



Digital Systems

11.1 Logical Operators and Conditional Logic (Chapter 4)

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ROADMAP

START

Week 1:

Introduction & Systems Analysis

- Course Description
- Systems Thinking

Assignments #01 & 02

Week 2:

Digital Product Management & Introduction to Process Mapping

- Max Labs 1a & 1b
- Systems & Processes
- Swim Lane Diagrams

Assignment #03

Week 3:

Data Modeling with Entity Relationship Diagrams

- Swim Lane Diagrams
- ERD Diagrams

Assignment #04

Week 4:

Digital Systems – Learn IT! #1

- ERD Diagrams
- Learn IT Kickoff
- Exam Prep

Assignment #05

Week 5:

Exam #1, Information Systems: Part I & II

- CRM & ERP

Assignment #06

Week 9:

Exam #2

& JavaScript Unit #1

- Parts I & II
- Hello World, Variables

Week 8:

Information Systems & Cybersecurity

- Protection Protocols
- Artificial Intelligence

Assignment #08

Week 7:

Platforms & Digital Business Models: Part I & II

- Platforms & Digital Models
- APIs

• Extra Credit (optional)

Week 6:

Information Systems: Parts I - III

- Data Analytics
- SCM

Assignment #07

Week 10:

JavaScript Unit #2 Functions

- Values & Variables
- Operator types
- Strings

Week 11:

JavaScript Unit #3 Logical Operators & Conditional Logic

- Logical Operators
- Conditional Types

Assignment #9

Week 12:

JavaScript Unit #4 Loops

- Intro to Loops
- While and Do

Week 13:

JavaScript Unit #4 Working with Loops & HTML & CSS Unit

- Writing the code
- HTML & CSS Basics

Assignment #10

Week 14:

HTML & CSS Unit (continued)

- HTML & CSS Basics
- Course Reflection

Exam #3

Assignments #11

FINISH

Coding Helpdesk and more tools...

1. We have a **coding help desk**! See schedule on our community site (Helpdesk tab)
2. VS Code debugger: watch the short video and the 4-part chrome series on the Diamond Peer corner
<https://community.mis.temple.edu/diamonpeercorner/debugger-videos/>

Final Exam

1. Our final exam is scheduled on **Friday May 5 from 1-2 pm** (regular classroom)
2. Exam Review sessions are already scheduled (see diamond peer site)
3. The exam is **one-hour with 20 questions** (all multiple choice):
 - 10 concept questions
 - 10 case study coding questions (coding examples similar to our ICAs)
4. Bring a simple **calculator to the exam** (not your mobile device / cell phone) **and two or more #2 pencils plus eraser(s)**



TIPS FROM MIS 2101 VIRTUAL HELPDESK

[The Only Way to Learn to Program
is by Programming with Caroline
Doyle](#)



If / Else Statements

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If and Else statements allow you to run some code based on whether a condition is **true** or **false**.

can be any expression that
evaluates to a true or false



```
if (something_is_true) {  
    do_something;  
} else {  
    do_something_different;  
}
```

Source: JavaScript Absolute Beginner's Guide by Kirupa Chinnathambi


```
if (expression operator expression) {  
    do_something;  
} else {  
    do_something_different;  
}
```

Source: JavaScript Absolute Beginner's Guide by Kirupa Chinnathambi

Operator	When it is true...
==	If the first expression evaluates to something that is equal to the second expression.
>=	If the first expression evaluates to something that is greater or equal to the second expression
>	If the first expression evaluates to something that is greater than the second expression
<=	If the first expression evaluates to something that is lesser or equal to the second expression
<	If the first expression evaluates to something that is less than the second expression
!=	If the first expression evaluates to something that is not equal to the second expression
&&	If the first expression and the second expression both evaluate to true
	If either the first expression or the second expression evaluate to true
!	Flips the value from false to true or true to false

Relational Operators

Logical Operators

Boolean Expressions

```
lastName == "Hopper"
```

```
testScore == 10
```

```
firstName != "Grace"
```

```
months != 0
```

```
testScore > 100
```

```
age < 18
```

```
distance >= limit
```

```
stock <= reorder_point
```

```
rate / 100 >= 0.1
```

Expressions evaluate to true or false.

