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

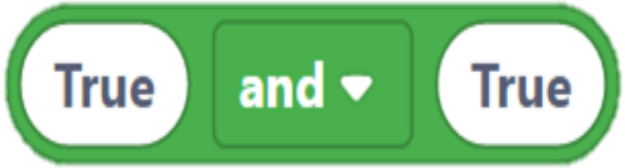
Remember & Understanding

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

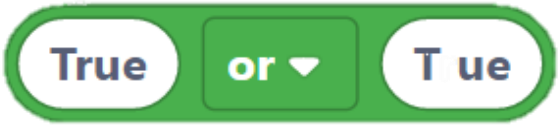


OR LOGICAL OPERATOR

OR gate

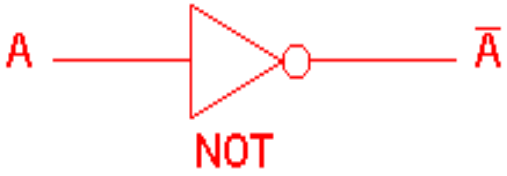
2 Input OR gate		
A	B	A+B
0	0	0
0	1	1
1	0	1
1	1	1

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



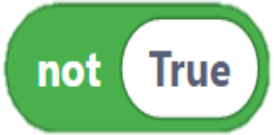
NOT LOGICAL OPERATOR

NOT gate



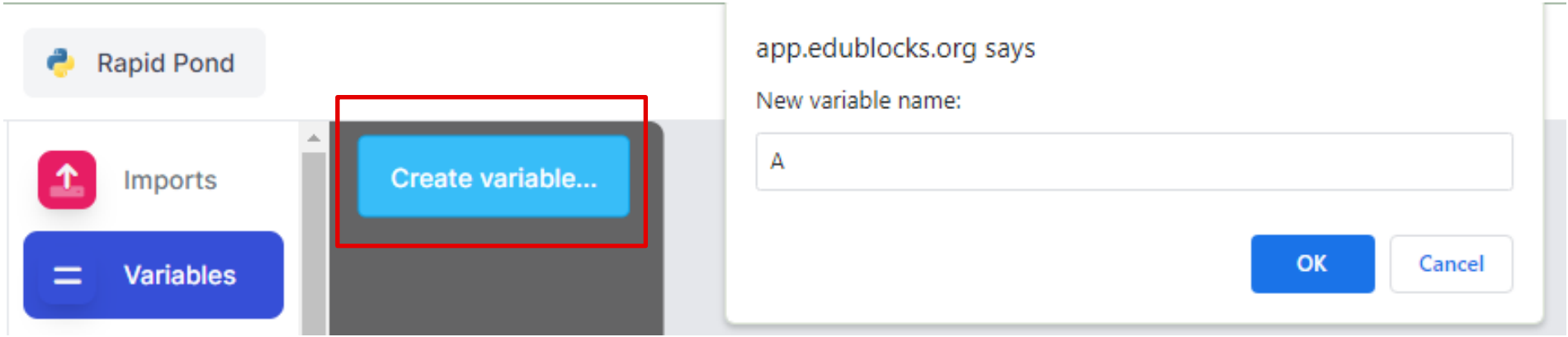
NOT gate	
A	$\bar{A}$
0	1
1	0

For NOT operator- returns TRUE if operand is false



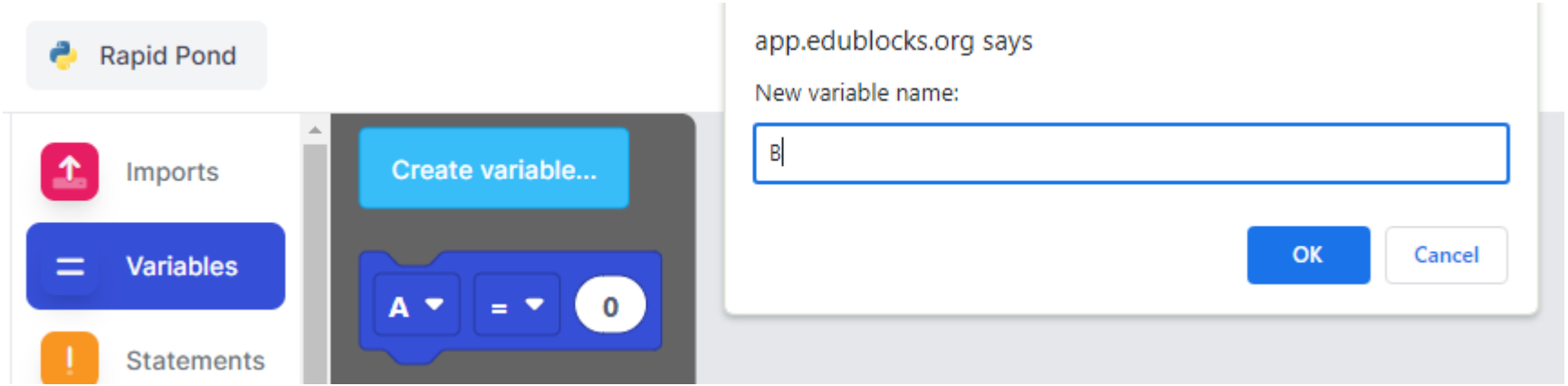
Apply & Create

Program Step 1:-



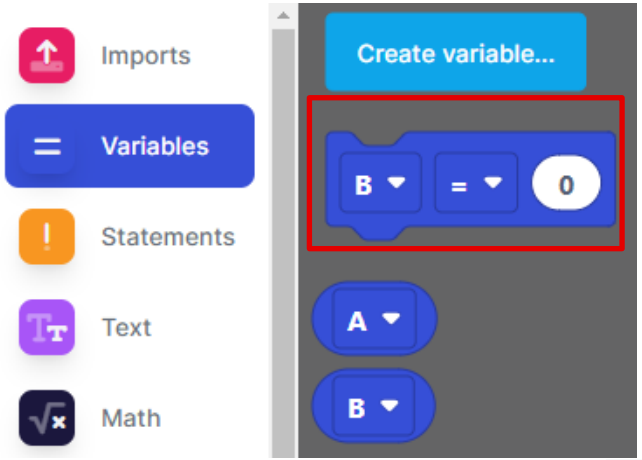
Create a variable with name 'A' to store input from the user

