**Program outline:**

**Read in user input**

Separate by :

Before : is variable name

After : is all possible values

Separate second section by ,

Each value is a variable value

Each variable’s value should be save on separate ‘row’ that matches the placement of the variable’s name

End up with:

List of lists: each one has: |variable name|value|value|value…

Sort the main list by length of inner lists, longest on top

Must copy values, not references

**If # of variables is less than 2, return error and end code**

**Put all variable names into array of lists**

Each list’s first value will be variable name

Array set to length of # of variables

Each value after first will be the value to be entered in a specific test

End up with:

|Variable 1|variable 2| variable 3|…

Take variable names out of the list of lists

Must copy values, not references

**Put values of first two variables into Array of Lists**

Values for Variable 1 should be printed equal to the number of values available for variable 2

Fill other variable values with “ “ (space)

Continue for # of values for variable 1

End up with:

|Variable 1|variable 2| variable 3|…

|V1 Value1|V2 Value1| “ “ |…

|V1 Value1|V2 Value2|“ “ |…

|V1 Value2|V2 Value1|“ “ |…

|V1 Value2|V2 Value2|“ “ |…

**If # of Variables = 2, end code now and return list of tests**

**For as many variables as remain:**

**Create Array of Lists of Arrays for all value combinations for current variable (starting at variable 3)**

Each list contains arrays of pairs of values: the first value is a value of the current variable and the next is the value of another variable that came before it

First array[0] contains list for current variable and variable 1, array[1] for variable 2…

End with:

V3 Value 1|V1 Value1

V3 Value 1|V1 Value 2….

V3 Value 1|V2 Value1

V3 Value 1|V2 Value2

V3 Value 2|V2 Value1

V3 Value 2|V2 Value2…

**Fill in the Array of Lists for final testing value combinations, check for matches**

The # of matches needed = current variable-1 (starting at 2)

For each testing combination in Array of Lists

While Array of List of Arrays !empty

Start at first position in first array

If value of variable 2 = value at positionInArray or “ “ && current variable value = “ “ or value of variable 1

Place variable 1 in possible match variable

Place location of array containing possible match in list of arrays to delete

Loop array of lists

For each list

If variable 1 = possible match && variable 2 = value at testArrayList[arrayPosition]

Add location of array containing possible match in list of arrays to delete

Move to next list to check next variable combinations

When loop is done

if positions to delete = matches need, add possible match to test values and delete arrays containing values that have been matched

else if position in first list !=end

reset and try for next value in first list

else if position in test list !=end

reset and try for next position in test list

else if matches required != 1

reset and reduce matches needed by 1

else

add a row to the tests filled with all “ “