

Advent of Code 2020

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Day 6 - Custom Customs

1 Part One

As your flight approaches the regional airport where you'll switch to a much larger plane, **customs declaration forms** are distributed to the passengers.

The form asks a series of 26 yes-or-no questions marked **a** through **z**. All you need to do is identify the questions for which **anyone in your group** answers "yes". Since your group is just you, this doesn't take very long.

However, the person sitting next to you seems to be experiencing a language barrier and asks if you can help. For each of the people in their group, you write down the questions for which they answer "yes", one per line. For example:

```
abcx
abcy
abcz
```

In this group, there are **6** questions to which anyone answered "yes": **a**, **b**, **c**, **x**, **y**, and **z**. (Duplicate answers to the same questions don't count extra; each question counts at most once.)

Another group asks for your help, then another, and eventually you've collected answers from every group on the plane (your puzzle input). Each group's answers are separated by a blank line, and within each group, each person's answers are on a single line. For example:

```
abc

a
b
c

ab
ac

a
a
a
```

a

b

This list represents answers from five groups:

- The first group contains one person who answered "yes" to **3** questions: a, b, and c.
- The second group contains three people; combined, they answered "yes" to **3** questions: a, b, c.
- The third group contains two people; combined, they answered "yes" to **3** questions: a, b, c.
- The fourth group contains four people; combined, they answered "yes" to only **1** question, a.
- The last group contains one person who answered "yes" to only **1** question, b.

In this example the sum of these counts is $3 + 3 + 3 + 1 + 1 = 11$.

For each group, count the number of questions to which anyone answered "yes". **What is the sum of those counts?**

1.1 Solution

```
abstract type Declarations end
```

```
struct Person <: Declarations
    answer::String
end
```

```
struct Group <: Declarations
    people::AbstractVector{Person}
end
```

```
Base.show(io::IO, dec::Declarations) = print(io, propertynames(dec))
```

```
groups = open("puzzle_input.txt") do file
    groups = Vector{Group}(undef, 0)
    people = Vector{Person}(undef, 0)
    b_processed_group = false
    for line ∈ eachline(file)
        if length(line) == 0
            push!(groups, Group(people))
            people = Vector{Person}(undef, 0)
            b_processed_group = true
        else
            push!(people, Person(line))
            b_processed_group = false
        end
    end
    if b_processed_group == false
        push!(groups, Group(people))
    end
end
```

```

    return groups
end

function num_yes_groups(groups::AbstractVector{Group})
    num_yes = Vector{Int}(undef, 0)
    for group ∈ groups
        group_answers = ""
        for person ∈ group.people
            group_answers = group_answers * person.answer
        end
        push!(num_yes, group_answers |> unique |> length)
    end
    return num_yes |> sum
end

num_yes_groups(groups)

6170

```

2 Part Two

As you finish the last group's customs declaration, you notice that you misread one word in the instructions:

You don't need to identify the questions to which **anyone** answered "yes"; you need to identify the questions to which **everyone** answered "yes"!

Using the same example as above:

abc

a

b

c

ab

ac

a

a

a

a

b

This list represents answers from five groups:

- In the first group, everyone (all 1 person) answered "yes" to **3** questions: a, b, and c.
- In the second group, there is **no** question to which everyone answered "yes".
- In the third group, everyone answered yes to only **1** question, a. Since some people did not answer "yes" to b or c, they don't count.

- In the fourth group, everyone answered yes to only 1 question, a.
- In the fifth group, everyone (all 1 person) answered "yes" to 1 question, b.

In this example, the sum of these counts is $3 + 0 + 1 + 1 + 1 = 6$.

For each group, count the number of questions to which **everyone** answered "yes". **What is the sum of those counts?**

2.1 Solution

```
function num_yes_groups(groups::Vector{Group})
    num_yes = Vector{Int}(undef, 0)
    for group ∈ groups
        if length(group.people) == 1
            push!(num_yes, length(group.people[1].answer))
        else
            counter = 0
            for yes_ans ∈ group.people[1].answer
                if [contains(person.answer, yes_ans) for person ∈ group.people[2:end]]
                    counter += 1
                end
            end
            push!(num_yes, counter)
        end
    end
    return num_yes |> sum
end

num_yes_groups(groups)

2947
```