Advance Programming Homework 2 (Functions)

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Corona Virus Information Analysis

- TASKS:
    1. Precisely Reading the Project Contract.
        a. ➔ 2 HOURS
    2. Creating First Brainstorming System Component Design
        a. ➔ 2 HOURS
    3. Analysis of System Components and Find Relations and Links
        a. ➔ 4 HOURS
    4. Creating Second Brainstorming Completement and Adding Needed Details
        a. ➔ 2 HOURS
    5. Creating Database Initial Structure for Data Information Lists
        a. ➔ 4 HOURS + 8 HOURS
    6. Creating Abstract Data Structure Maker for portion and sync Indexed Data By reference
        a. ➔ 2 HOURS
    7. Creating Reverse Data Simulating Random Process Function
        a. Code Aggressively Until done ← 77 Hours of Continuously by Steps With some Breaks in 7 Days
    8. Analysis of Database and Find Solution for each Request by Steps
        a. ➔ 6 Hours
    9. Creating requests Functions Aggressively until done ← 22 Hours , in 3 Days
    10. Full Testing The Project and Documentation ➔ 2 HOURS

TESTING RESULTS

Run the Application Without Any Arguments

ap-m20-hw2.py

```
[blanckarch@BlanckArch AP-Homework-2]$ ./ap-m20-hw2.py
./ap-m20-hw2.py [Arg1 = RequestCode:Required] [Arg(n) Options]
Request Code : Q1 ==> Options: [Counts]
Request Code : Q2 ==> Options: [Counts] [FromDay] [ToDay]
Request Code : Q3 ==> Options: [Counts][Day/From-Day][To-Day]
Request Code : Q4 ==> Options: [Counts]
Request Code : Q5 ==> Require: [Day]
Request Code : Q6 ==> Options: [Person]
Request Code : Q7 ==> Options: [Start Day] [Stop Day]
[blanckarch@BlanckArch AP-Homework-2]$
```

Request Code Qn :

Wrong Command code:

ap-m20-hw2.py O1

```
[blanckarch@BlanckArch AP-Homework-2]$ ./ap-m20-hw2.py O1
First Argument must be a VALID Request Code!
[blanckarch@BlanckArch AP-Homework-2]$
```

Request Out Of Options:

ap-m20-hw2.py Q1 6 13

```
[blanckarch@BlanckArch AP-Homework-2]$ ./ap-m20-hw2.py Q1 6 13
Command Not Valid!
[blanckarch@BlanckArch AP-Homework-2]$
```

Request:: Wrong Options ::

       ap-m20-hw2.py Q1 wrong2

```
[blanckarch@BlanckArch AP-Homework-2]$ ./ap-m20-hw2.py Q1 wrong2
Request Count Must be a Digit Number!
[blanckarch@BlanckArch AP-Homework-2]$ 
```

Request :: Out Of Range Options ::

       ap-m20-hw2.py Q1 222

```
[blanckarch@BlanckArch AP-Homework-2]$ ./ap-m20-hw2.py Q1 222
Request Count must be between 1 and 30!
[blanckarch@BlanckArch AP-Homework-2]$ 
```

Q1 :: Most Wanted Persons Decreasing

ap-m20-hw2.py Q1

```
[blanckarch@BlanckArch AP-Homework-2]$ ./ap-m20-hw2.py Q1
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

Most Penalty Person(s)

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
*******************************************************************************************
Position: 1 :: Penalty: 2

                        Person: 50 in House 19 Has Status: Clean


                        Person: 95 in House 28 Has Status: Probability

*******************************************************************************************
*******************************************************************************************
Position: 2 :: Penalty: 1

                        Person: 2 in House 29 Has Status: Probability


                        Person: 3 in House 19 Has Status: Clean


                        Person: 9 in House 18 Has Status: Clean


                        Person: 12 in House 2 Has Status: Clean


                        Person: 13 in House 20 Has Status: Clean


                        Person: 20 in House 28 Has Status: Probability


                        Person: 25 in House 18 Has Status: Clean


                        Person: 28 in House 28 Has Status: Probability


                        Person: 29 in House 26 Has Status: Probability


                        Person: 30 in House 30 Has Status: Probability
```

Q1 :: 6 (Counts)

      ap-m20-hw2.py Q1 6

```
[blanckarch@BlanckArch AP-Homework-2]$ ./ap-m20-hw2.py Q1 6
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

Most Penalty Person(s)

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
*****************************************************************************************
Position: 1 :: Penalty: 2

                        Person: 21 in House 30 Has Status: Probability

                        Person: 46 in House 6 Has Status: Probability-Plus

                        Person: 72 in House 7 Has Status: Probability

                        Person: 86 in House 4 Has Status: Clean

        *****************************************************************************************
        *****************************************************************************************
Position: 2 :: Penalty: 1

                        Person: 2 in House 25 Has Status: Probability

                        Person: 6 in House 28 Has Status: Clean

        *****************************************************************************************
[blanckarch@BlanckArch AP-Homework-2]$ █
```

Q2 :: Most Positive Corona Submit Test Days Decreasing

ap-m20-hw2.py Q2

```
[blanckarch@BlanckArch AP-Homework-2]$ ./ap-m20-hw2.py Q2
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

Most Positive Corona Submit Day(s)

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
*************************************************************************************
Position : 1 : Positive Counts : 2 ==> Day(s) : [37]
*************************************************************************************
*************************************************************************************
Position : 2 : Positive Counts : 1 ==> Day(s) : [1, 7, 12, 42]
*************************************************************************************
[blanckarch@BlanckArch AP-Homework-2]$
```

Q2 :: 2 (counts) :

ap-m20-hw2.py Q2 2

```
*************************************************************************************
[blanckarch@BlanckArch AP-Homework-2]$ ./ap-m20-hw2.py Q2 2
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

Most Positive Corona Submit Day(s)

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
*************************************************************************************
Position : 1 : Positive Counts : 3 ==> Day(s) : [1]
*************************************************************************************
*************************************************************************************
Position : 2 : Positive Counts : 2 ==> Day(s) : [4]
*************************************************************************************
[blanckarch@BlanckArch AP-Homework-2]$
```

Q2 :: 3 Counts :: From Day 33

ap-m20-hw2.py Q2 3 33 (# the Count is Maximum)

```
[blanckarch@BlanckArch AP-Homework-2]$ ./ap-m20-hw2.py Q2 3 33
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

Most Positive Corona Submit Day(s)

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
*************************************************************************************
Position : 1 : Positive Counts : 1 ==> Day(s) : [37, 42]
*************************************************************************************
[blanckarch@BlanckArch AP-Homework-2]$
```

Q2 :: 11 Counts :: From Day 13 to 222

ap-m20-hw2.py Q2 11 13 222

```
[blanckarch@BlanckArch AP-Homework-2]$ ./ap-m20-hw2.py Q2 11 13 222
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

Most Positive Corona Submit Day(s)

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
*********************************************************************************************
Position : 1 : Positive Counts : 2 ==> Day(s) : [31]
*********************************************************************************************
*********************************************************************************************
Position : 2 : Positive Counts : 1 ==> Day(s) : [13, 25, 51]
*********************************************************************************************
[blanckarch@BlanckArch AP-Homework-2]$
```

Q3 :: Most Corona Submit City In a Day Range

ap-m20-hw2.py Q3

```
[blanckarch@BlanckArch AP-Homework-2]$ ./ap-m20-hw2.py Q3
In the range of Days: [1, 365] ==> 30 Counts of Most Positive City
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

Most Positive Corona Submit City(s)

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
******************************************************************************************
Position : 1 :: PositiveCount = 2
------------------------------------------------------------------------------------------------

        City: 3 - CTC : BLOCK - ITC : FREE  --> Population: 11 ==> Status: Critical

------------------------------------------------------------------------------------------------
******************************************************************************************
Position : 2 :: PositiveCount = 1
------------------------------------------------------------------------------------------------

        City: 5 - CTC : BLOCK - ITC : FREE  --> Population: 10 ==> Status: Critical

------------------------------------------------------------------------------------------------
------------------------------------------------------------------------------------------------

        City: 7 - CTC : BLOCK - ITC : FREE  --> Population: 4 ==> Status: Critical

------------------------------------------------------------------------------------------------
------------------------------------------------------------------------------------------------

        City: 30 - CTC : FREE  - ITC : FREE  --> Population: 7 ==> Status: Critical

------------------------------------------------------------------------------------------------
[blanckarch@BlanckArch AP-Homework-2]$
```

Q3 :: 2 (counts)

ap-m20-hw2.py Q3 2

```
[blanckarch@BlanckArch AP-Homework-2]$ ./ap-m20-hw2.py Q3 2
In the range of Days: [1, 365] ==> 2 Counts of Most Positive City
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

Most Positive Corona Submit City(s)

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
*************************************************************************************
Position : 1 :: PositiveCount = 2
-------------------------------------------------------------------------------------

        City: 3 - CTC : BLOCK - ITC : FREE  --> Population: 15 ==> Status: Critical


-------------------------------------------------------------------------------------
*************************************************************************************
Position : 2 :: PositiveCount = 1
-------------------------------------------------------------------------------------

        City: 2 - CTC : BLOCK - ITC : BLOCK --> Population: 22 ==> Status: Critical


-------------------------------------------------------------------------------------
[blanckarch@BlanckArch AP-Homework-2]$
```

