



SESSION - 9

BOOLEAN



Learning Outcomes:

- **Remember:** The students will list different types of Logic Gates
- **Understand:** - They will focus on understanding the working and application of different logic gates .
- **Apply:** They will learn how to apply different logical operations
- **Analyze:** They will check their understanding by developing a code.
- **Create:** They will create the code in EduBlocks

Remember & Understanding

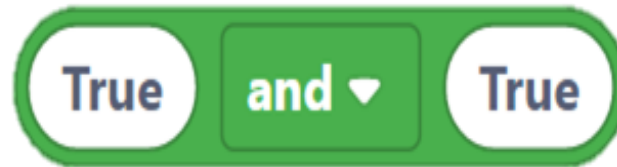
AND LOGICAL OPERATOR

AND gate



2 Input AND gate		
A	B	A.B
0	0	0
0	1	0
1	0	0
1	1	1

For AND operator – It returns TRUE if both the operands (right side and left side) are true



OR LOGICAL OPERATOR

OR gate



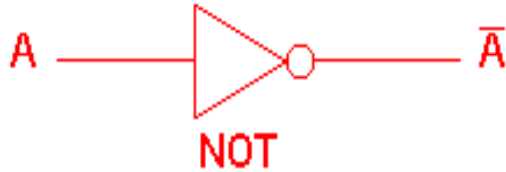
2 Input OR gate		
A	B	A+B
0	0	0
0	1	1
1	0	1
1	1	1

For OR operator- It returns TRUE if either of the operand (right side or left side) is true



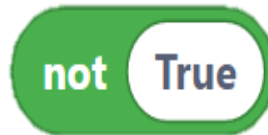
NOT LOGICAL OPERATOR

NOT gate



NOT gate	
A	\bar{A}
0	1
1	0

For NOT operator- returns TRUE if operand is false





Rapid Pond



Imports



Variables

Create variable...

app.edublocks.org says

New variable name:

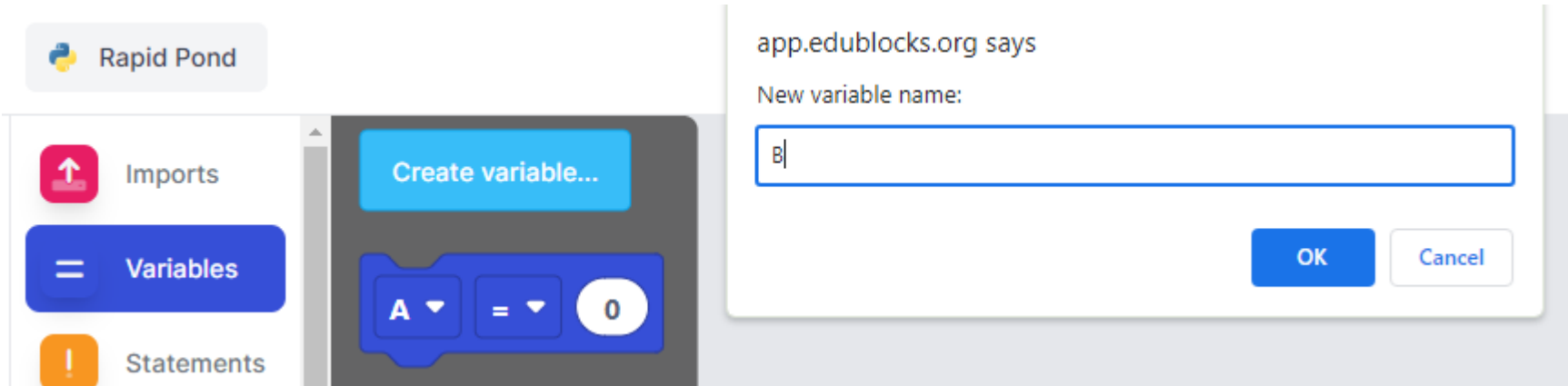
A

OK

Cancel

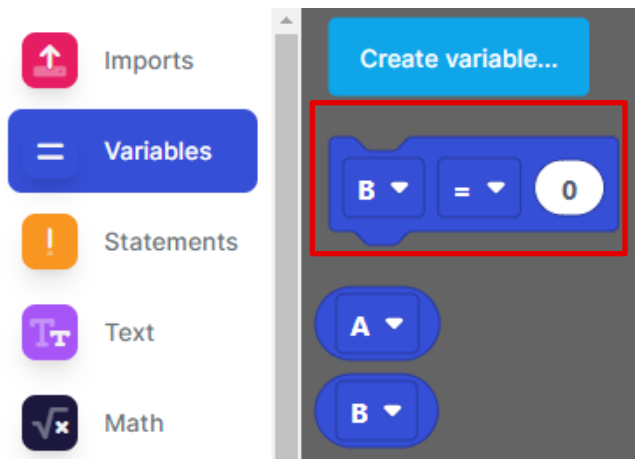
Create a variable with name 'A' to store input from the user

