If-Else Programs:

1. **Odd or Even:** Write a program to check whether a given number is odd or even using `if-else`.
2. **Leap Year Check:** Write a program to determine whether a given year is a leap year or not.
3. **Positive, Negative, or Zero:** Write a program to check whether a given number is positive, negative, or zero.
4. **Maximum of Two Numbers:** Write a program to find the maximum of two numbers using `if-else`.
5. **Alphabet Check:** Write a program to check whether a given character is an alphabet or not.
6. **Eligibility for Voting:** Write a program to check if a person is eligible to vote based on their age (18 years or older).
7. **Divisibility Check:** Write a program to check whether a given number is divisible by both 5 and 11.
8. **Greater of Three Numbers:** Write a program to find the greatest of three numbers using nested `if-else`.
9. **Simple Calculator:** Write a program that takes two numbers and an operator (+, -, *, /) as input and performs the corresponding operation using `if-else`.
10. **Grade Calculation:** Write a program that assigns grades based on marks: A for 90 and above, B for 80-89, C for 70-79, D for 60-69, and F for below 60.

Else-If Programs:

11. **Character Type Identification:** Write a program to identify whether a given character is a vowel, consonant, digit, or special character using `else-if`.
12. **Day of the Week:** Write a program that takes a number (1-7) as input and prints the corresponding day of the week using `else-if`.
13. **Triangle Type:** Write a program to check the type of triangle (equilateral, isosceles, or scalene) based on the lengths of its sides.
14. **Number Classification:** Write a program to classify a number as single-digit, two-digit, three-digit, or more.
15. **Age Group Classification:** Write a program to classify a person based on age: Child (0-12), Teen (13-19), Adult (20-59), and Senior (60+).
16. **Temperature Classification:** Write a program that classifies the weather based on temperature input: Cold (below 15°C), Warm (15-25°C), and Hot (above 25°C).
17. **Student Performance:** Write a program to classify student performance based on percentage: Distinction (75% and above), First Class (60-74%), Second Class (50-59%), and Fail (below 50%).

Switch-Case Programs:

18. **Simple Calculator using Switch:** Write a program that takes two numbers and an operator (+, -, *, /) and performs the corresponding operation using `switch-case`.
19. **Month Name:** Write a program that takes a number (1-12) as input and prints the corresponding month name using `switch-case`.
20. **Vowel or Consonant:** Write a program that takes a single character as input and checks whether it is a vowel or consonant using `switch-case`.

Solution:

If-Else Programs:

1. **Odd or Even:** Write a program

1. Odd or Even

```
#include <stdio.h>

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

    if (num % 2 == 0)
        printf("%d is even.\n", num);
    else
        printf("%d is odd.\n", num);

    return 0;
}
```

2. Leap Year Check

```
#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;
}
```

3. Positive, Negative, or Zero

```
#include <stdio.h>
int main() {
    int num;
    printf("Enter an integer: ");
    scanf("%d", &num);
    if (num > 0)
        printf("%d is positive.\n", num);
    else if (num < 0)
        printf("%d is negative.\n", num);
    else
        printf("%d is zero.\n", num);
    return 0;
}
```

4. Maximum of Two Numbers

```c
#include <stdio.h>
int main() {
    int num1, num2;
    printf("Enter two numbers: ");
    scanf("%d %d", &num1, &num2);
    if (num1 > num2)
        printf("%d is greater than %d.\n", num1, num2);
    else if (num1 < num2)
        printf("%d is greater than %d.\n", num2, num1);
    else
        printf("Both numbers are equal.\n");
    return 0;
}
```

5. Alphabet Check

```c
#include <stdio.h>
int main() {
    char ch;
    printf("Enter a character: ");
    scanf("%c", &ch);
    if ((ch >= 'a' && ch <= 'z') || (ch >= 'A' && ch <= 'Z'))
        printf("%c is an alphabet.\n", ch);
    else
        printf("%c is not an alphabet.\n", ch);

    return 0;
}
```

6. Eligibility for Voting

```c
#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;
}
```

7. Divisibility Check

```c
#include <stdio.h>
int main() {
    int num;
    printf("Enter a number: ");
    scanf("%d", &num);
    if (num % 5 == 0 && num % 11 == 0)
```

```
        printf("%d is divisible by both 5 and 11.\n", num);
    else
        printf("%d is not divisible by both 5 and 11.\n", num);
    return 0;
}
```

8. Greater of Three Numbers

```
#include <stdio.h>
int main() {
    int num1, num2, num3;
    printf("Enter three numbers: ");
    scanf("%d %d %d", &num1, &num2, &num3);
    if (num1 >= num2 && num1 >= num3)
        printf("%d is the greatest number.\n", num1);
    else if (num2 >= num1 && num2 >= num3)
        printf("%d is the greatest number.\n", num2);
    else
        printf("%d is the greatest number.\n", num3);
    return 0;
}
```

9. Simple Calculator

```
#include <stdio.h>
int main() {
    char operator;
    double num1, num2;
    printf("Enter an operator (+, -, *, /): ");
    scanf(" %c", &operator);
    printf("Enter two numbers: ");
    scanf("%lf %lf", &num1, &num2);
    if (operator == '+')
        printf("Result: %.2lf\n", num1 + num2);
    else if (operator == '-')
        printf("Result: %.2lf\n", num1 - num2);
    else if (operator == '*')
        printf("Result: %.2lf\n", num1 * num2);
    else if (operator == '/')
        printf("Result: %.2lf\n", num1 / num2);
    else
        printf("Invalid operator.\n");
    return 0;
}
```

10. Grade Calculation

```
#include <stdio.h>
int main() {
    int marks;
    printf("Enter your marks: ");
```

```
    scanf("%d", &marks);
    if (marks >= 90)
        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
        printf("Grade: F\n");
    return 0;
}
```

