Discussion 3: Domain, Range, Lists and HOFs

Domain and Range

1. Determine the domain and range of the following Snap! blocks:

a. 

Domain: _____, _____

Range: _____

b. 

Domain of foo: _____

Range of foo: _____

Data type of var: _____

2. Fill in the table with the domain and range of the following higher order functions:

Higher Order Function	Domain	Range	Notes
			
			
			

Higher Order Function Practice

1. Fill in the blanks so the keep block returns a list of the numbers from MyList.

```
MyList = [3, hello, goodbye, 5, 6]

Keep items such that _____ from _____
```

2. Write an expression that returns the sum of the squares of the numbers in YourList.

```
YourList = [1, 2, 3, 4]
```

_____

_____

3. Complete the following block so it works as described. Note: You may find the sentence -> list block helpful.

_____

_____

4. Describe (in words) what the following block outputs. Assume OurList is a list of words.

Challenge Problems

1. Determine the domain and range of the following blocks:

a. 

Domain of Foo: _____ Range of Foo: _____

b. 

Domain of Bar: _____ Range of Bar: _____

2. If the output of `Mystery` is true, which of the following can you say for sure?

☐ A must be true	☐ B must be true	☐ A must be false	☐ B must be false	☐ None of these

3. You realize you could replace the *entire* body of `Mystery` with a single report statement. What could we report instead so that `Mystery` would have the same exact behavior? (Select all that apply)

☐ 

☐ 

☐ 

☐ 

☐ 

☐ 

4. Given the following expression, what does `NAMES` evaluate to?

a. 

b. 

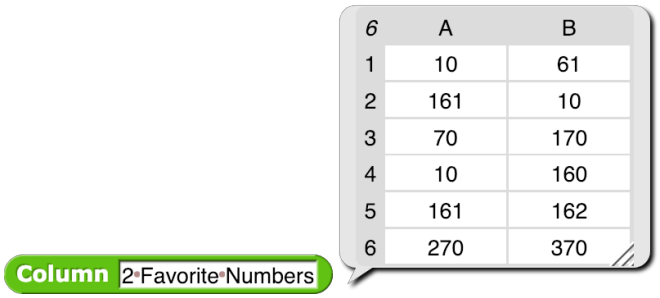
c. 

d. 

5. One of the most common data storage technologies is databases, think of them as Tables/Charts, with columns and rows. Let's say you're given a table that looks like the following:

ID	Name	Height(inches)	Year	2 Favorite Numbers
1	Dan	75	4	[10, 61]
2	Mansi	65	4	[161, 10]
3	Bob	70	3	[70, 170]
4	Alice	71	1	[10, 160]
5	Nick	68	3	[161, 162]
6	Eve	64	2	[270, 370]
:	:	:	:	:
:	:	:	:	:
...	...	...	...	...

Note: Each entry in "2 Favorite Numbers" is a list with exactly 2 numbers!



You're given a reporter block, Column, that takes in the name of a column in the database and reports a list of all of the elements in that column in order. An example call is shown to the left.

For this problem, you can assume that you are only given the 3 HOFs, Column, and any operators (green blocks) in Snap! For each of the subparts before, determine if the problem can be solved using only the given blocks.

a	Report the total sum of heights	Yes	No
b	Report a list of the names of people who are in year 4	Yes	No
c	Report the number you get when you multiply the squares of all of the heights above 70 inches together.	Yes	No
d	Calculate the sum of all of the numbers in the "2 Favorite Numbers" column	Yes	No

6. Indicate whether each set of blocks below is equivalent:

a

b

c

d