

## Final Project Report

The program's code begins with the inclusion of basic libraries and namespaces for practical syntax ("stdlib.h", "using namespace std", etc). Following this, global variables are established for each of the seven symptoms as well as counts for total patients and ill patients. Next are the classes.

In "class COVID" there is a public function "int SymptomCheck()" that checks the status of respective symptoms and returns an increased count of COVID cases if the requirements are met. Derived from this are "class Cold" and "class Flu," both of which serve the same purpose for their respective illness. Following these are general functions.

Function "int Guide()" prints the program title and a symptom guide with easily adjustable symptom keys thanks to each symptom having its own array of character values. The next function, "int Prompt()," prompts the user to input the number of patients and sets "numPatients" to that input. Finally, "int IllnessResults()" displays how many patients with COVID-19, Cold, Flu, and other illness symptoms were found from the data. This function also includes several chunks that display each percentage of patients with COVID-19, Cold, Flu, and other illness symptoms. The "int main()" function ends the program to tie it all together.

The "main" function begins by establishing access to each class. Next, "Guide()" is called to greet and inform the user. "Prompt()" is called to prompt the user for input and pass it on. A small line runs to inform the user that the program is working. Symptom randomization takes place in a for loop that iterates according to the number of patients. During an iteration, each global symptom variable is given a random value of 0 or 1, then each class' "SymptomCheck()" function is run to check if the current patient's symptoms meet requirements. If the patient does not meet any requirements, a count is added to the number of patients with "other" illnesses. To end the program, "IllnessResults()" is called to display patient statistics.

```

~`Symptom Checker`~

| Guide: * Common | + Sometimes/Rarely | - No |

|-----|-----|-----|-----|
| Symptoms | COVID-19 | Cold | Flu |
|-----|-----|-----|-----|
| Fever | * | + | * |
|-----|-----|-----|-----|
| Cough | * | + | * |
|-----|-----|-----|-----|
| Shortness of Breath | * | - | - |
|-----|-----|-----|-----|
| Runny Nose | + | * | + |
|-----|-----|-----|-----|
| Headaches | + | + | * |
|-----|-----|-----|-----|
| Sneezing | - | * | - |
|-----|-----|-----|-----|
| Fatigue | + | + | * |
|-----|-----|-----|-----|

Number of patients: 100
Working on it ...

| Symptom Results |
Patients with COVID-19 symptoms: 4
Patients with Cold symptoms: 12
Patients with Flu symptoms: 1
Patients with other illness symptoms: 83

| Percentage of each illness |
COVID-19: [4%]++++
Cold: [12%]+++++
Flu: [1%]+
Other: [83%]+++++

```

*Final report produced by program*