Program Step 2:-



Create a variable with name 'B' to store input from the user

Program Step 3:-



The image shows the Scratch interface. On the left, the 'Variables' menu is selected. In the script area, a 'Create variable...' block is at the top. Below it, a 'B = 0' block is highlighted with a red box. Below that are 'A' and 'B' variable blocks.

Take the variable 'A' and store the data TRUE



The image shows a Scratch script area. A yellow 'Start code here' block is at the top. Below it, a blue 'A = TRUE' block is shown.

Code

```
1 #Start code here
2 A = TRUE
3
```


Program Step 4:-

Imports

Variables

Statements

Text

Math

Create variable...

B ▼ = ▼ 0

A ▼

B ▼

Take the variable 'B' and store the data FALSE

Start code here

A ▼ = ▼ TRUE

B ▼ = ▼ FALSE

Code

```
1 #Start code here
2 A = TRUE
3 B = FALSE
4
```

Program Step 5:-

Imports

Variables

Statements

Text

Output

```
print( "Hello World" )
```

```
print( 1 )
```

Start code here

A = TRUE

B = FALSE

print(1)

print(1)

print(1)

print(1)

Code

```

1 #Start code here
2 A = TRUE
3 B = FALSE
4 print(1)
5 print(1)
6 print(1)
7 print(1)
8

```

Take the print variable block from the statement

Program Step 6:-

Text

Math

Logic

Lists

Loops

Definitions

Turtle

Graphs

Random

if True :

elif True :

else:

0 == 0

True and True

not True

Start code here

A = TRUE

B = FALSE

print(True and True)

print(1)

print(1)

print(1)

Code

```
1 #Start code here
2 A = TRUE
3 B = FALSE
4 print(True and True)
5 print(1)
6 print(1)
7 print(1)
8
```

Take 'and' block from the logical operator

Program Step 7:-

Imports

Variables

Statements

Text

Create variable...

B = 0

A

B

Start code here

A = TRUE

B = FALSE

print(A and B)

print(1)

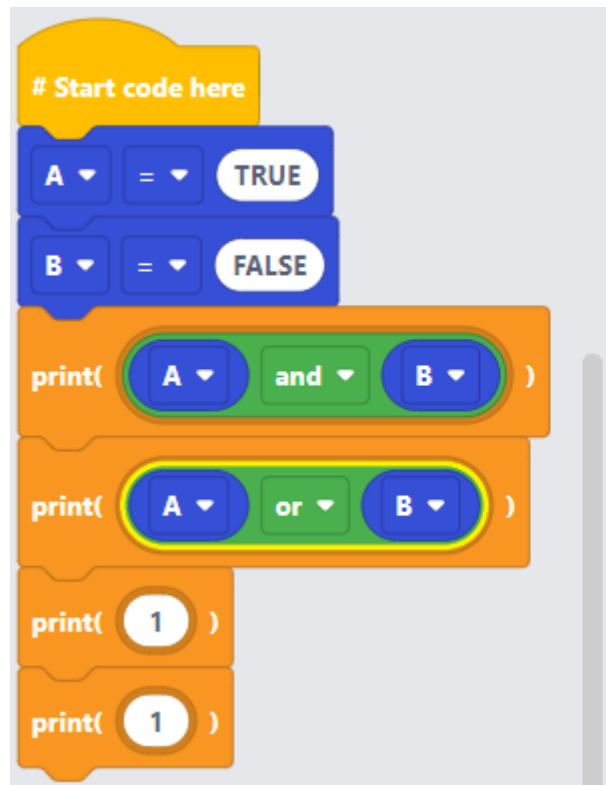
print(1)

print(1)

Code

```
1 #Start code here
2 A = TRUE
3 B = FALSE
4 print(A and B)
5 print(1)
6 print(1)
7 print(1)
8
```

