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Worksheet 4: answers

1) Whether code blocks executes or not can determined by boolean expressions.
The condition therefore refers to the "boolean expression" or "boolean condition"

2) There are two code paths for an if/else. One for the "true" case of the boolean
expression and one for the false case of the boolean expression.

3) Prompt commands brings up a modal dialog box.
   We use it to ask the user for input.  We are also using it temporarily for learning purposes,
   in later labs we will stop using prompt.
4) isNan() checks if a value pass into the function can not be converted to a number.
   The function call has a value of true if can not, and false if it cans.

5) var userInput = prompt("I want input, feed me please!");
   var num = Number(userInput); //Rember we get NaN if it can't convert it.
   if(!isNan(num)){
      alert("You have entered a number");
   }else {
      alert("You typed something, I don't think it was a number.")
   }
 6) Will the line alert("Maverick") ever execute?
    There are two answers top this question, one almost correct and
    one correct.

    The almost correct answer.
    No, because for
    if(x < 0){
       alert("Snowbird");
    } else if(Math.pow(x,2)+Math.pow(y,2)+Math.pow(z,2) <=1) {
       alert("goose egg");
    } else if(Math.pow(x,2)+Math.pow(y,2)+Math.pow(z,2) >1 ){
      alert("Blue Angel");
    } else {
      alert("Maverick");
    }
    }
    the else can never be reached, because if x,y,z are numbers the three
    boolean expressions before the else covers every possible combination.

    The correct answer:
    for alert("Maverick") to execute the boolean expression
    1: x < 0
    2: Math.pow(x,2)+Math.pow(y,2)+Math.pow(z,2) <=1
    3: Math.pow(x,2)+Math.pow(y,2)+Math.pow(z,2) >1
    Must all be false.
    For 1 to be false, x needs to be less than 0.
    2 and 3 cannot be both false if x,y,z are a numbers.
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    In the first if statement

    if( !isNan(x) && !isNaN(y) && !isNaN(y))

    only ensures x, and y are numbers so z can be a string, because if we read the statement carefully
    we can see a typo in the last !isNaN(y). That is, we have two !isNaN(y), instead of !isNaN(z) at the end.

    so, 2 and 3 can be false if z is a string, so Math.pow(z,2) will evaluate to NaN. This will cause the addition
    expression to equal NaN, and any comparison with NaN is always false.

    So, for alert("Maverick") to execute, x needs to be less than 0, and z needs to be a string.

    Note: Both answers were accepted.

   Part B: alert("goose egg") will execute if x,y, z are numbers, and the sum of their squares are less than or equal to 1
and x greater or equal to 0.
   Part C: The min is 0, because no code is executed if x or y is not a number.
           The max is 1, because only one code block is the if/else if/else statement will execute.

 Q7) One page will display userName+"You are richer than Donald Trump", if the user name is greater or equal to "Donald Tru
mp" according to Unicode ordering.  The second version will say "No one is as rich as Donald Trump!" if the user name is less than
 "Donald Trump"
 Q8)
 /*Notes: The simplest was to approach this problem is to use a variable to keep track of the cost.
        Then we can simply use two "if/else if/else" blocks one after another.

        //I'll leave the HTML for you to write, it should only contain one div

 The JavaScript:*/

var output = document.getElementById("output");
var coffeeSize = prompt("Please enter a size(Regular, Medium, Large)");
var coffeeType = prompt("Please enter a type(Expresso, Drip, Siphon)");
var cost = 0;

//First if block to find the base cost
if(coffeeSize === "Regular"){
        cost = 2;
} else if(coffeeSize === "Medium"){
        cost = 2.5;
} else if(coffeeSize === "Large"){
        cost = 3.5;
} else {
        //Will assume a regular if invalid input is entered
    cost = 2;
    coffeeSize = "Regular"
}

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 94: //Second if block to find additional cost
 95: if(coffeeType === "Expresso"){
 96:         cost = cost + 1;
 97: } else if (coffeeType === "Drip"){
 98:         cost = cost + 0;
 99: } else if( coffeeType === "Siphon"){
100:         cost = cost + 2.00;
101: } else {
102:         //Will assume drip coffee if invalid input is entered
103:         coffeeType = "Drip";
104:         cost = cost +0;
105: }
106: output.innerHTML = "You ordered a " + coffeeSize + " "+coffeeType + " which cost $" + cost;
107:
108: //Note some people used nested if statements.
109: //While that also gave the correct answer
110: //using a variable carry information around, makes
111: //our program simpler, with less code to debug.
112: //In in the above example there are 16 code paths.
113: //4 possible for the 1st if block, and 4 for the second.
114: //leading to 4*4 code paths. Doing it the above way, we
115: //don't have to write all 16 boolean conditions one for each path.
116: //We cut the number of if's by a factor of 2. \0/
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