Program Step 2:-



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

Program Step 3:-

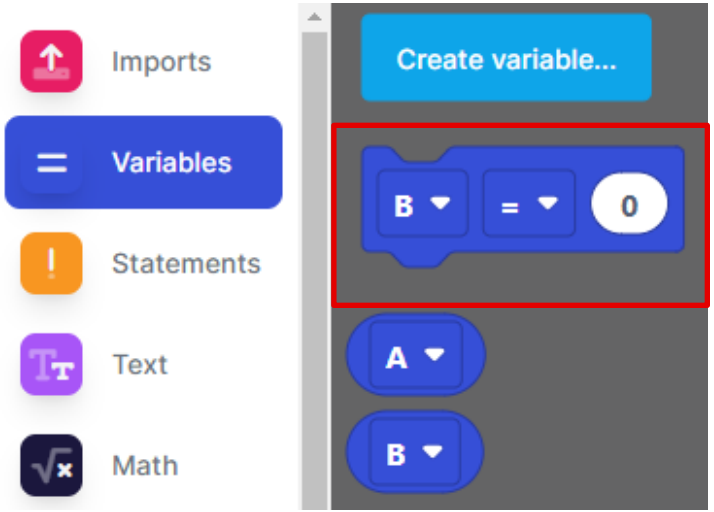


Take the varibale ‘A’ and store the data TRUE

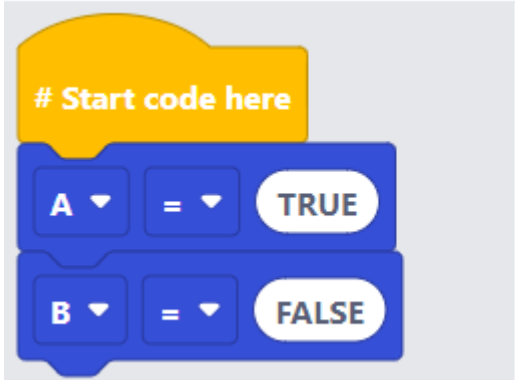
Code

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

Program Step 4:-



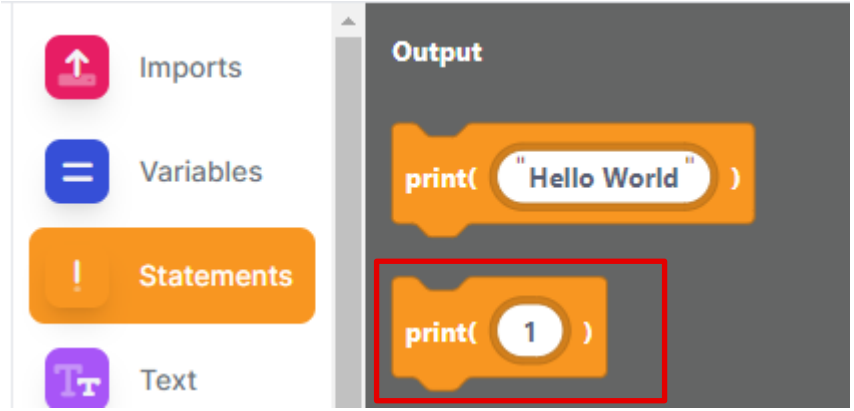
Take the varibale ‘B’ and store the data FALSE



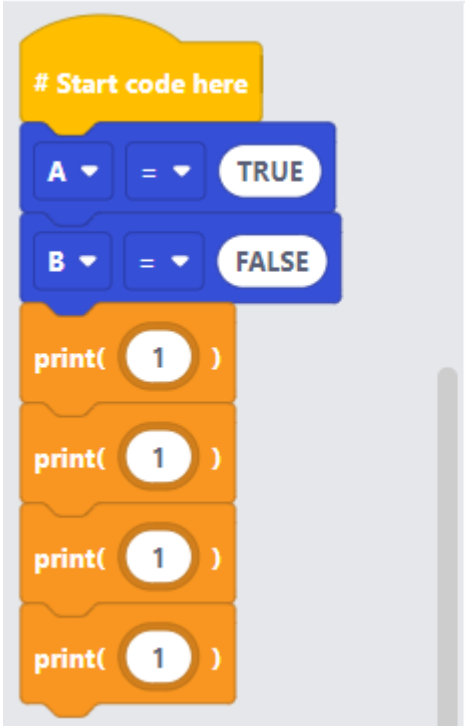
Code

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

Program Step 5:-



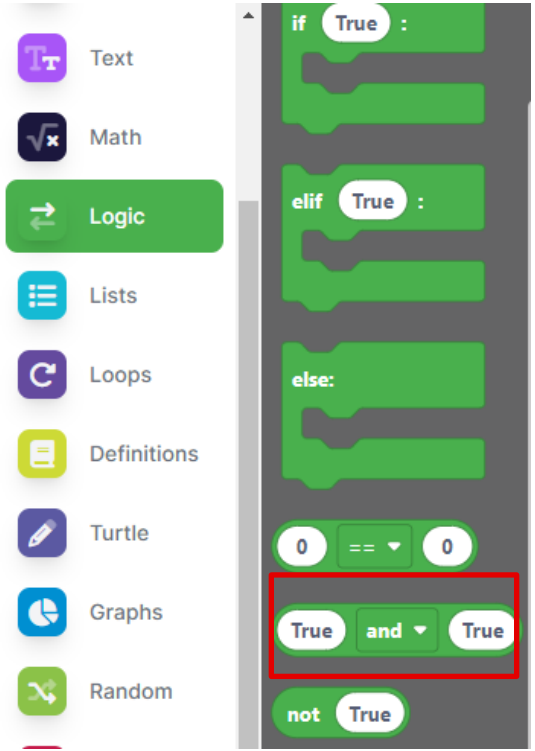
Take the print variable block from the statement

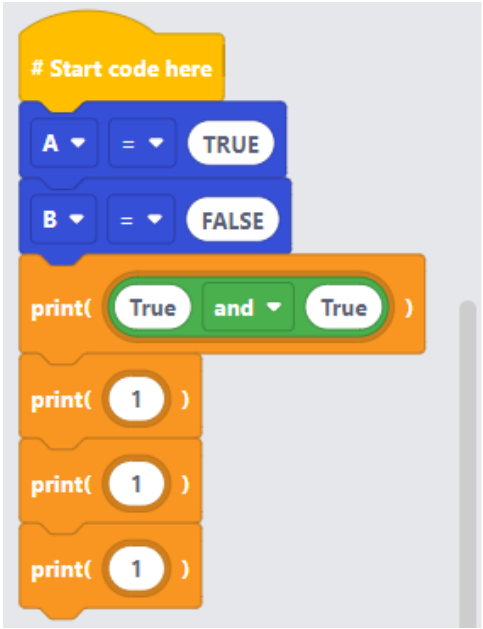


Code

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

Program Step 6:-



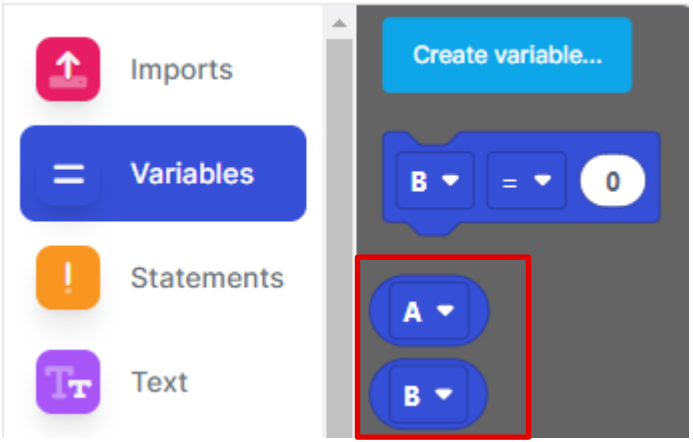


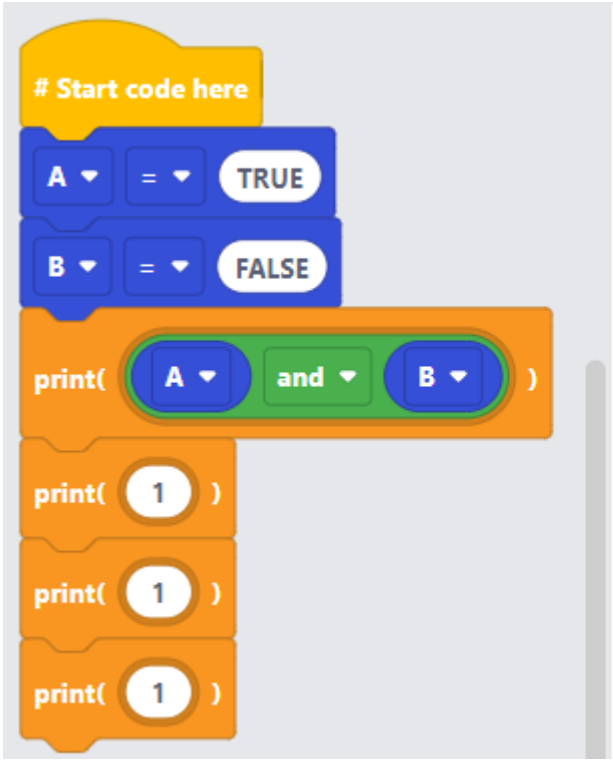
Code

```
#Start code here
A = TRUE
B = FALSE
print(True and True)
print(1)
print(1)
print(1)