Hello World!

(now with conditional logic)

Classroom Challenge

What gets displayed now?

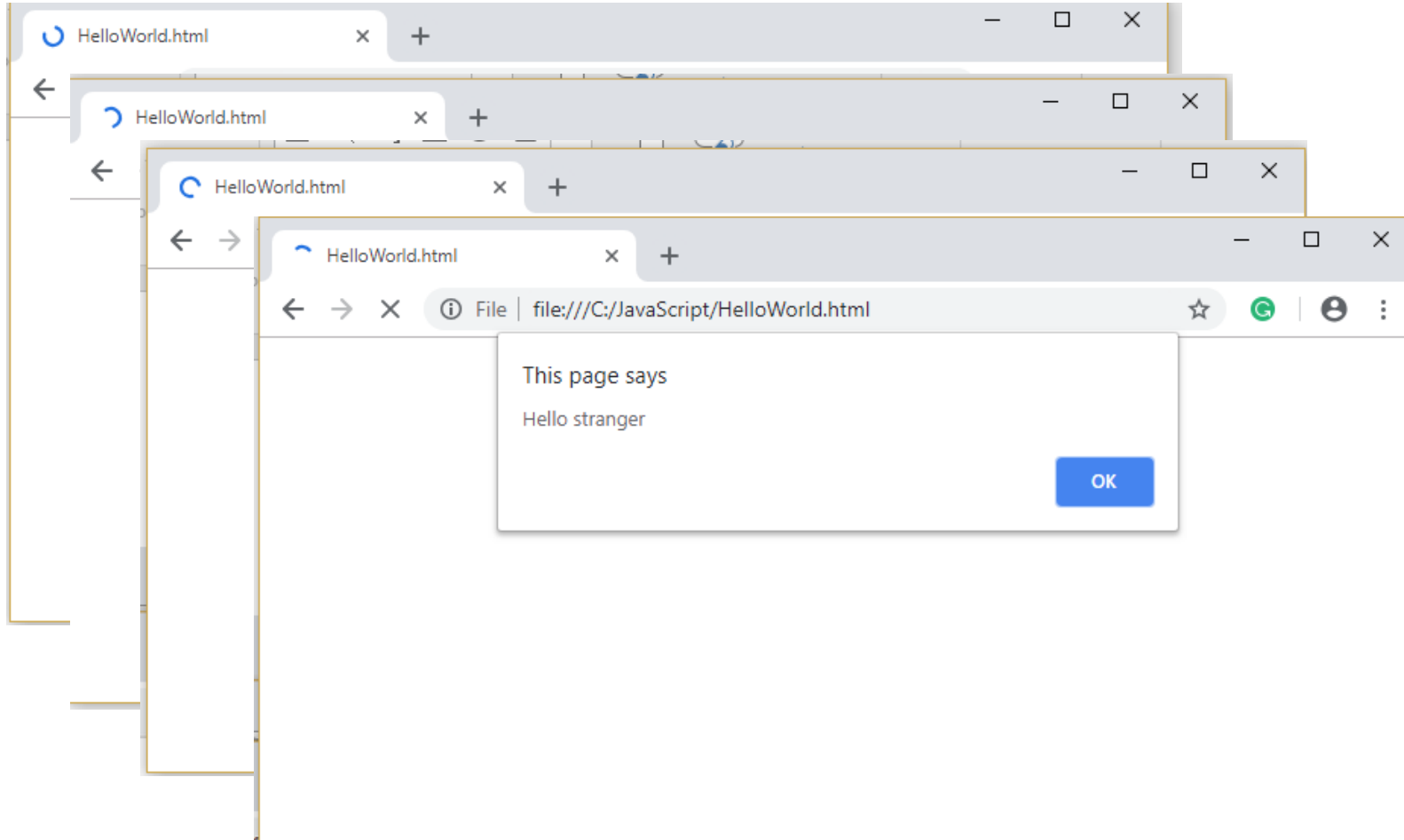
An “if” statement with a Boolean (true/false) expression

