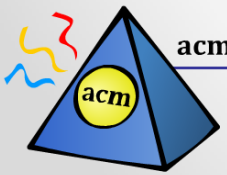
PROBLEM SOLVING USING C++

BEFORE WE START

WHY COMPUTERS ?!!

PROBLEM SOLVING USING C++

VARIABLES AND CONDITIONS



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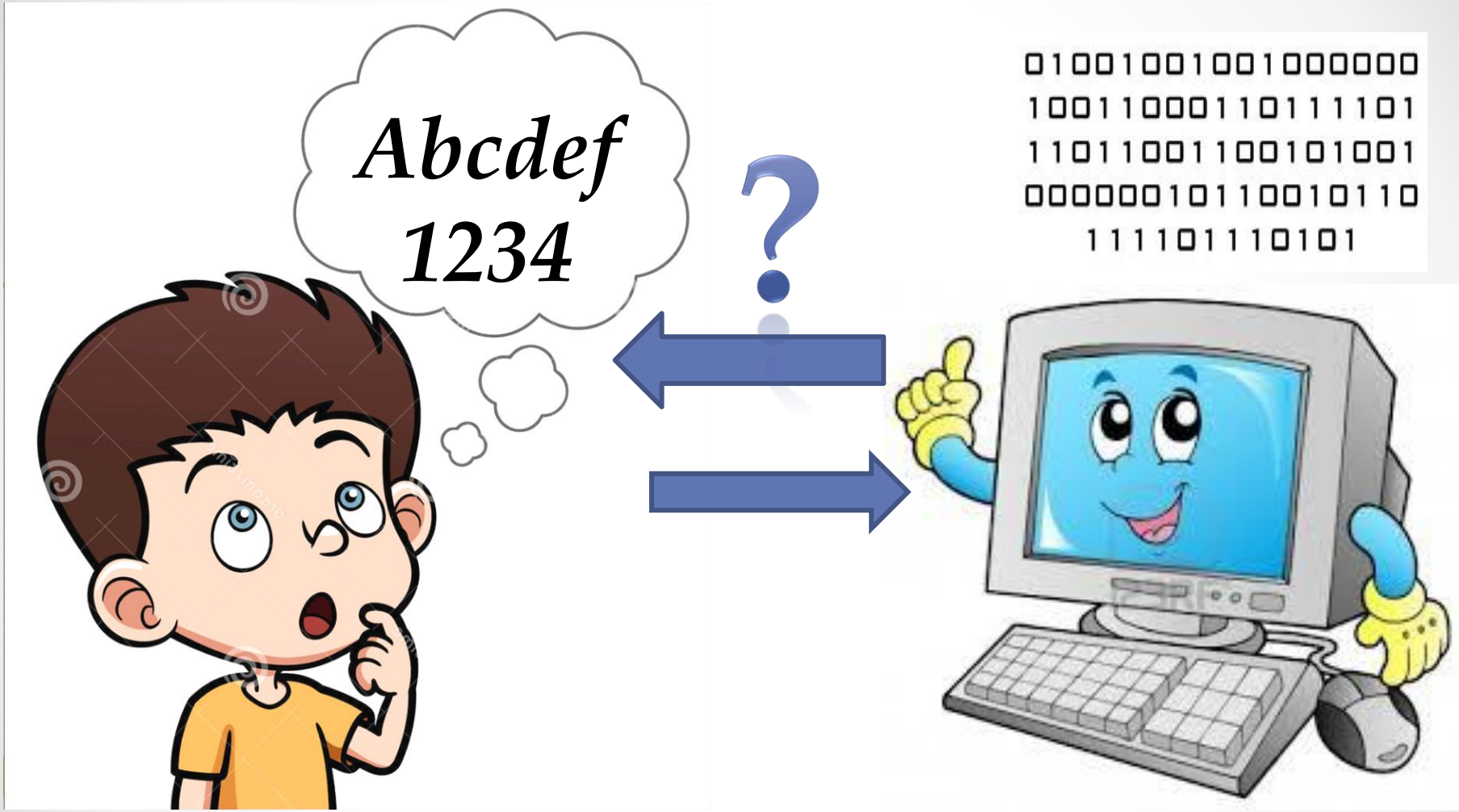
REMEMBER



