



SESSION - 8

PRIME NUMBER



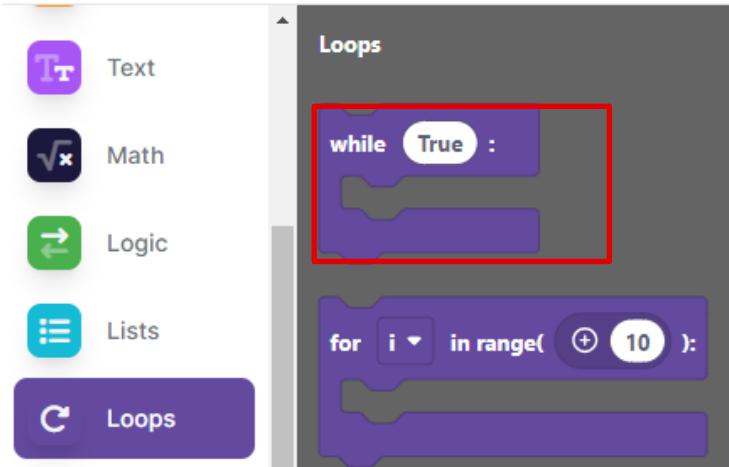
Learning Outcomes:

- **Remember:** The students will list different types of blocks being learnt in the session .
- **Understand:** - They will focus on understanding the FOR Loop
- **Apply:** - They will apply FOR loop to check if a number is Prime or not
 - Will use a combination of IF-ELSE and FOR loop to execute programs .
 - Apply the use of BREAK statement
- **Analyze:** They will check their understanding by developing a code.
- **Create:** They will create the code in EduBlocks

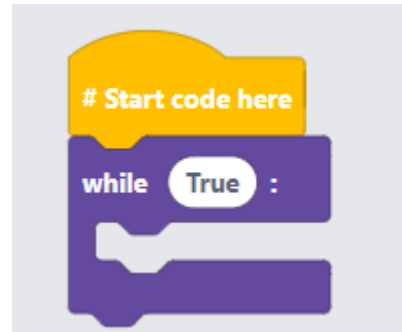
- A 'for loop' is used for iterating over a sequence (that is either a list, a tuple, a dictionary, a set, or a string).
- In this activity we are going to use for loop and else for loop also
- **Example:-**

```
for i in range(2, num):  
    if num % i == 0:  
        print("It is not a prime Number")  
        break  
else:  
    print("It is a prime Number")
```

Program Step 1:-



Get a While loop to make the code run repeatedly

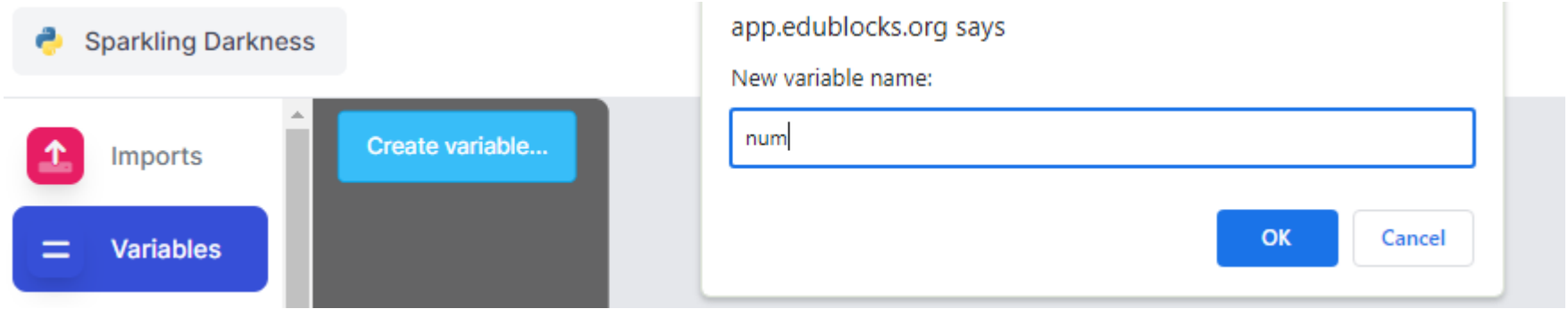


Code

Output

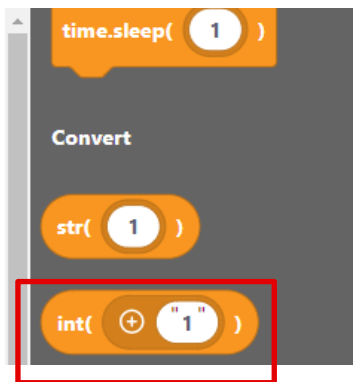
```
1 #Start code here
2 while True:
3     pass
4
```

