Al-Mustaqbal University
College of Engineering Technology
Cybersecurity Techniques Engineering Department

Programming Essential

Lecture 5

Conditions, if-else and Switch

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Objectives

By the end of this lecture, students will be able to:

- Identify **conditional statements** used in C++ (if, if–else, switch)
- Explain how **conditions control program execution**
- Apply if and if–else statements to make **simple decisions**
- Use the switch statement to select between **multiple options**
- Apply break to stop execution within a switch statement
- Use continue to skip an iteration in simple loop scenarios
- Write simple C++ programs that implement **decision-making logic**

Think

- *Cybersecurity is not about code only — it's about decisions.*
- If a hacker tries 5 wrong passwords… should the system allow access?

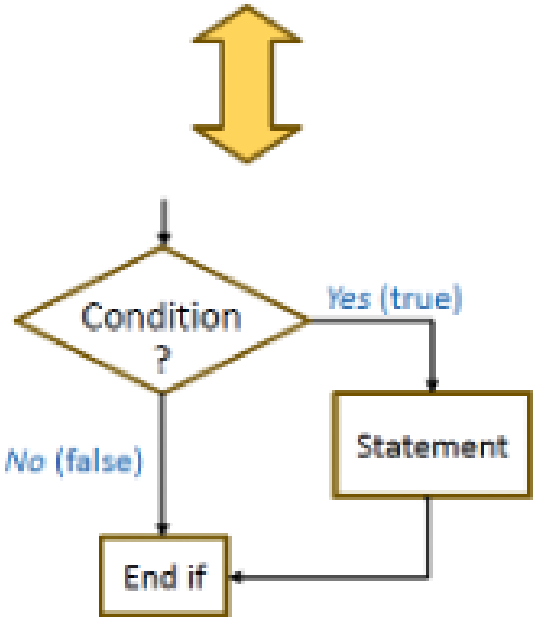
Computers don't think.
We teach them how to decide
— using conditions.

Part 1: if Statement

- Do something ONLY if a condition is true.

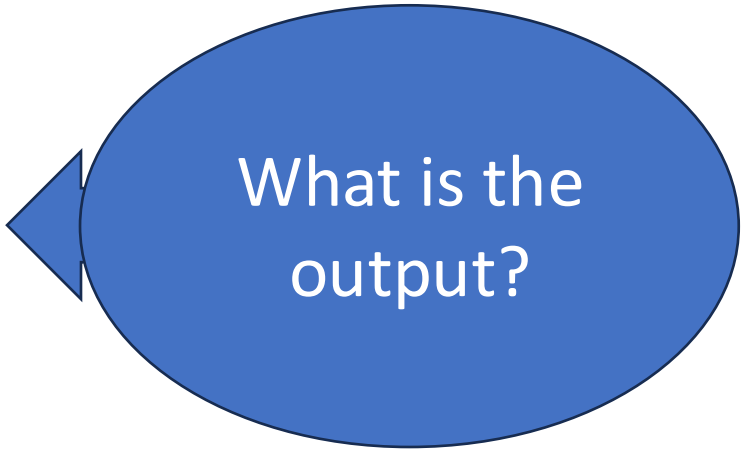
1 *if .... then*

```
If (condition) then
 statement(s)

End if
```



Part 1: if Statement - Simplest firewall

```cpp
#include <iostream>
using namespace std;

int main() {
    int securityLevel = 3;

    if (securityLevel >= 3) {
        cout << "Access Granted\n";
    }

    return 0;
}
```