```

Take ‘and’ block from the logical operator

Program Step 7:-

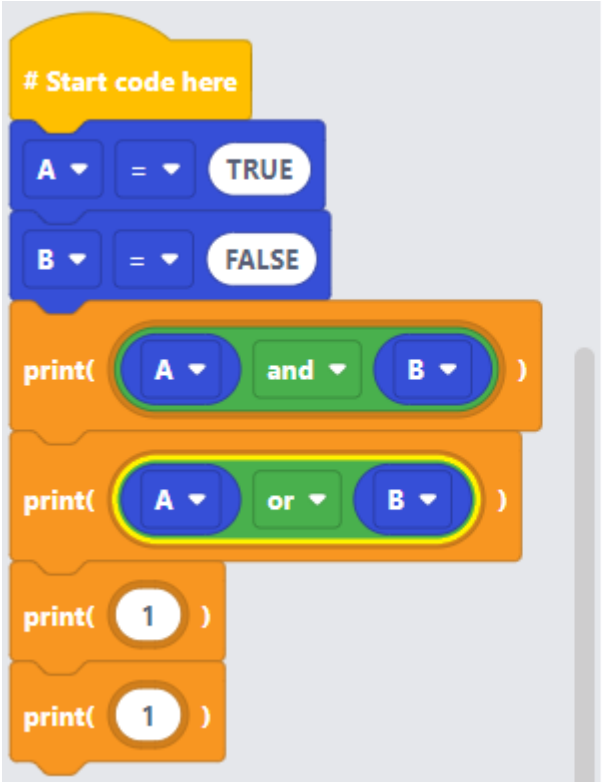




Code

```
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:-

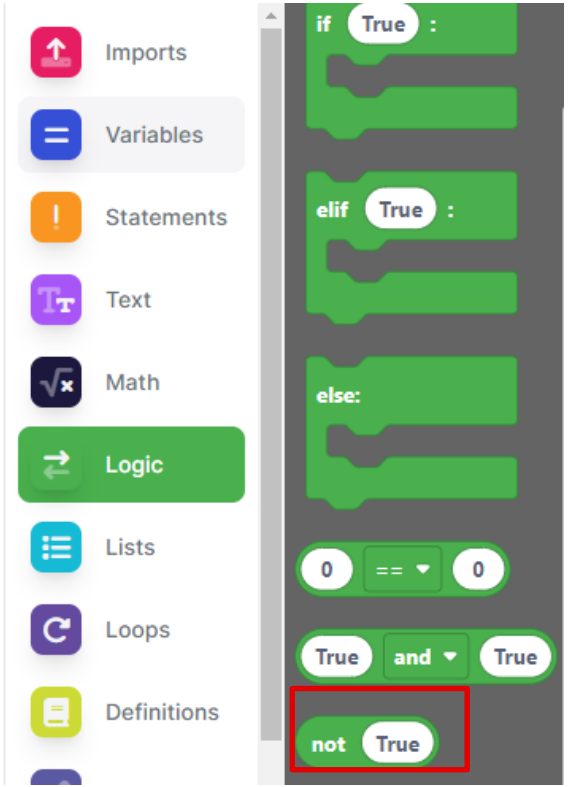


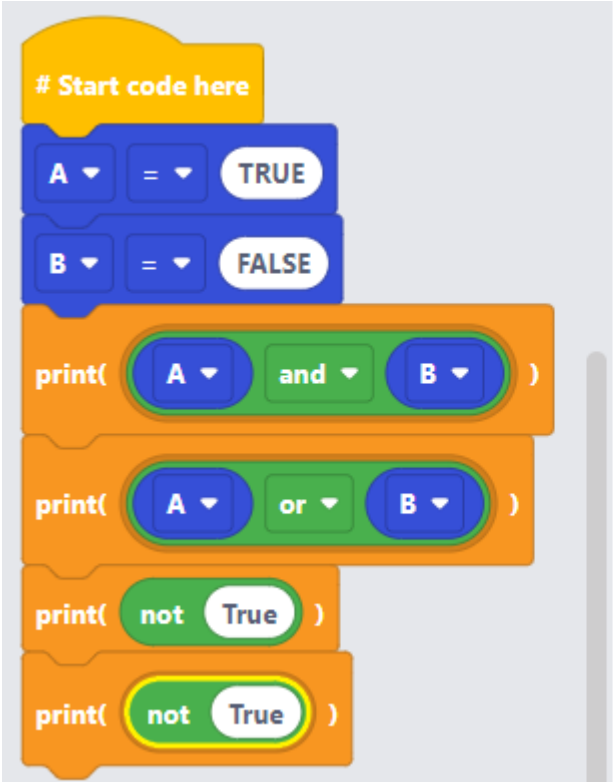
Code