Program Step 8:-



Code

```

1 #Start code here
2 A = TRUE
3 B = FALSE
4 print(A and B)
5 print(A or B)
6 print(1)
7 print(1)
8
    
```

Get a for loop connect it inside the if condition and set the range to 2, num, so that it will check ever number between 2 to number given by user

Program Step 9:-

- Imports
- Variables
- Statements
- Text
- Math
- Logic
- Lists
- Loops
- Definitions

```

if True :
    # Code block 1

elif True :
    # Code block 2

else:
    # Code block 3

0 == 0

True and True

not True
    
```

```

# Start code here

A = TRUE
B = FALSE


print(A and B)
print(A or B)
print(not True)
print(not True)
    
```


Code


```


1 #Start code here
2 A = TRUE
3 B = FALSE
4 print(A and B)
5 print(A or B)
6 print(not True)
7 print(not True)
8
    
```

Program Step 10:-

 Imports

 Variables

 Statements

 Text

Create variable...

B ▾

= ▾

0

A ▾

B ▾

Start code here

A ▾

= ▾

TRUE

B ▾

= ▾

FALSE

print(

A ▾

and ▾

B ▾

)

print(

A ▾

or ▾

B ▾

)

print(

not

A ▾

)

print(

not

B ▾

)

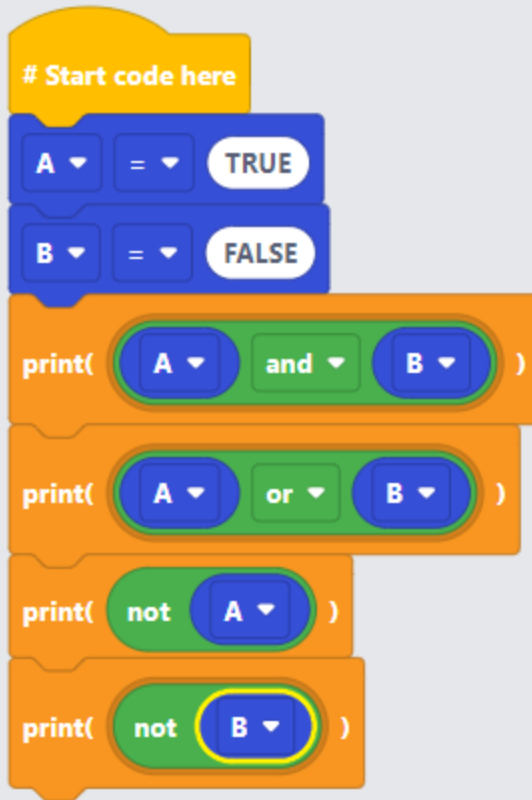
Code

```

1 #Start code here
2 A = TRUE
3 B = FALSE
4 print(A and B)
5 print(A or B)
6 print(not A)
7 print(not B)
8

```

FINAL CODE



Code


```
1 #Start code here
2 A = TRUE
3 B = FALSE
4 print(A and B)
5 print(A or B)
6 print(not A)
7 print(not B)
8
```



Apply & Create


ACTIVITY 01:-

</> WRITE THE PROGRAM TO CHECK WHETHER THE INPUT NUMBERS ARE EQUAL OR NOT

Program Step 1:-

 Tight Hat

 Imports

 Variables

Create variable...


app.edublocks.org says


New variable name:


num 1

OK

Cancel

 Tight Hat

 Imports

 Variables

Create variable...

app.edublocks.org says

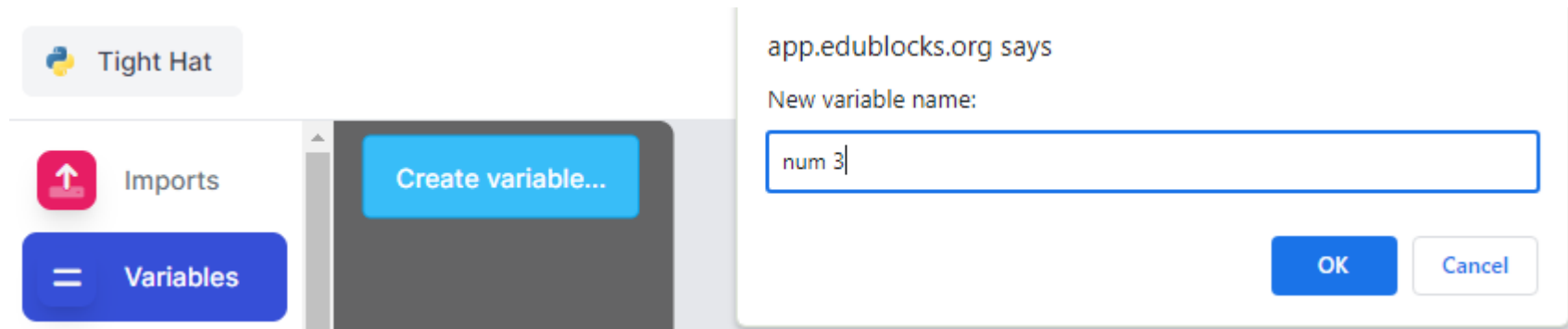
New variable name:

