Practice Problems #4

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The goal of these practice problems is to build some of the 'basic' R skills for manipulating a variety of objects. Outputs are provided to check your progress, but code is hidden from the PDF file.

1. Create a numeric vector comprising a sequence of integers 1 through 5. Do with this with a function rather than typing them all out.

```
[1] 1 2 3 4 5
```

2. Create a character vector comprising 5 fruits/vegetables.

```
[1] "apple"    "banana"   "carrot"   "daikon"   "eggplant"
```

3. Create a 2-level factor vector identifying each of the previously-created foods as either a fruit or vegetable.

```
[1] Fruit     Fruit     Vegetable Vegetable Vegetable
Levels: Fruit Vegetable
```

4. Combine these 3 vectors into a dataframe.

```
  id     food  category
1  1    apple     Fruit
2  2   banana     Fruit
3  3   carrot Vegetable
4  4   daikon Vegetable
5  5 eggplant Vegetable
```

5. Change the column names to "id", "food", and "type". (*Advanced Users:* Change **only** the "category" column name to "type" by writing code where one and only one column name is changed.)

```
  id     food      type
1  1    apple     Fruit
2  2   banana     Fruit
3  3   carrot Vegetable
4  4   daikon Vegetable
5  5 eggplant Vegetable
```

6. Let's say you found an error in your data collection process, and you need to change the "carrot" value to "cucumber". This can be done in a variety of ways, but let's try 2 common approaches.

6a. In the first approach, you only want to change this specific value. Point R to the problematic value using matrix notation (i.e., using brackets and numbers). *Hint:* If you encounter an error related to factors, you might need to coerce your food column to a character vector.

```
  id     food      type
1  1    apple     Fruit
2  2   banana     Fruit
3  3 cucumber Vegetable
4  4   daikon Vegetable
5  5 eggplant Vegetable
```

6b. In the second approach, let's use an if-else statement to replace **all** instances of "carrot" with "cucumber." This approach might be beneficial if there are systematic problems in a dataset that is much larger.

```
  id     food      type
1  1    apple     Fruit
2  2   banana     Fruit
3  3 cucumber Vegetable
4  4   daikon Vegetable
5  5 eggplant Vegetable
```

7. Remove all rows that are fruits.

```
  id     food      type
1  3 cucumber Vegetable
2  4   daikon Vegetable
3  5 eggplant Vegetable
```

8. Remove the type and id columns from the dataframe.

```
      food
1 cucumber
2   daikon
3 eggplant
```

9. Convert the food column by itself to a new vector.

```
[1] "cucumber" "daikon"   "eggplant"
```

10. Instead of combining the original vectors into a dataframe, let's place them into a list. Explore the differences between your previously created dataframe and the newly created list.

```
$id
[1] 1 2 3 4 5

$food
[1] "apple"    "banana"   "carrot"   "daikon"   "eggplant"

$category
[1] Fruit     Fruit     Vegetable Vegetable Vegetable
Levels: Fruit Vegetable
```

Hints: If you're struggling to perform these, you might benefit from exploring the following functions:
seq()
c() and Cs()
factor()
data.frame()
colnames()
as.character()
ifelse()
filter() or subset()
select()
list()