```
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:-

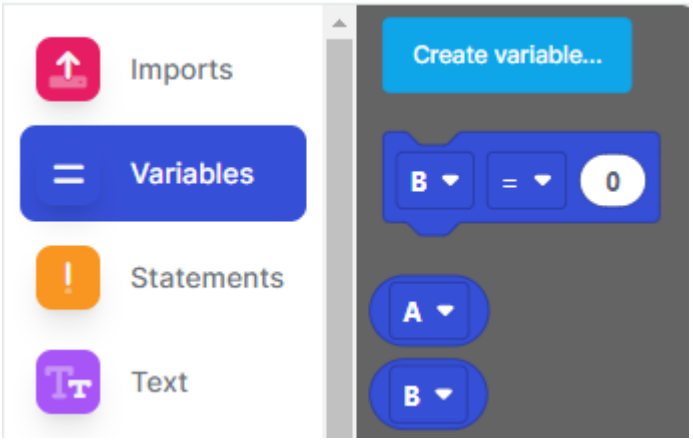


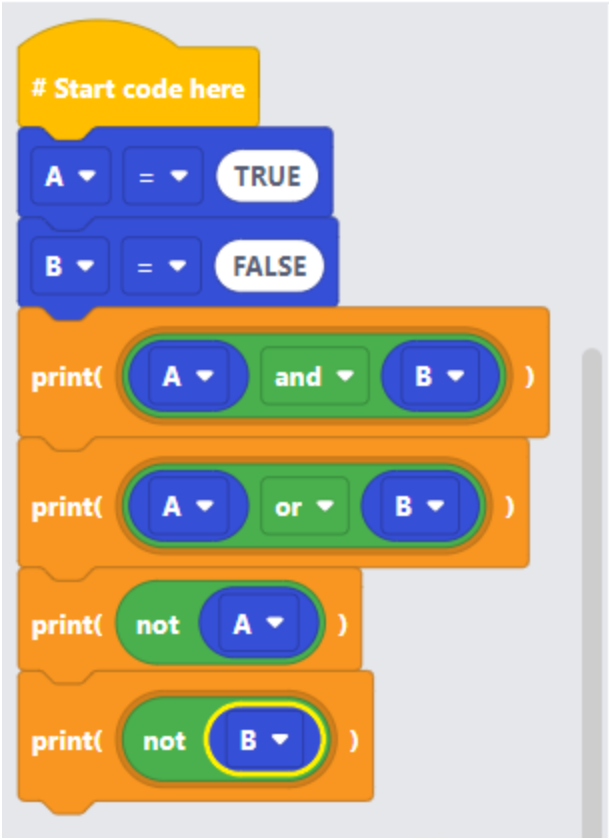


Code

```
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:-

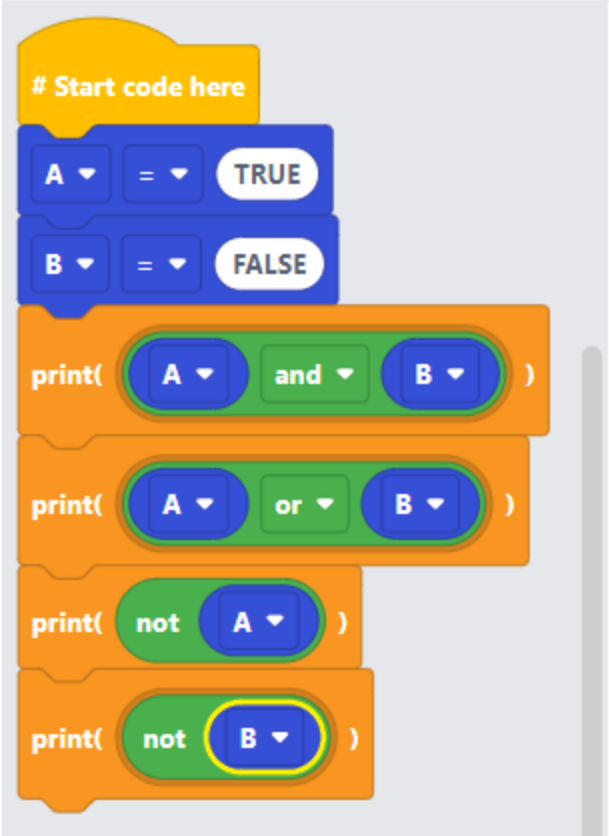




Code

```
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

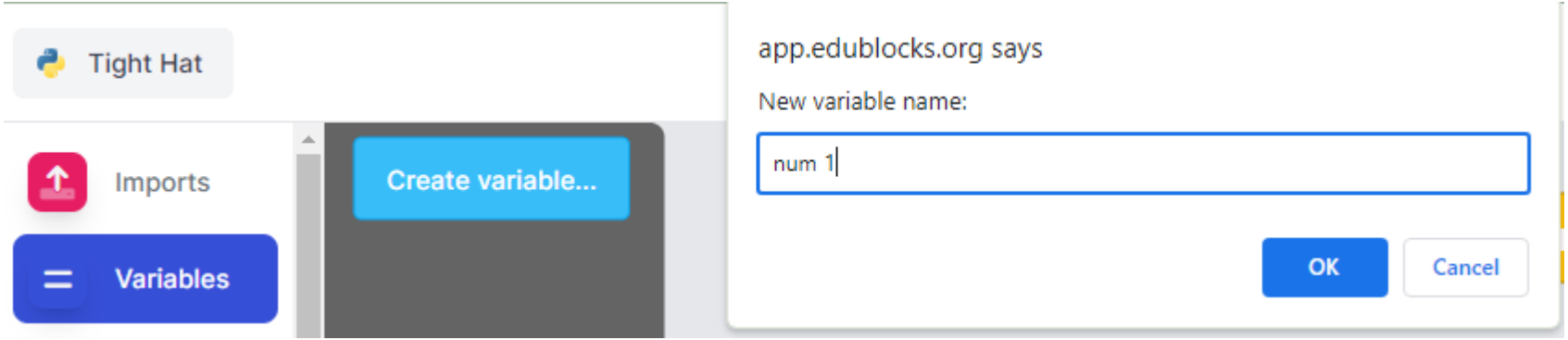
```
1  #Start code here
2  A = TRUE
3  B = FALSE
4  print(A and B)
5  print(A or B)
6  print(not A)
7  print(not B)
8
```