num 2

OK

Cancel

Program Step 2:-



Program Step 3:-

Imports

Variables

Statements

Text

Math

Logic

Create variable...

num 1 ▼ = ▼ 0

num 1 ▼

num 2 ▼

num 3 ▼

Start code here

num 1 ▼ = ▼ 0

num 2 ▼ = ▼ 0

num 3 ▼ = ▼ 0

Code

```
1 #Start code here
2 num_1 = 0
3 num_2 = 0
4 num_3 = 0
5
```

Program Step 4:-

Imports

Variables

Statements

Text

str(1)

int(+ 1)

int(- 1 , 1)

Start code here

num 1 = int(+ 1)

num 2 = int(+ 1)

num 3 = int(+ 1)

Code

```
1 #Start code here
2 num_1 = int("1")
3 num_2 = int("1")
4 num_3 = int("1")
5
```

Take a int block from the Statement

Program Step 5:-



Imports



Variables



Statements

Input

input("What is your name?")

Time

Take a input block from the Statement

Start code here

num 1 = int(+ input("What is your name?"))

num 2 = int(+ input("What is your name?"))

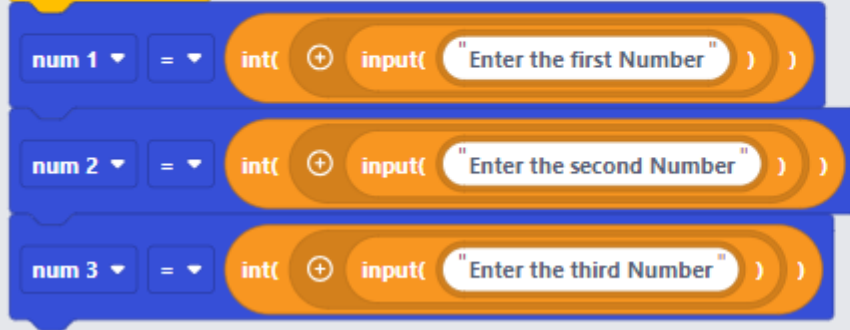
num 3 = int(+ input("What is your name?"))

Code

```
1 #Start code here
2 num_1 = int(input("What is your name?"))
3 num_2 = int(input("What is your name?"))
4 num_3 = int(input("What is your name?"))
5
```

Program Step 6:-

Start code here



Code

```
1 #Start code here
2 num_1 = int(input("Enter the first Number"))
3 num_2 = int(input("Enter the second Number"))
4 num_3 = int(input("Enter the third Number"))
5
```

