



Session 3

Organization : TeachToTech

Instructor : Ayush Raj

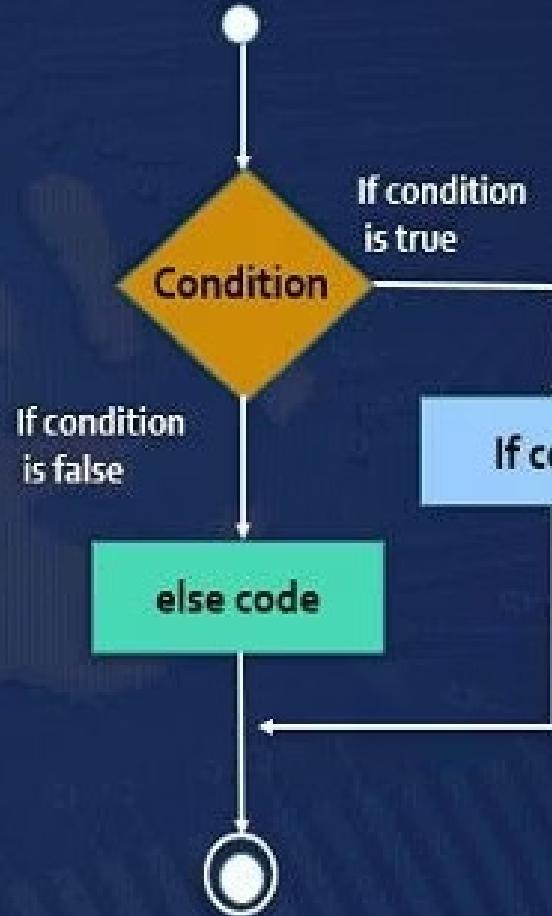
Duration : 1.5 hr

(knight @leetcode, 4 ★@codechef, Specialist @codeforces)

Today's Agenda :

Control Statements

If-Else-If ladder, Switch Case.



How Computers Make Decisions



Sequential Execution

Code executes line-by-line from top to bottom



Control Statements

Allow us to skip lines or choose different paths



The Analogy

Normal code is a straight road; control statements are crossroads with signs

The if-else Ladder

Syntax Structure

```
if (condition) {  
    // Runs if True  
} else if (other_condition) {  
    // Runs if 1st was False  
    // but this is True  
} else {  
    // Runs if nothing else  
    // was True  
}
```

Live Demo Challenge

Write a program that takes marks and prints "Pass" or "Fail"

Syntax : if..else.. ladder statement

```
if (expression1) ← First check this expression  
{  
    // statement(s)  
}  
else if (expression2) ← Check this expression only if above expression  
    is false  
{  
    // statement(s)  
}  
else if (expression3) ← Check this expression only if above expression is  
    false  
{  
    // statement(s)  
}  
. . .  
else  
{  
    // statement(s) ← Execute these statements only if all the above  
    // expression checks are false.  
}
```

Problem Solving: Power of Two

LeetCode 231

The Problem: Given an integer n, return true if it is a power of two (1, 2, 4, 8, 16...)



Problem 1

[Power of Two - LeetCode](#)

Approach : Bitwise Trick

Recall Session 2: Powers of 2 have exactly one '1' bit (e.g., 8 is 1000).

Why does it work? If $n=8$ (1000), then $n-1=7$ (0111). 8 & 7 becomes 0.

Logic: `if (n > 0 && (n & (n - 1)) == 0)`

The switch Statement

Why use it?

When you have many specific options (like a menu), it's cleaner than writing 50 else if statements.

```
3 int main()
4 {
5     int N;
6     scanf ("%d", &N);
7     switch (N)
8     {
9         case 1:
10            printf ("One");
11            break;
12        case 2:
13            printf ("Two");
14        default:
15            printf ("Not One or Two");
16    }
17
18    return 0;
19 }
```

Syntax Components

- `switch(expression)`: The variable to check
- `case x::` If variable == x, do this
- `break::` Stop! Don't run cases below
- `default::` If no cases match (like else)

Activity: Menu Driven Program

Create a Mini-ATM

1

Check Balance

Display current account balance

2

Withdraw Money

Deduct amount from balance

3

Deposit Money

Add amount to balance

4

Exit

Close the program

Your Task: Students write the switch block to print messages for each choice



Key Takeaways

if Statements

Check conditions and execute code based on True/False evaluation

switch Statements

Check equality against specific values - cleaner for multiple options

Problem Solving

Multiple approaches exist - consider efficiency and readability



THANK YOU!

Homework & Practice

1

Leap Year Checker

Write a program to check if a year is a leap year using if-else statements

2

Traffic Light Simulator

Create a simulator using switch statement:

- R = Stop
- G = Go
- Y = Wait

Practice makes perfect! Complete both assignments before the next session.