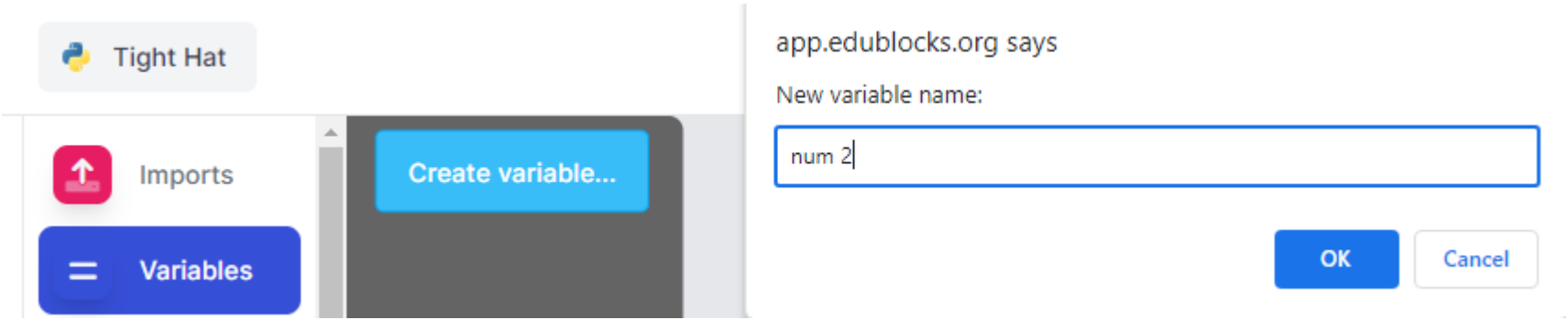
Apply & Create

ACTIVITY 01:-

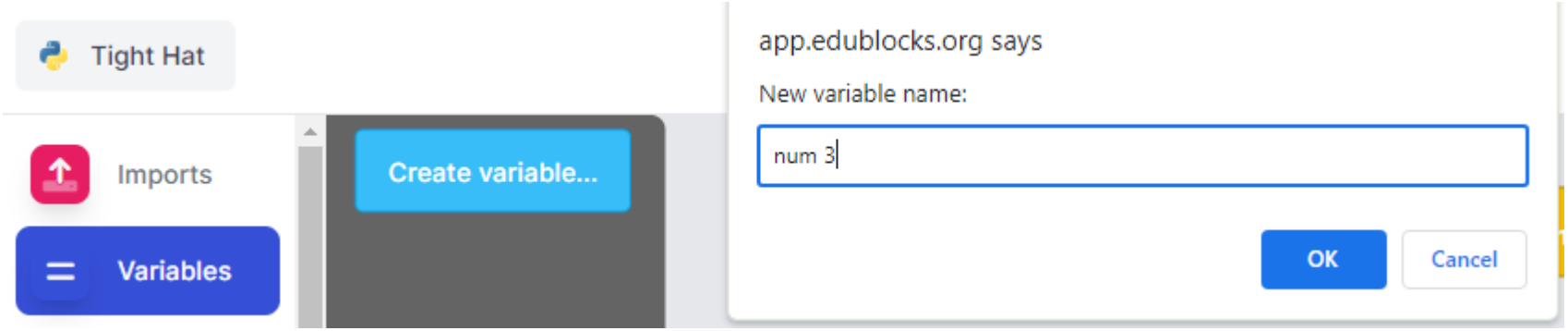
</> WRITE THE PROGRAM TO CHECK WHETHER THE INPUT NUMBERS ARE EQUAL OR NOT

Program Step 1:-

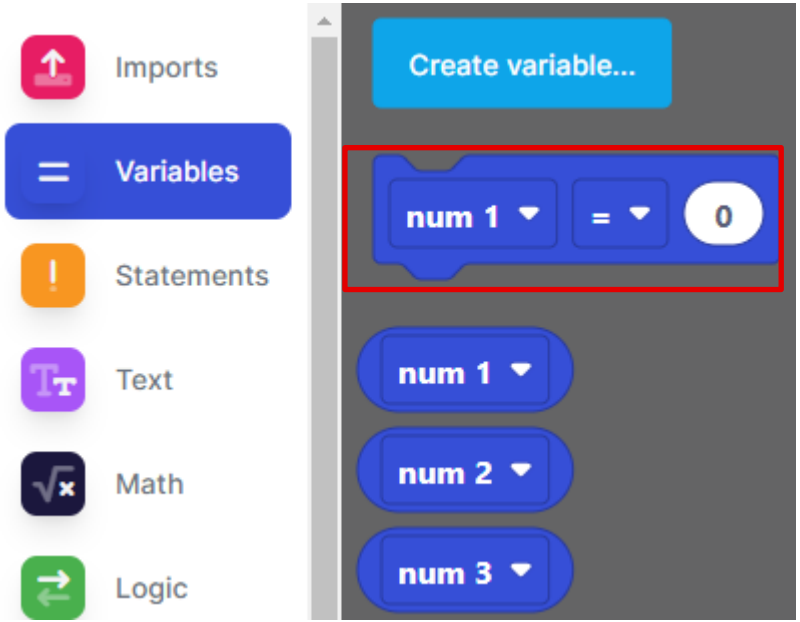


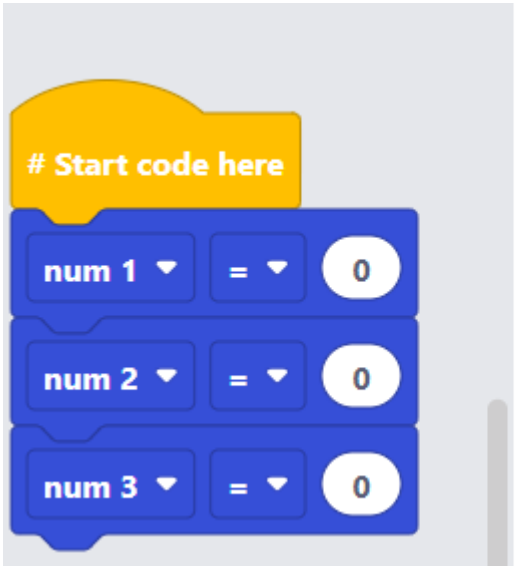


Program Step 2:-



Program Step 3:-

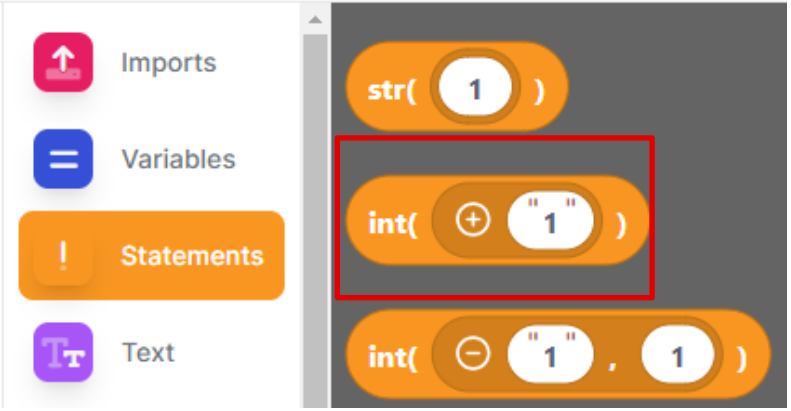


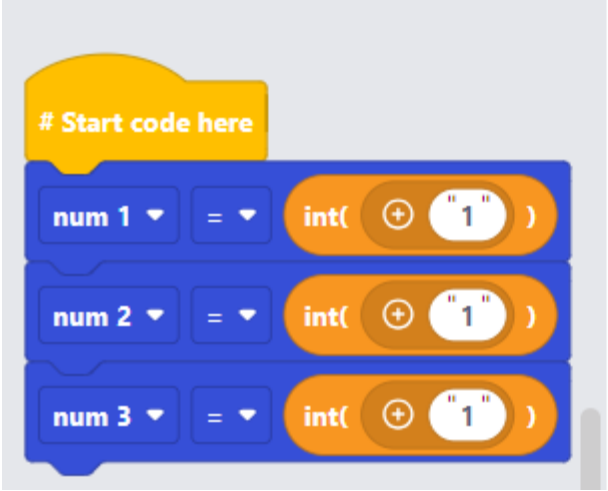


Code

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

Program Step 4:-



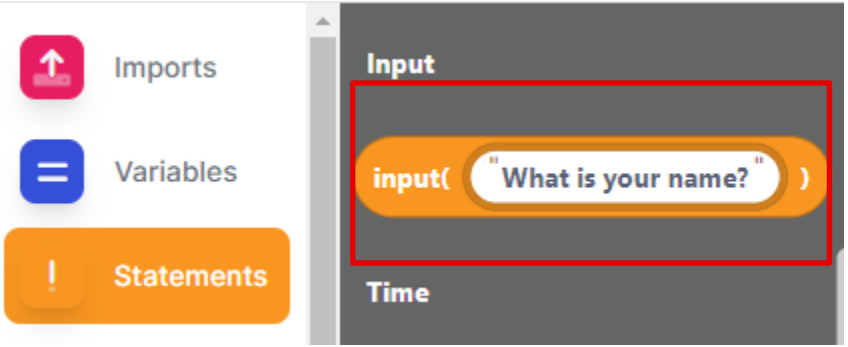


Code

```
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:-

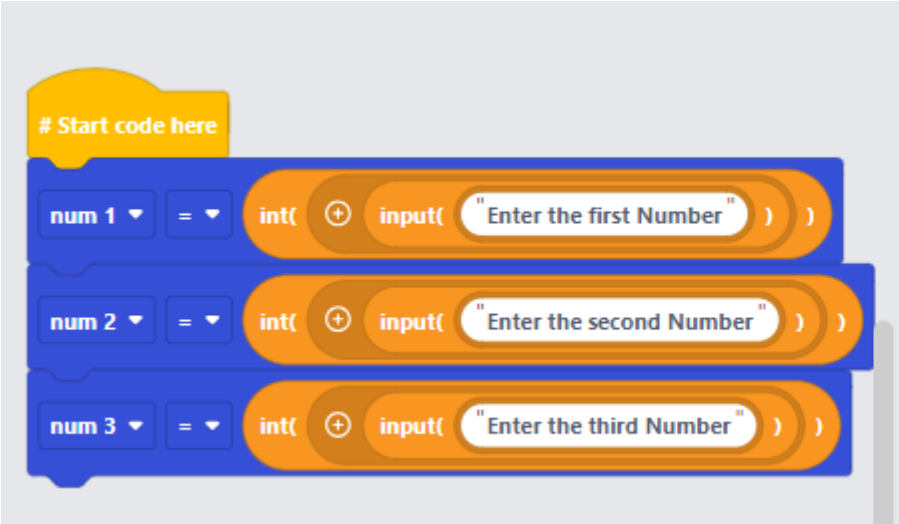


Take a input block from the Statement

Code

```
#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?"))

```

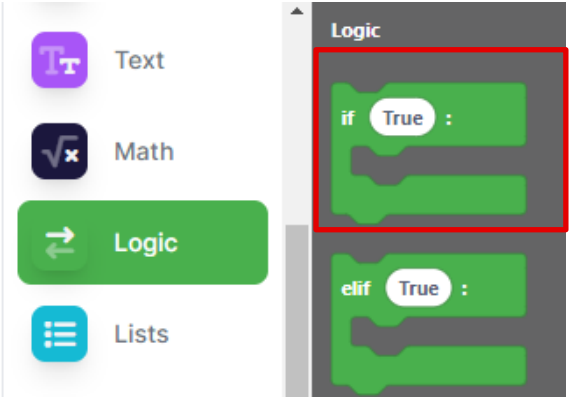
Program Step 6:-



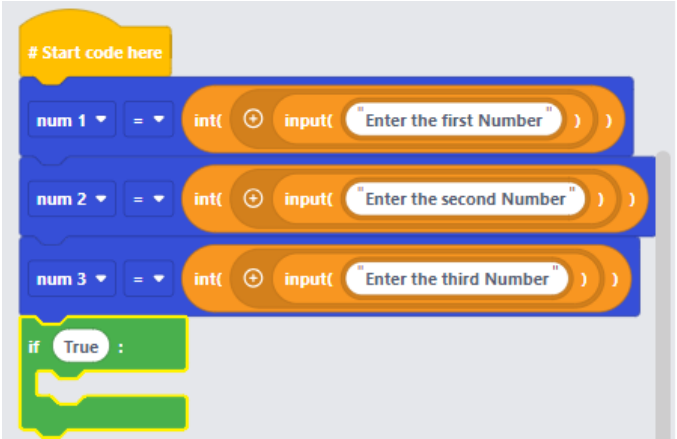
Code

