

CS 106: Web Technology - I Assignment #5

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1 Introduction to Control Flow Statements

JavaScript supports a compact set of statements, specifically control flow statements, that you can use to incorporate a great deal of interactivity in your application.

1.1 Block Statements

The most basic statement is a block statement, which is used to group statements. The block is delimited by a pair of curly brackets:

```
{  
    statement1;  
    statement2;  
    // ...  
    statementN;  
}
```

Here statement1 through statementN are block statements.

Block statements are commonly used with control flow statements (if, for, while).

```
while (x < 10) {  
    x++; // block statement  
}
```

1.2 Conditional Statements

A conditional statement is a set of commands that executes if a specified condition is true. JavaScript supports two conditional statements: if...else and switch.

1.2.1 if...else statements

```
if (condition) {  
    statement1;  
} else {  
    statement2;  
}  
  
if (condition1) {  
    statement1;  
} else if (condition2) {  
    statement2;  
} else if (conditionN) {  
    statementN;  
} else {  
    statementLast;  
}
```

The following values evaluate to false:

1. false
2. undefined
3. null
4. 0
5. NaN
6. the empty string ("")

1.2.2 switch Statement

```
switch (expression) {  
  case label1:  
    statements1;  
    break;  
  case label2:  
    statements2;  
    break;  
  // ...  
  default:  
    statementsDefault;  
}
```

1.3 Loops and Iteration

1. for statement
2. do...while statement
3. while statement
4. labeled statement
5. break statement
6. continue statement
7. for...in statement
8. for...of statement

```
for ([initialExpression]; [conditionExpression]; [incrementExpression])  
  statement
```

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

```
while (condition)  
  statement
```

Other Statements

```
continue;
continue label;

for (variable in object)
    statement

for (variable of object)
    statement
```

2 Lab Objectives

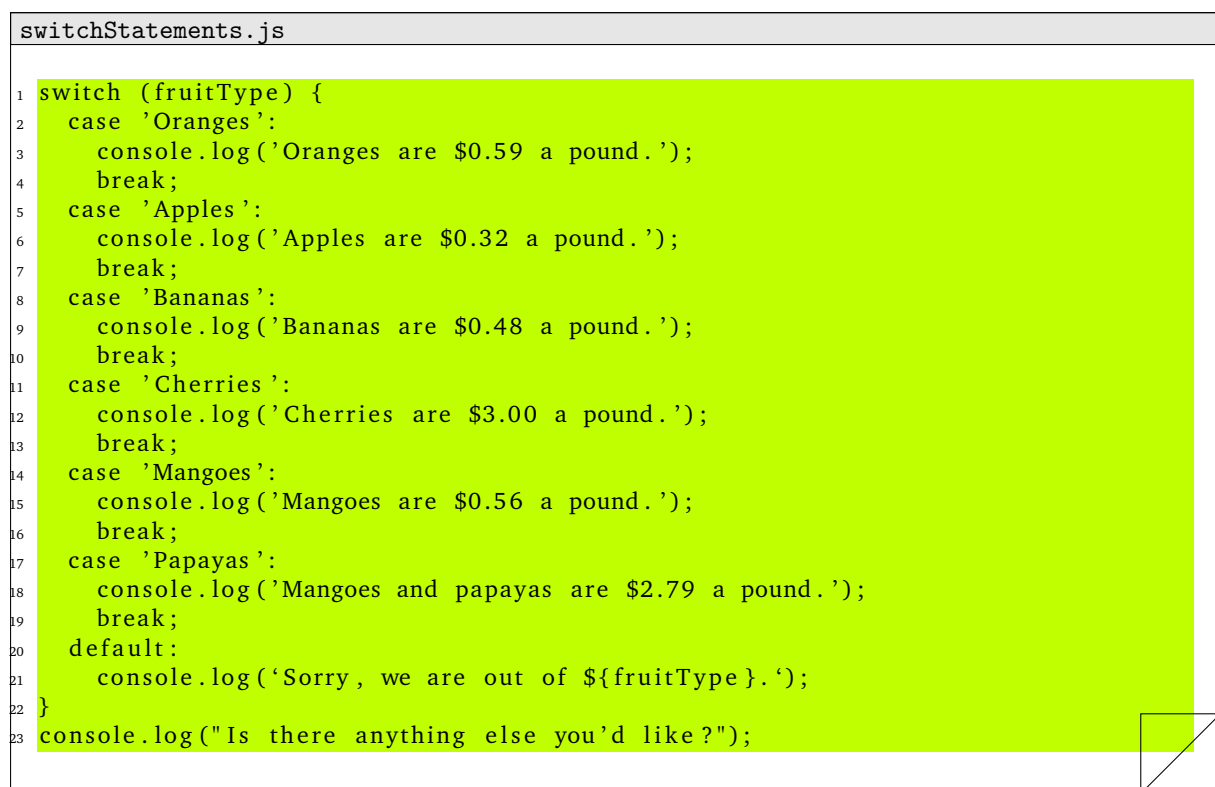
The lab Objectives are:

1. To understand the basic control statements in JS.
2. To understand the basics loops and iteration statements in JS.

3 Examples

```
switchStatements.js

1 switch (fruitType) {
2   case 'Oranges':
3     console.log('Oranges are $0.59 a pound.');
```



```
4     break;
5   case 'Apples':
6     console.log('Apples are $0.32 a pound.');
```

```
7     break;
8   case 'Bananas':
9     console.log('Bananas are $0.48 a pound.');
```

```
10    break;
11   case 'Cherries':
12     console.log('Cherries are $3.00 a pound.');
```

```
13    break;
14   case 'Mangoes':
15     console.log('Mangoes are $0.56 a pound.');
```

```
16    break;
17   case 'Papayas':
18     console.log('Mangoes and papayas are $2.79 a pound.');
```

```
19    break;
20   default:
21     console.log('Sorry, we are out of ${fruitType}.');
```

```
22 }
23 console.log("Is there anything else you'd like?");
```

```
loops.js

24 for (let step = 0; step < 5; step++) {
25     // Runs 5 times, with values of step 0 through 4.
26     console.log('Walking east one step');
27 }
28
29
30 let i = 0;
31 do {
32     i += 1;
33     console.log(i);
34 } while (i < 5);
35
36
37 let n = 0;
38 let x = 0;
39 while (n < 3) {
40     n++;
41     x += n;
42 }
```

3.1 Breaking to a label

```
let x = 0;
let z = 0;
labelCancelLoops: while (true) {
    console.log('Outer loops: ', x);
    x += 1;
    z = 1;
    while (true) {
        console.log('Inner loops: ', z);
        z += 1;
        if (z === 10 && x === 10) {
            break labelCancelLoops;
        } else if (z === 10) {
            break;
        }
    }
}
```

```
forLoop.js

44 const arr = [3, 5, 7];
45 arr.foo = 'hello';
46
47 for (const i in arr) {
48     console.log(i);
49 }
50 // "0" "1" "2" "foo"
51
52 for (const i of arr) {
53     console.log(i);
54 }
55 // Logs: 3 5 7
```

4 Questions

Question 1

Write a JavaScript conditional statement to find the sign of product of three numbers. Display an alert box with the specified sign.

Question 2

Write a JavaScript conditional statement to find the largest of five numbers. Display an alert box to show the result. Sample Numbers: 5, -2, -6, 0, -1

Question 3

Write a JavaScript for loop that will iterate from 0 to 15. For each iteration, it will check if the current number is odd or even, and display a message to the screen.

Sample Output :

"0 is even"

"1 is odd"

"2 is even"

Question 4

Write a JavaScript program which compute, the average marks of the following students in Table 1. Then, this average is used to determine the corresponding grade Table 2.

Table 1: Student Name and Marks

| Student Name | Marks |
|--------------|-------|
| Ram | 80 |
| Shyam | 77 |
| Hari | 88 |
| Krishna | 95 |
| Narayan | 68 |

Table 2: Grade Calculation

| Range | Grade |
|-------|-------|
| <60 | F |
| <70 | D |
| <80 | C |
| <90 | B |
| <100 | A |