Program Step 2:-

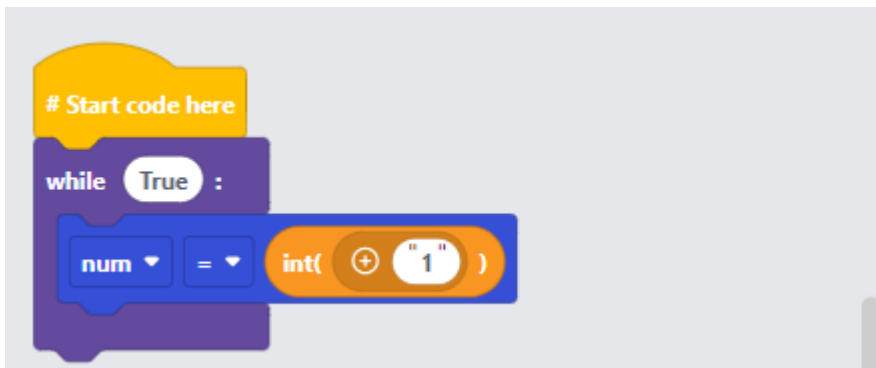


Create a variable with name 'num' to store input from the user

Program Step 3:-



Add an int block to convert the input given by user into an integer



Code

```
1 #Start code here
2 while True:
3     num = int("1")
4
```

Program Step 4:-

Imports

Variables

Statements

Text

print(1)

Input

input("What is your name?")

Add an input block to the int block to get input from user

Start code here

while True :

num = int(input("Enter the number"))

Code

```
1 #Start code here
2 while True:
3     num = int(input("Enter the number"))
4
```

Program Step 5:-

Text

Math

Logic

Lists

Loops

Logic

if True :

elif True :

Add an if condition from the logic

Start code here

while True :

num = int(input("Enter the number"))

if True :

Code

Output

```
1 #Start code here
2 while True:
3     num = int(input("Enter the number"))
4     if True:
5         pass
6
```


Program Step 6:-

The screenshot shows a programming environment with a left sidebar containing categories: Text, Math, Logic, Lists, Loops, Definitions, Turtle, and Sprites. The 'Logic' category is selected. The main workspace displays a Scratch script with a yellow 'Start code here' block, a purple 'while True:' loop block, a blue 'num = int(input("Enter the number"))' block, and a green 'if 0 > 0:' block. A dropdown menu for the 'if' block is open, showing various comparison operators. The 'greater than' operator (>) is highlighted with a green checkmark. Below the workspace, a red box highlights a '0 == 0' block in the Logic category. To the right, the 'Code' tab shows the corresponding Python code:

```
1 #Start code here
2 while True:
3     num = int(input("Enter the number"))
4     if 0 > 0:
5         pass
6
```

Add a comparison block and change it to greater than block to check if the input given by the user is greater than 1

Program Step 7:-



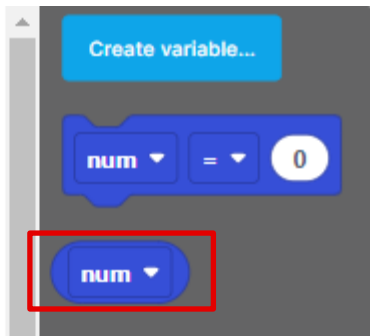
Imports



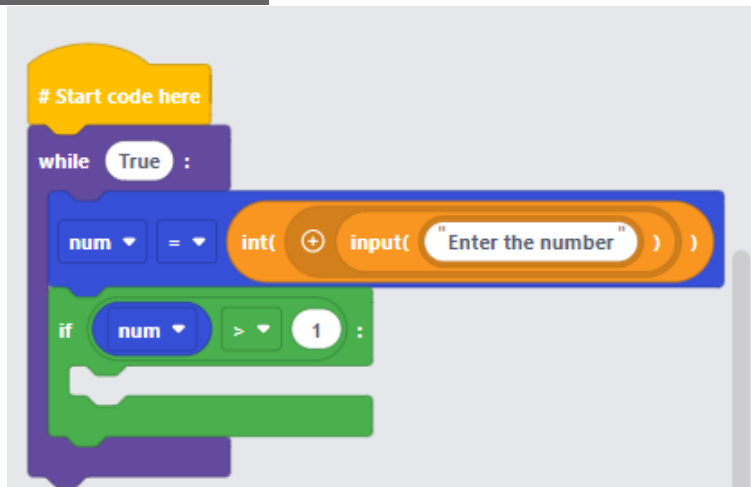
Variables



Statements



Get the num variable block and connect it to the left side of comparison block and write 1 on the right side



Code

Output

```
1 #Start code here
2 while True:
3     num = int(input("Enter the number"))
4     if num > 1:
5         pass
6
```