```
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:-

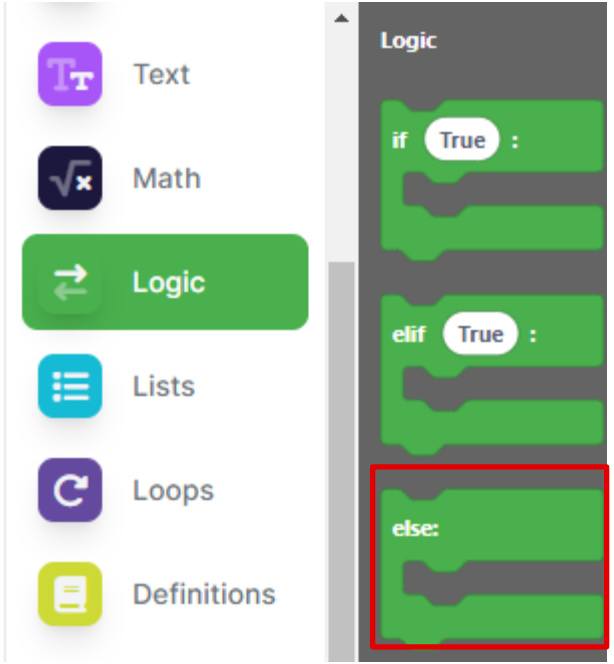


Get a if Statement from the logic



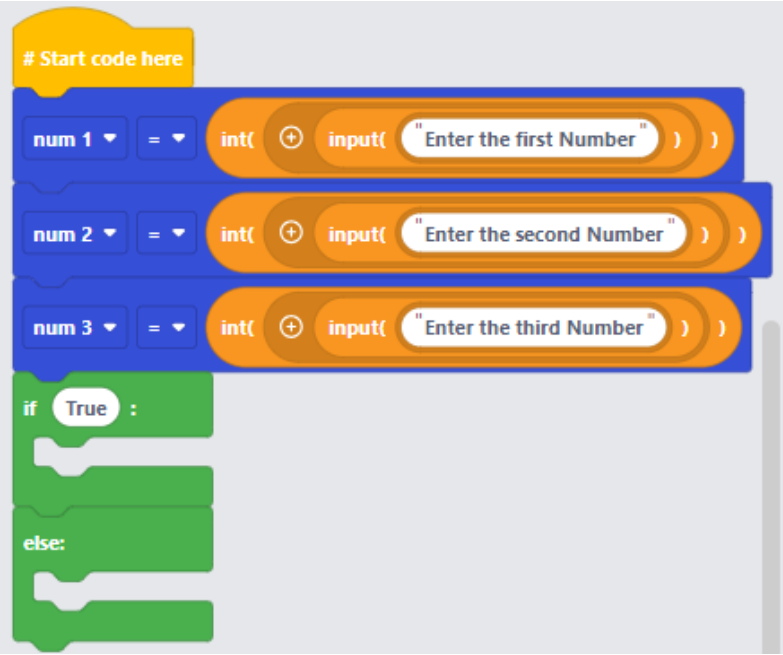

```
#Start code here
num_1 = int(input("Enter the first Number
num_2 = int(input("Enter the second Numbe
num_3 = int(input("Enter the third Number
if True:
    pass

```

Program Step 8:-



Get a else Statement from the logic

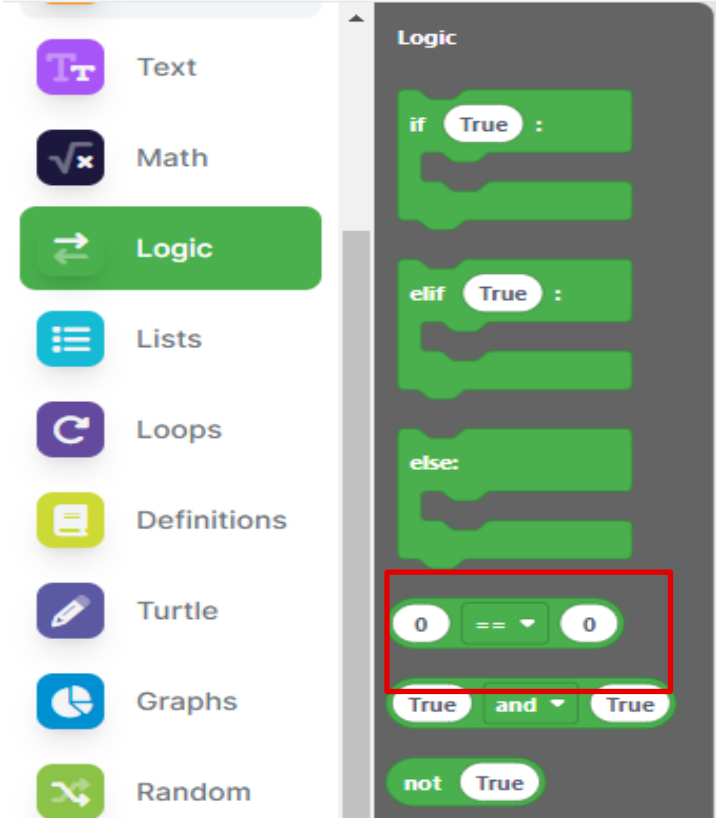
Program Step 9:-



Code

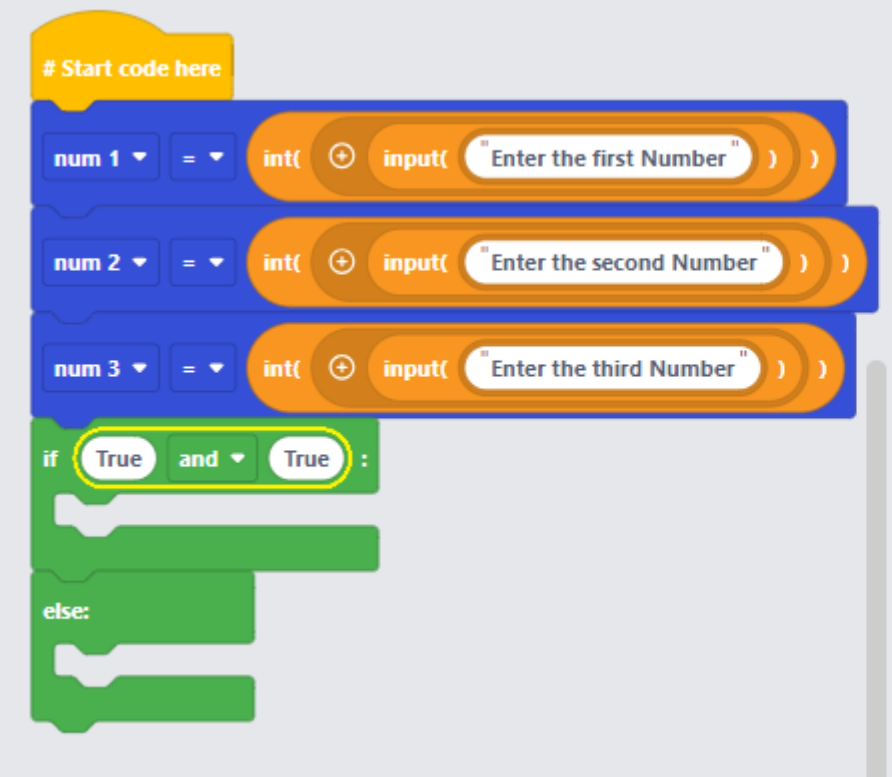
```
1  #Start code here
2  num_1 = int(input("Enter the first Number"))
3  num_2 = int(input("Enter the second Number"))
4  num_3 = int(input("Enter the third Number"))
5  if True:
6    pass
7  else:
8    pass
9
```