Program Step 7:-



Text



Math



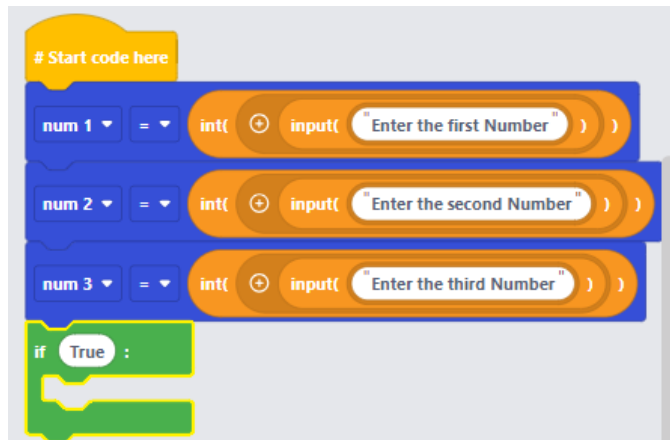
Logic



Lists



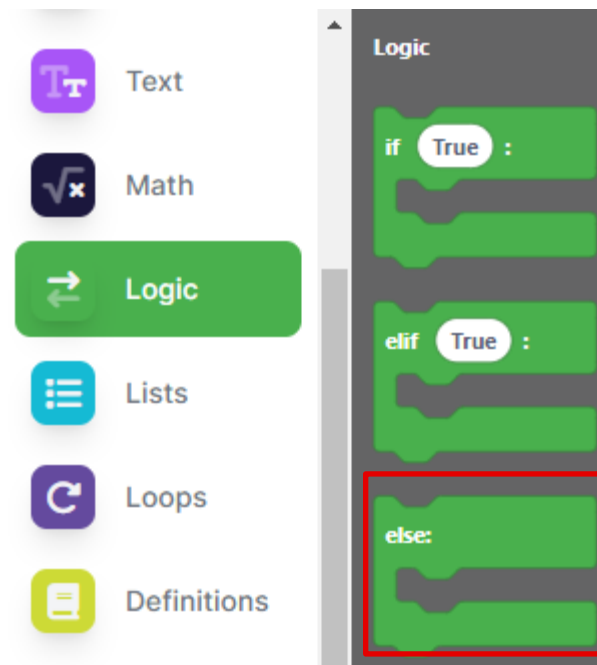
Get a if Statement from the logic



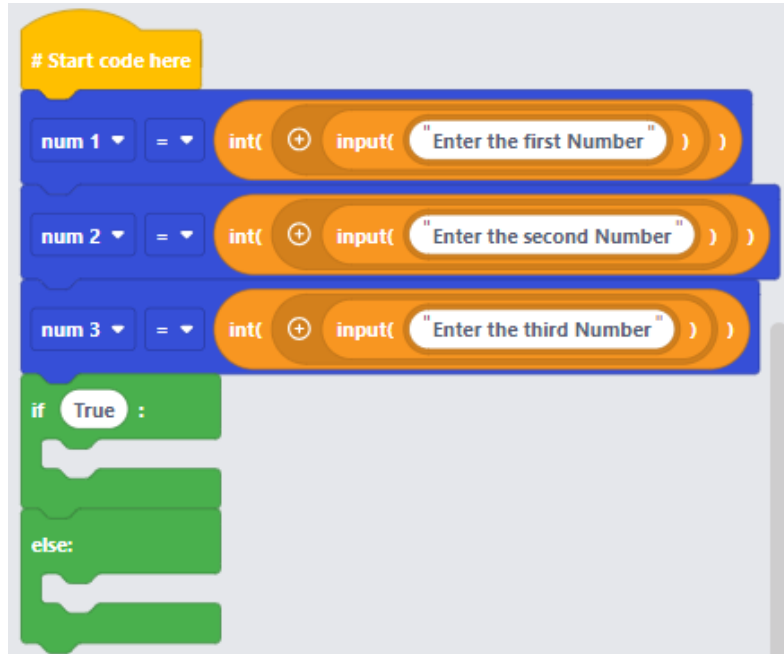
```
1 #Start code here
2 num_1 = int(input("Enter the first Number"))
3 num_2 = int(input("Enter the second Number"))
4 num_3 = int(input("Enter the third Number"))
5 if True:
6     pass
7
```


Program Step 8:-

Get a else Statement from the logic



Program Step 9:-



Code

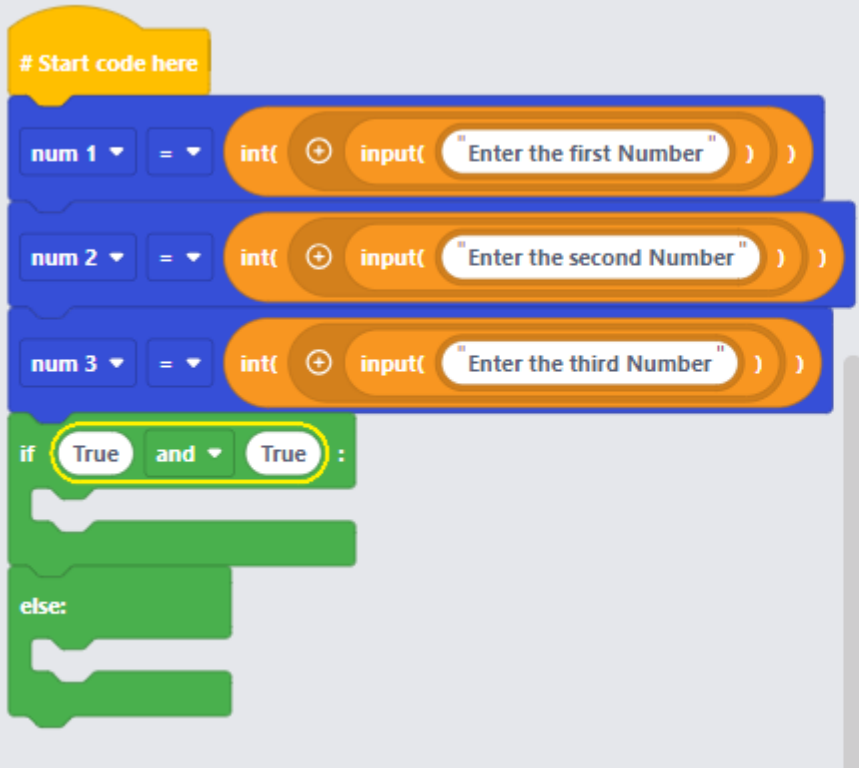
```
1 #Start code here
2 num_1 = int(input("Enter the first Number"))
3 num_2 = int(input("Enter the second Number"))
4 num_3 = int(input("Enter the third Number"))
5 if True:
6     pass
7 else:
8     pass
9
```