Program Step 8:-

T

Text

√x

Math

↔

Logic

☰

Lists

↺

Loops

📄

Definitions

🖋️

Turtle

Loops

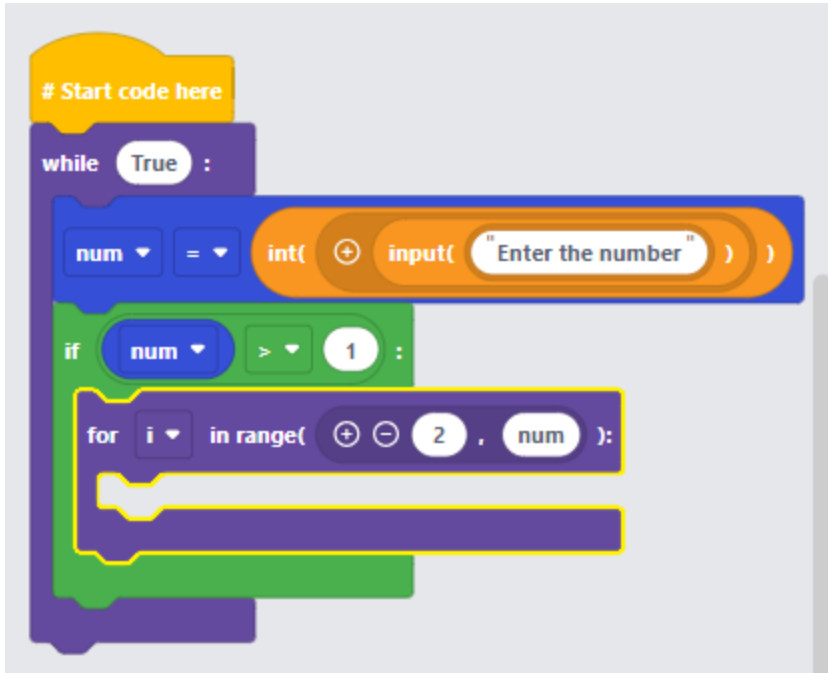
while True :

for i in range(+ 10):

for i in range(+ - 5 , 10):

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

Output

```
1 #Start code here
2 while True:
3     num = int(input("Enter the number"))
4     if num > 1:
5         for i in range(2, num):
6             pass
7
```

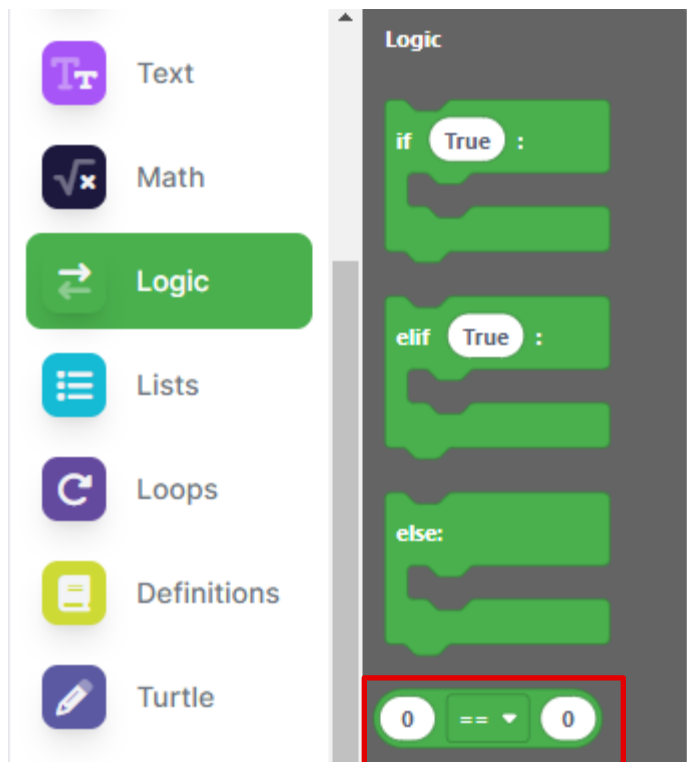
Program Step 10:-

The screenshot displays a programming environment with a left sidebar containing icons for Text, Math, Logic, Lists, and Loops. The Logic section is active, showing an 'if True:' block highlighted with a red rectangle. The main workspace shows a script starting with a yellow 'Start code here' block, followed by a 'while True:' loop. Inside the loop, there is an input block 'input("Enter the number")', an assignment 'num = int(input(...))', and an 'if num > 1:' condition. Inside this 'if' block, a 'for i in range(2, num):' loop is present, which contains an 'if True:' block. The right panel shows the corresponding Python code:

```
1 #Start code here
2 while True:
3     num = int(input("Enter the number"))
4     if num > 1:
5         for i in range(2, num):
6             if True:
7                 pass
8
```