Program Step 10:-



Get a equal to block from the logic

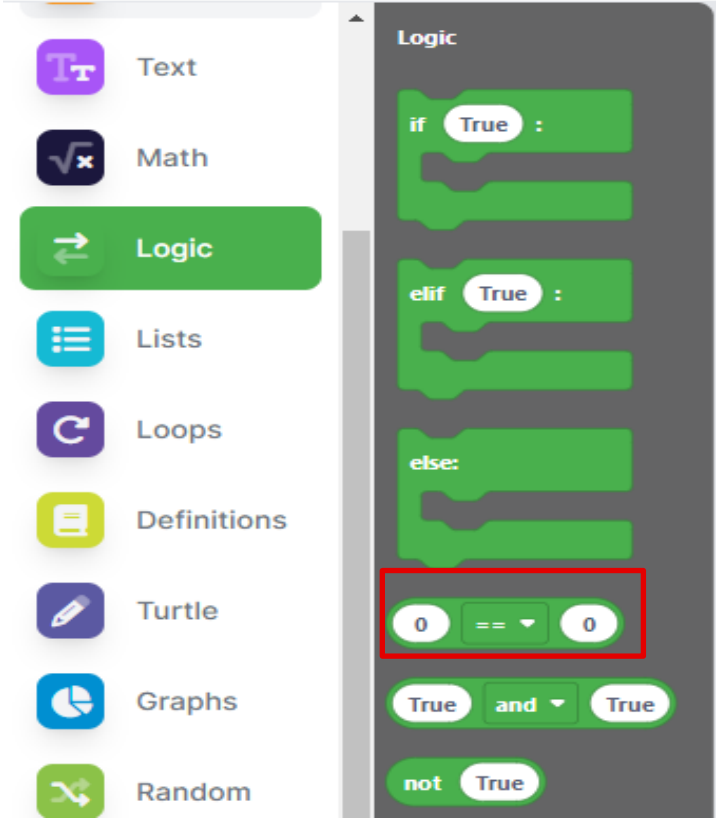
Program Step 11:-



Code

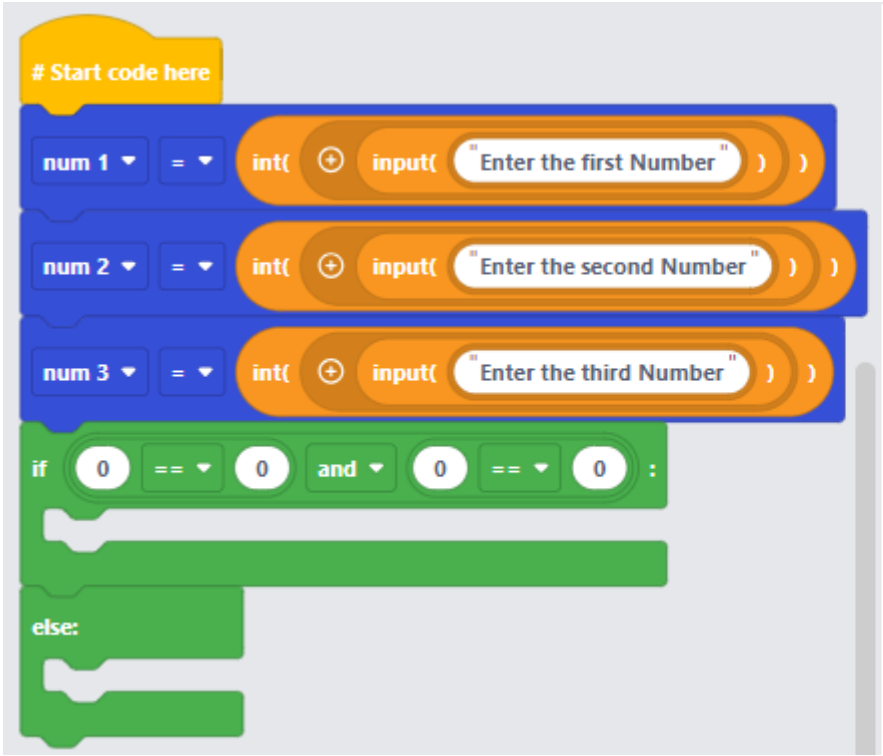
```
1  #Start code here
2  num_1 = int(input("Enter the first Number"))
3  num_2 = int(input("Enter the second Number"))
4  num_3 = int(input("Enter the third Number"))
5  if True and True:
6      pass
7  else:
8      pass
9
```

