**Bind with Pointers, Structures, Functions and Arrays**

**Project Title: Case Investigation and contact tracing: Fight against COVID-19 Pandemic**

The novel coronavirus disease (COVID-19) has already affected over 6.9 million people, claiming more than 400 000 lives in over 200 nations all over the world. Most of the cases were reported from the United States of America, India, Brazil, and Russia. While some nations (like China and South Korea) have successfully been able to flatten the pandemic curve, other nations are finding it difficult to achieve the same. In the absence of any definite therapy against COVID-19, the resilience of the health care infrastructure and health professionals is being put to test.

The governments are trying their level best in controlling the situations. But in India with a population of over 1.3 billon it’s difficult to keep track of details. Shri A.Md. Imtiaz, Krishna District Collector, want to trace the patients list in his district (KRISHNA) by collecting blood samples form the suspected people who are suffering with mild symptoms. So Design a Collector proforma to track the details of situation with regarding to COVID-19. Create a structure District and store details of Truncate where each Truncate contains the following details ->

1. S.No
2. Truncate Code
3. Lab S.No
4. Sample ID
5. Name of the Patient
6. Age
7. Gender
8. Complete Address
9. Phone Number
10. Aadhar Number
11. Sample Collection Centre
12. Sample Collection Date
13. Result Date
14. Result
15. SARS COVID2 Result

Design a console-based program for Citizen of District.Design the Citizen’s Console as Citizen can check what the status of the Truncate (Mandal) is and act accordingly. Collect details of Citizen and should have the features to check his Truncate’s Status and details of it. Display which Truncate is to in which zone (Red,Green or Orange) based on the positive cases.

Input Constraints:

|  |  |  |  |
| --- | --- | --- | --- |
| S.No | Input parameter | Variable | Constraints |
| 1 | S.No | int | It must be in range of 1-1000 |
| 2 | Truncate Code | String | Upper case letters |
| 3 | Lab S.No | int | It must be of 4 digit number  Starting digit must not be 0  Ex: 1309 |
| 4 | Sample ID | int | It must be of 8 digit number  Starting digit must not be 0  Ex: 5855859 |
| 5 | Name of the Patient | String | It should have 100 characters  It should be in upper case only with white spaces  It should not have numbers, special characters |
| 6 | Age | int | Between 6-75 |
| 7 | Gender | char | Must be M or F only |
| 8 | Complete Address | String | Must contain-  Door No:  can be 7 digit number  Should not start with 0,  must have –(hyphen) after 1 digit, / (oblique) after 3 digits)  Ex: 6-101/2  Oblique is optional.  Street(String, 30)  Location(String,40)  City(String,40)  District(Must be Krishna only)  Pincode:   * It can be only six digits. * It should not start with zero. * First digit of the pin code must be 5. * Next five digits of the pin code may range from 0 to 9. * It should allow only one white space, but after three digits. |
| 9 | Phone Number | long long int | The first digit should contain number between 7 to 9.  The rest 9 digit can contain any number between 0 to 9.  The mobile number can have 11 digits also by including 0 at the starting.  The mobile number can be of 12 digits also by including 91 at the starting |
| 10 | Aadhar Number | String | It should have 12 digits.  It should not starts with 0 and 1.  It should not contains any alphabet and special characters.  It should have white space after every 4 digits |
| 11 | Sample Collection Centre | String | Must be in uppercase letter,  Center name is 3 letter followed by location name with space.  Ex. MHC MACHILIPATNAM |
| 12 | Sample Collection Date |  | Must be in dd/mm/yyyy format.  check range of year,month and day  must be in range of 1, January, 2020 to 31, October, 2020  handle months which have 30 days only. |
| 13 | Result Date | int | Must be in dd/mm/yyyy format.  check range of year,month and day  must be in range of 1, January, 2020 to 31, October, 2020  handle months which have 30 days only.   * Collection Date and Result Date must not be same |
| 14 | Result | String | Input must be either of  Detected very low(all lower case)  detected low(all lower case)  detected high(all lower case)  DETECTED HIGH(all upper case) |
| 15. | SARS COVID2 Result | String | Input must be either of  Detected very low(all lower case)  detected low(all lower case)  detected high(all lower case)  DETECTED HIGH(all upper case) |

Based on the stored details of patients calculate the number of positive cases and negative cases. For example if the result of a patient is “detected very low” the it is “Negative case”. Remaining results comes under “Positive case”. Based on number of positive and negative cases, display the Zone ((RED, GREEN, YELLOW) depicting the severity) of the Truncate.