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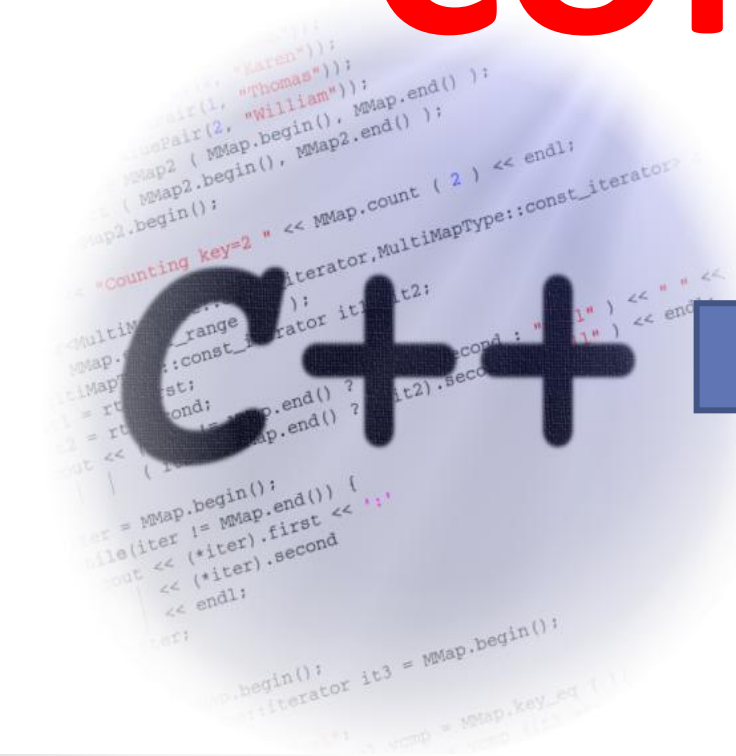
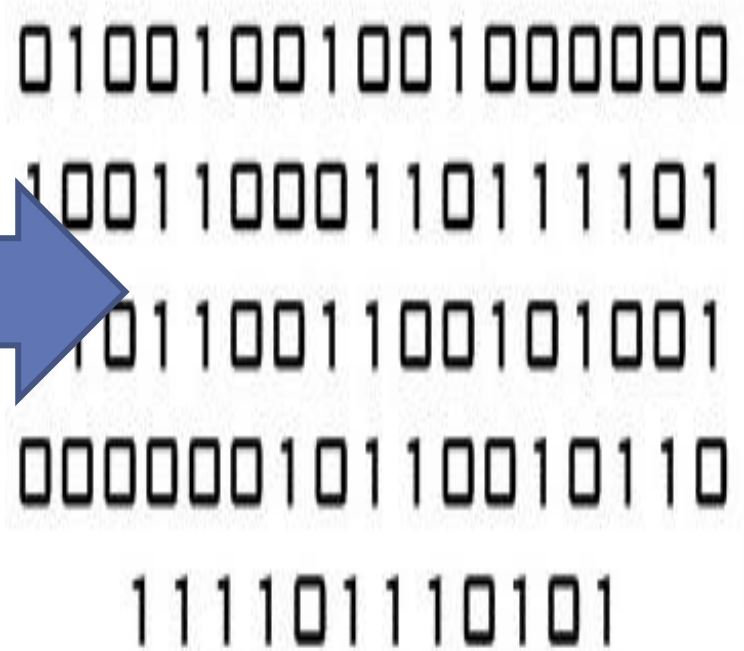
COMPILERS





FIRST PROGRAM

We want our program to say hello to the world.

FIRST PROGRAM

```
#include<iostream>
using namespace std;
int main()
{
    return 0;
}
```

