Java loops

Hello!

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Java While Loop

- The while loop loops through a block of code as long as a specified condition is true:

```
while (condition) {
  // code block to be executed
}
```

```java
int i = 0;
while (i < 5) {
  System.out.println(i);
  i++;
}
```

The Do/While Loop

- The do/while loop is a variant of the while loop. This loop will execute the code block once, before checking if the condition is true, then it will repeat the loop as long as the condition is true.

```
do {
  // code block to be executed
}
while (condition);
```

```java
int i = 0;
do {
  System.out.println(i);
  i++;
}
while (i < 5);
```

Java For Loop

- When you know exactly how many times you want to loop through a block of code, use the for loop instead of a while loop:
  - Statement 1 is executed (one time) before the execution of the code block.
  - Statement 2 defines the condition for executing the code block.
  - Statement 3 is executed (every time) after the code block has been executed.

```
for (statement 1; statement 2; statement 3) {
  // code block to be executed
}
```

```java
for (int i = 0; i < 5; i++) {
  System.out.println(i);
}
```

```java
for (int i = 0; i <= 10; i = i + 2) {
  System.out.println(i);
}
```

For-Each Loop

- There is also a "for-each" loop, which is used exclusively to loop through elements in an array

```
for (type variableName : arrayName) {
  // code block to be executed
}
```

```
String[] cars = {"Volvo", "BMW", "Ford", "Mazda"};
for (String i : cars) {
  System.out.println(i);
}
```

Java Break

- The break statement can also be used to jump out of a loop

```
for (int i = 0; i < 10; i++) {
  if (i == 4) {
    break;
  }
  System.out.println(i);
}
```

Java Continue

- The continue statement breaks one iteration (in the loop), if a specified condition occurs, and continues with the next iteration in the loop.

```
for (int i = 0; i < 10; i++) {
  if (i == 4) {
    continue;
  }
  System.out.println(i);
}
```

Anylogic

Sample

- Calculate factorial
- Calculate $$\binom{n}{k} = \frac{n!}{k! \times (n-k)!}$$

Thanks!

Any questions?

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