Unit 2 – ICD2O – App Lab, Variables & Networks

Sample Test: October 8, 2025

Name: Solutions

Total	%	Knowledge	Communication	Application	Thinking
(85)	(100)	(24)	(24)	(20)	(17)

Knowledge

1. Identify the piece of the AppLab interface used for each of the following: /5

(a)	Choosing the widget's colour on the screen.	Design Mode	Coding Editor	Run Mode
(b)	Moving the widget's position on the screen.	Design Mode	Coding Editor	Run Mode
(c)	Choosing the sound to put in the playSound block.	Design Mode	Coding Editor	Run Mode
(d)	Typing in a noun into a MadLibs prompt.	Design Mode	Coding Editor	Run Mode
(e)	Clicking on a button to see what it does.	Design Mode	Coding Editor	Run Mode

2. Which of the following are valid widget IDs? (put an ✓ if valid and an × if incorrect). /4

house_keeping ✓	Back up ×	var@ble ×	printer4paper ✓

3. Classify each piece of input with the most appropriate type (text or number) /6

(a)	Alpha Go	text	(c)	OS	text	(e)	(905) 451-2860	text
(b)	1.1345	number	(d)	-8	number	(f)	L6Y 1Z4	text

4. Fill in the types: prompt or promptNum. /2

```
var year = promptNum ("What year is it? ");
var verb = prompt    ("Enter a verb: ");
```

5. Consider this user interface. /7

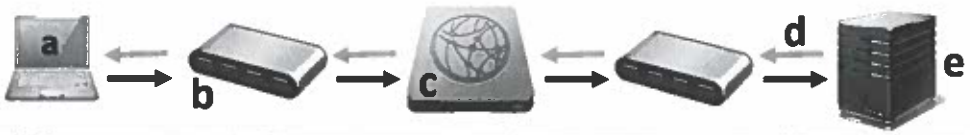
(a)	How many widgets are used?	5
(b)	What types of widgets appear?	Image Button Label
(c)	How many drop down menus?	0
(d)	How many onEvents would you need?	3
(e)	How many widgets would need a meaningful id?	4

Communication

6. Identify the term using the description. /7

Widget	(a)	A piece of a graphic user interface. e.g. Label, Button.
Variable	(b)	A named space in RAM that has a type.
Backup	(c)	Making a second copy of a file in another location.
Keyboard Shortcut	(d)	Pressing two keys on the keyboard to select an option quickly.
Housekeeping	(e)	Keeping your computer in good working order.
Binary Tree	(f)	A type of a graph where each node has a maximum of 2 children,
Destination IP address	(g)	One item in a packet header.

7. Identify these pieces of the internet. /5



(a) Computer that connects to the internet.	(b) Hardware directing internet packets.	(c) Companies providing internet connection.	(d) A type of internet cable.	(e) A large computer on the internet providing files.
Client	Router	ISP	Fibre Optic Cable	Server

8. Fill in the blanks in the Mad Libs story after looking at the output below. /6

Prompts: (answers in italics)

Enter a noun: *peacock*	Enter an article of clothing: *shoe*
Enter another noun: *bathtubs*	Enter a food: *soy sauce*
Enter a liquid: *dishsoap*	Enter a body part: *arm*

use questions from here

Code:

```
onEvent("enter", "click", function(event) {
var noun = prompt ("Enter a noun : ");
var noun2 = prompt ("Enter another noun : ");
var liq = prompt ("Enter a liquid : ");
var cloth = prompt ("Enter an article of clothing : ");
var food = prompt ("Enter a food : ");
var body = prompt ("Enter a body part : ");

var words = "The Beach \n";  Use variable names from above
words = words + "When you go to the beach, bring a " +noun ;
words = words + ", a thermos full of "+ liq +" and a couple ";
words = words + "of folding " + noun2 +". You should also ";
words = words + "have a big "+cloth +" to cover your "+body;
words = words + ". Also, bring "+ food +" for lunch.";
setText("answer", words);
});
```

9. Why is a depth-first search useful? Use specific details to support your answer. /6 See other examples next page

Depth-First Search (DFS) is useful because it explores deep regions of a graph. When solving a maze or suduko puzzle, programs create a graph of possible actions. Then, DFS finds the optimal path by searching the graph's branches, backtracking when needed to find unexplored paths. If an answer is found deep inside a tree-graph, the nature of the DFS algorithm will allow its quick location. Point, Detail, Analysis!

Great student answers to #8 – why is DFS useful:

Depth first search is useful because it can create AI game systems. Deep Blue is a chess computer created to beat humans at chess starting a new era of chess. This shows the depth/deep thinking process of computers finding the right move in thousands of moves. These help computers to make wiser choices for important things better than a human.