FIRST PROGRAM

#include<iostream>

iostream is a library

FIRST PROGRAM

using namespace std

namespace is a group of libraries

FIRST PROGRAM

```
int main()
```

The operating system need it

FIRST PROGRAM

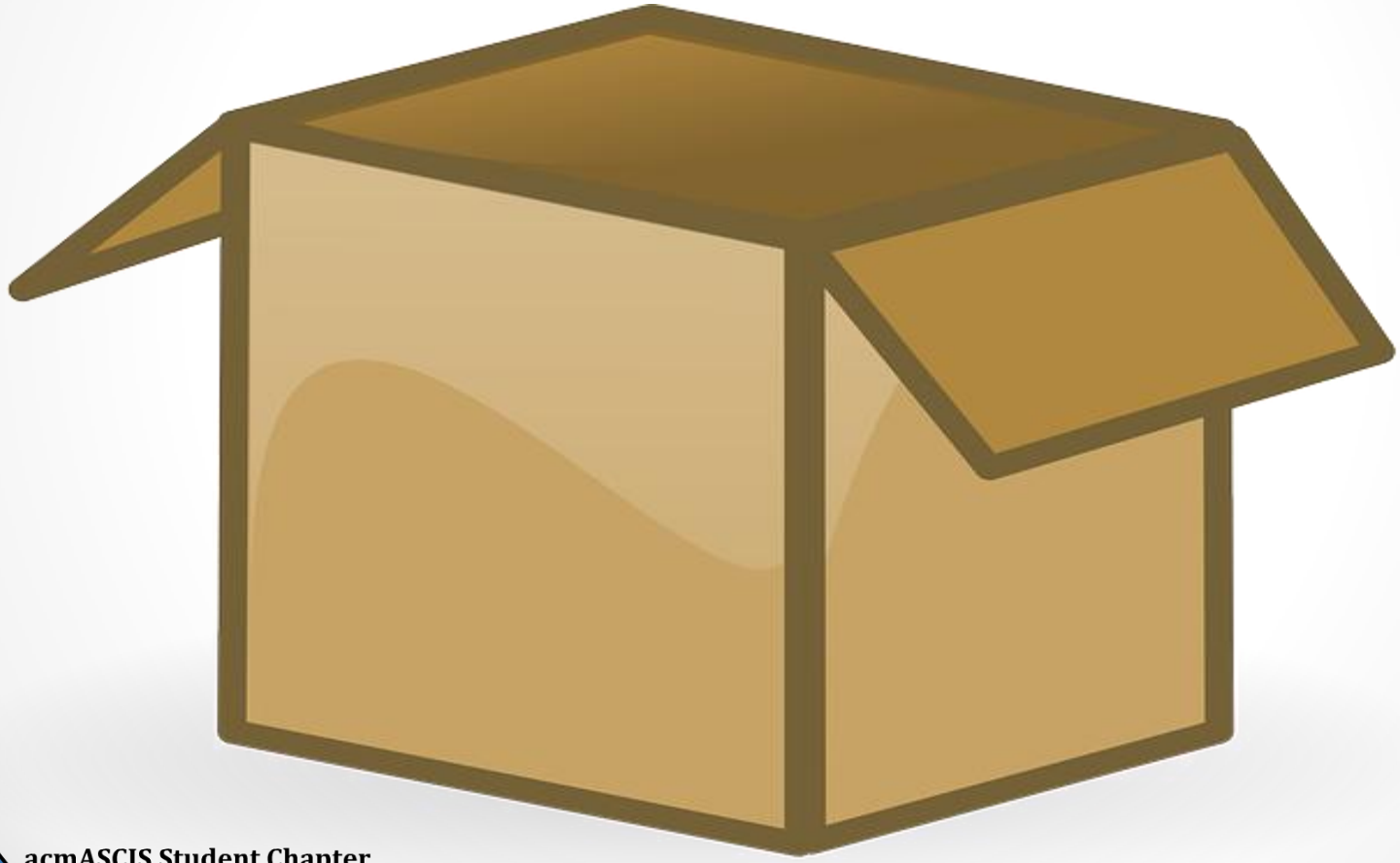
```
return 0;
```

The program finished succecfully

STATEMENT ;

```
cout << "Hello World" << endl ;
```

VARIABLES



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KINDS OF DATA

Integer Number: 10

Real Number : 10.24

Character : ‘A’ ‘?’