...what we do if the Boolean expression is true

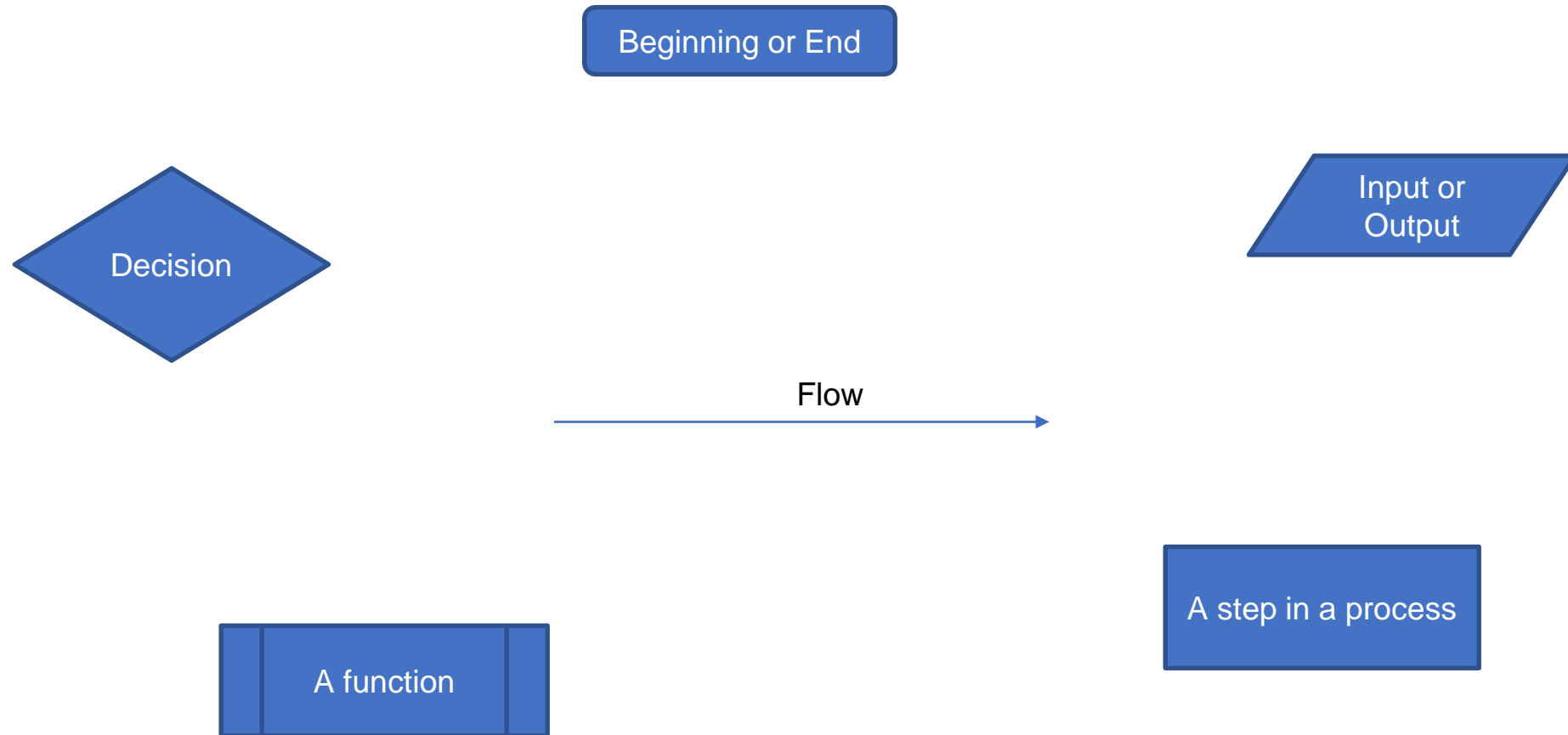
...what we do if the Boolean expression is false

```
24 let name = prompt("What is your name?");
25
26 if (name != "") {
27
28     alert('Hello ' + name);
29
30 } else {
31
32     alert('Hello stranger');
33 }
```

