;
    printf("Enter two numbers: ");
    scanf("%d %d", &a, &b);

    if (b != 0) {
        if (a % b == 0) {
            printf("%d is a multiple of %d.\n", a, b);
        } else {
            printf("%d is not a multiple of %d.\n", a, b);
        }
    } else {
        printf("Division by zero is not allowed.\n");
    }
    return 0;
}
```

Explanation:

- The program takes two integers as input.
- It first checks if the second number is not zero (to prevent division by zero).
- It then checks if the first number is a multiple of the second and prints the appropriate message.

Problem 8: Check if a Number Falls in a Range

Question: Write a C program that takes an integer and checks if it falls in the range 1 to 100 using an if-else statement.

```
c
Copy code
#include <stdio.h>

int main() {
    int num;
    printf("Enter a number: ");
    scanf("%d", &num);

    if (num >= 1 && num <= 100) {
        printf("The number is in the range of 1 to 100.\n");
    } else {
        printf("The number is out of range.\n");
    }
    return 0;
}
```

Explanation:

- The user inputs a number.
- The program uses an `if` statement to check if the number is between 1 and 100 inclusive.
- It prints whether the number is in range or out of range.

Problem 9: Check Number Using Switch Statement

Question: Write a C program to check whether a number is positive, negative, or zero using a switch statement.

```
c
Copy code
#include <stdio.h>

int main() {
    int num;
    printf("Enter a number: ");
    scanf("%d", &num);
```

```
    switch (num > 0) {
        case 1:
            printf("The number is positive.\n");
            break;
        case 0:
            switch (num < 0) {
                case 1:
                    printf("The number is negative.\n");
                    break;
                case 0:
                    printf("The number is zero.\n");
                    break;
            }
            break;
    }
    return 0;
}
```

Explanation:

- The program reads a number and uses a `switch` statement to check if it is positive or negative.
- The outer switch checks if the number is greater than zero, while the inner switch checks if it is less than zero to determine if it is zero.
- The appropriate message is printed based on the conditions.

Problem 10: Day of the Week from Day Number

Question: Write a C program that takes a day number (1-7) and prints the corresponding day of the week using a switch statement.

```
c
Copy code
#include <stdio.h>

int main() {
    int day;
    printf("Enter a day 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 day number.\n");
    }
    return 0;
}
```

Explanation:

- The program takes a day number as input.
- A `switch` statement is used to map the day number to the corresponding day of the week.
- If the input is not between 1 and 7, an error message is displayed.

Problem 11: Grade Description from Grade Input

Question: Write a C program to take a grade (A, B, C, D, or F) as input and print the corresponding grade description using a switch statement.

```
c
Copy code
#include <stdio.h>

int main() {
    char grade;
    printf("Enter a grade (A, B, C, D, F): ");
    scanf(" %c", &grade); // Note the space before %c to consume any
newline characters

    switch (grade) {
        case 'A':
            printf("Excellent\n");
            break;
        case 'B':
            printf("Good\n");
            break;
        case 'C':
            printf("Average\n");
            break;
        case 'D':
            printf("Below Average\n");
            break;
        case 'F':
            printf("Fail\n");
            break;
        default:
            printf("Invalid grade.\n");
    }
    return 0;
}
```

Explanation:

- The program prompts the user to input a grade character.
- It uses a `switch` statement to print a description based on the grade received.
- If the input doesn't match any case, it prints an invalid grade message.

Problem 12: Number of Days in a Month

Question: Write a C program to take a month number (1-12) and print the number of days in that month using a switch statement (assuming a non-leap year).

```
c
Copy code
#include <stdio.h>

int main() {
    int month;
    printf("Enter a month number (1-12): ");
    scanf("%d", &month);

    switch (month) {
        case 1: case 3: case 5: case 7: case 8: case 10: case 12:
            printf("31 days\n");
            break;
        case 4: case 6: case 9: case 11:
            printf("30 days\n");
            break;
        case 2:
            printf("28 days\n");
            break;
        default:
            printf("Invalid month number.\n");
    }
    return 0;
}
```

Explanation:

- The program asks the user for a month number.

- A `switch` statement determines the number of days based on the month number.
- The case structure allows for concise handling of months with the same number of days.

Problem 13: Arithmetic Operations with Switch Statement

Question: Write a C program to take two integers and an operator (+, -, *, /) as input and perform the corresponding arithmetic operation using a switch statement.

```
c
Copy code
#include <stdio.h>

int main() {
    int a, b;
    char operator;
    printf("Enter two numbers and an operator (+, -, *, /): ");
    scanf("%d %d %c", &a, &b, &operator);

    switch (operator) {
        case '+':
            printf("%d + %d = %d\n", a, b, a + b);
            break;
        case '-':
            printf("%d - %d = %d\n", a, b, a - b);
            break;
        case '*':
            printf("%d * %d = %d\n", a, b, a * b);
            break;
        case '/':
            if (b != 0) {
                printf("%d / %d = %d\n", a, b, a / b);
            } else {
                printf("Division by zero is not allowed.\n");
            }
            break;
        default:
            printf("Invalid operator.\n");
```

```
    }
    return 0;
}
```

Explanation:

- The program takes two numbers and an operator from the user.
- It uses a `switch` statement to perform the selected arithmetic operation.
- If division is attempted with zero, it prevents division by zero and informs the user.

Problem 14: Electricity Bill Calculation

Question: Write a C program to calculate the electricity bill based on usage using if-else statements with different rate slabs.

```
c
Copy code
#include <stdio.h>

int main() {
    float units, bill;
    printf("Enter the number of units consumed: ");
    scanf("%f", &units);

    if (units <= 100) {
        bill = units * 1.5;
    } else if (units <= 300) {
        bill = 100 * 1.5 + (units - 100) * 2.5;
    } else {
        bill = 100 * 1.5 + 200 * 2.5 + (units - 300) * 3.5;
    }
    printf("Total bill: %.2f\n", bill);
    return 0;
}
```

Explanation:

- The program reads the number of units of electricity consumed.
- It calculates the bill based on different slabs using `if-else` statements.
- The total bill is printed at the end.

Problem 15: Find Minimum of Two Numbers

Question: Write a C program to find the minimum of two numbers using a simple if statement.

c
Copy code
```
#include <stdio.h>

int main() {
    int a, b;
    printf("Enter two numbers: ");
    scanf("%d %d", &a, &b);

    if (a < b) {
        printf("The minimum number is %d.\n", a);
    } else {
        printf("The minimum number is %d.\n", b);
    }
    return 0;
}
```

Explanation:

- The user inputs two integers.
- An `if` statement checks which number is smaller and prints it as the minimum.

Problem 16: Calculate Roots of a Quadratic Equation

Question: Write a C program to calculate the roots of a quadratic equation using if-else to handle different cases (real roots, complex roots, etc.).

c

```
Copy code
#include <stdio.h>
#include <math.h>

int main() {
    float a, b, c, discriminant, root1, root2;
    printf("Enter coefficients a, b, and c: ");
    scanf("%f %f %f", &a, &b, &c);

    discriminant = b * b - 4 * a * c;

    if (discriminant > 0) {
        root1 = (-b + sqrt(discriminant)) / (2 * a);
        root2 = (-b - sqrt(discriminant)) / (2 * a);
        printf("Roots are real and different: %.2f and %.2f\n", root1,
root2);
    } else if (discriminant == 0) {
        root1 = -b / (2 * a);
        printf("Roots are real and the same: %.2f\n", root1);
    } else {
        float realPart = -b / (2 * a);
        float imaginaryPart = sqrt(-discriminant) / (2 * a);
        printf("Roots are complex: %.2f + %.2fi and %.2f - %.2fi\n",
realPart, imaginaryPart, realPart, imaginaryPart);
    }
    return 0;
}
```

Explanation:

- The program takes coefficients of a quadratic equation.
- It calculates the discriminant to determine the nature of the roots.
- It uses `if-else` statements to compute and print the roots based on the discriminant value.

Problem 17: Check if a Character is Vowel or Consonant

Question: Write a C program to find if a character is a vowel or a consonant using an if-else statement.