Program Step 10:-

Get a equal to block from the logic

The image shows the Scratch Logic blocks interface. On the left is a vertical menu with categories: Text, Math, Logic (highlighted), Lists, Loops, Definitions, Turtle, Graphs, and Random. On the right is a workspace titled 'Logic' containing a stack of logic blocks. The stack includes an 'if True:' block, an 'elif True:' block, an 'else:' block, and a block with the expression '0 == 0' which is highlighted with a red rectangle. Below the highlighted block are 'True and True' and 'not True' blocks.

Program Step 11:-



Code

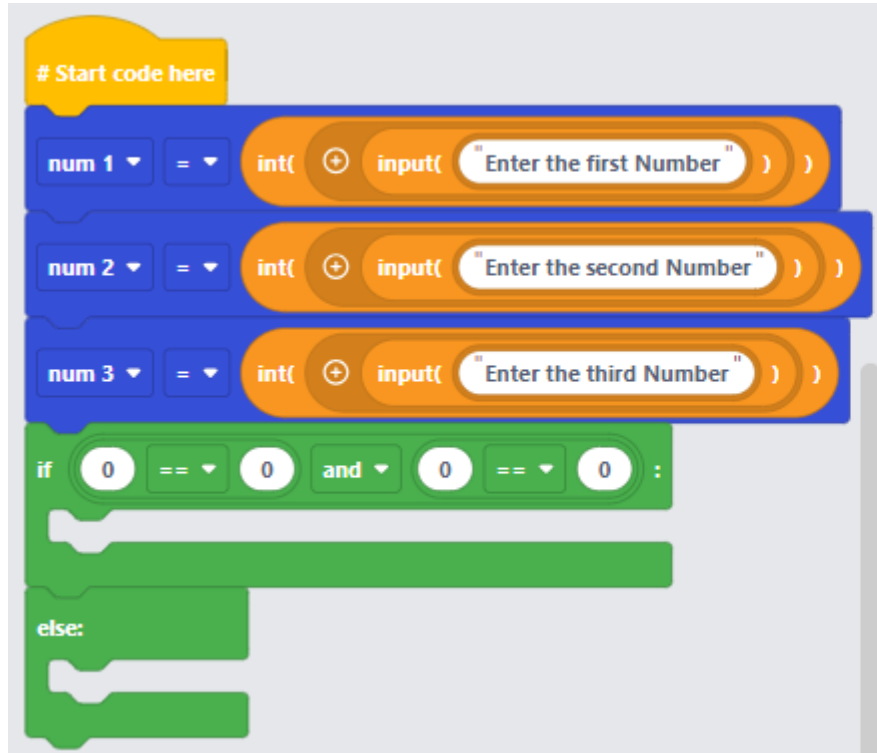
```
1 #Start code here
2 num_1 = int(input("Enter the first Number"))
3 num_2 = int(input("Enter the second Number"))
4 num_3 = int(input("Enter the third Number"))
5 if True and True:
6     pass
7 else:
8     pass
9
```

Program Step 12:-

Get a equal to block from the logic

The image shows the Scratch Logic blocks interface. On the left is a vertical menu with categories: Text, Math, Logic (highlighted), Lists, Loops, Definitions, Turtle, Graphs, and Random. On the right is a workspace titled 'Logic' containing a stack of blocks. The stack includes an 'if True:' block, an 'elif True:' block, an 'else:' block, and a highlighted '0 == 0' block. Below these are 'True and True' and 'not True' blocks.

