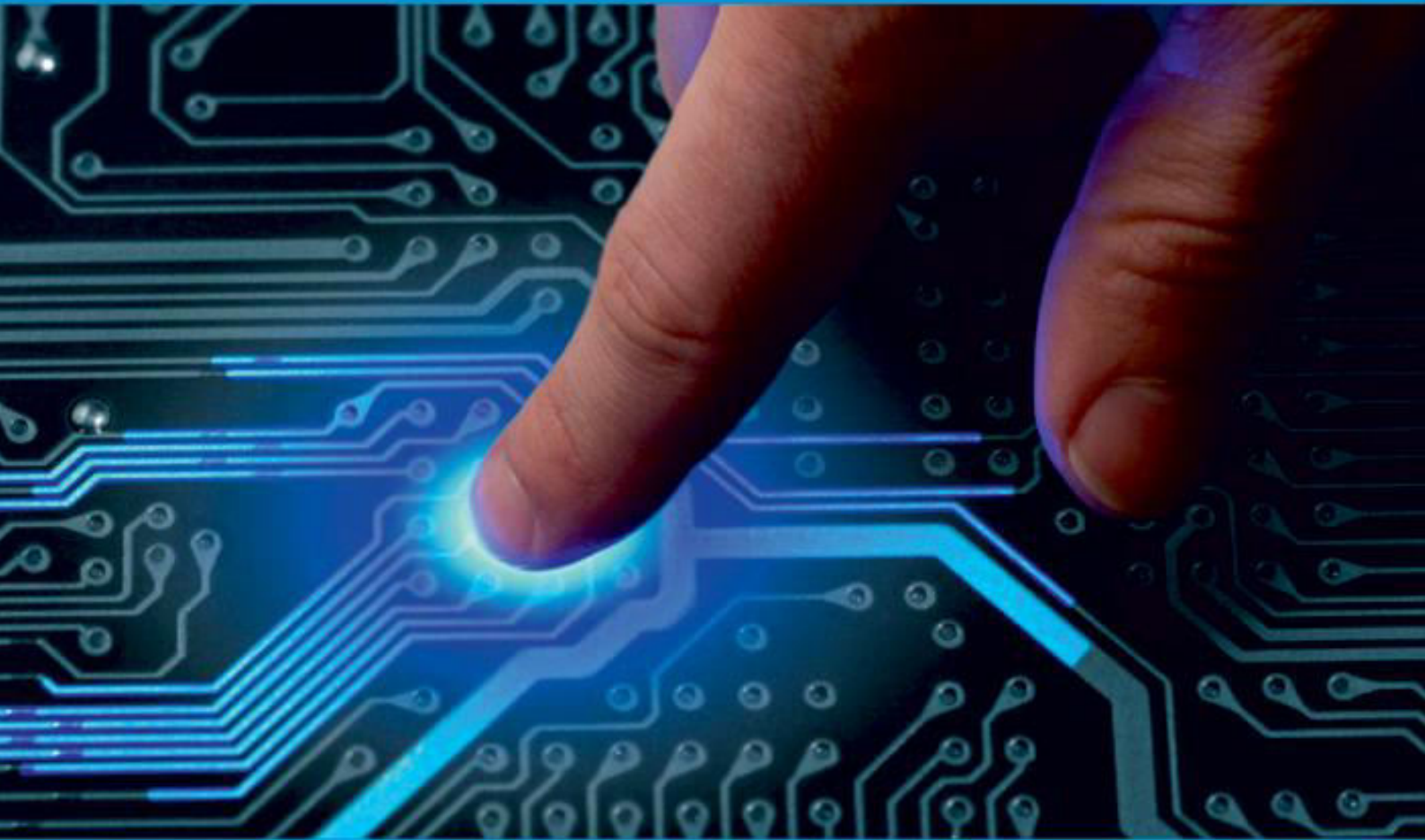




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# Automated Vacant Bed System using Robot Framework to Combat with COVID-19

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**ABSTRACT:** The main purpose of this paper is to design an automatic technique to search the vacant bed for covid patient. In the present time COVID situation is so horrible and this technique can be a blessing to people. In this system, there's a COVID website under every state government. It will produce a database of those beds which are void in every hospital in those districts. And this information will be mailed to the website viewer. And the information about the vacant beds used to change time to time if there is any update about any vacant bed. Now, the patients don't have to search for beds from hospital to hospital. Enough time of those patients will be saved for this automation process and this process will be really helpful for COVID patient

**KEYWORDS:** COVID-19; Automatic; Python; Robot Framework; Vacant Bed;

## I. INTRODUCTION

The COVID-19 outbreak has impacted almost all sectors of our society [1-4]. State authorities have been carrying out vigorous COVID-19 testing of patients throughout the state on a large scale. The ground staff and healthcare workers collect data of patients being tested and past test samples. This patient data goes directly into a centralized repository via the National Authority portal. With the State Government planning to ramp up the COVID-19 testing from a Website, it became a large task of collating the state's data from the National Authority website and then adding to the State Governments database. As the number of patient testing increased beyond 2000 per day, the manual task of collating the daily patient data after downloading it as an excel sheet from the National Authority portal became too time-consuming. The State Authorities team wanted to have a quick automation in place where the COVID-19 patient testing data downloads from the National Authority portal and then collates on the State Government portal to the database almost real time. The data collated in the State Government's database would then help the state to make quick real time decisions and dynamically change the course of action depending on the patient's test results.