```
c
Copy code
#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;
}
```

Explanation:

- The user inputs a character.
- The program checks if the character is a vowel by comparing it against the vowel characters.
- It prints whether the character is a vowel or consonant.

Problem 18: Find Maximum of Three Numbers

Question: Write a C program to find the maximum of three numbers using if-else statements.

```
c
```

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

int main() {
    int a, b, c;
    printf("Enter three numbers: ");
    scanf("%d %d %d", &a, &b, &c);

    if (a >= b && a >= c) {
        printf("The maximum number is %d.\n", a);
    } else if (b >= a && b >= c) {
        printf("The maximum number is %d.\n", b);
    } else {
        printf("The maximum number is %d.\n", c);
    }
    return 0;
}
```

Explanation:

- The program reads three integers from the user.
- It uses `if-else` statements to determine which number is the largest and prints it.

Problem 19: Check Voting Eligibility

Question: Write a C program that checks if a person is eligible to vote based on their age using an if statement.

```
c
Copy code
#include <stdio.h>

int main() {
    int age;
    printf("Enter your age: ");
    scanf("%d", &age);

    if (age >= 18) {
```

```
        printf("You are eligible to vote.\n");
    } else {
        printf("You are not eligible to vote.\n");
    }
    return 0;
}
```

Explanation:

- The user inputs their age.
- The program checks if the age is 18 or older to determine voting eligibility and prints the result.

Problem 20: Odd or Even Using Ternary Operator

Question: Write a C program to print "odd" or "even" depending on whether a number is odd or even, using a ternary (?:) operator.

```
c
Copy code
#include <stdio.h>

int main() {
    int number;
    printf("Enter a number: ");
    scanf("%d", &number);

    (number % 2 == 0) ? printf("%d is even.\n", number) : printf("%d
is odd.\n", number);
    return 0;
}
```

Explanation:

- The program reads an integer.
- It uses a ternary operator to check if the number is even or odd, printing the appropriate message based on the condition.

Problem 21: Height Classification

Question: Write a C program that reads a person's height and classifies them as "short," "average," or "tall" using if-else statements.

c
Copy code

```
#include <stdio.h>

int main() {
    float height;
    printf("Enter your height in meters: ");
    scanf("%f", &height);

    if (height < 1.6) {
        printf("Short\n");
    } else if (height >= 1.6 && height < 1.8) {
        printf("Average\n");
    } else {
        printf("Tall\n");
    }
    return 0;
}
```

Explanation:

- The program prompts the user to input their height in meters.
- It classifies the height into three categories: "short," "average," and "tall" using `if-else` statements based on specified thresholds.

Problem 22: Divisibility by 2, 3, or Both

Question: Write a C program that checks whether a number is divisible by 2, 3, or both using if-else if statements.

c
Copy code

```c
#include <stdio.h>

int main() {
    int number;
    printf("Enter a number: ");
    scanf("%d", &number);

    if (number % 2 == 0 && number % 3 == 0) {
        printf("%d is divisible by both 2 and 3.\n", number);
    } else if (number % 2 == 0) {
        printf("%d is divisible by 2.\n", number);
    } else if (number % 3 == 0) {
        printf("%d is divisible by 3.\n", number);
    } else {
        printf("%d is not divisible by 2 or 3.\n", number);
    }
    return 0;
}
```

Explanation:

- The user inputs a number.
- The program uses `if-else if` statements to check for divisibility by 2, 3, or both, and prints the result accordingly.

Problem 23: Student Grade Calculation

Question: Write a C program to calculate the grade of a student based on their marks using if-else statements (90-100: A, 80-89: B, etc.).

```
c
Copy code
#include <stdio.h>

int main() {
    int marks;
    printf("Enter your marks: ");
    scanf("%d", &marks);
```

```
    if (marks >= 90 && marks <= 100) {
        printf("Grade: A\n");
    } else if (marks >= 80) {
        printf("Grade: B\n");
    } else if (marks >= 70) {
        printf("Grade: C\n");
    } else if (marks >= 60) {
        printf("Grade: D\n");
    } else if (marks >= 0) {
        printf("Grade: F\n");
    } else {
        printf("Invalid marks entered.\n");
    }
    return 0;
}
```

Explanation:

- The program prompts the user for their marks.
- It evaluates the marks using `if-else` statements to assign a letter grade and handles invalid inputs gracefully.

