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

```
switch (fruitType) {
  case 'Oranges':
    console.log('Oranges are $0.59 a pound.');
    break;
  case 'Apples':
    console.log('Apples are $0.32 a pound.');
    break;
  case 'Bananas':
    console.log('Bananas are $0.48 a pound.');
    break;
  case 'Cherries':
    console.log('Cherries are $3.00 a pound.');
    break;
  case 'Mangoes':
    console.log('Mangoes are $0.56 a pound.');
    break;
  case 'Papayas':
    console.log('Mangoes and papayas are $2.79 a pound.');
    break;
  default:
    console.log(`Sorry, we are out of ${fruitType}.`);
}
console.log("Is there anything else you'd like?");
```

loops.js

```
for (let step = 0; step < 5; step++) {
  // Runs 5 times, with values of step 0 through 4.
  console.log('Walking east one step');
}


let i = 0;
do {
  i += 1;
  console.log(i);
} while (i < 5);


let n = 0;
let x = 0;
while (n < 3) {
  n++;
  x += n;
}
```

3.0.1 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;
    }
  }
}
```

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