Structured Programming Language - 4

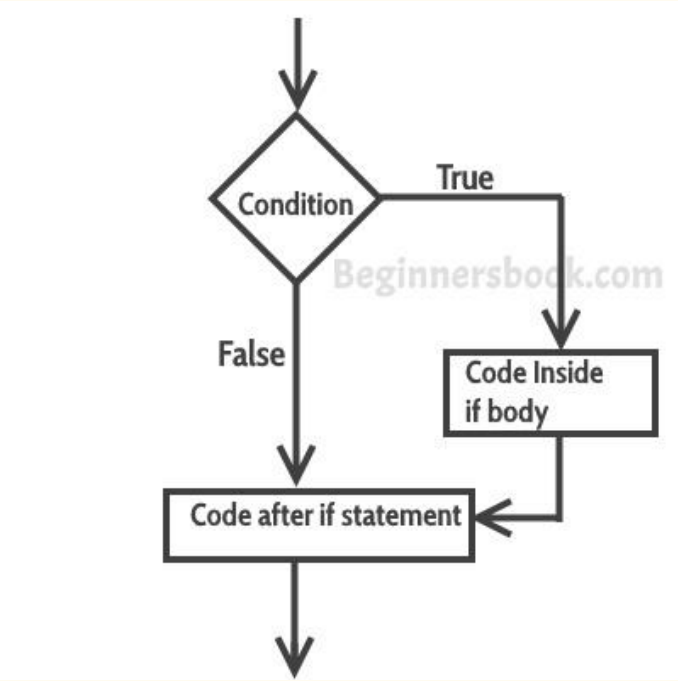
Gourab Saha
Lecturer
CSE, UIU

Ajwad Akil
Lecturer
CSE, UIU

Branching Statements

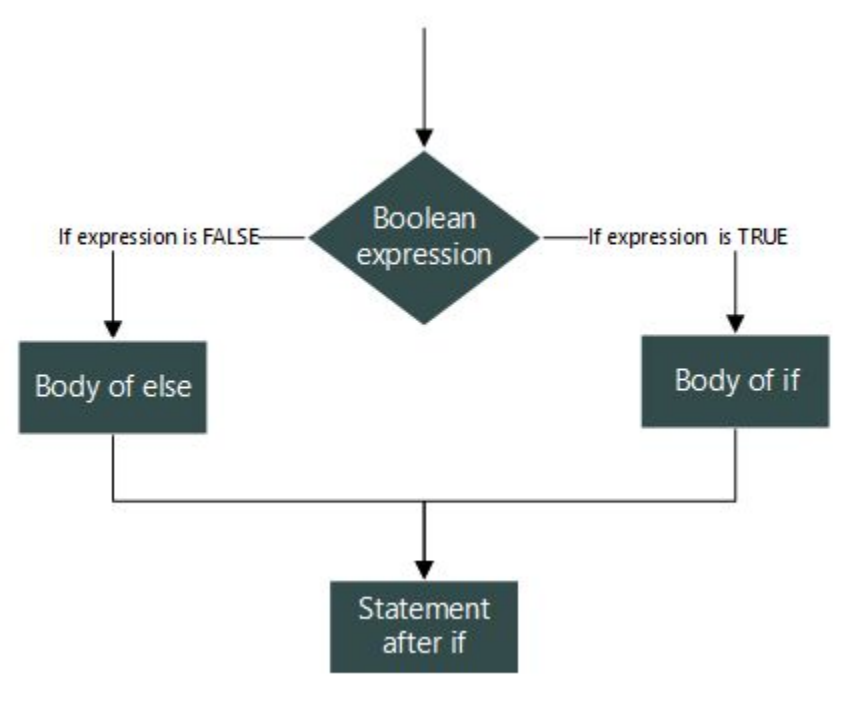
- if statements
- if - else if - else statement
- Lets us branch off to different decisions