DATA TYPES

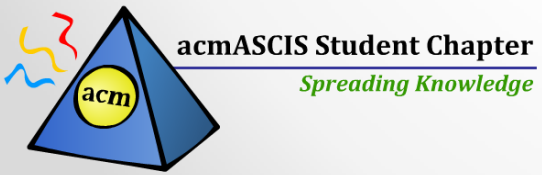
{ short , int , long long , float , double , char }

*DataTypes

HOW TO MAKE A VARIABLE

datatype name = value;

Ex. : int x = 4;



NAMING

- Meaningful Names
- First character

(a -> z) & (A -> Z) & (_)

INITIALIZING

```
char my_char = 'Y';
int my_number = 4;
float my_float = 4.5;
```

{SCOPING}

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{SCOPING}

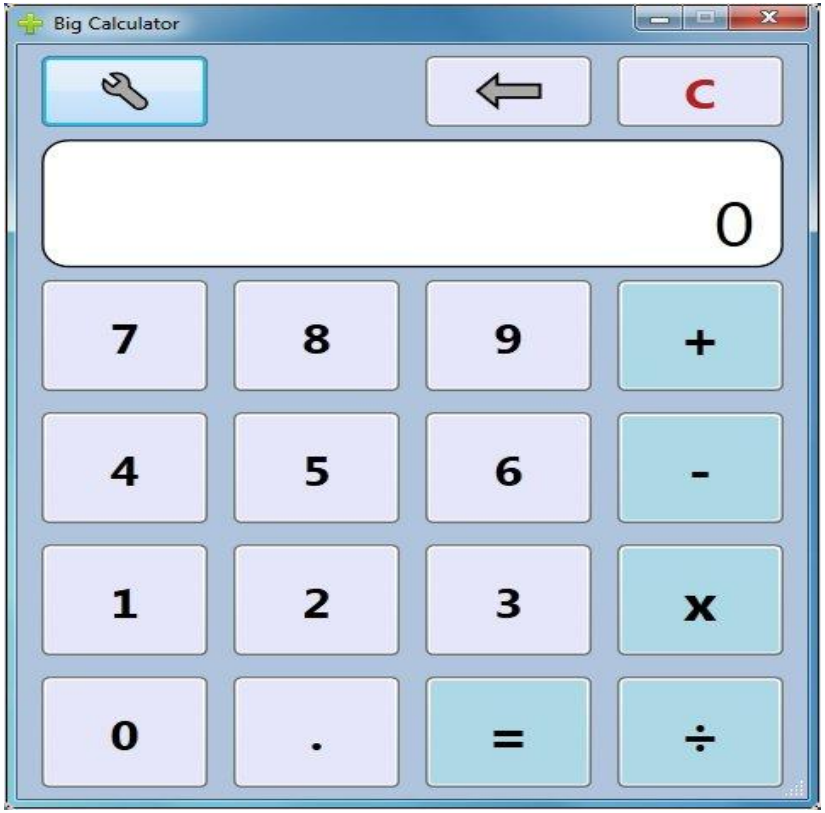
Any Variable defined in {} Can't be used outside them

Example :

```
{
        int x = 0;
}
cout << x;
```

"Error"

CALCULATOR



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INPUT

We use “cin” then “>>” then “the variable”

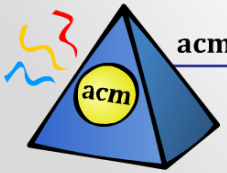
Example :

```
int koko;
cin >> koko;
```

linear sequence of instructions

VS

Control Structures



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Control Structures

- Conditional structure:
- The selective structure
- Iteration structures
- Jump statements.

*Control Structures

CONDITIONS

If statement

(if - else if - else)

if statement

```
if( some condition )
{
    //a sequence of statements
}
```

a boolean expression

small game

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```
1  #include<iostream>
2  using namespace std;
3  int man()
4  {
5      int age;
6      cin >> age;
7      if( age < 19 )
8      {
9          cout << " raise your hand " << endl;
10     }
11 }
```

another game

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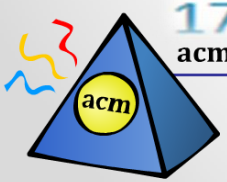
The output ???