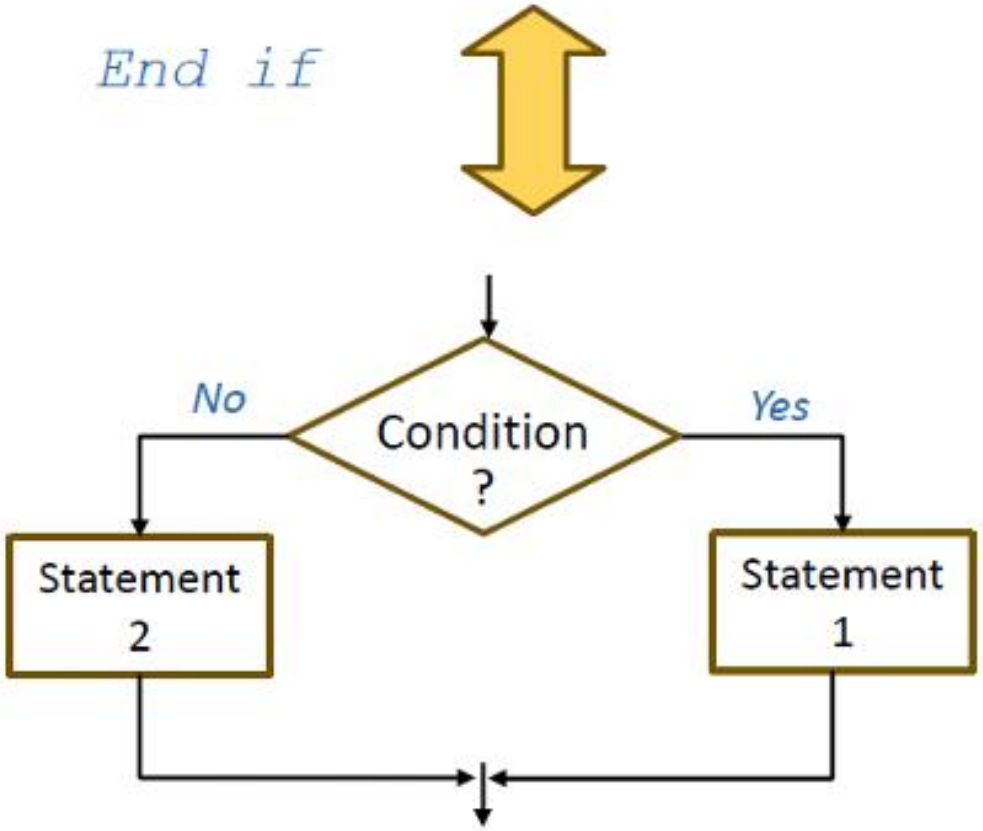


Part 2: if – else

❖Choose between TWO paths.

2 *if .... then .... else*

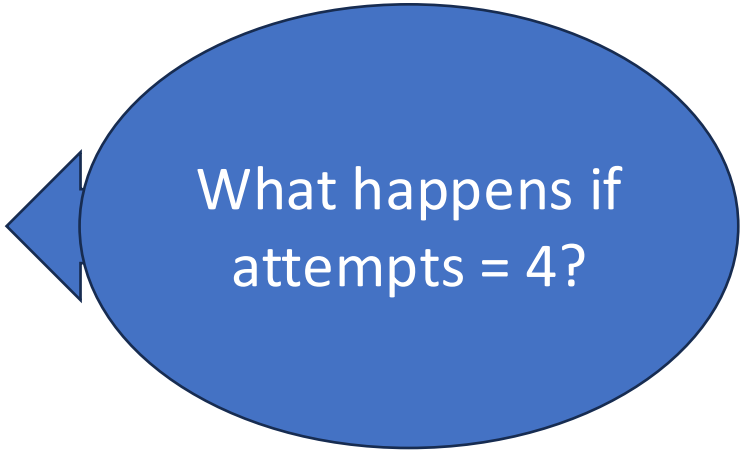
```
If (condition) then
 statement 1
Else
 statement 2

End if
```