If statement Flow Chart



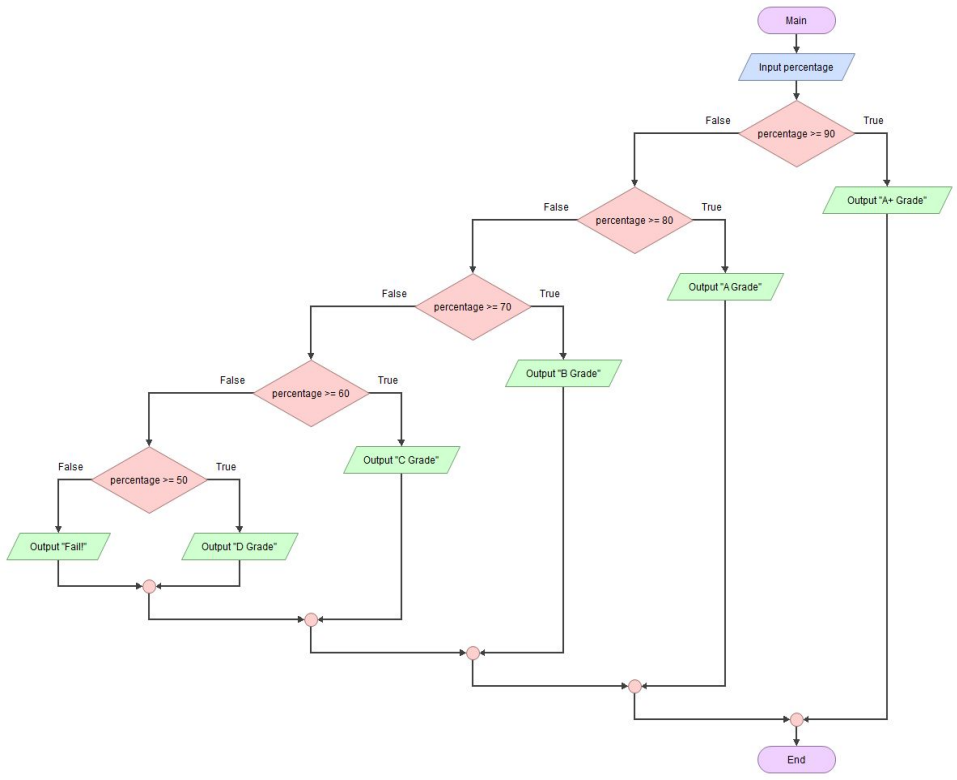

```
if ( condition )
{

        // body of code inside if

}
```

If statement Flow Chart



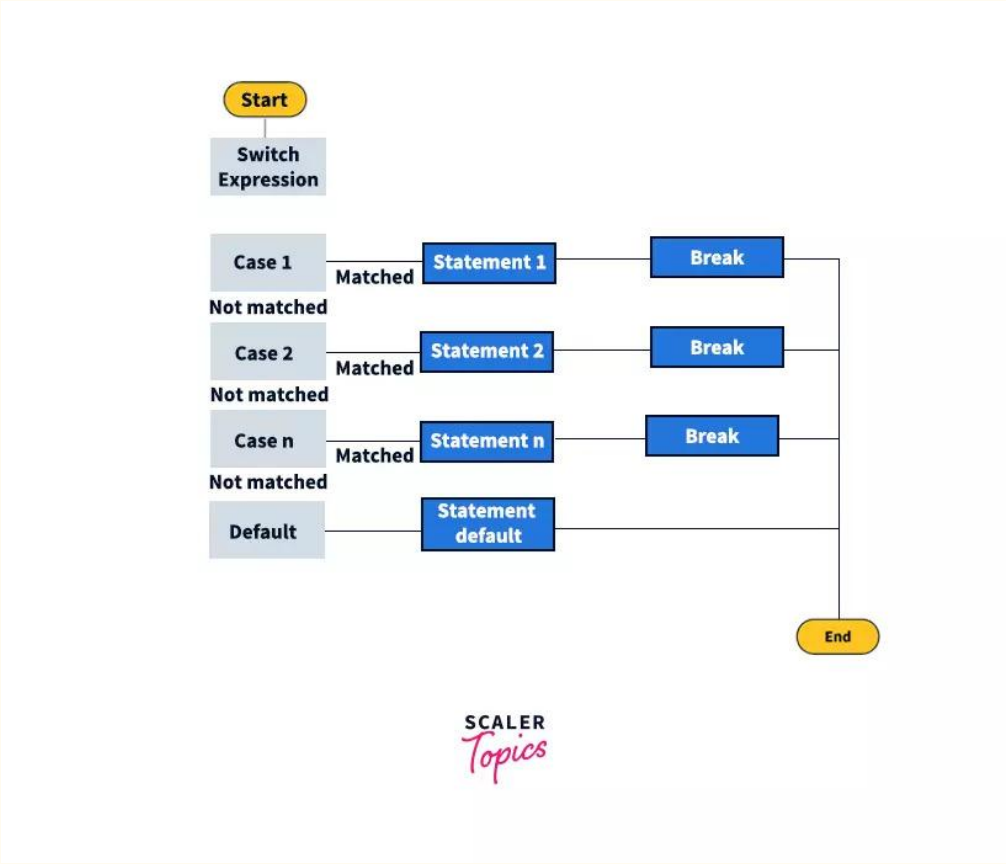

```
if ( condition )
{

        // body of code inside if

}
else
{

        // body of code inside else

}
```