Problem 24: Pass or Fail Based on Marks

Question: Write a C program that reads the marks of five subjects and calculates the percentage. Print the result as "Pass" or "Fail" based on whether the percentage is above a certain threshold using if-else.

```
c
Copy code
#include <stdio.h>

int main() {
    int marks[5], total = 0;
    float percentage;
    printf("Enter the marks of five subjects:\n");
```

```
    for (int i = 0; i < 5; i++) {
        printf("Subject %d: ", i + 1);
        scanf("%d", &marks[i]);
        total += marks[i];
    }

    percentage = (float)total / 5;

    if (percentage >= 40) {
        printf("Pass\n");
    } else {
        printf("Fail\n");
    }

    printf("Percentage: %.2f%%\n", percentage);
    return 0;
}
```

Explanation:

- The user enters marks for five subjects, and the program computes the total.
- It calculates the percentage and determines if the student has passed or failed based on a threshold of 40%.

Problem 25: Leap Year Check Using Nested If

Question: Write a C program that reads a year and prints whether it is a leap year using nested if statements.

```
c
Copy code
#include <stdio.h>

int main() {
    int year;
    printf("Enter a year: ");
    scanf("%d", &year);
```

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

Explanation:

- The program checks if the year is a leap year using nested `if` statements.
- It applies the rules for leap years: divisible by 4, not divisible by 100 unless also divisible by 400.

Problem 26: Taxi Fare Calculation

Question: Write a C program to calculate the fare for a taxi ride based on distance traveled, using if-else to apply different rates for different ranges of distance.

```
c
Copy code
#include <stdio.h>

int main() {
    float distance, fare;
    printf("Enter the distance traveled in kilometers: ");
    scanf("%f", &distance);

    if (distance <= 5) {
        fare = distance * 10; // Rate for first 5 km
```

```
    } else if (distance <= 20) {
        fare = (5 * 10) + (distance - 5) * 8; // Rate for next 15 km
    } else {
        fare = (5 * 10) + (15 * 8) + (distance - 20) * 5; // Rate for
above 20 km
    }

    printf("Total fare: %.2f\n", fare);
    return 0;
}
```

Explanation:

- The user inputs the distance traveled.
- The program calculates the fare based on different rate slabs using `if-else` statements.

Problem 27: Temperature Classification

Question: Write a C program that takes the temperature as input and prints "Cold," "Warm," or "Hot" depending on the temperature range using if-else statements.

```
c
Copy code
#include <stdio.h>

int main() {
    float temperature;
    printf("Enter the temperature in degrees Celsius: ");
    scanf("%f", &temperature);

    if (temperature < 15) {
        printf("Cold\n");
    } else if (temperature >= 15 && temperature < 25) {
        printf("Warm\n");
    } else {
        printf("Hot\n");
    }
```

```
    return 0;
}
```

Explanation:

- The program prompts the user to input the temperature in degrees Celsius.
- It uses `if-else` statements to classify the temperature as "Cold," "Warm," or "Hot."

Problem 28: Character Case Check

Question: Write a C program to check whether a character is uppercase, lowercase, or a digit using if-else statements.

```
c
Copy code
#include <stdio.h>

int main() {
    char ch;
    printf("Enter a character: ");
    scanf(" %c", &ch);

    if (ch >= 'A' && ch <= 'Z') {
        printf("%c is an uppercase letter.\n", ch);
    } else if (ch >= 'a' && ch <= 'z') {
        printf("%c is a lowercase letter.\n", ch);
    } else if (ch >= '0' && ch <= '9') {
        printf("%c is a digit.\n", ch);
    } else {
        printf("%c is not an uppercase letter, lowercase letter, or
digit.\n", ch);
    }
    return 0;
}
```

Explanation:

- The program reads a character from the user.
- It checks if the character is an uppercase letter, lowercase letter, or a digit using `if-else` statements.

