CSE 343
TERM PROJECT

Requirement Analysis Report

HIGH FIVE

PROJECT TITLE: COVID DASHBOARD

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1. Introduction and Scope of the Project

The COVID-19 pandemic, also known as the coronavirus pandemic, is an ongoing global pandemic of coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), first identified in December 2019 in Wuhan, China. The World Health Organization declared the outbreak a Public Health Emergency of International Concern in January 2020 and a pandemic in March 2020. As of 10 November 2020, more than 50.9 million cases have been confirmed, with more than 1.26 million deaths attributed to COVID-19, and more than 33.2 million recoveries. Since it is such a big pandemic, it is very difficult to keep up to date with the news. Dashboards are frequently used today to prevent information confusion and to make it more understandable.

All the systems that are introduced on the web have some common features that they exist almost in all systems. These features can be listed as follows:

- A graph showing the number of patients and deaths over specific time intervals
- Blocks showing the change in the number of patients and deaths on a daily, weekly and monthly basis as a percentage.

On the other hand there are some systems with special features that are rarely used. These features can be listed as follows:

- Showing values on world map and country map.
- Comparison charts for cities and countries
- Admin login to add data
- Time flow graphs showing the number of cases from the beginning of the pandemic to the present day by country or by city for a country.
- Showing news on country-based topic

After investigating many systems we observed many different implementations with different properties. First of all our intended system will be web based, in other words it will be accessible from everywhere. There will be three actors using this system. The first one is the "Admin" who will be mainly responsible for ~~accepting request for Setter's create account request~~ ==examine the data provided by Data Ingestor==. ~~The second actor is the "Setter" who will login the system and provide data for graphs~~. And the third kind of user is the "viewer". Mainly our system will have the following properties and functionalities:

- There will be some graphs showing the number of patients and deaths over specific time intervals for Turkey.
- Admin will check Data Ingestors data.
- ~~There will be registration form for becoming a Setter.~~
- ~~The Admin will see all the registration request from Setters.~~
- ~~The Setters will have chance to make a data insertion request for a specific location.~~
- ~~The Admin will have chance to accept or decline registration request and data insertion request.~~
- The Viewer can create account.
- ~~The Admin can stop the Viewer registration.~~
- ~~The Viewers and Setters can make suggestions about their opinion about site.~~

~~In order to make an efficient and well working system we will define some constraints. Our system will be reachable from everywhere via Internet, so we will put a pre registration constraint in order to avoid everybody to access our dashboard (only pre registered users will access the dashboard).~~

As it is seen this system can be used by any user without any big requirement. By this way common folk can understand the situation around them more easily.

2 Detailed Description of the Project

After a wide investigation and identifying customer needs explicitly we reached a consensus on our system. Our system will be a web-based system that will enable users to reach it from every platform. A user needs only to be connected to the Internet and a web browser that is working properly. These two constraints are the minimum requirements for our intended system. There will be three kind of user of this system that they will interact with. The first is the "admin", the second kind is the "Setter" and the last actor is the "Viewer". The roles of these actors will be as follows:

1. *The Users*

Admin: Admin is the master of the system that he/she handles requests from setters and trace the number of viewers registered on the system.
 The jobs of the admin can be listed and explained as follows:

- ~~The admin will evaluate data integration request and setter register request.~~
- ~~The admin will trace the number of viewers registered on the system. If number of the viewers are too great for the system, they stop the new registrations.~~

- The admin will check is Data Ingestor working fine.

~~**Setter**: Setter is the second type of the possible user. The duties and responsibilities of the setter can be listed and described as follows:~~

- ~~Setters must fill a request form to become a setter.~~
- ~~An accepted setter can make a data insertion request for a specific location.~~
- ~~Their data must be correct honest.~~
- ~~Setters can make suggestions about their opinion about site.~~
  We replaced it with a Data Ingestor.

Viewer: The third type of the user is the viewer. A viewer can do the following events in the system:

- The viewer can observe the graphs and other assets.

