

Decision Statements

aka If Statements

Decision Statements

- Are a form of **control** statements
- They control which code is run at which times
- In java, the most common form is an **if** structure.

An If Statement

```
var num = promptNum ("Enter a level > ");
```

```
if (num >= 2)  
    setText("answer", "pass");
```

An If Statement

```
var num = promptNum ("Enter a level > ");
```

```
if (num >= 2)  
    setText("answer", "pass");
```

Keyword for an if...



An If Statement

```
var num = promptNum ("Enter a level > ");
```

```
if (num >= 2)  
    setText("answer", "pass");
```

Boolean
Expression
If true, the
statement runs.

Keyword for an if...

An If Statement

```
var num = promptNum ("Enter a level > ");
```

```
if (num >= 2)
```

```
    setText("answer", "pass");
```

Boolean
Expression
If true, the
statement runs.

Code to run if true

Keyword for an if...

An If Statement

```
var num = prompt("Enter a level > ");
```

No semi-colon!

```
if (num >= 2)
```

```
    setText("answer", "pass");
```

Boolean
Expression
If true, the
statement runs.

Code to run if true

Keyword for an if...

An If/Else Statement

```
var num = promptNum ("Enter a level > ");
```

```
if (num >= 2)  
    setText("answer", "pass");
```

```
else  
    setText("answer", "fail");
```

Default = else.

If not the first one, then run this one.

An If/Else Statement

```
var num = promptNum ("Level > ");
```

```
if (num >= 2)  
    setText("answer", "pass");  
else  
    setText("answer", "fail");
```

lvl	Printed?
7	

An If/Else Statement

```
var num = promptNum ("Level > ");
```

```
if (num >= 2)  
    setText("answer", "pass");  
else  
    setText("answer", "fail");
```

lvl	Printed?
7	Pass
1	

An If/Else Statement

```
var num = promptNum ("Level > ");
```

```
if (num >= 2)  
    setText("answer", "pass");  
else  
    setText("answer", "fail");
```

lvl	Printed?
7	Pass
1	Fail
2	

An If/Else Statement

```
var num = promptNum ("Level > ");
```

```
if (num >= 2)  
    setText("answer", "pass");  
else  
    setText("answer", "fail");
```

lvl	Printed?
7	Pass
1	Fail
2	Pass
-3	

An If/Else Statement

```
var num = promptNum ("Level > ");
```

```
if (num >= 2)  
    setText("answer", "pass");  
else  
    setText("answer", "fail");
```

lvl	Printed?
7	Pass
1	Fail
2	Pass
-3	Fail
81	

An If/Else Statement

```
var num = promptNum ("Level > ");
```

```
if (num >= 2)  
    setText("answer", "pass");  
else  
    setText("answer", "fail");
```

lvl	Printed?
7	Pass
1	Fail
2	Pass
-3	Fail
81	Pass

If/Else if/Else

```
var num = promptNum ("Level > ");  
if (num == 4)  
    setText("answer", "Outstanding");  
else if (num >=3)  
    setText("answer", "Great Work");  
else if (num >=2)  
    setText("answer", "Satisfactory");  
else  
    setText("answer", "Come for extra help");
```

In an if/else if structure, the FIRST true statement is run and then it skips to the end.

Nothing else is run once one is true.

If/Else if/Else

```
var num = promptNum ("Level > ");  
if (num == 4)  
    setText("answer", "Outstanding");  
else if (num >=3)  
    setText("answer", "Great Work");  
else if (num >=2)  
    setText("answer", "Satisfactory");  
else  
    setText("answer", "Come for extra help");
```

[illegible]

If/Else if/Else

```
var num = promptNum ("Level > ");
if (num == 4)
    setText("answer", "Outstanding");
else if (num >=3)
    setText("answer", "Great Work");
else if (num >=2)
    setText("answer", "Satisfactory");
else
    setText("answer", "Come for extra help");
```

[illegible]

If/Else if/Else

```
var num = promptNum ("Level > ");
if (num == 4)
    setText("answer", "Outstanding");
else if (num >= 3)
    setText("answer", "Great Work");
else if (num >= 2)
    setText("answer", "Satisfactory");
else
    setText("answer", "Come for extra help");
```

[illegible]

If/Else if/Else

```
var num = promptNum ("Level > ");  
if (num == 4)  
    setText("answer", "Outstanding");  
else if (num >=3)  
    setText("answer", "Great Work");  
else if (num >=2)  
    setText("answer", "Satisfactory");  
else  
    setText("answer", "Come for extra help");
```

lvl	Printed?
4	Outstanding
3.5	Great Work!
3	Great Work!
2	

If/Else if/Else

```
var num = promptNum ("Level > ");  
if (num == 4)  
    setText("answer", "Outstanding");  
else if (num >= 3)  
    setText("answer", "Great Work");  
else if (num >= 2)  
    setText("answer", "Satisfactory");  
else  
    setText("answer", "Come for extra help");
```

lvl	Printed?
4	Outstanding
3.5	Great Work!
3	Great Work!
2	Satisfactory
2.5	

If/Else if/Else

```
var num = promptNum ("Level > ");  
if (num == 4)  
    setText("answer", "Outstanding");  
else if (num >=3)  
    setText("answer", "Great Work");  
else if (num >=2)  
    setText("answer", "Satisfactory");  
else  
    setText("answer", "Come for extra help");
```

lvl	Printed?
4	Outstanding
3.5	Great Work!
3	Great Work!
2	Satisfactory
2.5	Satisfactory
1	