Part 2: if – else - Example

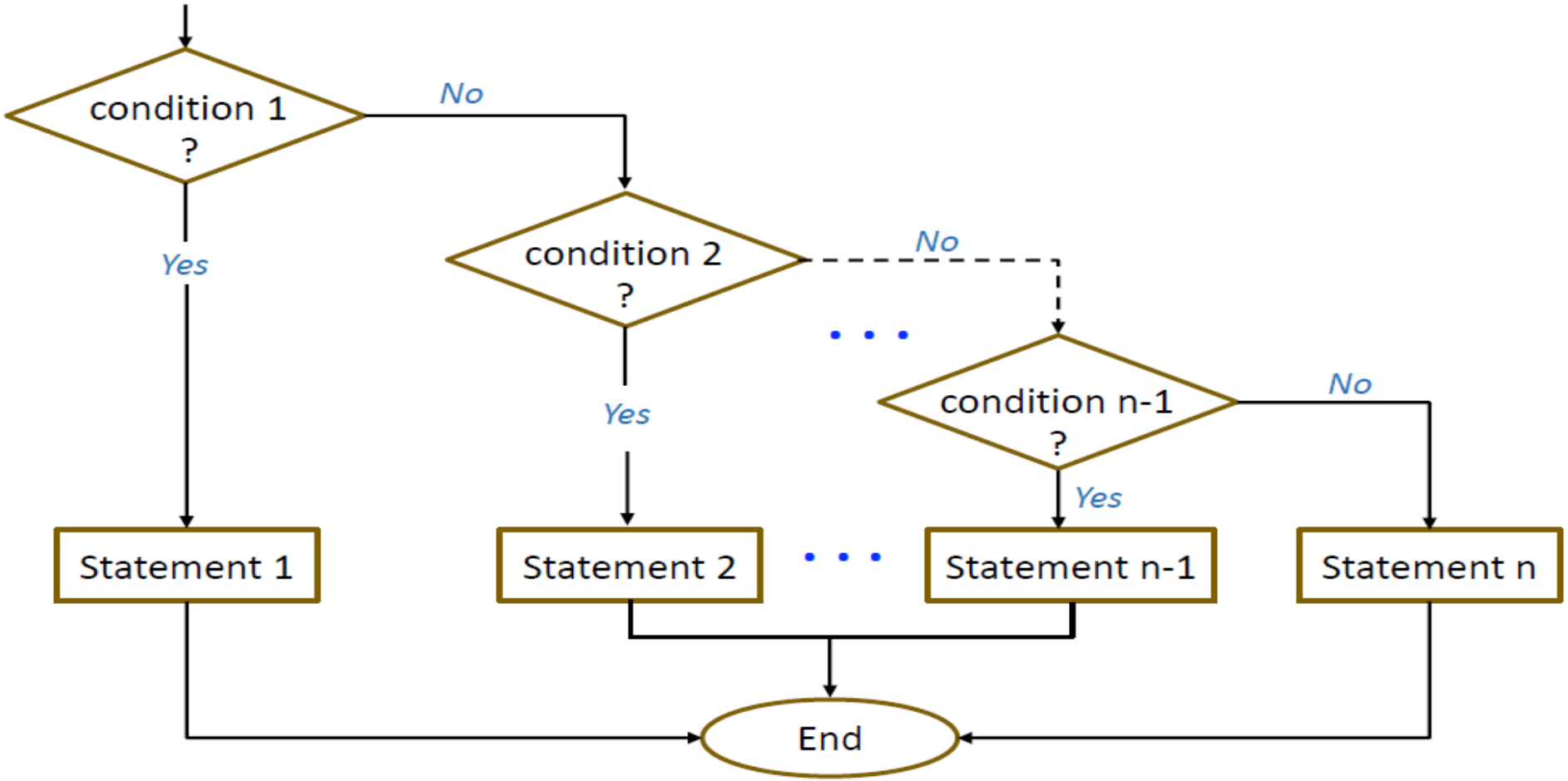
❖ Example: Login Decision

```
#include <iostream>
using namespace std;

int main() {
    int passwordAttempts = 3;

    if (passwordAttempts <= 3) {
        cout << "Login Allowed\n";
    } else {
        cout << "Account Locked\n";
    }

    return 0;
}
```



