If Else

Lecture- 3

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Control Statements

IF – ELSE

Ques : Take positive integer input and tell if it is even or odd

→ n is divisible by 2 → even

↳ is not divisible by 2 → odd

```
if (n%2 == 0)
```

↓

Condition

↓

true, false

n = 8

↓

8 % 2 → 0

```cpp
#include<iostream>
using namespace std;
int main(){
    cout<<"Enter a number : ";
    int n;
    cin>>n;
    if(n%2==0){
        cout<<"even";
    }
    if(n%2!=0){
        cout<<"odd";
    }
}
```

Output

Enter a number : 7

odd

```
cout<<"Enter a number : ";
int n;
cin>>n;
if(n%2==0){
    cout<<"even";
}
else{
    cout<<"odd";
}
```

Output

Enter a number : 8

even

Ques : Take positive integer input and tell if it is divisible by 5 or not.

```
int n;
cin >> n;
if ( n % 5 == 0) {
    cout << "  . . . . ;
}
else {
    cout << ".  .
}
```

Ques : Given an integer. Print the absolute value of that integer.

.. -4, -3, -2, -1, 0, 1, 2, 3, 4, 5 ..

$n = |7| = 7$

$|-3| = 3$

```
if(n > 0){
    cout << n;
}
else {
    cout << -n;
}
```

```
cout<<"Enter an integer : ";
int n;
cin>>n;
if(n>0){
    cout<<n;
}
else{ // n<=0
    cout<<-n;
}
```

Output

Enter a ~~number~~ : -6

6

```
cout<<"Enter an integer : ";
int n;
cin>>n;
if(n<0){
    n = -n;
}
cout<<n;
```

Output

Enter an integer : -2

2

Ques : If cost price and selling price of an item is input through the keyboard, write a program to determine whether the seller has made profit or incurred loss. Also determine how much profit he made or loss he incurred.

CP = 40

SP = 60

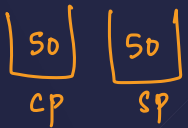
Profit = SP - CP

Loss = CP - SP

Profit ⇒ SP > CP

Loss ⇒ CP > SP or SP < CP

```
cout<<"Enter the Cost Price : ";
int cp;
cin>>cp;
cout<<"Enter the Selling Price : ";
int sp;
cin>>sp;
if(sp>cp){
    cout<<"Profit";
}
else{ // sp <= cp
    cout<<"loss";
}
```



Output

Enter the cost price : 50

Enter the selling price : 50

Loss

Multiple Conditions Using && and ||

&& → logical and

|| → logical or

> → greater than

>=

< → less than

<=

== → equal to

Ques : Take positive integer input and tell if it is a three digit number or not.

```
int n;
cin >> n;
if ( 3 digit no ✓ ){
    cout <<
}
else {
    cout <<
}
```

100 999

```
if ( n >= 100 && n <= 999 ){
    cout << "Three digit";
}
else {
}
```

Ques : Take positive integer input and tell if it is divisible by 5 and 3.

M-I Using '&&' operator

```
if ( condition1 && condition2){
    //code
}
```

Ques : Take positive integer input and tell if it is divisible by 5 or 3.

3 5 6 9 10 12 15 18 20 21

|| → logical or

```
if ( condition1 || condition2 ) {
   // code
}
```

&&

```
if ( condition 1 && condition 2){
    // code
}
```

Note : if condition 1 is false then compiler won't check for condition 2.

||

```
if ( condition 1  ||  condition 2) {
    // code
}
```

Note : if condition 1 is true, then compiler won't check for condition 2.

Ques : Take 3 positive integers input and print the greatest of them.

a, b, c

Algorithm → a > b && a > c → 'a' greatest

Ques : Write a program to check whether a character is an alphabet or not.

ASCII

a → 97
b → 98
c → 99
d → 100
:
z → 122

A → 65
B → 66
C → 67
.
.
.
Z → 90

0 → 48
1 → 49
2 → 50
.
.
.
9 → 57

```
if ((x >= 97 && x <= 122) || (x >= 65 && x <= 90))
```

&& > ||

```
if (x >= 97 || x <= 122 && x >= 65 || x <= 90)
```

brackets

Nested If – Else

Ques : Take positive integer input and tell if it is divisible by 5 or 3 but not divisible by 15.

```
if (n%5==0 || n%3==0){
```

```
if (n%15!=0)
```

3

3 5 6 9 10 12 ~~15~~ 18 20 21 24 25 27 ~~30~~

Ques : Take positive integer input and tell if it is divisible by 5 or 3 but not divisible by 15.

Nested - If - Else :

n = 7 → Not matching...

n = 30

```
if(n%5==0 || n%3==0){
    if(n%15!=0){
        cout<<"The number is divisible by 5 or 3 but not 15";
    }
    else{
        cout<<"Not matching condition";
    }
}
else{
    cout<<"Not matching condition";
}
```

Category	Operator	Associativity
Postfix	() [] -> . ++ - -	Left to right
Unary	+ - ! ~ ++ - - (type)* & sizeof	Right to left
Multiplicative	* / %	Left to right
Additive	+ -	Left to right
Shift	<< >>	Left to right
Relational	< <= > >=	Left to right
Equality	== !=	Left to right
Bitwise AND	&	Left to right
Bitwise XOR	^	Left to right
Bitwise OR	|	Left to right
Logical AND	&&	Left to right
Logical OR	||	Left to right
Conditional	?:	Right to left
Assignment	= += -= *= /= %=>>= <<= &= ^= |=	Right to left
Comma	,	Left to right

Ques : Take positive integer input and tell if it is divisible by 5 and 3.

Ques : Take 3 positive integers input and print the greatest of them.

a, b, c

without using && , || operators

Else If

Ques : Take input ~~percentage~~ marks of a student and print the Grade according to marks:

1) 91-100 Excellent
2) 81-90 Very Good
3) 71-80 Good
4) 61-70 Can do better
5) 51-60 Average
6) 40-50 Below Average
7) <40 Fail

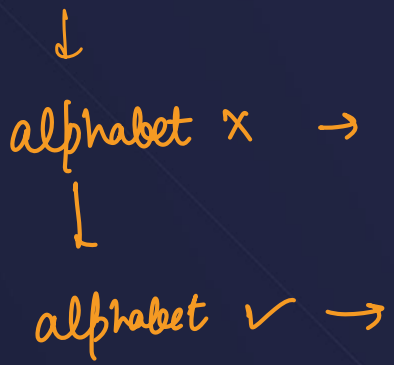
```
if(n>=91){
    cout<<"Excellent";
}
else{
    if(n>=81){
        cout<<"Very Good";
    }
    else{
        if(n>=71){
            cout<<"Good";
        }
        else{
            if(n>=61){
                cout<<"Can do better";
            }
            else{
                if(n>=51){
                    cout<<"Average";
                }
                else{
                    if(n>=41){
                        cout<<"Below Average";
                    }
                    else{
                        cout<<"Fail";
                    }
                }
            }
        }
    }
}
```

n = 54 → Average

n = 86 → Very Good

n = 34 → Fail

Ques : Write a program to check whether a given character is a vowel or a consonant.



0, 1, 2, 3, 4, 5, 6, 7, 8, 9

```
if ( ch == '0' || ch == '1' || ch == '2'
```

Ques : Take 3 numbers input and tell if they can be the sides of a triangle.

a, b, c

↓

$a + b > c$

$b + c > a$

$a + c > b$

Predict the output, if any error detect that

Output

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

void main(){

    int number = 0;
    if(number > 0) cout << "Number is positive.";
    if(number => 0) cout << "Number is not negative.";

}
```

=>

Error

Predict the output

You Win

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

int main(){

     int score =  100;
     if (score == 100) cout << " You win ";
     else cout << " You lose ";

  return 0;
}
```

Predict the output

```
int main(){
    int num1=5, num2=4, num3=3;
    if(num1 > num2 && num1 > num3)cout<<"Number1."<<endl;
    if(num2 > num1 || num2 > num3)cout<<"Number2."<<endl;
    if(num3 > num1 && num3 > num2)cout<<"Number3."<<endl;
    return 0;
}
```

Output
- Number 1.
- Number 2.

*, /, % > +, - > >, <, >=, <= > ==, != > && > ||

THANK YOU