Add an if condition inside for loop

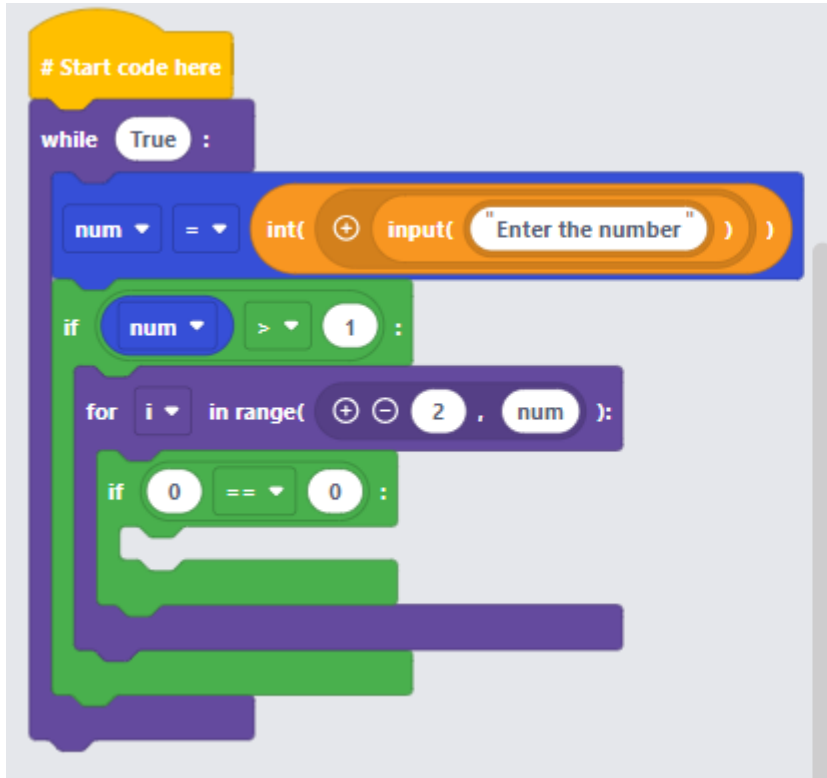
Program Step 11:-



The image shows the Scratch Logic blocks palette on the left and a workspace on the right. The palette includes Text, Math, Logic, Lists, Loops, Definitions, and Turtle. The Logic block is highlighted. In the workspace, there is an 'if' block with a 'True' condition, followed by an 'elif' block with a 'True' condition, and an 'else:' block. A red box highlights the bottom of the 'if' block, showing a comparison block with '0 == 0'.

Add a comparison block to the if condition

Program Step 12:-

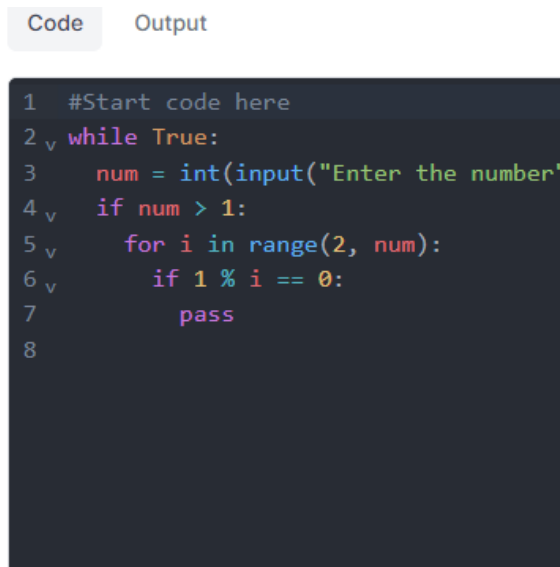
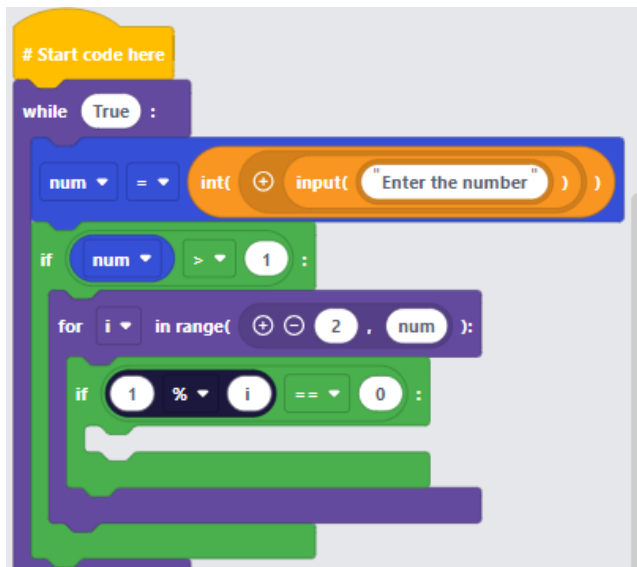
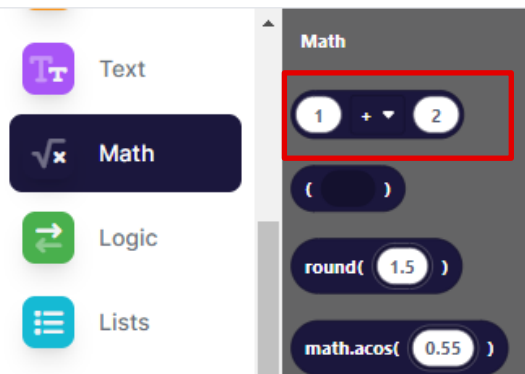


Code

Output

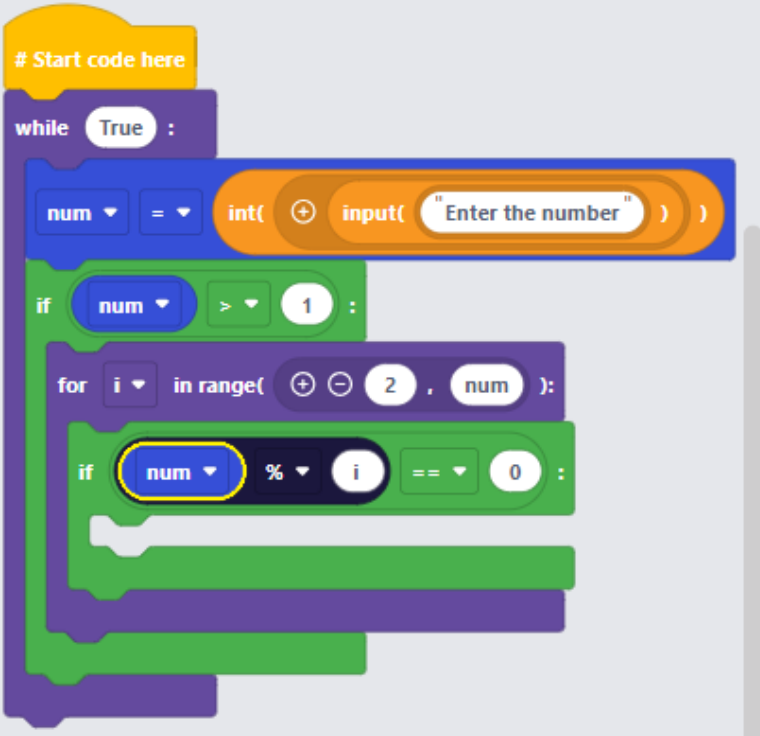
```
1 #Start code here
2 while True:
3     num = int(input("Enter the number"))
4     if num > 1:
5         for i in range(2, num):
6             if 0 == 0:
7                 pass
8
```

Program Step 13:-



Get the addition block from math drawer and change it to modulus

Program Step 14:-



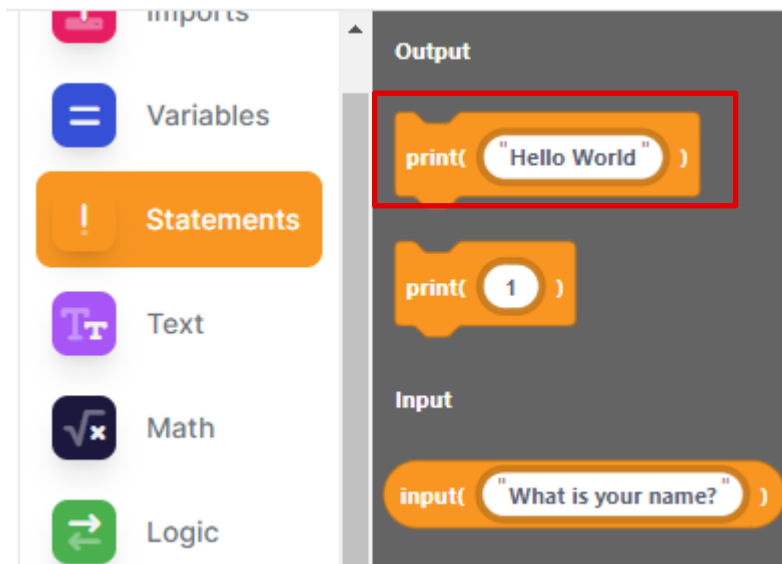
Code

Output

```
1 #Start code here
2 while True:
3     num = int(input("Enter the number"))
4     if num > 1:
5         for i in range(2, num):
6             if num % i == 0:
7                 pass
8
```

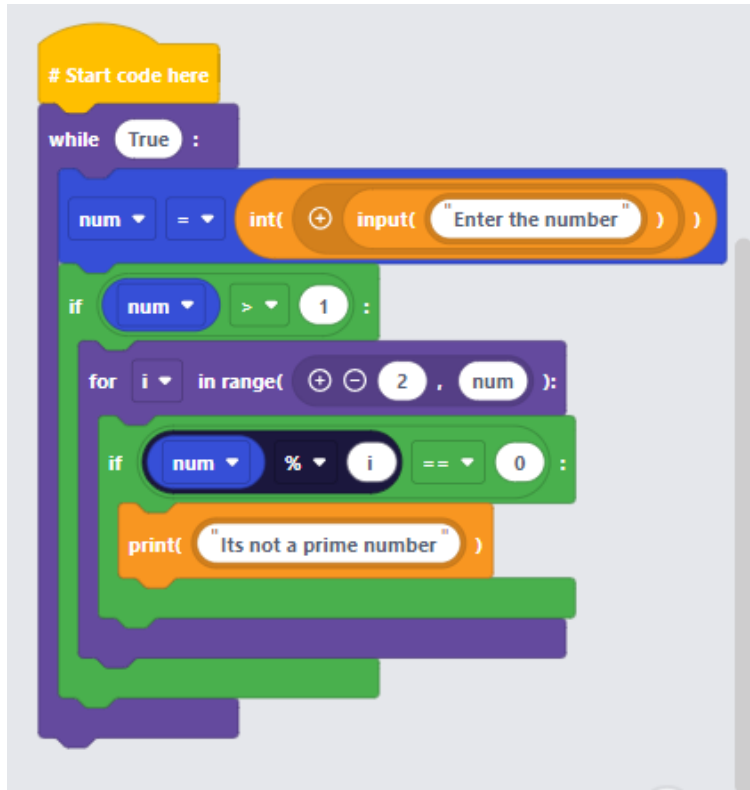
Get the num variable block and connect it to the left side of modulus and write I on the right side, this will give us the remainder, if the remainder is equal to 0, it is not a prime number