Program Step 12:-



Get a equal to block from the logic

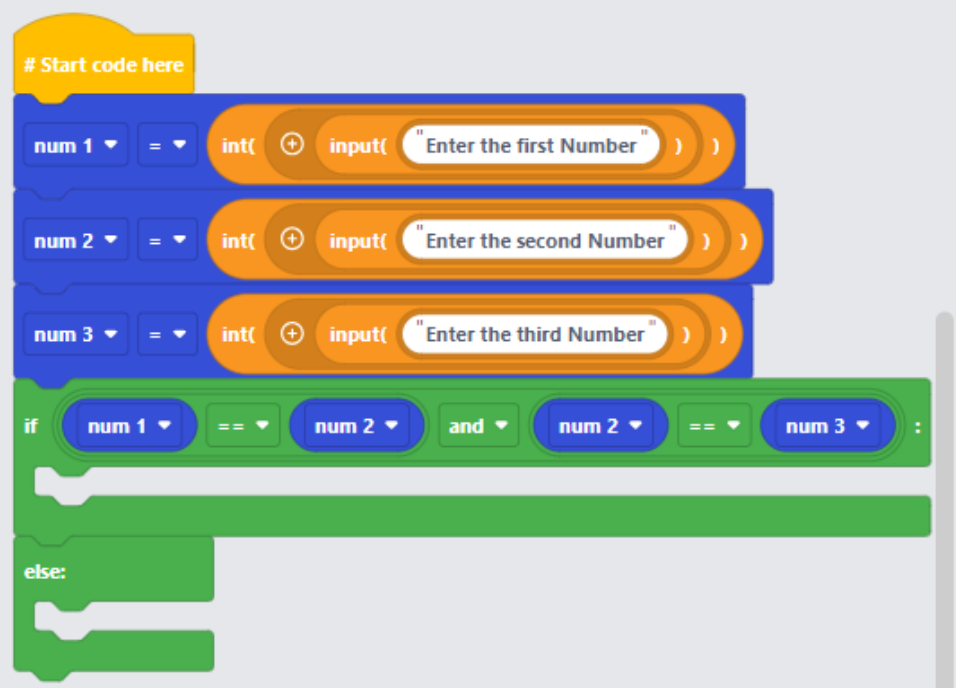
Program Step 13:-



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
```

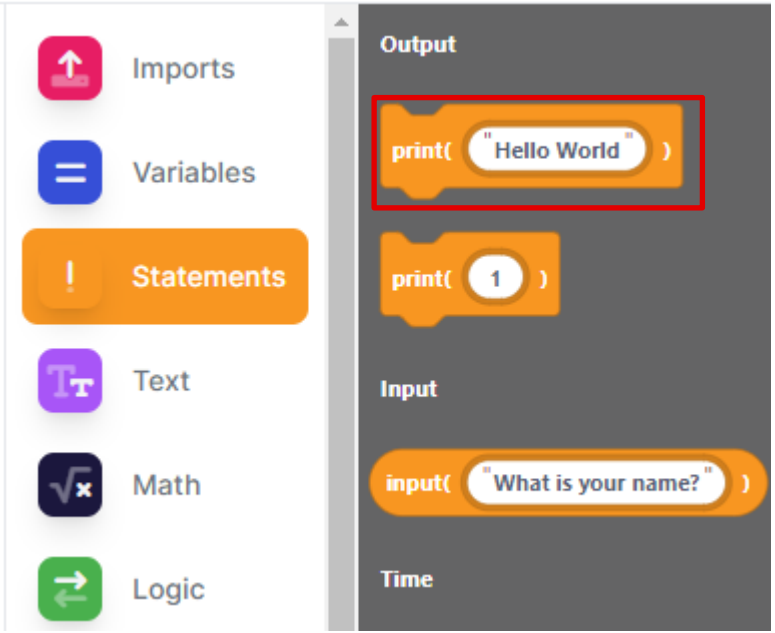
Program Step 14:-



Code

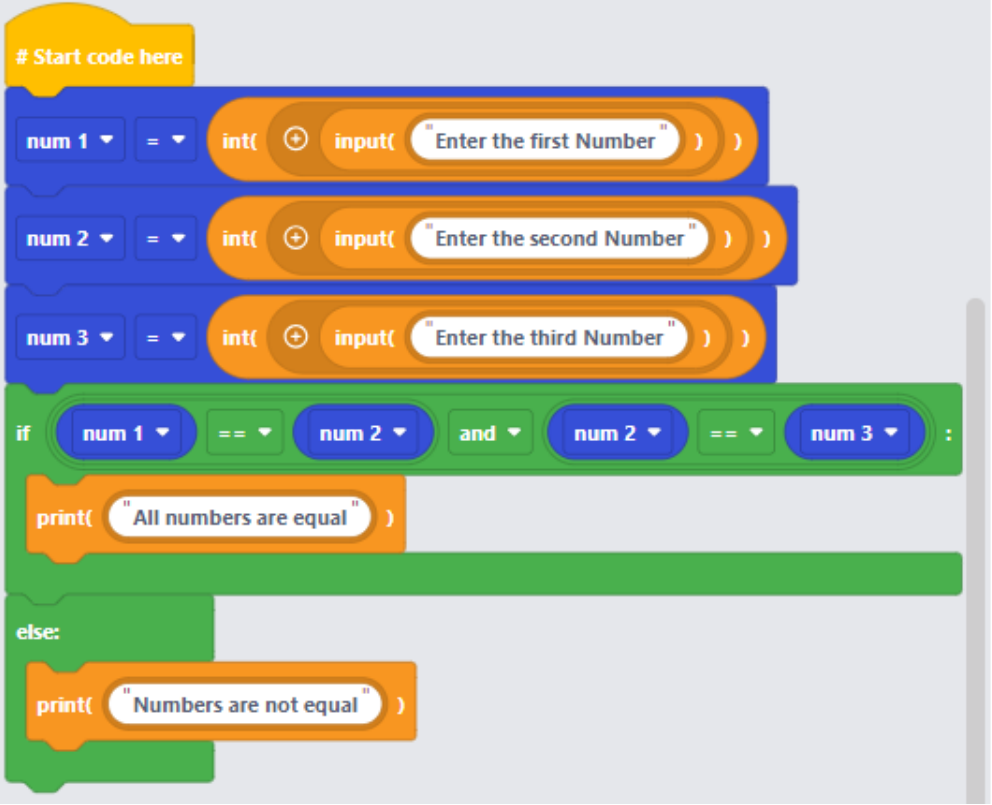
```
1  #Start code here
2  num_1 = int(input("Enter the first Number"))
3  num_2 = int(input("Enter the second Number"))
4  num_3 = int(input("Enter the third Number"))
5  if num_1 == num_2 and num_2 == num_3:
6      pass
7  else:
8      pass
9
```

Program Step 15:-



Get a print “Hello World” from the Statement

Program Step 16:-



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

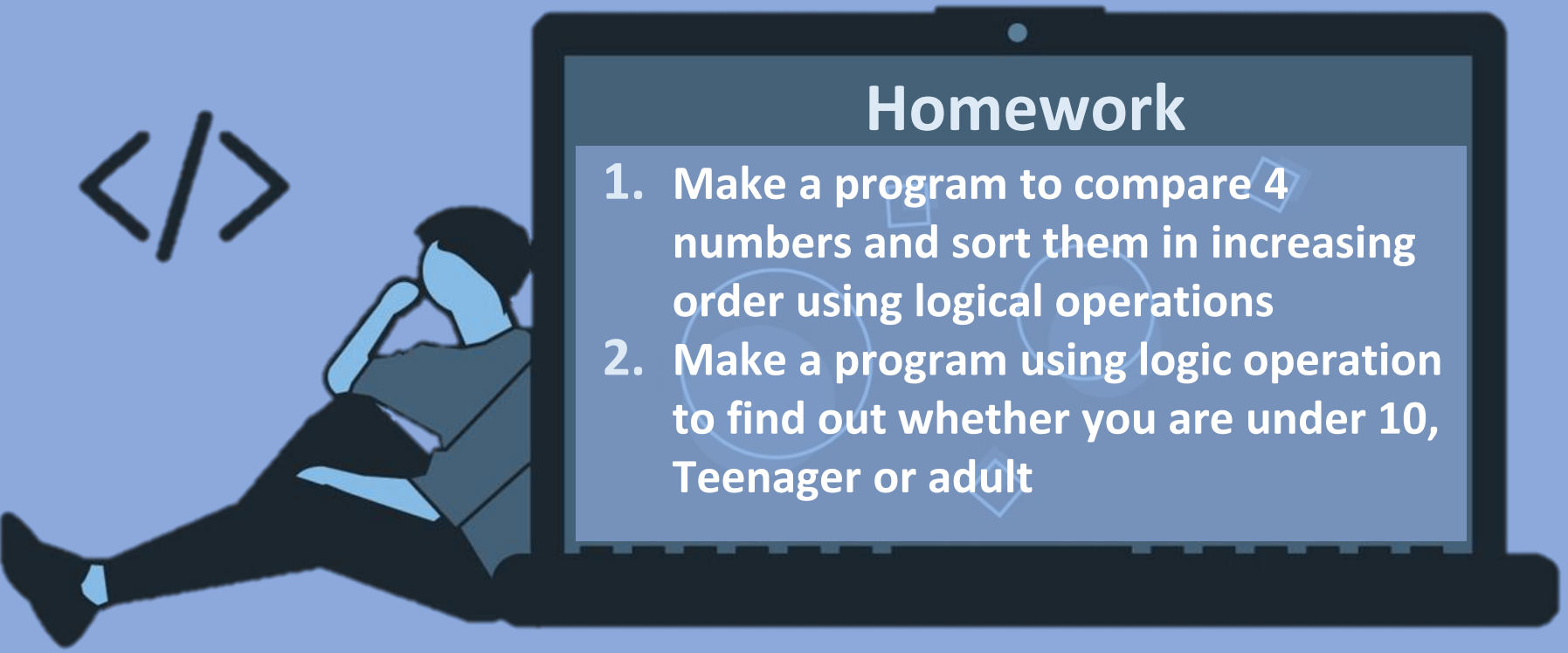
Question 4:

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