3 Project Estimation

Estimations are essential to have a general idea about the schedule, cost, effort. These are required in the early phases of the project. Then we restore the estimates with the help of metrics. We will use these metrics to determine progress and to estimate future projects. If we can make our plans according to these estimations then it will be easier to manage risks and increase efficiency.

2.1. Function Point Estimation

Measuremnt Parameter	Count	Simple	Average	Complex	Sub-Total
Number of Inputs :	20	**3**	4	6	**60**
Number of Outputs :	20	**4**	5	7	**80**
Number of Inquiries :	50	**3**	4	6	**150**
Number of files :	50	**7**	10	15	**350**
Number of Interfaces :	10	**5**	7	10	**50**

Count Total : **690**

We evaluated the questions according to the following criteria table.

0*:* Not important or applicable

1*:* Insignificant influence

2*:* Moderate influence

3*:* Average influence

4*:* Significant influence

5*:* Absolutely essential

QUESTIONS	IMPORTANCE
Does system require reliable backup and recovery?	**0**
Are data communications required?	**5**
Are there distributed processing functions?	**3**

Is performance critical?	**4**
Will the system run in an existing operational environment?	**4**
Does the system require on line data entry?	**5**
Does the online data entry require the input transaction to be built over multiple screens or operations?	**1**
Are the inputs, outputs, files are complex?	**1**
Is the internal processing complex?	**1**
Is the code designed to be reusable?	**2**
Are conversion and installation included in the design?	**1**
Is the system designed for multiple installations in different organizations?	**0**
Is the application designed to facilitate change and ease of use by the user?	**5**
TOTAL	**32**

(we referred these questions from the Roger's Software Engineering(P.91))

FP(Function Point) = count-total * [0.65 + 0.01*$\sum$Fi]

$$= 690 * [0.65 + 0.01*32]$$

$$= 669.3$$

2.2. Lines of Code Estimation

Functions	Lines of Code
Graphical User Interface Design	3500
Database Design	750
Communication Functions	500
Inqury Functions	250
TOTAL	**5000 LOC**

2.2.1 LOC Based Effort Estimation

$$\text{Effort} = 5.5 + 0.73*(\text{KLOC})^{1.16} \text{ (Bailey-Basili Model)}$$

$$= 5.5 + 0.73*(5)^{1.16}$$

$$= 10.22 \text{ person / month}$$

2.2.2 FP Based Effort Estimation

$$\text{Effort} = -13.39 + 0.0545 * \text{FP (Albrecht and Gaffney)}$$

$$= -13.39 + 0.0545 * 669.3$$

$$= 23.08 \text{ person / month}$$

2.3. Basic COCOMO Estimation

When negligible differences in COCOMO are neglected, our results are similar.

OLD

COCOMO RESULTS for Covid Dashboard								
MODE	"A" variable	"B" variable	"C" variable	"D" variable	KLOC	EFFORT, (in person-months)	DURATION, (in months)	STAFFING, (recommended)
organic	1.4728098872093967	1.05	2.5	0.38	10.000	16.525	7.258	2.277

Explanation: The coefficients are set according to the project mode selected on the previous page, (as per Boehm). Note: the decimal separator is a period.

The final estimates are determined in the following manner:

effort = a*KLOC^b, in person-months, with KLOC = lines of code, (in thousands), and:

staffing = effort/duration

where a has been adjusted by the factors:

NEW

COCOMO RESULTS for COVID-Dashboard								
MODE	"A" variable	"B" variable	"C" variable	"D" variable	KLOC	EFFORT, (in person-months)	DURATION, (in months)	STAFFING, (recommended)
organic	1.12412664	1.05	2.5	0.38	5.000	6.092	4.968	1.226

Explanation: The coefficients are set according to the project mode selected on the previous page, (as per Boehm). Note: the decimal separator is a period.

The final estimates are determined in the following manner:

effort = a*KLOC^b, in person-months, with KLOC = lines of code, (in thousands), and:

staffing = effort/duration

where a has been adjusted by the factors: