LOOPS II.

Poggie

02.22.2024

// TODO.

While loops

For loops

Loops in loops

Wow !!

WHILE LOOPS.

Tracing Loops.

```
int i = 1;
while (i<50) {
   Console.WriteLine(i);
   i = i*2;
}
Console.WriteLine("{0} at the end", i);
```

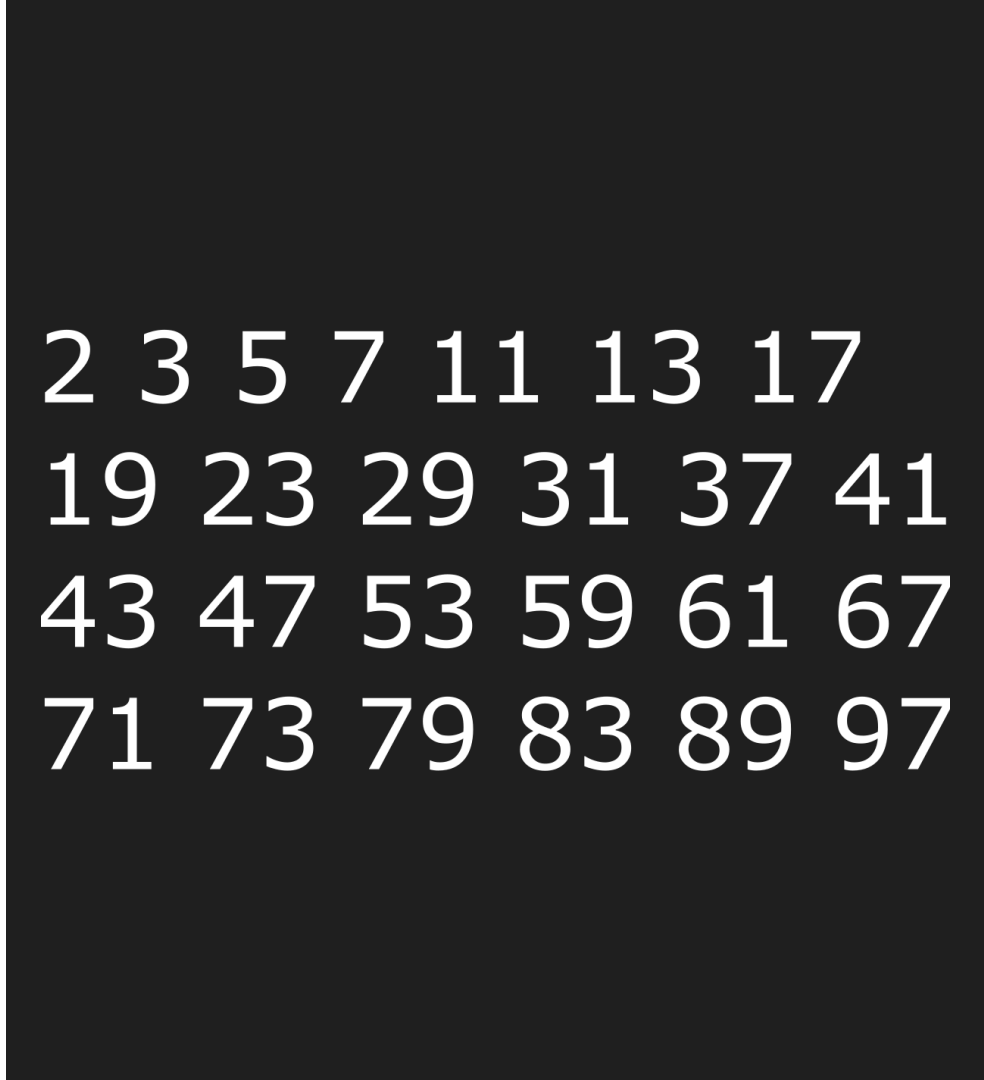
It it Prime?

A prime number is a natural number greater than 1 that has no positive divisors other than 1 and itself.

In other words, a prime number is a whole number greater than 1 that cannot be formed by multiplying two smaller natural numbers.

2 3 5 7 11 13 17
19 23 29 31 37 41
43 47 53 59 61 67
71 73 79 83 89 97

How do we implement this idea?



FOR LOOPS.

“For” loop syntax.

```
for (int i = 1; i <= 42; i++) {
   // some code
}
```

Warm up activity.

```
"A computer should output"
"all odd numbers between 30 and 50."
```

“For” loop VS “while” loop.

```for (int i = 0; i < 42 ; i++) {
  Console.WriteLine("yeet");
}```

```int i = 0;
while (i < 42) {
  Console.WriteLine("yeet");
  i++;
}```

# Common errors.

# How many times is this executed?

```
for (int i = 1; i < n; i++) {
  // some code
}
```

What about this?

```
for (int i = 0; i <= n; i++) {
   // some code
}
```

Breaking loops.

A break statement will cause the program to exit the current loop.

