Selection

Making decisions

Lesson Objectives

- Understand selection control logic
- Learn to use JavaScript control logic syntaxes

Control logic

- Sequence
- **Selection**
- Repetition

Use of relational and logical operators

- As in real life, we need to make decisions in our programs too. Based on the condition we may have to choose different path of execution.
- For making this kind of decisions in our programs, we need set of operators that evaluates expression to either true or false (Boolean).

Selective execution (decision making)

- Execute statements inside the if block({}), if expression evaluates to true.

```
if(condition){
// statements;
}
```

Example

- Execute statements inside the if block, if expression evaluates to true, else execute expression inside the else block.

```
if(condition){
// statements;
}else{
// different statements;
}
```

Example

Exercise

- Write a program that asks user to enter weather for today and print "Get an umbrella" if weather is rainy.
- Write a program that asks user to enter a number between 1 to 10, and print "Bingo!" if user enters 7 otherwise prints "Try again.".
  - Use === for comparison not ==

else if

```
let gpa = prompt("Please enter your gpa");
gpa = parseFloat(gpa);

let grade;

if (gpa === 4.0) {
  grade = 'A';
} else if (gpa >= 3.8) {
  grade = 'B';
} else if (gpa >= 3.6) {
  grade = 'C'
} else {
  grade = 'NC';
}

alert('your grade is ' + grade);

// modify the progmram to
// stop user from entering gpa > 4.0
```

Run here

Exercise

- Write a program that accepts user age as input and output following based on the input
  - If age <= 0
    - print "please enter valid age"
  - if age is between 0 and 14
    - print "You can't drive yet."
  - if age is between 15 and 18
    - print "You can drive under supervision."
  - if age is between 19 or higher
    - print "You can drive."

Switch

- Switch can be used as alterative for "else if" when test is one variable equality. Variable type can be Number or String.
- Example, using else if
- Example, using switch

Exercise

- Write a program that asks user to enter number between 1 to 5 and prints out how the number is spelled.
  - First, write using else if
  - Then, refactor it to use switch

Nested If Statements

- There are times when we need to check for more conditions when prior conditions are met.
  - One way to achieve this is using nested if statements.

```
let weather = prompt("Please enter weather outside");
let temp = prompt("Please enter current temperature");

if (weather == 'sunny') {
    if (temp < 80) {
        alert("Good day for outdoor running")
    } else {
        alert("Better used trade mill at home.")
    }
}
```

Scope of variables

- The scope of a variable determines how long and where a variable can be used.
- When let keyword is used for variable declaration, scope of the variable is within the block scope.

```
let x = 5;
console.log(x);
if(x==5){
        let y = 2*x;
        console.log(y);
        console.log(x); // x is accessible here.
}
console.log(x);
console.log(y); // y is not accessible here.
```

- Declare y using var keyword in above code and see the change in output.

Exercise

- Make example 10 and 12 from book page 71, 72 running in your machine.

Main points

- In programming, we encounter situations where we must make decisions based on some conditions, that determines the flow of code execution. We make use of relational and/or logical operators to make such decisions. Our program can produce expected result only when our decision logic is correct. *Science of consciousness, As in programing, taking right decision at right point of time is also crucial to success in life. Our, actions and decisions are spontaneously in right direction, when we act being established at the field of pure intelligence.*

Assignments

- Reading Chapter 6, 7
- Make Even Integers (example 5), Odd Integers (Example 6) and Quadratic Formula (example 9) from book page 67-70, running in your machine.
- Programming Assignments form chapter 6 (except question 7)
- Programming Assignments from chapter 7 (2 and 5)