Problem 29: Perfect Square Check

Question: Write a C program to determine if a number is a perfect square using conditional (if) statements and the square root function.

```
c
Copy code
#include <stdio.h>
#include <math.h>

int main() {
    int number;
    printf("Enter a number: ");
    scanf("%d", &number);

    int sqrt_num = (int)sqrt(number);

    if (sqrt_num * sqrt_num == number) {
        printf("%d is a perfect square.\n", number);
    } else {
        printf("%d is not a perfect square.\n", number);
    }
    return 0;
}
```

Explanation:

- The user inputs a number.
- The program calculates the square root and checks if squaring it returns the original number, thus determining if it is a perfect square.

Problem 30: Smallest of Three Numbers

Question: Write a C program to determine the smallest of three numbers using nested if statements.

```
c
Copy code
#include <stdio.h>

int main() {
    int a, b, c;
    printf("Enter three numbers: ");
    scanf("%d %d %d", &a, &b, &c);

    int smallest;
    if (a < b) {
        if (a < c) {
            smallest = a;
        } else {
            smallest = c;
        }
    } else {
        if (b < c) {
            smallest = b;
        } else {
            smallest = c;
        }
    }

    printf("The smallest number is: %d\n", smallest);
    return 0;
}
```

Explanation:

- The program reads three numbers.
- It uses nested `if` statements to find the smallest number among the three and prints the result.

Problem 31: Odd or Even Using Ternary Operator

Question: Write a C program that prints "odd" or "even" depending on whether a number is odd or even, using a ternary (?:) operator.

```
c
Copy code
#include <stdio.h>

int main() {
    int number;
    printf("Enter a number: ");
    scanf("%d", &number);

    (number % 2 == 0) ? printf("%d is even.\n", number) : printf("%d
is odd.\n", number);
    return 0;
}
```

Explanation:

- The program prompts the user for a number.
- It uses a ternary operator to determine if the number is even or odd, printing the corresponding message.

Problem 32: Voting Eligibility Check

Question: Write a C program that checks if a person is eligible to vote based on their age using an if statement.

```
c
Copy code
#include <stdio.h>

int main() {
    int age;
    printf("Enter your age: ");
    scanf("%d", &age);
```

```
    if (age >= 18) {
        printf("You are eligible to vote.\n");
    } else {
        printf("You are not eligible to vote.\n");
    }
    return 0;
}
```

Explanation:

- The program reads the user's age.
- It checks if the age is 18 or older to determine voting eligibility, printing the appropriate message.

Problem 33: Uppercase, Lowercase, or Digit Check

Question: Write a C program that reads a letter and checks whether it is a vowel (lowercase or uppercase) using switch statements.

```
c
Copy code
#include <stdio.h>

int main() {
    char ch;
    printf("Enter a letter: ");
    scanf(" %c", &ch);

    switch (ch) {
        case 'A':
        case 'a':
        case 'E':
        case 'e':
        case 'I':
        case 'i':
        case 'O':
        case 'o':
```

```
        case 'U':
        case 'u':
            printf("%c is a vowel.\n", ch);
            break;
        default:
            printf("%c is not a vowel.\n", ch);
    }
    return 0;
}
```

Explanation:

- The program prompts the user for a letter.
- It uses a `switch` statement to check if the letter is a vowel, printing the corresponding message.

Problem 34: Day of the Week

Question: Write a C program that takes a day number (1-7) and prints the corresponding day of the week using a switch statement.

```
c
Copy code
#include <stdio.h>

int main() {
    int day;
    printf("Enter day 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 day number.\n");
    }
    return 0;
}
```

Explanation:

- The user inputs a day number.
- The program uses a `switch` statement to print the corresponding day of the week and handles invalid inputs.

Problem 35: Month Days Calculation

Question: Write a C program to take a month number (1-12) and print the number of days in that month using a switch statement (assume a non-leap year).

```
c
Copy code
#include <stdio.h>

int main() {
    int month;
    printf("Enter month number (1-12): ");
```

```
    scanf("%d", &month);

    switch (month) {
        case 1: case 3: case 5: case 7: case 8: case 10: case 12:
            printf("31 days\n");
            break;
        case 4: case 6: case 9: case 11:
            printf("30 days\n");
            break;
        case 2:
            printf("28 days\n");
            break;
        default:
            printf("Invalid month number.\n");
    }
    return 0;
}
```

Explanation:

- The program reads the month number from the user.
- It uses a `switch` statement to determine the number of days in the specified month, assuming a non-leap year.