Part 3: else if

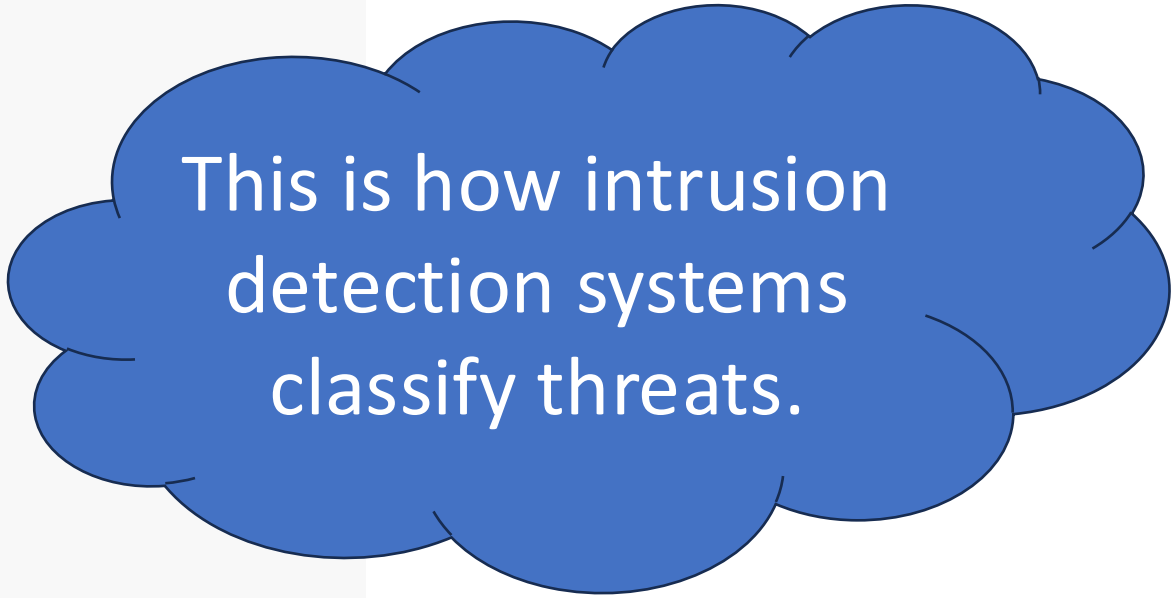
- More than two decisions.
  - *if .... then .... elseif* Flowchart



Part 3: else if - Example

- Example: Risk Level System:

```cpp
#include <iostream>
using namespace std;

int main() {
    int riskScore = 7;

    if (riskScore <= 3) {
        cout << "Low Risk\n";
    } else if (riskScore <= 6) {
        cout << "Medium Risk\n";
    } else {
        cout << "High Risk\n";
    }

    return 0;
}
```



Part 4: switch Statement

❖Choose ONE option from many.