Program Step 13:-



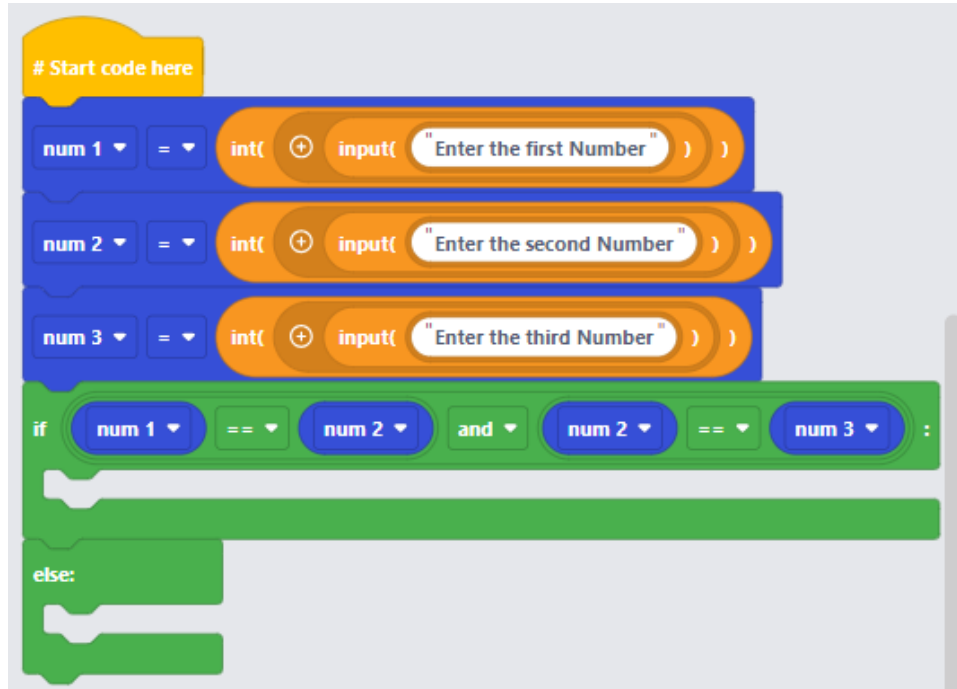
Code

```

1  #Start code here
2  num_1 = int(input("Enter the first Number"))
3  num_2 = int(input("Enter the second Number"))
4  num_3 = int(input("Enter the third Number"))
5  if 0 == 0 and 0 == 0:
6      pass
7  else:
8      pass
9

```

Program Step 14:-



Code

```
1 #Start code here
2 num_1 = int(input("Enter the first Number"))
3 num_2 = int(input("Enter the second Number"))
4 num_3 = int(input("Enter the third Number"))
5 if num_1 == num_2 and num_2 == num_3:
6     pass
7 else:
8     pass
9
```

Program Step 15:-

Get a print "Hello World" from the Statement

The image shows a block editor interface with a left sidebar and a main workspace. The sidebar contains categories: Imports, Variables, Statements (highlighted in orange), Text, Math, and Logic. The main workspace is divided into sections: Output, Input, and Time. In the Output section, a 'print' block with the text 'Hello World' is highlighted with a red rectangle. Below it is another 'print' block with the number '1'. In the Input section, there is an 'input' block with the text 'What is your name?'. The Time section is currently empty.

Program Step 16:-

Start code here

```

num 1 = int( input( "Enter the first Number" ) )
num 2 = int( input( "Enter the second Number" ) )
num 3 = int( input( "Enter the third Number" ) )

if num 1 == num 2 and num 2 == num 3 :
    print( "All numbers are equal" )
else:
    print( "Numbers are not equal" )
  
```

Code

```

1 #Start code here
2 num_1 = int(input("Enter the first Number"))
3 num_2 = int(input("Enter the second Number"))
4 num_3 = int(input("Enter the third Number"))
5 if num_1 == num_2 and num_2 == num_3:
6     print("All numbers are equal")
7 else:
8     print("Numbers are not equal")
9
  
```

Output

Powered by  **trinket**

```
Enter the first Number 4
Enter the second Number 6
Enter the third Number 6
Numbers are not equal
```

Powered by  **trinket**

```
Enter the first Number 8
Enter the second Number 8
Enter the third Number 8
All numbers are equal
```

ACTIVITY SHEETS

Question 1:

How many values can boolean have?