Q3 :: 3(Counts) :: in Day 1

ap-m20-hw2.py Q3 3 1

```
[blanckarch@BlanckArch AP-Homework-2]$ ./ap-m20-hw2.py Q3 3 1
In the range of Days: [1, 1] ==> 3 Counts of Most Positive City
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

Most Positive Corona Submit City(s)

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
*************************************************************************************
Position : 1 :: PositiveCount = 1
-------------------------------------------------------------------------------------

        City: 11 - CTC : BLOCK - ITC : FREE  --> Population: 5 ==> Status: Critical


-------------------------------------------------------------------------------------
[blanckarch@BlanckArch AP-Homework-2]$
```

Q3 :: 4(Counts) :: From Day 13 :: To Day 111

ap-m20-hw2.py Q3 4 13 111

```
[blanckarch@BlanckArch AP-Homework-2]$ ./ap-m20-hw2.py Q3 4 13 111
In the range of Days: [13, 111] ==> 4 Counts of Most Positive City
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

Most Positive Corona Submit City(s)

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
*************************************************************************************
Position : 1 :: PositiveCount = 1
-------------------------------------------------------------------------------------

        City: 2 - CTC : BLOCK - ITC : BLOCK --> Population: 11 ==> Status: Critical


-------------------------------------------------------------------------------------
-------------------------------------------------------------------------------------

        City: 4 - CTC : BLOCK - ITC : BLOCK --> Population: 9 ==> Status: Critical


-------------------------------------------------------------------------------------
[blanckarch@BlanckArch AP-Homework-2]$
```

Q4 :: Most Infected Days of Year

ap-m20-hw2.py Q4

```
[blanckarch@BlanckArch AP-Homework-2]$ ./ap-m20-hw2.py Q4
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

Most Infected Days Of Year

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
**********************************************************************************
Position : 1 :: Infected Count = 3 at Day(s): [30, 31, 32]
**********************************************************************************
Position : 2 :: Infected Count = 2 at Day(s): [25, 26, 27, 28, 29, 33, 34, 35, 36, 37]
**********************************************************************************
Position : 3 :: Infected Count = 1 at Day(s): [1, 2, 3, 4, 5, 6, 7, 8, 11, 12, 13, 14, 15, 16, 17, 18, 22]
[blanckarch@BlanckArch AP-Homework-2]$
```

Q4:: 6 (counts)

ap-m20-hw2.py Q4 6

```
[blanckarch@BlanckArch AP-Homework-2]$ ./ap-m20-hw2.py Q4 6
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

Most Infected Days Of Year

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
*****************************************************************************************
Position : 1 :: Infected Count = 4 at Day(s): [5, 6, 7, 8]
*****************************************************************************************
Position : 2 :: Infected Count = 3 at Day(s): [1, 2]
[blanckarch@BlanckArch AP-Homework-2]$
```

Q5 :: The Bounty of the Option Day

ap-m20-hw2.py Q5 13

```
[blanckarch@BlanckArch AP-Homework-2]$ ./ap-m20-hw2.py Q5 13
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

Bounty Of the Day

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
The Bounty Of Day : 13 is 6 Person(s).
```

Q6 :: Bill Counts of Infected

ap-m20-hw2.py Q6

```
^[[A[blanckarch@BlanckArch AP-Homework-2]$ ./ap-m20-hw2.py Q6
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

Bill Counts Of An Infected

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

Person : 80 has 1 Submit Bill!
[blanckarch@BlanckArch AP-Homework-2]$
```

Q6 :: Person 69

ap-m20-hw2.py Q6 69 → (Person ID or [Index])

```
[blanckarch@BlanckArch AP-Homework-2]$ ./ap-m20-hw2.py Q6 69
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

Bill Counts Of An Infected

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
Person : 70 has 0 Submit Bill!
[blanckarch@BlanckArch AP-Homework-2]$
```

Q7:: Trespassers Of a Day Range

ap-m20-hw2.py Q7

```
[blanckarch@BlanckArch AP-Homework-2]$ ./ap-m20-hw2.py Q7
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

Tresspassers of a Date range.

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
The Tresspassers Of the Day : 1 to 365 is 22 Person(s).
[blanckarch@BlanckArch AP-Homework-2]$ 
```

Q7:: From Day 111

ap-m20-hw2.py Q7 111

```
[blanckarch@BlanckArch AP-Homework-2]$ ./ap-m20-hw2.py Q7 111
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

Tresspassers of a Date range.

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
The Tresspassers Of the Day : 111 to 365 is 13 Person(s).
[blanckarch@BlanckArch AP-Homework-2]$ 
```

Q7:: From Day 66 To Day 222

ap-m20-hw2.py Q7 66 222

```
[blanckarch@BlanckArch AP-Homework-2]$ ./ap-m20-hw2.py Q7 66 222
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Tresspassers of a Date range.

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
The Tresspassers Of the Day : 66 to 222 is 13 Person(s).
[blanckarch@BlanckArch AP-Homework-2]$ 
```