```
1  #include<iostream>
2  using namespace std;
3  int man()
4  {
5      int number = 20;
6
7      if( number < 19 )
8      {
9          cout << " You win " << endl;
10     }
11
12     else
13     {
14         cout << " game over " << endl;
15     }
16 }
17
```



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Two conditions ?

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Logical operators

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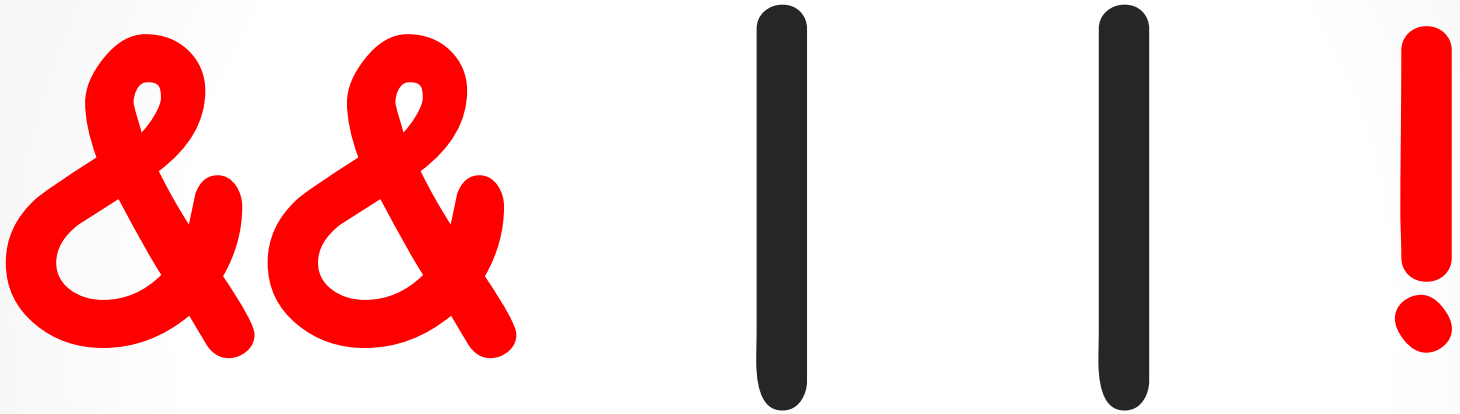
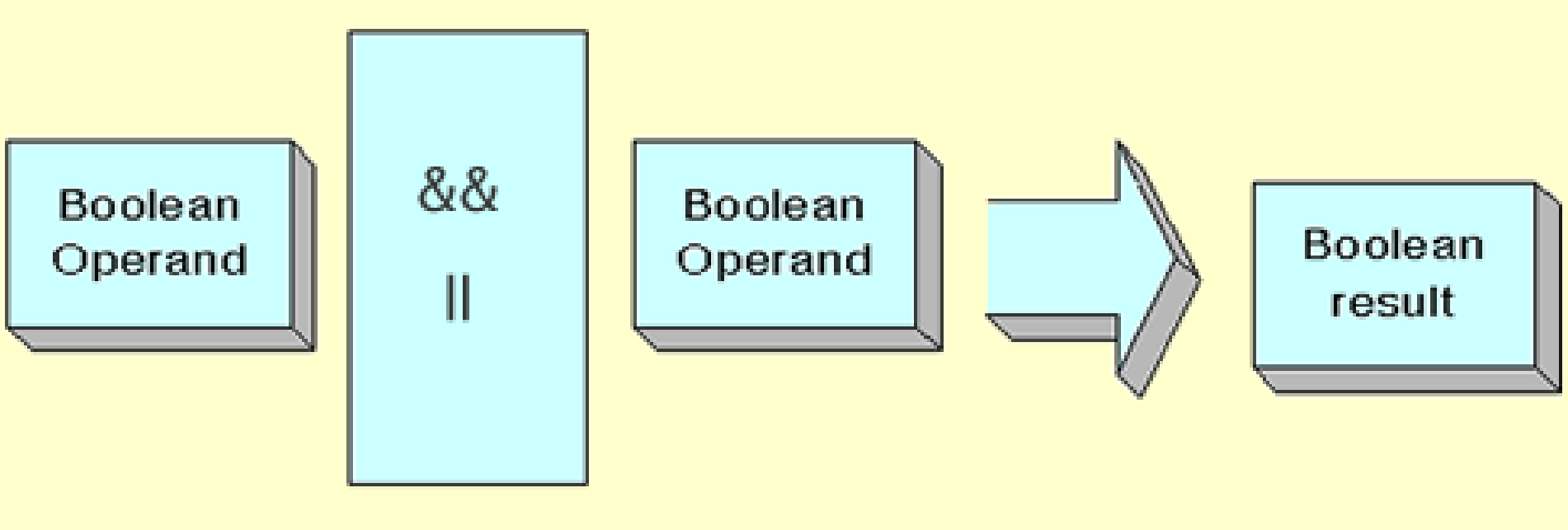
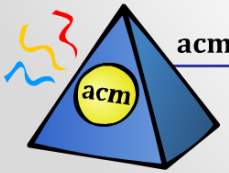



Boolean Operand
&&
||
Boolean Operand
Boolean result

More magic?



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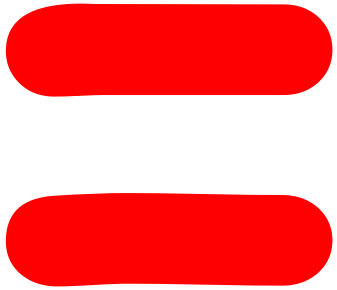
Types of operators

- Logical
- Assignment
- Increment and decrement
- Arithmetic
- Relational
- Conditional(case study)
- Bitwise Operators (advanced)

*Operators

Assignment

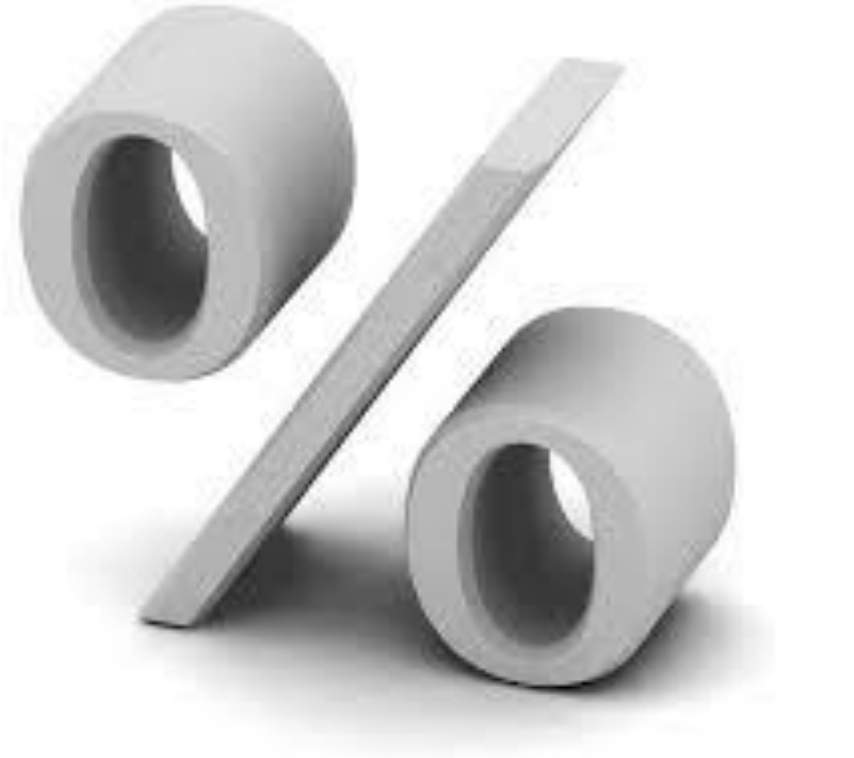


Increment and decrement

(++ , --)

Arithmetic

(+ - * / %)



Relational operators

(==, !=, >, <, >=, <=)

(== VS =)

nested if conditions

```cpp
#include<iostream>
using namespace std;
int main(){
    int age;
    cin >> age;
    char gender;
    cin >> gender ;
    if( age < 19 )
    {
        if(gender == 'F')
        {
            cout << " raise your hand" << endl;
        }
        else
        {
            cout << " Stand up " << endl;
        }
    }
    else
    {
        cout << " dont do any thing : " << endl;
    }
}
```

multiple conditions ?

else if

Volunteer

Live example

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```
if (grade >= 85)
    cout<<" Excellent"<<endl;
else if (grade >= 75)
    cout<<"VeryGood :)"<<endl;
else if (grade >= 65)
    cout<<"Good :)"<<endl;
else
    cout<<":("<<endl;
```

The selective structure (case study)

switch

(switch - case - default)

ANY QUESTION ?

THANK YOU !

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