- A. 4
- B. 5
- C. 6
- D. 2

Question 2:

Why we use “==”?

- A. to pass the value to variable
- B. to store value in variable
- C. compare value
- D. make both values same

Question 3:

Which of the following statement is correct

- A. True AND True = false
- B. True OR True = False
- C. True AND False = True
- D. True OR False = True

Question 4:

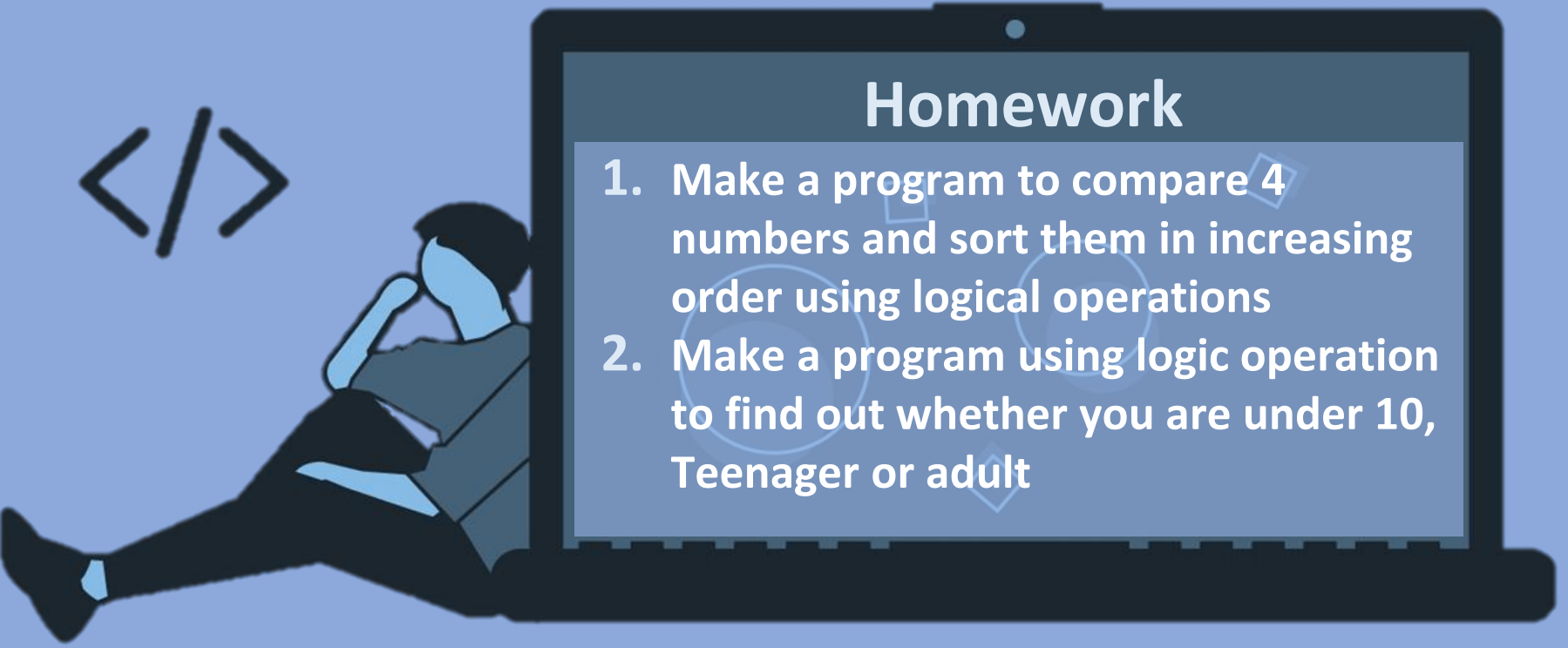
Why we use “!=”?

- A. To pass the value to variable.
- B. To store value in variable.
- C. Compare the values.
- D. Make both values same.

Question 5:

“NOT” operation is used for_____.

- A. To invert boolean logic.
- B. To invert Boolean value.
- C. Compare boolean value
- D. None of the above.



Homework

1. Make a program to compare 4 numbers and sort them in increasing order using logical operations
2. Make a program using logic operation to find out whether you are under 10, Teenager or adult