Program Step 15:-



Add a print "Hello World" block inside if condition, so that if the number given by user is divisible by any smaller number, then it will print "it is not a prime number"

Program Step 16:-

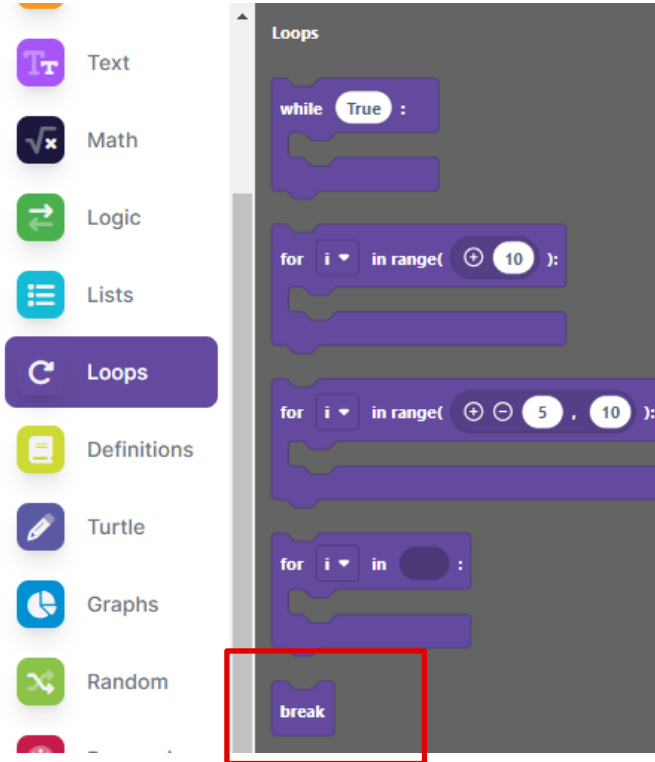


Code

Output

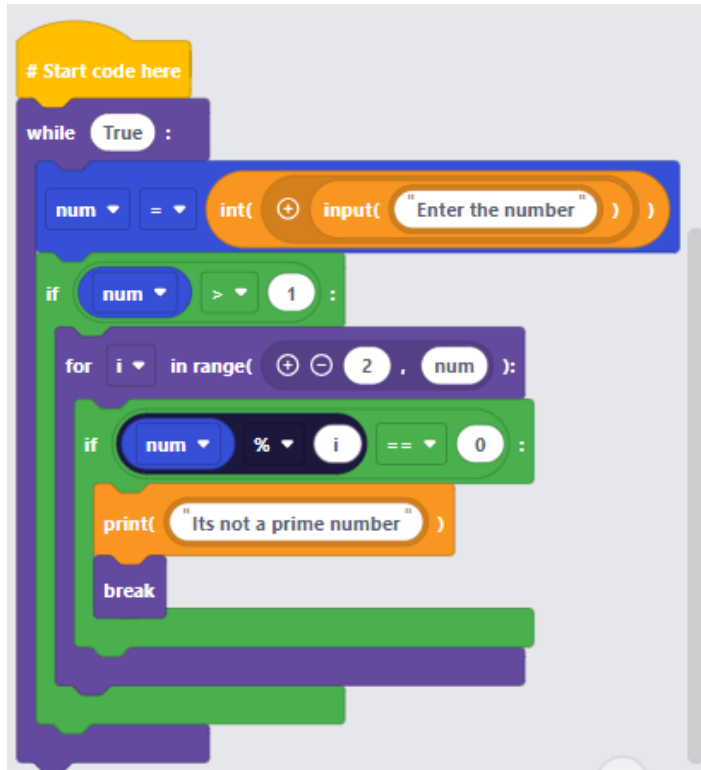
```
1 #Start code here
2 while True:
3     num = int(input("Enter the number"))
4     if num > 1:
5         for i in range(2, num):
6             if num % i == 0:
7                 print("Its not a prime number")
8
```

Program Step 17:-



Add a break block below print, so if the number is divisible, after printing it will break the loop