If/Else if/Else

```
var num = promptNum ("Level > ");  
if (num == 4)  
    setText("answer", "Outstanding");  
else if (num >=3)  
    setText("answer", "Great Work");  
else if (num >=2)  
    setText("answer", "Satisfactory");  
else  
    setText("answer", "Come for extra help");
```

lvl	Printed?
4	Outstanding
3.5	Great Work!
3	Great Work!
2	Satisfactory
2.5	Satisfactory
1	Come for extra help
-45	

If/Else if/Else

```
var num = promptNum ("Level > ");  
if (num == 4)  
    setText("answer", "Outstanding");  
else if (num >=3)  
    setText("answer", "Great Work");  
else if (num >=2)  
    setText("answer", "Satisfactory");  
else  
    setText("answer", "Come for extra help");
```

lvl	Printed?
4	Outstanding
3.5	Great Work!
3	Great Work!
2	Satisfactory
2.5	Satisfactory
1	Come for extra help
-45	Come for extra help
90	

If/Else if/Else

```
var num = promptNum ("Level > ");
```

```
if (num == 4) ❌
```

```
    setText("answer", "Outstanding");
```

```
else if (num >= 3)
```

```
    setText("answer", "Great Work");
```

```
else if (num >= 2)
```

```
    setText("answer", "Satisfactory");
```

```
else
```

```
    setText("answer", "Come for extra help");
```

lvl	Printed?
7	Outstanding
6	Great Work!
5	Great Work!
4	Satisfactory
3	Satisfactory
2	Come for extra help
-45	Come for extra help
90	Great Work!


```
var num = promptNum ("Level > ");  
if (num == 4) {  
    setText("answer", "Outstanding");  
    setText("answer2", "Top level in class");  
}  
else if (num >=3)  
    setText("answer", "Great Work");  
else if (num>=2)  
    setText("answer", "Satisfactory");  
else {  
    setText("answer", "Come for extra help");  
    setText("answer2", "Review study techniques.");  
}
```

Multi-line Ifs

Multi-line ifs require
{ } to set up a region
of code.

Tracing

```
var x = promptNum ("X? ");
if (x == 6)
    setText("answer", "turtle");
else if (x > 4)
    setText("answer", "fish");
else if (x > 2)
    setText("answer", "snail");
else
    setText("answer", "pineapple");
```

[illegible]

Tracing

```
var x = promptNum ("X? ");
if (x == 6)
    setText("answer", "turtle");
else if (x > 4)
    setText("answer", "fish");
else if (x > 2)
    setText("answer", "snail");
else
    setText("answer", "pineapple");
```

[illegible]

Tracing

```
var x = promptNum ("X? ");
if (x == 6)
    setText("answer", "turtle");
else if (x > 4)
    setText("answer", "fish");
else if (x > 2)
    setText("answer", "snail");
else
    setText("answer", "pineapple");
```

[illegible]

Tracing

```
var x = promptNum ("X? ");  
if (x == 6)  
    setText("answer", "turtle");  
else if (x > 4)  
    setText("answer", "fish");  
else if (x > 2)  
    setText("answer", "snail");  
else  
    setText("answer", "pineapple");
```

x	Printed?
6	turtle
5	fish
7	fish
3	

Tracing

```
var x = promptNum ("X? ");  
if (x == 6)  
    setText("answer", "turtle");  
else if (x > 4)  
    setText("answer", "fish");  
else if (x > 2)  
    setText("answer", "snail");  
else  
    setText("answer", "pineapple");
```

x	Printed?
6	turtle
5	fish
7	fish
3	snail
4	

Tracing

```
var x = promptNum ("X? ");  
if (x == 6)  
    setText("answer", "turtle");  
else if (x > 4)  
    setText("answer", "fish");  
else if (x > 2)  
    setText("answer", "snail");  
else  
    setText("answer", "pineapple");
```

x	Printed?
6	turtle
5	fish
7	fish
3	snail
4	snail
2	

Tracing

```
var x = promptNum ("X? ");  
if (x == 6)  
    setText("answer", "turtle");  
else if (x > 4)  
    setText("answer", "fish");  
else if (x > 2)  
    setText("answer", "snail");  
else  
    setText("answer", "pineapple");
```