Problem 36: Simple Calculator

Question: Write a C program to take two integers and an operator (+, -, *, /) as input and perform the corresponding arithmetic operation using a switch statement.

```
c
Copy code
#include <stdio.h>

int main() {
    int num1, num2;
    char operator;

    printf("Enter first number: ");
```

```
    scanf("%d", &num1);
    printf("Enter second number: ");
    scanf("%d", &num2);
    printf("Enter an operator (+, -, *, /): ");
    scanf(" %c", &operator);

    switch (operator) {
        case '+':
            printf("%d + %d = %d\n", num1, num2, num1 + num2);
            break;
        case '-':
            printf("%d - %d = %d\n", num1, num2, num1 - num2);
            break;
        case '*':
            printf("%d * %d = %d\n", num1, num2, num1 * num2);
            break;
        case '/':
            if (num2 != 0) {
                printf("%d / %d = %.2f\n", num1, num2, (float)num1 /
num2);
            } else {
                printf("Division by zero is not allowed.\n");
            }
            break;
        default:
            printf("Invalid operator.\n");
    }
    return 0;
}
```

Explanation:

- The user inputs two numbers and an operator.
- The program uses a `switch` statement to perform the corresponding arithmetic operation and handles division by zero.

Problem 37: Electricity Bill Calculation

Question: Write a C program to calculate the electricity bill based on usage using if-else statements with different rate slabs.

```
c
Copy code
#include <stdio.h>

int main() {
    float units, bill;
    printf("Enter the units consumed: ");
    scanf("%f", &units);

    if (units <= 100) {
        bill = units * 1.5; // Rate for first 100 units
    } else if (units <= 300) {
        bill = (100 * 1.5) + (units - 100) * 3; // Rate for next 200
units
    } else {
        bill = (100 * 1.5) + (200 * 3) + (units - 300) * 5; // Rate
for above 300 units
    }

    printf("Total bill: %.2f\n", bill);
    return 0;
}
```

Explanation:

- The user inputs the number of units consumed.
- The program calculates the bill based on different rates for various usage levels using `if-else` statements.

Problem 38: Triangle Classification

Question: Write a C program to classify a triangle based on the lengths of its sides (equilateral, isosceles, or scalene) using if-else statements.

c
Copy code

```
#include <stdio.h>

int main() {
    float side1, side2, side3;
    printf("Enter the lengths of the three sides of the triangle: ");
    scanf("%f %f %f", &side1, &side2, &side3);

    if (side1 == side2 && side2 == side3) {
        printf("Equilateral triangle\n");
    } else if (side1 == side2 || side2 == side3 || side1 == side3) {
        printf("Isosceles triangle\n");
    } else {
        printf("Scalene triangle\n");
    }
    return 0;
}
```

Explanation:

- The program reads the lengths of the three sides of a triangle.
- It uses `if-else` statements to classify the triangle based on the equality of its sides.

Problem 39: Angle Classification

Question: Write a C program to classify an angle as acute, obtuse, or right based on its degree value using if-else statements.

c
Copy code

```c
#include <stdio.h>

int main() {
    float angle;
    printf("Enter an angle in degrees: ");
    scanf("%f", &angle);

    if (angle < 90) {
        printf("Acute angle\n");
    } else if (angle == 90) {
        printf("Right angle\n");
    } else if (angle < 180) {
        printf("Obtuse angle\n");
    } else {
        printf("Invalid angle.\n");
    }
    return 0;
}
```

Explanation:

- The user inputs an angle in degrees.
- The program classifies the angle using `if-else` statements based on its value.

Problem 40: Age Classification

Question: Write a C program to determine whether a person is a child, teenager, or adult based on their age using if-else statements.

```
c
Copy code
#include <stdio.h>

int main() {
    int age;
    printf("Enter your age: ");
    scanf("%d", &age);
```

```
    if (age < 13) {
        printf("Child\n");
    } else if (age >= 13 && age < 20) {
        printf("Teenager\n");
    } else {
        printf("Adult\n");
    }
    return 0;
}
```

Explanation:

- The program reads the user's age.
- It classifies the user as a child, teenager, or adult using `if-else` statements.