Zones are given based on following conditions.

RED🡪 % of positive cases >= 30

ORANGE🡪 % of positive cases in between 20 - 30

YELLOW🡪 % of positive cases in between 10 - 20

GREEN🡪 % of positive cases is less than 10

(Note: Read population of the truncate.)

Sample Input

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **S.No** | **TRUNAT CODE** | **Lab SNo** | **SAMPLE ID** | **NAME OF THE PATIENT** | **AGE** | **GENDER** |
| 1 | CHC JAGGAYYAPETA | 1104 | 6472947 | G SREENU | 31 | M |
| 2 | CHC JAGGAYYAPETA | 1307 | 6472631 | M RAMESH BABU | 29 | M |
| 3 | CHC JAGGAYYAPETA | 1398 | 5934157 | MARTHI RAMBABU | 45 | M |
| 4 | MHC MACHILIPATANAM | 2453 | 5935931 | K SEKHAR RAO | 60 | M |
| 5 | MHC MACHILIPATANAM | 2563 | 6463563 | K RAJYA LAKSHMI | 40 | F |
| 6 | MHC MACHILIPATANAM | 3524 | 6465732 | V KONDALARAO | 35 | M |
| 7 | MHC MACHILIPATANAM | 1243 | 6468430 | L VENKATESWARAO | 13 | M |
| 8 | MHC MACHILIPATANAM | 1652 | 6469196 | L ANNAPURNA | 6 | F |

|  |  |
| --- | --- |
| **COMPLETE ADDRESS** | **PHONE NUMBER** |
| H NO 1-248/1 CHERUVU BAZAR JPT KRISHNA PINCODE: 521243 | 9948432910 |
| H NO 1-248/1 CHERUVU BAZAR JPT KRISHNA PINCODE: 521243 | 8790802466 |
| H NO 1-248/1 CHERUVU BAZAR JPT KRISHNA PINCODE: 521243 | 9949932059 |
| 1-141/2 BANGARUPETA MACHILIPATNAM KRISHNA PINCODE:520452 | 6304137123 |
| 1-141/2 BANGARUPETA MACHILIPATNAM KRISHNA PINCODE:520453 | 8500000020 |
| 1-141/2 BANGARUPETA MACHILIPATNAM KRISHNA PINCODE:520454 | 8500000020 |
| 1-141/2 BANGARUPETA MACHILIPATNAM KRISHNA PINCODE:520455 | 8500000020 |
| 1-141/2 BANGARUPETA MACHILIPATNAM KRISHNA PINCODE:520456 | 9848367235 |

|  |  |  |
| --- | --- | --- |
| **AADHAR NUMBER** | **SAMPLE COLLECTION CENTRE** | **SAMPLE COLLECTION DATE** |
| 482836719608 | CHC JAGGAYYAPETA | 05-08-2020 |
| 369403409976 | CHC JAGGAYYAPETA | 05-08-2020 |
| 846719018442 | CHC JAGGAYYAPETA | 05-08-2020 |
| 361829721726 | MHC MACHILIPATNAM | 05-08-2020 |
| 670150154970 | MHC MACHILIPATNAM | 05-08-2020 |
| 315365858367 | MHC MACHILIPATNAM | 05-08-2020 |
| 913084686082 | MHC MACHILIPATNAM | 05-08-2020 |
| 631853358040 | MHC MACHILIPATNAM | 05-08-2020 |

|  |  |  |
| --- | --- | --- |
| **RESULT DATE** | **RESULT (HIGH/ MEDIUM/ LOW/ VERY LOW)** | **SARS CoV-2 Result** |
| 09-08-2020 | detected very low | detected very low |
| 09-08-2020 | detected low | detected low |
| 09-08-2020 | deteceted medium | deteceted medium |
| 09-08-2020 | detected low | detected low |
| 09-08-2020 | DETECTED HIGH | DETECTED HIGH |
| 09-08-2020 | deteceted medium | deteceted medium |
| 09-08-2020 | detected low | detected low |
| 09-08-2020 | DETECTED HIGH | DETECTED HIGH |

**Sample Output:**

|  |  |  |  |
| --- | --- | --- | --- |
| **S.No** | **TRUNAT CODE** | **No of Positive Cases** | **Zone** |
| 1 | CHC JAGGAYYAPETA | 54 | Yellow |
| 2 | MHC MACHILIPATANAM | 98 | Red |