x	Printed?
6	turtle
5	fish
7	fish
3	snail
4	snail
2	pineapple
-1	

Tracing

```
var x = promptNum ("X? ");  
if (x == 6)  
    setText("answer", "turtle");  
else if (x > 4)  
    setText("answer", "fish");  
else if (x > 2)  
    setText("answer", "snail");  
else  
    setText("answer", "pineapple");
```

x	Printed?
6	turtle
5	fish
7	fish
3	snail
4	snail
2	pineapple
-1	pineapple
90	

Tracing

```
var x = promptNum ("X? ");  
if (x == 6)  
    setText("answer", "turtle");  
else if (x > 4)  
    setText("answer", "fish");  
else if (x > 2)  
    setText("answer", "snail");  
else  
    setText("answer", "pineapple");
```

x	Printed?
6	turtle
5	fish
7	fish
3	snail
4	snail
2	pineapple
-1	pineapple
90	fish



Tracing

```
var y = promptNum ("Y? ");
var words;
if (y >= 8)
    words = words + "A";
else if (y <= 15)
    words = words + "B";
if (y >= 10)
    words = words + "C";
else if (y >= 5)
    words = words + "D";
else
    words = words + "E";
setText("answer", words);
```

[illegible]

Tracing

```
var y = promptNum ("Y? ");
var words;
if (y >= 8)
    words = words + "A";
else if (y <= 15)
    words = words + "B";
if (y >= 10)
    words = words + "C";
else if (y >= 5)
    words = words + "D";
else
    words = words + "E";
setText("answer", words);
```

[illegible]



Tracing

```
var y = promptNum ("Y? ");
var words;
if (y >= 8)
    words = words + "A";
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    words = words + "B";
if (y >= 10)
    words = words + "C";
else if (y >= 5)
    words = words + "D";
else
    words = words + "E";
setText("answer", words);
```

[illegible]



Tracing

```
var y = promptNum ("Y? ");
var words;
if (y >= 8)
    words = words + "A";
else if (y <= 15)
    words = words + "B";
if (y >= 10)
    words = words + "C";
else if (y >= 5)
    words = words + "D";
else
    words = words + "E";
setText("answer", words);
```

[illegible]



Tracing

```
var y = promptNum ("Y? ");
var words;
if (y >= 8)
    words = words + "A";
else if (y <= 15)
    words = words + "B";
if (y >= 10)
    words = words + "C";
else if (y >= 5)
    words = words + "D";
else
    words = words + "E";
setText("answer", words);
```

[illegible]

Tracing

```
var y = promptNum ("Y? ");  
var words;  
if (y >= 8)  
    words = words + "A";  
else if (y <= 15)  
    words = words + "B";  
if (y >= 10)  
    words = words + "C";  
else if (y >= 5)  
    words = words + "D";  
else  
    words = words + "E";  
setText("answer", words);
```

y	Printed?
9	AD
8	AD
16	AC
15	AC
10	

Tracing

```
var y = promptNum ("Y? ");  
var words;  
if (y >= 8)  
    words = words + "A";  
else if (y <= 15)  
    words = words + "B";  
if (y >= 10)  
    words = words + "C";  
else if (y >= 5)  
    words = words + "D";  
else  
    words = words + "E";  
setText("answer", words);
```

y	Printed?
9	AD
8	AD
16	AC
15	AC
10	AC
5	

Tracing

```
var y = promptNum ("Y? ");
var words;
if (y >= 8)
    words = words + "A";
else if (y <= 15)
    words = words + "B";
if (y >= 10)
    words = words + "C";
else if (y >= 5)
    words = words + "D";
else
    words = words + "E";
setText("answer", words);
```

y	Printed?
9	AD
8	AD
16	AC
15	AC
10	AC
5	BD
2	

Tracing

```
var y = promptNum ("Y? ");  
var words;  
if (y >= 8)  
    words = words + "A";  
else if (y <= 15)  
    words = words + "B";  
if (y >= 10)  
    words = words + "C";  
else if (y >= 5)  
    words = words + "D";  
else  
    words = words + "E";  
setText("answer", words);
```

y	Printed?
9	AD
8	AD
16	AC
15	AC
10	AC
5	BD
2	BE
90	

Tracing

```
var y = promptNum ("Y? ");  
var words;  
if (y >= 8)  
    words = words + "A";  
else if (y <= 15)  
    words = words + "B";  
if (y >= 10)  
    words = words + "C";  
else if (y >= 5)  
    words = words + "D";  
else  
    words = words + "E";  
setText("answer", words);
```

y	Printed?
9	AD
8	AD
16	AC
15	AC
10	AC
5	BD
2	BE
90	AC
-3	

Tracing

```
var y = promptNum ("Y? ");  
var words;  
if (y >= 8)  
    words = words + "A";  
else if (y <= 15)  
    words = words + "B";  
if (y >= 10)  
    words = words + "C";  
else if (y >= 5)  
    words = words + "D";  
else  
    words = words + "E";  
setText("answer", words);
```

y	Printed?
9	AD
8	AD
16	AC
15	AC
10	AC
5	BD
2	BE
90	AC
-3	BE