Continuing loops.

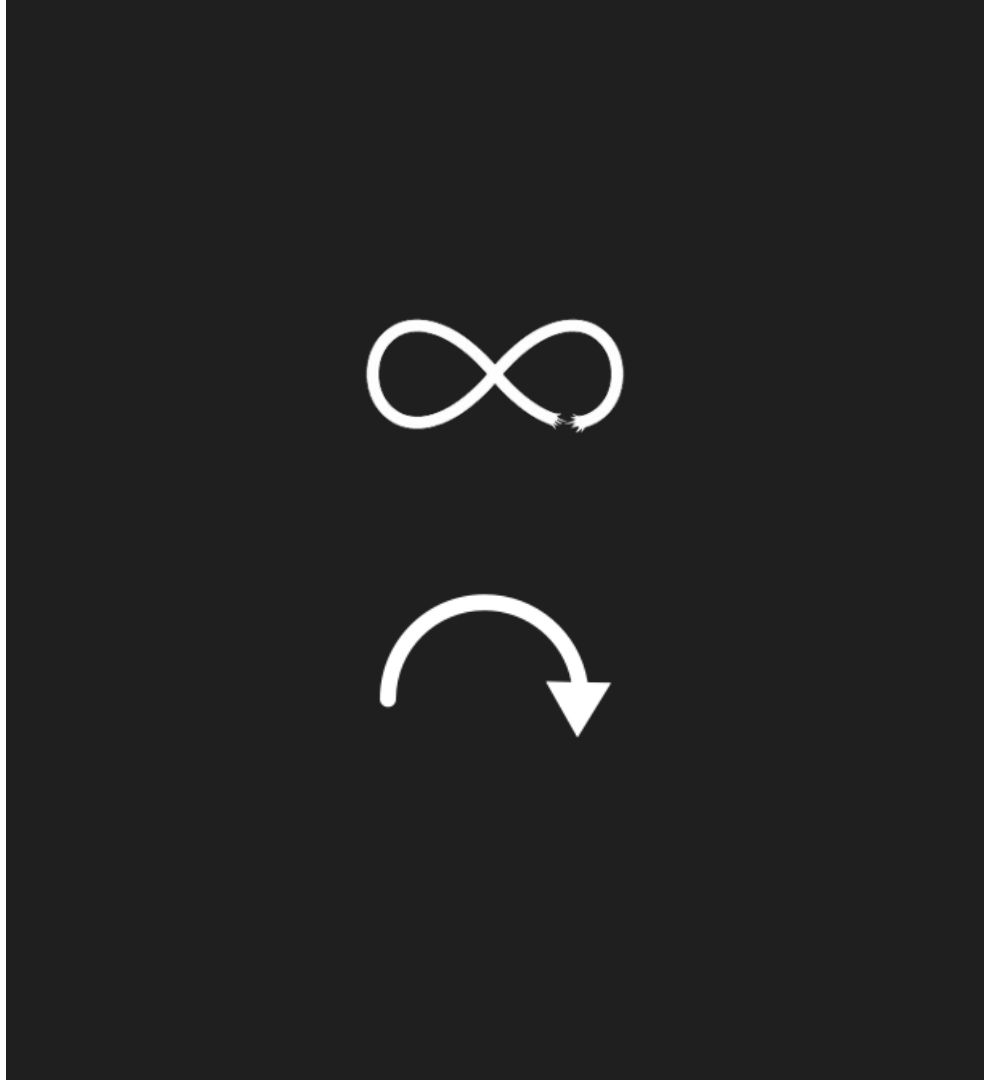
A continue statement cause the program to skip to the next iteration of the loop.

To break or to continue?

Using break and continue gives you more control over the loop execution, but they make the code more difficult to read and debug.

If you find yourself using them all the time, you are probably doing something more complicated than it needs to be.

Think of them as tools in your toolkit, best used sparingly.



NESTING LOOPS.

What will this print?

```
int num = 0;
for (int a = 0; a < 5 ; a++) {
  for (int b = 0; b < 5 ; b++) {
    for (int c = 0; c < 5 ; c++) {
      for (int d = 0; d < 5 ; d++) {
          for (int e = 0; e < 5 ; e++) {
            num++;
          }
      }
    }
  }
}
Console.WriteLine(num)
```

Putting it all together.

Nesting, for loops, while loops, and more !!

```
"If I enter 5 positive integer numbers,"
"the computer should output the sum."
```

Drawing shapes.

Let's write a program that takes an integer as an input and prints a square.

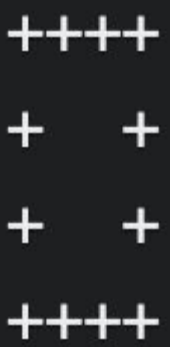
For example, if i input 4, the program should output the following …

EXERCISE.

Exercise.

Write a flowgorithm program that takes an integer as input and prints an empty square.

For example, if i enter the number 4, i should see the following …



QUESTIONS?