Program Step 18:-

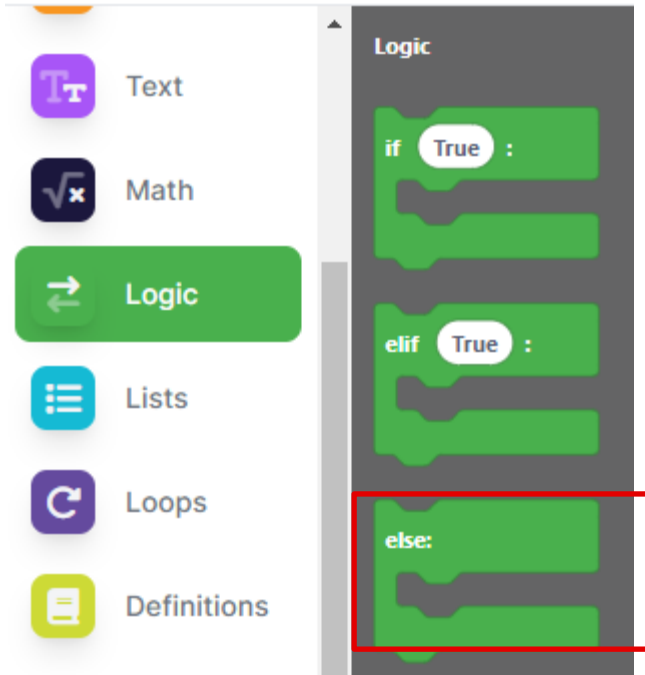


Code

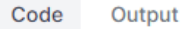
Output

```
1 #Start code here
2 while True:
3     num = int(input("Enter the number"))
4     if num > 1:
5         for i in range(2, num):
6             if num % i == 0:
7                 print("Its not a prime number")
8                 break
9
```

Program Step 19:-

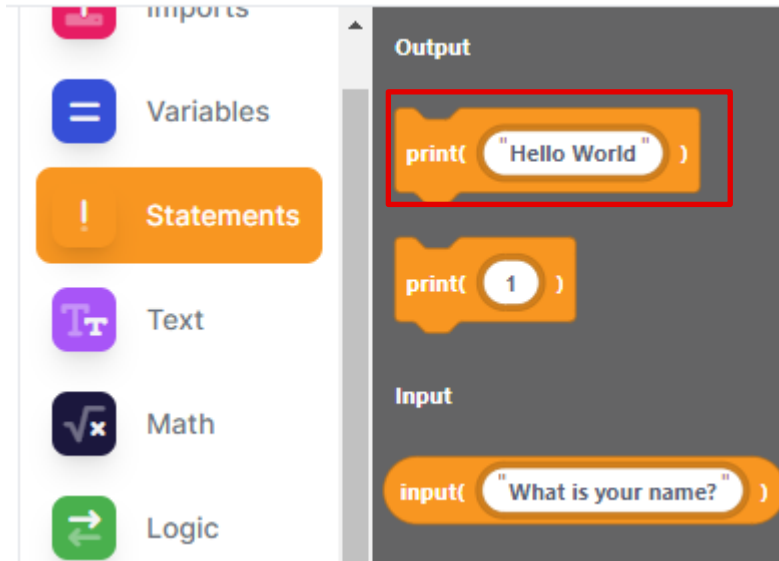


Connect an else block beneath for loop, if the number is not divisible by any number, then it should print it is a prime number



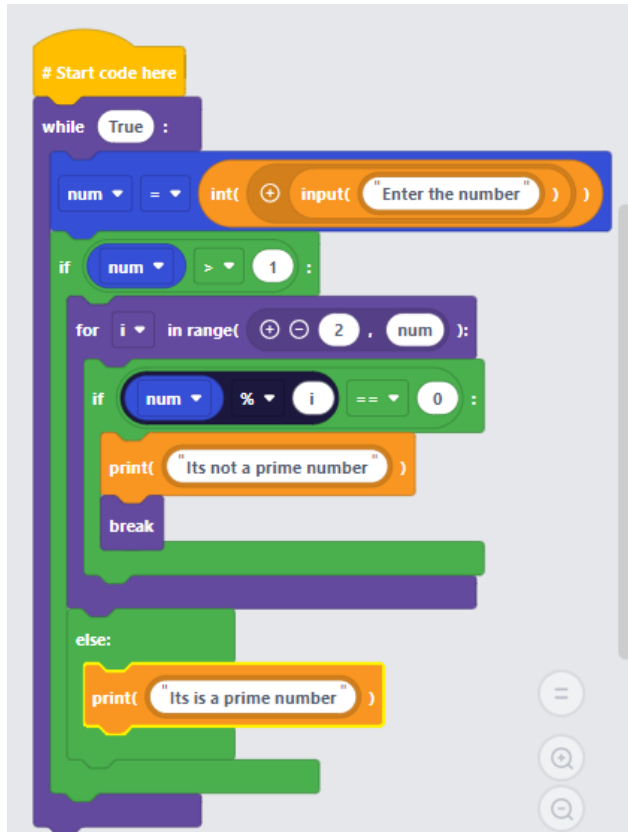
```
1 #Start code here
2 while True:
3     num = int(input("Enter the number"))
4     if num > 1:
5         for i in range(2, num):
6             if num % i == 0:
7                 print("Its not a prime number")
8                 break
9     else:
10         pass
11
```

Program Step 21:-



Add a print "Hello World" block inside else condition, so that if the number given by user is not divisible by any smaller number, then it will print "it is a prime number"

Program Step 22:-



Code


Output

```
1 #Start code here
2 while True:
3     num = int(input("Enter the number"))
4     if num > 1:
5         for i in range(2, num):
6             if num % i == 0:
7                 print("Its not a prime number")
8                 break
9         else:
10            print("Its is a prime number")
11
```

Output


Code

Output

```
Powered by trinket  
Enter the number 7  
Its is a prime number  
Enter the number █
```

Code

Output

```
Powered by trinket  
Enter the number 88  
Its not a prime number  
Enter the number █
```

ACTIVITY SHEETS

Question 1:

What does a for loop do?