Else-If Programs:

```
### 11. Character Type Identification
#include <stdio.h>
#include <ctype.h>
int main() {
    char ch;
    printf("Enter a character: ");
    scanf("%c", &ch);
    if (isalpha(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);
        }
    } else if (isdigit(ch)) {
        printf("%c is a digit.\n", ch);
    } else {
        printf("%c is a special character.\n", ch);
    }
    return 0;
}

### 12. Day of the Week
#include <stdio.h>
int main() {
    int day;
    printf("Enter a number (1-7): ");
    scanf("%d", &day);
    if (day == 1)
        printf("Monday\n");
    else if (day == 2)
        printf("Tuesday\n");
```

```
    else if (day == 3)
        printf("Wednesday\n");
    else if (day == 4)
        printf("Thursday\n");
    else if (day == 5)
        printf("Friday\n");
    else if (day == 6)
        printf("Saturday\n");
    else if (day == 7)
        printf("Sunday\n");
    else
        printf("Invalid input! Please enter a number between 1 and 7.\n");
    return 0;
}
```

13. Triangle Type

```
#include <stdio.h>
int main() {
    int a, b, c;
    printf("Enter the sides of the triangle: ");
    scanf("%d %d %d", &a, &b, &c);
    if (a == b && b == c)
        printf("The triangle is Equilateral.\n");
    else if (a == b || b == c || a == c)
        printf("The triangle is Isosceles.\n");
    else
        printf("The triangle is Scalene.\n");
    return 0;
}
```

14. Number Classification

```
#include <stdio.h>
int main() {
    int number;
    printf("Enter a number: ");
    scanf("%d", &number);
    if (number >= 0 && number <= 9)
        printf("Single-digit number\n");
    else if (number >= 10 && number <= 99)
        printf("Two-digit number\n");
    else if (number >= 100 && number <= 999)
        printf("Three-digit number\n");
    else
        printf("More than three-digit number\n");
    return 0;
}
```

15. Age Group Classification

```c
#include <stdio.h>
int main() {
    int age;
    printf("Enter the age: ");
    scanf("%d", &age);
    if (age >= 0 && age <= 12)
        printf("Child\n");
    else if (age >= 13 && age <= 19)
        printf("Teen\n");
    else if (age >= 20 && age <= 59)
        printf("Adult\n");
    else if (age >= 60)
        printf("Senior\n");
    else
        printf("Invalid age!\n");
    return 0;
}
```

16. Temperature Classification

```c
#include <stdio.h>
int main() {
    float temperature;
    printf("Enter the temperature in °C: ");
    scanf("%f", &temperature);
    if (temperature < 15)
        printf("Cold\n");
    else if (temperature >= 15 && temperature <= 25)
        printf("Warm\n");
    else
        printf("Hot\n");
    return 0;
}
```

17. Student Performance

```c
#include <stdio.h>
int main() {
    float percentage;
    printf("Enter the percentage: ");
    scanf("%f", &percentage);
    if (percentage >= 75)
        printf("Distinction\n");
    else if (percentage >= 60 && percentage < 75)
        printf("First Class\n");
    else if (percentage >= 50 && percentage < 60)
        printf("Second Class\n");
    else
        printf("Fail\n");
    return 0;
```

```
}
```

Switch-Case Programs:

18. Simple Calculator using Switch

```
#include <stdio.h>
int main() {
    char operator;
    double num1, num2, result;
    printf("Enter an operator (+, -, *, /): ");
    scanf("%c", &operator);
    printf("Enter two numbers: ");
    scanf("%lf %lf", &num1, &num2);
    switch (operator) {
        case '+':
            result = num1 + num2;
            printf("%.2lf + %.2lf = %.2lf\n", num1, num2, result);
            break;
        case '-':
            result = num1 - num2;
            printf("%.2lf - %.2lf = %.2lf\n", num1, num2, result);
            break;
        case '*':
            result = num1 * num2;
            printf("%.2lf * %.2lf = %.2lf\n", num1, num2, result);
            break;
        case '/':
            if (num2 != 0)
                result = num1 / num2;
            else {
                printf("Error! Division by zero is not allowed.\n");
                return 1;
            }
            printf("%.2lf / %.2lf = %.2lf\n", num1, num2, result);
            break;
        default:
            printf("Error! Operator is not correct.\n");
            return 1;
    }
    return 0;
}
```

19. Month Name using Switch

```
#include <stdio.h>
int main() {
    int month;
    printf("Enter a number (1-12): ");
    scanf("%d", &month);
```

```
    switch (month) {
        case 1:
            printf("January\n");
            break;
        case 2:
            printf("February\n");
            break;
        case 3:
            printf("March\n");
            break;
        case 4:
            printf("April\n");
            break;
        case 5:
            printf("May\n");
            break;
        case 6:
            printf("June\n");
            break;
        case 7:
            printf("July\n");
            break;
        case 8:
            printf("August\n");
            break;
        case 9:
            printf("September\n");
            break;
        case 10:
            printf("October\n");
            break;
        case 11:
            printf("November\n");
            break;
        case 12:
            printf("December\n");
            break;
        default:
            printf("Invalid month number!\n");
            break;
    }
    return 0;
}
```

20. Vowel or Consonant using Switch

```
#include <stdio.h>
int main() {
    char ch;
```

```
    printf("Enter a character: ");
    scanf("%c", &ch);
    switch (ch) {
        case 'a':
        case 'e':
        case 'i':
        case 'o':
        case 'u':
        case 'A':
        case 'E':
        case 'I':
        case 'O':
        case 'U':
            printf("%c is a vowel.\n", ch);
            break;
        default:
            printf("%c is a consonant.\n", ch);
            break;
    }
    return 0;
}
```