If statement Flow Chart




```
if ( condition )
{
        // body of code inside if
}
else if
{
        // body of code inside else-if condition
}
else if
{
        // body of code inside another else-if
}
else
{
        // body of code inside else
}
```

Switch Case Statements



Switch Case Statements

```c
int a = 9;
switch (a) {
 case 1: printf("I am One\n");
         break;
 case 2: printf("I am Two\n");
         break;
 case 3: printf("I an Three\n");
         break;
 case 4: printf("I am Four\n");
         break;
 case 5: printf("I am Five\n");
         break;
 case 6: printf("I am Six\n");
         break;
 case 7: printf("I am Seven\n");
         break;
 case 8: printf("I am Eight\n");
 case 9: printf("I am Nine\n");
 case 0: printf("I am Zero\n");
 default: printf("I am default\n");
}
```

Switch Case Statements

```
switch(operation)
{
    case '+':
        printf("%.1lf + %.1lf = %.1lf",n1, n2, n1+n2);
        break;

    case '-':
        printf("%.1lf - %.1lf = %.1lf",n1, n2, n1-n2);
        break;

    case '*':
        printf("%.1lf * %.1lf = %.1lf",n1, n2, n1*n2);
        break;

    case '/':
        printf("%.1lf / %.1lf = %.1lf",n1, n2, n1/n2);
        break;

    // operator doesn't match any case constant +, -, *, /
    default:
        printf("Error! operator is not correct");
}
```

Switch Case Statements

1. Can also Have Nested switch case statements, though not that common.
2. Switch operation only supports integer and character type variables.

Definitely check this link(Reference) : Switch Case In details

Problem Solving Session

1. Write a program to determine whether an input year is a leap year or not.

INPUT	OUTPUT
1921	NO
2014	NO
2004	YES

```
year % 400 == 0) or (year % 4 == 0 && year % 100 != 0)
```

Problem Solving Session

2. You are given the length of the diagonal of a **square** as input. Find out the area of the square. (a square has 4 equal sides)

INPUT	OUTPUT
2	2.000
43	924.500
9	40.500

Problem Solving Session

3. Program that will evaluate simple expressions of the form

<number1> <operator> <number2>

where operators are (+, - , *, /)

And if the operator is “/”, then check if <number2> nonzero or not.

Problem Solving Session

INPUT	OUTPUT
100 * 55.5	Multiplication: 5550
100 / -5.5	Division: -18.181818
100 / 0	Division: Zero as divisor is not valid!

Problem Solving Session

4. Program that will construct a menu for performing arithmetic operations. The user will give two **real** numbers **(a, b)** on which the arithmetic operations will be performed and an integer number **(1 <= Choice <= 4)** as a choice. **Choice-1, 2, 3, 4** are for performing a**ddition, subtraction, multiplication, division** respectively.

If **Choice-4** is selected, again the program will ask for another **choice (1 <= Case <=2)**, where **Case-1, 2 evaluate quotient and reminder respectively**.

Problem Solving Session

Note: % works with only integer operands

INPUT	OUTPUT
5 10 3	Multiplication: 50
-5 10.5 4 1	Quotient: -0.476190
-5 10.5 4 2	Reminder: -5

Problem Solving Session

- Check LMS for more problems to solve for practicing