- A. Iterates through a range/sequence
- B. Repeats the code for forever
- C. Repeats the code for limited time
- D. check the condition

Question 2:

What is the difference between while loop and for loop?

- A. While loop can run forever
- B. For loop can run forever
- C. while loop can iterates through a list
- D. For loop can compare two values

Question 3:

Which of the following statements is correct?

- A. `for x in range x= 20:`
- B. `for x in range (0,20):`
- C. `for x in range (0,20)`
- D. `for x in range("0,20"):`

Question 4:

What is the output of the following code?

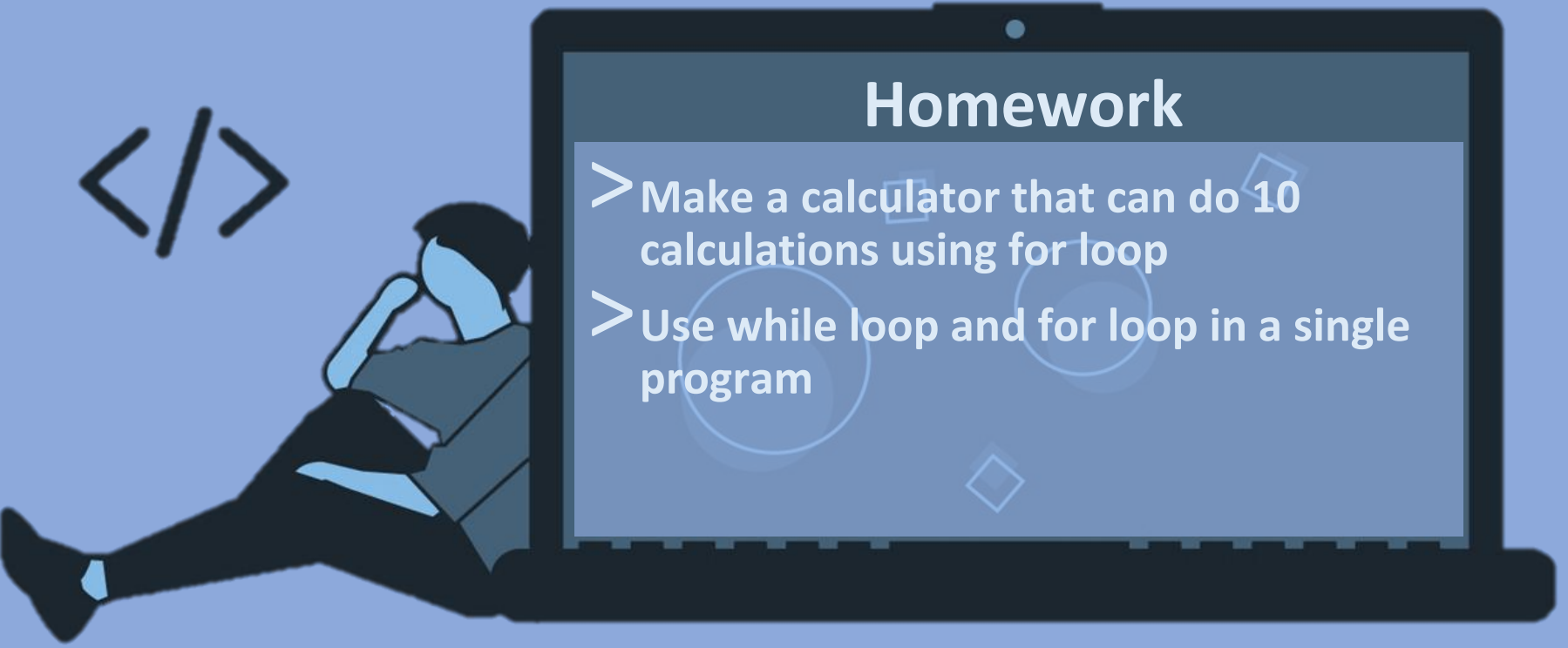
```
for x in range(0,1):  
    print (x)
```

- A. 0,1
- B. 0
- C. 1
- D. 0 1

Question 5:

What is the meaning of `range(0,20)` in code-
for `x in range(0,20)`:

- A. Iteration range of for loop
- B. index
- C. range for it condition
- D. variable



Homework

- > Make a calculator that can do 10 calculations using for loop
- > Use while loop and for loop in a single program