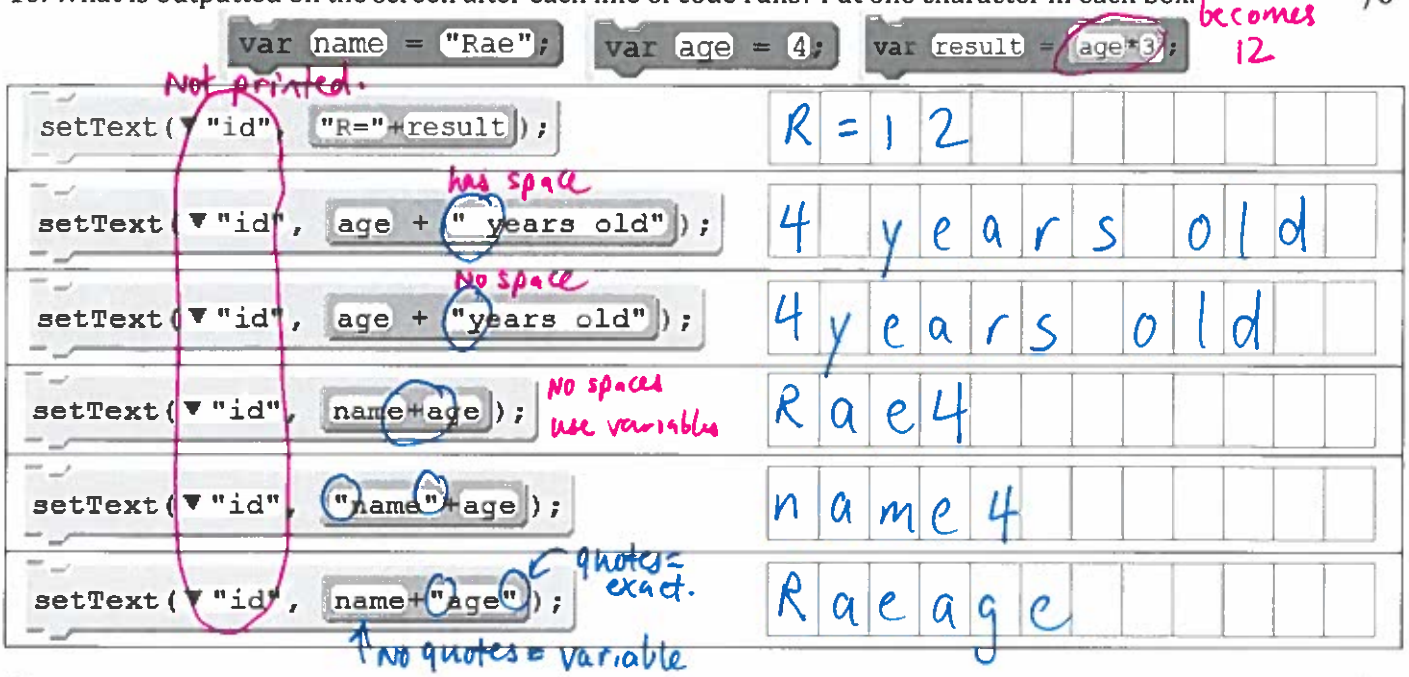
The depth-first search is useful because it moves forward until finding a solution. When using the search, it goes through all the paths from left to right instead of clearing the nearest ones. This allowed Deep Blue an AI system to effectively defeat professionals at chess becoming an actual threat. The results can be smarter and better than that of Breadth-first search.

Depth-first searches are useful for finding the path out of mazes. It achieves this through backtracking, moving forward to the left until a solution is found, going backwards and then going to the right side until all spaces have been explored. This explores all potential paths, allowing you to quickly and effectively find the exit of a maze.

Depth-first searches are important because they are used to find all the paths between nodes. Specifically, when a packet needs to travel over a network, it is the fastest when the packet knows all the routes. The depth-first search finds this route by checking the possible left nodes and then right. By prioritizing both the closest and farthest nodes, this search finds out all the routes in detail.

Application

10. What is outputted on the screen after each line of code runs? Put one character in each box. /6



11. Look at the following program: /6

```
onEvent("enter", "click", function(event) {
  var I = promptNum ("Enter the current: ");
  var R = promptNum ("Enter the resistance: ");
  var V = I * R;
  setText("answer", "The voltage is " + V);
});
```

variables

output

a) If you entered 3 and 4, what would appear in the label 'answer'?
The voltage is 12

b) How many variables are in this program? 3

c) What are three variable names?
I, R, V

* Use #11 to help you with #12 *

12. The relationship between power (P) and voltage (V) and resistance (R) is: $P = \frac{V^2}{R}$

Write code to find the power. /8

- Start the onEvent block
  onEvent("enter", "click", function(event){
- Get input for the voltage (V) and resistance (R).
  var V = promptNum("Enter the voltage:");
  var R = promptNum("Enter the resistence:");
- Figure out the power. The formula is: $P = \frac{V^2}{R}$
  var P = V*V/R; (or: var P = V^2/R;)
- Print out the power in the label 'answer'.
  setText("answer", "The power is "+P);
- Close the onEvent Blocks
  });