Fancy Hello World! or Hello Stranger



Flowcharts

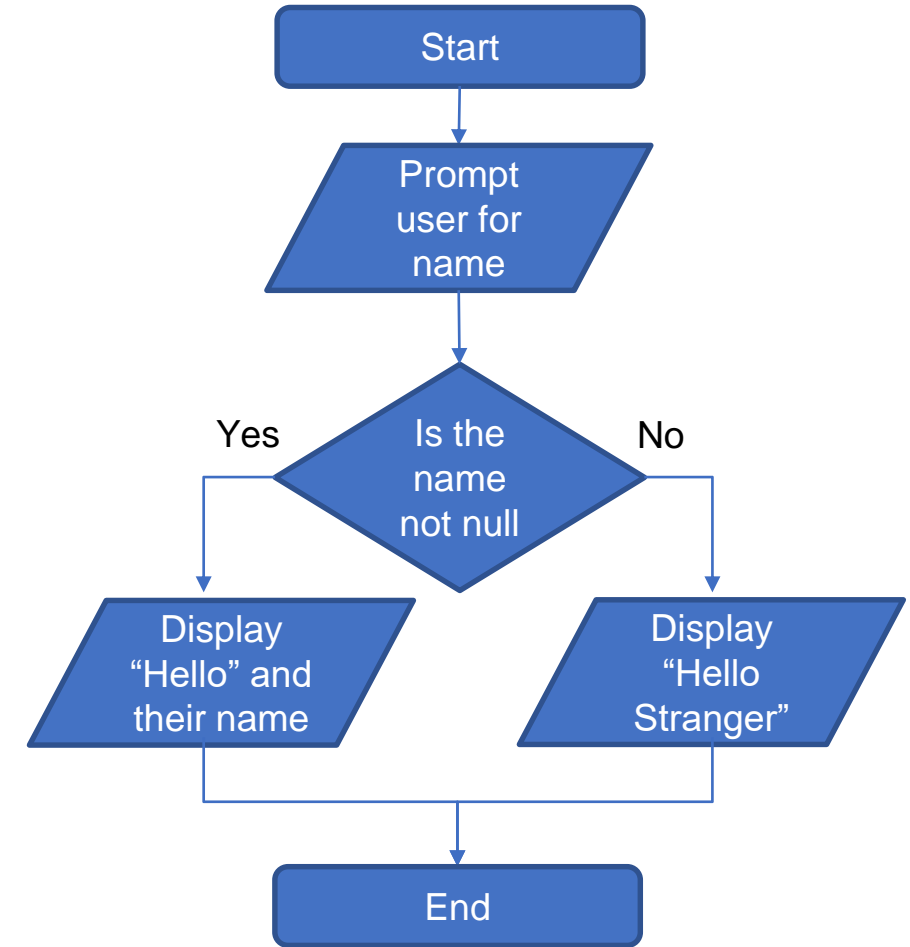


Hello World

Step #1 – Understand the Problem

Prompt the user for their name. If the user enters their name then display the message “Hello” and their name. If the user does not enter their name then display the message “Hello Stranger”

Step #2 – Develop the Algorithm



Handy Boolean Expression

The syntax of the global `isNaN` (= is Not A Number) method

```
isNaN(expression)
```

Examples of the `isNaN()` method

```
isNaN("Hopper") // Returns true
```

```
isNaN("123.45") // Returns false
```

`isNaN()` is a global method. The term “global” means it is available everywhere in your JavaScript code. Global methods are also sometimes called functions.

Conditional expressions with logical operators

Example 1: The AND operator

```
age > 17 && score < 70
```

Example 2: The OR operator

```
isNaN(rate) || rate < 0
```

Example 3: The NOT operator

```
!isNaN(age)
```

Expressions evaluate to true or false.

What do each of these expressions evaluate to?

Putting conditional expressions to work!

