

## Statements and expressions

### Statements and expressions

Statement and expression are the basic elements in Java to perform some action.

Statements and expressions appear within a *code block*. A code block is anything surrounded by open braces { ... }.

Statement sample code:

[https://github.com/JasonWang19/cacc\\_java/blob/master/week3/Statement.java](https://github.com/JasonWang19/cacc_java/blob/master/week3/Statement.java)

### Scope

Variable declared within a code block is only visible in the block, so it is its scope.

### Condition

if/else if/else

e.g.

```
if ( condition ) {  
    statement;  
    statement;  
} else if ( condition ) {  
    statement;  
    statement;  
} else {  
    statement;  
}
```

### Loop

Repeatedly do something until some condition doesn't meet

do/while loop

```
do {  
    statement;  
} while ( condition );
```

while loop

```
while ( condition ) {  
    statement;  
}
```

for loop

```
for ( initialization; condition; incrementor ) {  
    statement;  
}
```

```
for ( variable : iterable ) {  
    statement;  
}
```

switch statements

```
switch ( expression ) {  
    case constantExpression :  
        statement;  
    case constantExpression :  
        statement;  
    default :  
        statement;  
}
```

## Practice

Guess Number

Generate a random number, and keep guess the number until the guess is correct.

[https://github.com/JasonWang19/cacc\\_java/blob/master/week3/GuessNumber.java](https://github.com/JasonWang19/cacc_java/blob/master/week3/GuessNumber.java)

## Algorithm

a process or set of rules to be followed in calculations or other problem-solving operations, especially by a computer.

Generally speaking, algorithm provides an approach to solve a certain type of problem.

### Divide and conquer algorithm

A divide and conquer algorithm works by recursively breaking down a problem into two or more sub-problems of the same or related type, until these become simple enough to be solved directly. The solutions to the sub-problems are then combined to give a solution to the original problem.

## Homework

Based on the explanation of the divide and conquer algorithm, by using

[https://github.com/JasonWang19/cacc\\_java/blob/master/week3/GuessNumberLogic0.java](https://github.com/JasonWang19/cacc_java/blob/master/week3/GuessNumberLogic0.java)

as the start point to implement the number guessing problem.