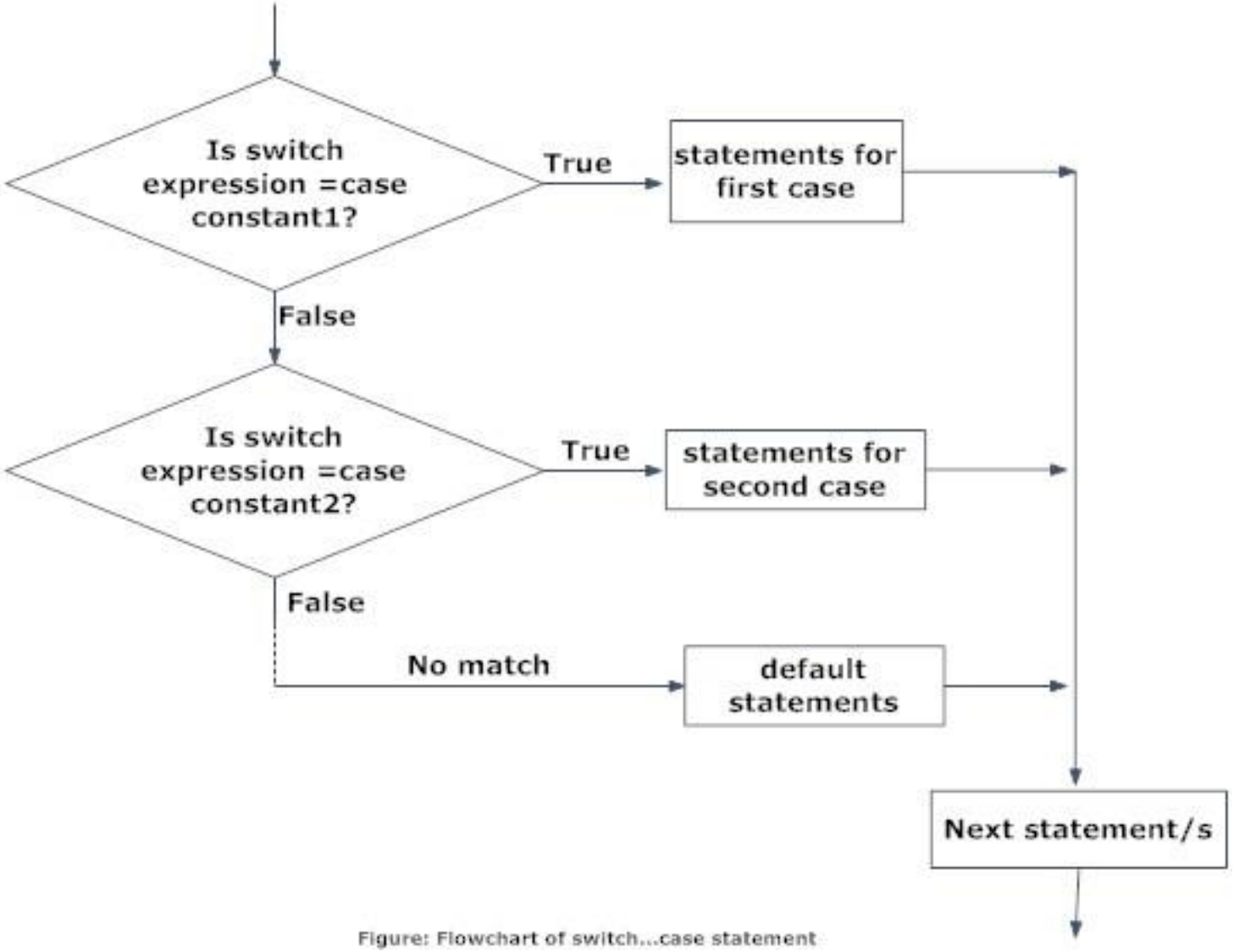


Figure: Flowchart of switch...case statement

Part 4: switch - Example

❖Example: User Role System

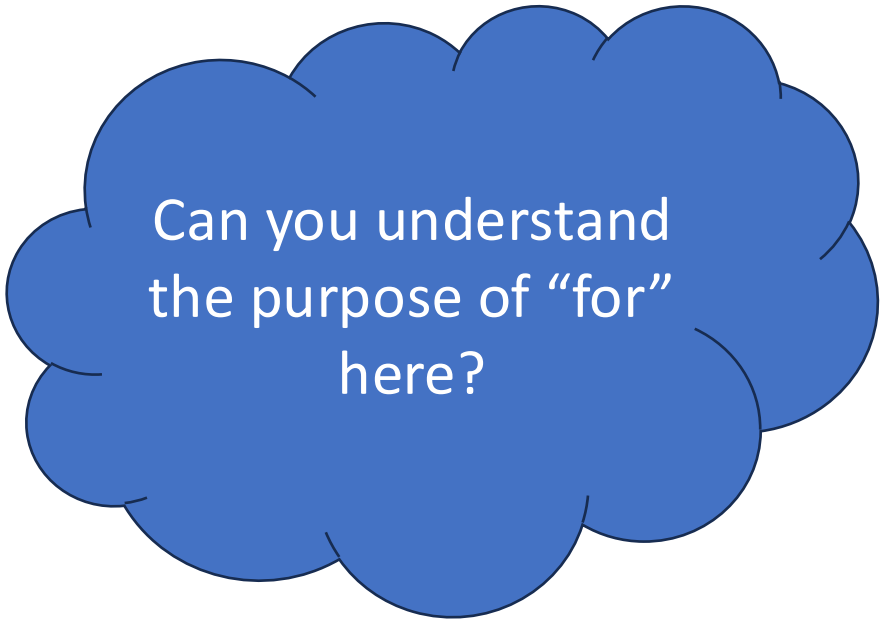
Without `break`, the system leaks access.

```
#include <iostream>
using namespace std;
int main() {
    char role = 'A';
    switch (role) {
        case 'A':
            cout << "Admin Access\n";
            break;
        case 'U':
            cout << "User Access\n";
            break;
        case 'G':
            cout << "Guest Access\n";
            break;
        default:
            cout << "Unknown Role\n";
    }
    return 0;
}
```

Part 5: continue

- Skip this step and move on.
  - **Example:** Using continue with switch

```cpp
#include <iostream>
using namespace std;

int main() {
    for (int attempt = 1; attempt <= 5; attempt++) {

        if (attempt == 3) {
            continue;
        }

        cout << "Attempt number: " << attempt << "\n";
    }

    return 0;
}
```



Mini Interaction

Which statement would you use for:

1. Yes / No decision?

2. Many roles?

Mini Interaction

if → one decision

if – else → two paths

else if → multiple levels

Switch → many fixed options

Break → stops execution

Continue → skips one step

THANK YOU