



Topic 9: JavaScript

Iteration:
while and for Statements

Lecture Contents

- The `while` statement
- The `for` statement
- Practice: `printCharRepeatedly()`
- Practice: `printCharGrid()`

The while Statement

```
function powersOfTwo(max) {  
  var i = 1;  
  var s = "";  
  while(i <= max) {  
    s += i + " ";  
    i *= 2;  
  }  
  console.log(s);  
}  
  
powersOfTwo(100);
```

The while Statement

```
function powersOfTwo(max) {  
  var i = 1;  
  var s = "";  
  while(i <= max) {  
    s += i + " ";  
    i *= 2;  
  }  
  console.log(s);  
}  
  
powersOfTwo(100);
```

1 2 4 8 16 32 64

The for Statement

- These two segments of code are (almost) equivalent:
 - Results for max = 10.

```
for(int i=1; i<=max; i++) {  
    System.out.print(i + " ");  
}
```

```
int i = 1;  
while(i<=max) {  
    System.out.print(i + " ");  
    i++;  
}
```

The for Statement

- These two segments of code are (almost) equivalent:
 - Results for max = 10.

```
for(int i=1; i<=max; i++) {  
    System.out.print(i + " ");  
}
```

```
int i = 1;  
while(i<=max) {  
    System.out.print(i + " ");  
    i++;  
}
```

1 2 3 4 5 6 7 8 9 10

Practice: printCharRepeatedly()

- Write a method that print a character a variable number of times on a single line

```
function printCharRepeatedly(c, n) {  
    // TODO: Write the code for this method  
}  
printCharRepeatedly('a',5);
```

aaaaa

Practice: printCharRepeatedly()

- Write a method that print a character a variable number of times on a single line

```
function printCharRepeatedly(c, n) {  
    var s = "";  
    while(n > 0) {  
        s += c;  
        n--;  
    }  
    console.log(s);  
}  
printCharRepeatedly('a',5);
```

aaaaa

Practice: printCharGrid()

- Write a method that print a x by y grid of a given character from the given template:

```
function printCharGrid(c, x, y) {  
    /* pre-loop statements */  
    for( /* loop condition */ ) {  
        for( /* loop condition */ ) {  
            /* loop statements */  
        }  
        /* post-loop statements */  
    }  
    console.log(s);  
}  
printCharGrid('b',10,4);
```

```
bbbbbbbbbbbb  
bbbbbbbbbbbb  
bbbbbbbbbbbb  
bbbbbbbbbbbb
```

Practice: printCharGrid()

- Write a method that print a x by y grid of a given character from the given template:

```
function printCharGrid(c, x, y) {  
    var s = ""  
    for(i = 1; i <= y; i++) {  
        for(j = 1; j <= x; j++) {  
            s += c;  
        }  
        s += '\n';  
    }  
    console.log(s);  
}  
printCharGrid('b',10,4);
```

```
bbbbbbbbbbbb  
bbbbbbbbbbbb  
bbbbbbbbbbbb  
bbbbbbbbbbbb
```



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