Unit 5—Building APPS
Chapter 1: Introduction to Event Driven Programming
Study Guide (Stages 1-5)

Chapter 1 Big Questions

- Why do we need algorithms?
- How do you program apps to respond to user "events"?
- How do you write programs to make decisions?
- How do programs keep track of information?
- How creative is programming?
- How do people develop, test, and debug programs?

Enduring Understandings

- 1.1 Creative development can be an essential process for creating computational artifacts.
- 1.1 Creative development can be an essential process for creating computational artifacts.
- 1.2 Computing enables people to use creative development processes to create computational artifacts for creative expression or to solve a problem.
- 1.3 Computing can extend traditional forms of human expression and experience.
- 2.2 Multiple levels of abstraction are used to write programs or create other computational artifacts
- 4.1 Algorithms are precise sequences of instructions for processes that can be executed by a computer and are implemented using programming languages.
- 5.1 Programs can be developed for creative expression, to satisfy personal curiosity, to create new knowledge, or to solve problems (to help people, organizations, or society).
- 5.2 People write programs to execute algorithms.
- 5.3 Programming is facilitated by appropriate abstractions.
- 5.4 Programs are developed, maintained, and used by people for different purposes.
- 5.5 Programming uses mathematical and logical concepts.
- 7.1 Computing enhances communication, interaction, and cognition.

1. Take a few minutes to go through Unit 5 Stages 1-5 and read the student lesson plans focusing on the important concepts presented in the Background and Vocabulary. Be sure to watch every video provided in each unit.

2. Make sure you complete every coding puzzle in all units! Since this is a programming/coding unit, you will need to be able to read and write code and understand the following concepts/commands including the proper notation.

   onEvent (id, type, function)

   setText(id)

   showElement

   hideElement

   setScreen(screenId)

   Assignment Operator: = ("gets the value of")

   Mathematical Operators: +, -, *, /

   var x = _____ vs. x = _____

   prompt("Enter a value")

   promptNum("Enter a value")

   console.log(message) vs. write(text)

3. Be prepared to write a short sentence about the following topics:
    a. Introduction to Event-Driven Programming

    b. Multi-Screen Apps

    c. Controlling memory with variables

    d. Building an App (Clicker and/or Chaser Game)

4. Understand the difference between:
    a. Event handler vs. event listener

    b. Creating, assigning, and reassigning a variable

    c. Local vs. global variables

    d. Code mode vs. design mode in App Lab

    e. Using quotation marks and not using quotation marks

Coding Examples

For #1-5, use the provided code to answer the following questions.

1. In which line(s) are variables declared without assigning an initial value?

2. In which line(s) are variables declared as well as initialized?

3. Which line(s) show a variable assignment?

```
1  var course = 1;
2  var teachers = 2;
3  var totalPeople =0;
4  var students;
5  students = 25;
6  totalPeople = teachers + students;
```

4. Which line(s) are variable reassignments?

5. Which line(s) use the concatenation operation?

For #6-10, use the following code to answer questions.

6. What is the output for line 6?

7. Which of the following will be the output for line 8?

A. num + name
B. 3NATE
C. 3 + NATE
D. ERROR

```
1  var num = 0;
2  var name = "NATE";
3  num = num + 1;
4  num = num + 1;
5  num = num + 1;
6  console.log(num);
7  console.log(name);
8  console.log(num + name);
9  console.log(("My name is " + name + " my age is ") + num);
```

8. What is the output for line 9?

9. What line(s) consist of variable declarations with an initial value?

10. What line(s) consist of variable reassignment?

For #11-12, use the provided codes to answer the question that follows.

11.

```
var x = 3;
var y = 2;
var z = 1;
x = x+1;
y = x+1;
z = y-1;
```

What are the values of *x*, y, and *z* after the code is run?

12.

```
var a = 3;
var b = 7;
a = b;
b = a;
//add console.log statments below
console.log("the value a is: "+a);
console.log("the value b is: "+b);
```

What is the output?

For #13-16, determine what will be displayed in the console.log after the code is run.

13.

```
var a=5;
var b=10;
var c=-2;
var d;
addNumbers();
console.log(d);
function addNumbers (){
  d=a+b+c;
}
```

14.

```
var y = 6;
starburst ();
y = y + 3;
console.log (y);
function starburst ( ) {
  var y = 5;
  y=y-1;
}
```

15.

```
var e=5;
console.log(e);
e=e*e-e;
change();
function change(){
  e=0;
}
```

16.

```
var students = 25;
var books = 6;
purchases ();
console.log(total);
function purchases (){
  var total = students*books;
}
```

17. Consider the similar codes below:

var x = "3";	var x = 3;	var x = 3;	var x = 3;
var y = "4";	var y = 4;	var y = 4;	var y = 4;
var combo = x + y;	var combo = x + y;	var combo = x + y;	var combo = "x+y"
console.log(combo);	console.log(combo);	console.log("combo");	console.log(combo)

What will be displayed in the console.log for each of these codes?

18. The following commands are all related to text when programming in App Lab. Describe specifically what each of them does and if the programmer needs to create anything in design mode in order for the text to be displayed.

```
1 console.log("I can't wait for Winter Break");
2 write("I'm ready to go to college");
3 setText("displayLabel","Is it Summer yet?");
```

For #19-22, use the code provided to answer the TRUE/FALSE questions below.

```
1  //kittenImage is an image on catScreen
2  //dogButton is a button on dogScreen
3  var number=0;
4  onEvent("dogButton", "click", function() {
5    setScreen("catScreen");
6    number = number+1;
7  });
8  onEvent("kittenImage", "mouseover", function() {
9    setPosition("kittenImage", randomNumber(100,200), randomNumber(150,300), 30, 30);
10 });
11 onEvent("kittyButton", "mousedown", function() {
12   setScreen("dogScreen");
13   number = number+1;
14 });
```

_____19. The size of the kittenImage changes when the user performs mouseover on the image.

_____20. The user can go back and forth between catScreen and dogScreen.

_____21. When a user clicks on dogButton, it also clicks on dogScreen.

_____22. The value of number increases each time a user changes screens.

23. Explain why debugging is a valuable process in programing.