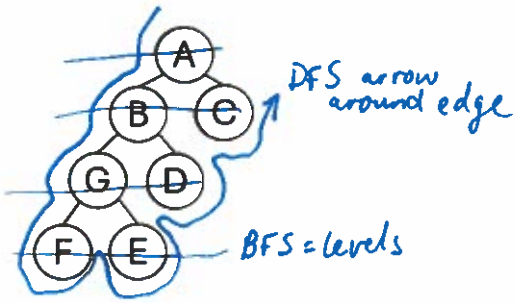
Thinking

13. Trace the following search techniques. /4

(a) Trace the flood fill with numbers.
(1 for first cell, 2 for second layer)

2	2	2	2	2
2	1	1	1	2
2				2
3				3
4	4	5	4	4

(b)



DFS: A B G F E D C

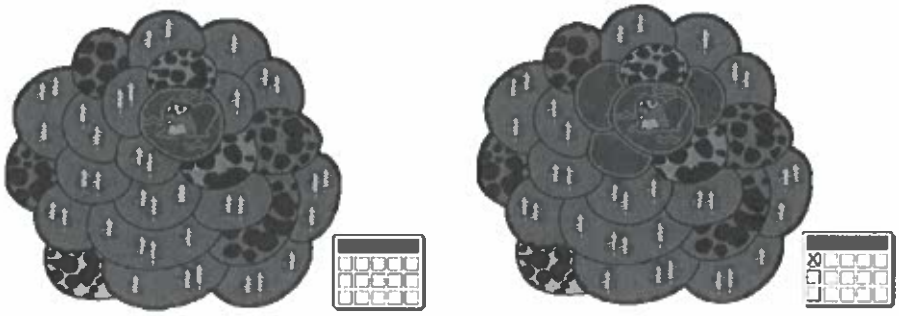
BFS: A B C G D F E

14. Circle **and correct** 5 errors in the following piece of code. /5

```
onEvent("enter", "click", function(event) {
    var base = prompt("What is the side length? ");
    sq = base * base;
    setText("LBLsquare", "Square Area: " & sq);
});
```

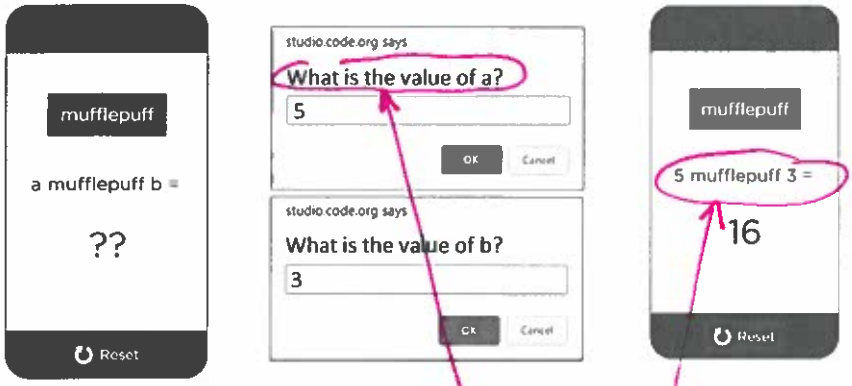
1 missing { 2 Num 3 missing ; 4 var 5 + 6 no quotes

15. Every day, beavers flood all fields with trees that are next to the lake or flooded fields. Fields with stones are not flooded. For example, after one day, three fields will be flooded, as shown. After how many days in total will all the fields with trees be flooded? (circle)



(A) 4 days (B) 5 days (C) 6 days (D) 7 days /2

16. Fill in the blanks to code the onEvent.



More examples of the "mufflepuff" mathematical function follow:

- 2 mufflepuff 3 = -5
- 6 mufflepuff 4 = 20
- 1 mufflepuff 0 = 1
- 1 mufflepuff 1 = 0
- 23 mufflepuff 2 = 525
- 5 mufflepuff 2 = 21
- 3 mufflepuff 1 = 8

/6

```
onEvent("mufflepuff", "click", function(event) {
    var a = promptNum("What is the value of a?");
    var b = promptNum("What is the value of b?");
    setText("question", a + " mufflepuff " + b + " =");
    var ans = a^2 - b^2 ;   (or a*a - b*b)
    setText("answer", ans);
});
```