The syntax of the if statement

```
if ( condition-1 ) { statements }  
[ else if ( condition-2 ) { statements }  
  ...  
  else if ( condition-n ) { statements } ]  
[ else { statements } ]
```

An if statement

```
if ( age >= 18 ) {  
    alert ("You may vote.");  
}
```

Examples of using if/else clauses

An if statement with an else clause

```
if ( age >= 18 ) {  
    alert ("You may vote.");  
} else {  
    alert ("You are not old enough to vote.");  
}
```

An if statement with multiple else clauses

```
if ( isNaN(rate) ) {  
    alert ("You did not provide a number for the rate.");  
} else if ( rate < 0 ) {  
    alert ("The rate may not be less than zero.");  
} else if ( rate > 12 ) {  
    alert ("The rate may not be greater than 12.");  
} else {  
    alert ("The rate is: " + rate + ".");  
}
```

An Example

```
24 let speedLimit = 55;
25
26 function amISpeeding(speed) {
27     if (speed > speedLimit) {
28         alert("Yes. You are speeding.");
29     } else {
30         alert("No. You are not speeding. What's wrong with you?");
31     }
32 }
33 amISpeeding(53);
34 amISpeeding(72);
```

201 < 300 = True
151 < 150 = False
Things are fine!

if and else statement just another example!

500 < 300 = False
160 < 150 = False
Things are fine!

100 < 300 = True
100 < 150 = True
Adjust the position

```
25 let xPos = 300;  
26 let yPos = 150;  
27  
28 function sendWarning(x, y) {  
29     if ((x < xPos) && (y < yPos)) {  
30         alert("Adjust the position");  
31     } else {  
32         alert("Things are fine!");  
33     }  
34 }  
35  
36 sendWarning(500, 160);  
37 sendWarning(100, 100);  
38 sendWarning(201, 151);
```

Your **if** and **else** statements can be nested to help you simulate more complex situations!

```
9 let age = 70;
10 if (age < 18) {
11   alert("You are a minor and Not Eligible to Work.");
12
13 }else{
14
15     if (age >= 18 && age <= 65) {
16       alert("You are Eligible to Work. Please apply");
17     }
18     else {
19       alert("You've reached retirement! Please collect your pension!");
20     }
21 }
22 </script>
```



TIPS FROM MIS 2101 VIRTUAL HELPDESK

[Don't Fall Behind with Jackson
Randolph](#)



Practice, Practice, Practice

Open HelloWorld2.html and start coding!

```
24 let name = prompt("What is your name?");
25
26 if (name != "") {
27     alert('Hello ' + name);
28 }
29
30 } else {
31
32     alert('Hello stranger');
33 }
```

More Practice!

Boolean Values: true and false

- Open Unit 11 in-class example file (age.html)

```
1  <!DOCTYPE html>
2  <html>
3  |
4  |     <title> Sclarow </title>
5  |
6  | <body>
7  | <script>
8  |
9  |     function oldEnough(yourAge){
10 |
11 |
12 |
13 |
14 |
15 |     }
16 |
17 |
18 | }
19 |
20 | let yourAge = parseInt(prompt("How old are you?"));
21 | if (oldEnough(yourAge)){
22 |     alert("You can drink!");
23 | }else{
24 |     alert("It's chocolate milk for you!");
25 | }
26 |
27 | </script>
28 | </body>
29 | </html>
```

Friday & Monday: Time for “Challenges”!

Homework

- Review Riley's Ranking Calculator

Week 11 Challenges ICA#14a

- **GuessANumber: watch video!**
- **DayOfTheWeek**
- **AreasOfRectangles**
- **AgeClassifier**
- **RomanNumerals: watch video!**
- **MassAndWeight (video)**
- **MoneyCountingGame (video)**
- **ColorMixer (video)**
- **HotDogCalculator (video)**

Diamond Peer Teacher Lauren Quinn

[Guess a Number Intro Walkthrough](#)

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[Debugger Video 2 \(Developer Tools Console\)](#)

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[Debugger Video 3 \(Developer Tools Breakpoints\)](#)

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Ariella Izbinsky

[Roman Numerals Walkthrough](#)

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Diamond Peer Teacher Anna Boykis

[Mass and Weight Walkthrough](#)

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Diamond Peer Teacher Lauren Quinn

[Money Counting Game Walkthrough](#)

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Diamond Peer Teacher Quinten Powers

[Color Mixing Walkthrough](#)

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[Hot Dog Calculator Walkthrough](#)

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Read Chapter 5 before next Wednesday!

Last chapter!