In this paper we have implemented a test automation framework to combat with COVID-19. A test automation framework [5] is an integrated system that sets the rules of automation of a specific product. This system integrates the function libraries, test data sources, object details and various reusable modules. It actually searches the vacant bed in every district of a selected state. The whole paper is organized as follows: Section II provides the brief idea about the automation and robot framework, Section III describes the proposed technique in detail, Section IV shows the simulation result of robotic framework. Finally section V concludes the paper.

## II. AUTOMATION AND ROBOT FRAME WORK

Automation is a term for technology applications where human input is minimized. Robot Framework is an open source test automation framework for acceptance testing and acceptance test-driven development. It follows different test case styles – keyword-driven, behaviour-driven and data-driven for writing test cases. Robot Framework provides support for external libraries, tools which are open source and can be used for automation. The most popular library used is Selenium Library used for web development & UI testing.

Test cases are written using keyword style in a tabular format. You can use any text editor or Robot Integrated Development Environment (RIDE) for writing test cases. Robot framework works fine on all the Operating Systems available. The framework is built on Python and runs on Jython (JVM)[6] and IronPython (.NET).

There are different features offered by Robot:

- i) Tabular format for test cases: Robot framework comes with a simple tabular format where the test cases are written using keywords. It is easy for a new developer to understand and write test cases.
- ii) Keywords: Robot framework comes with built-in keywords available with robot framework, keywords available from the libraries like Selenium Library (open browser, close browser, maximize browser, etc.). We can also create user-defined keywords, which are a combination of other user-defined keywords or built-in or library keywords. We can also pass arguments to those keywords, which make the user-defined keywords like functions that can be reused.
- iii) Variables: Robot framework supports variables – scalar, list and dict. Variables in robot framework are easy to use and are of great help while writing complex test cases.
- iv) Libraries: Robot framework has support for a lot of external libraries like Selenium Library, Database Library, FTP Library and http library. Selenium Library is mostly used as it helps to interact with the browsers and helps with web application and UI testing. Robot framework also has its own built-in libraries for strings, date, numbers etc.
- v) Resources: Robot framework also allows the import of robot files with keywords externally to be used with test cases. Resources are very easy to use and are of great help when we need to use some keywords already written for other test projects.
- vi) Data driven test cases: Robot framework supports keyword driven style test cases and data driven style. Data driven works with high-level keyword used as a template to the test suite and the test cases are used to share data with the high-level keyword defined in the template. It makes the work very easy for testing UI with different inputs.
- vii) Test Case Tagging: Robot framework allows to tag test-cases so that we can either run the tags test-cases or skip the tagged test cases. Tagging helps when we want to run only a group of test cases or skip them.
- viii) Reports and Logs: Robot framework provides all the details of test suite, test case execution in the form of report and logs. All the execution details of the test case are available in the log file. The details like whether the test case has failed or passed, time taken for execution, steps followed to run the test case are provided.
- ix) Ride: This editor available with Robot framework helps in writing and running test cases. The editor is Very easy to install and use. RIDE makes life easy for writing test cases by providing framework specific code completion, syntax highlighting, etc. Creation of project, test suite, test case, keywords, variables, importing library, executing, tagging the test case is easily done in the editor. Robot framework also provides plugins for eclipse, sublime, Textmate, Pycharm that has support for robot test cases.

Robot framework is open source, so anyone who wants to try out can easily do. It is very easy to install and helps in creating and executing test cases. Any new comer can easily understand and does not need any high level knowledge of testing to get started with robot framework. It supports keyword-driven, behaviour-driven and data-driven style of writing test cases. It is a good support for external libraries. Most used is Selenium Library, which is easy to install and use in robot framework.

### III. PROPOSED METHOD

The flow diagram of proposed method is shown in Fig.1. As per our algorithm at first when our automation starts, we have to choose or select the state where we want to search the vacant bed. After selecting state it automatically open an URL. Then through this URL it one by one select one district at a time and after selecting a particular district it search the vacant bed in Government Hospital, Government undertaken hospital and in Private Hospital. In a particular state this automation system provides the real time data about the vacancy of bed in every district in a particular selected state. After collecting the data of all districts about vacant beds this automation system it import the data in an excel sheet. Then finally it display this sheet or to mail this sheet to the viewer.

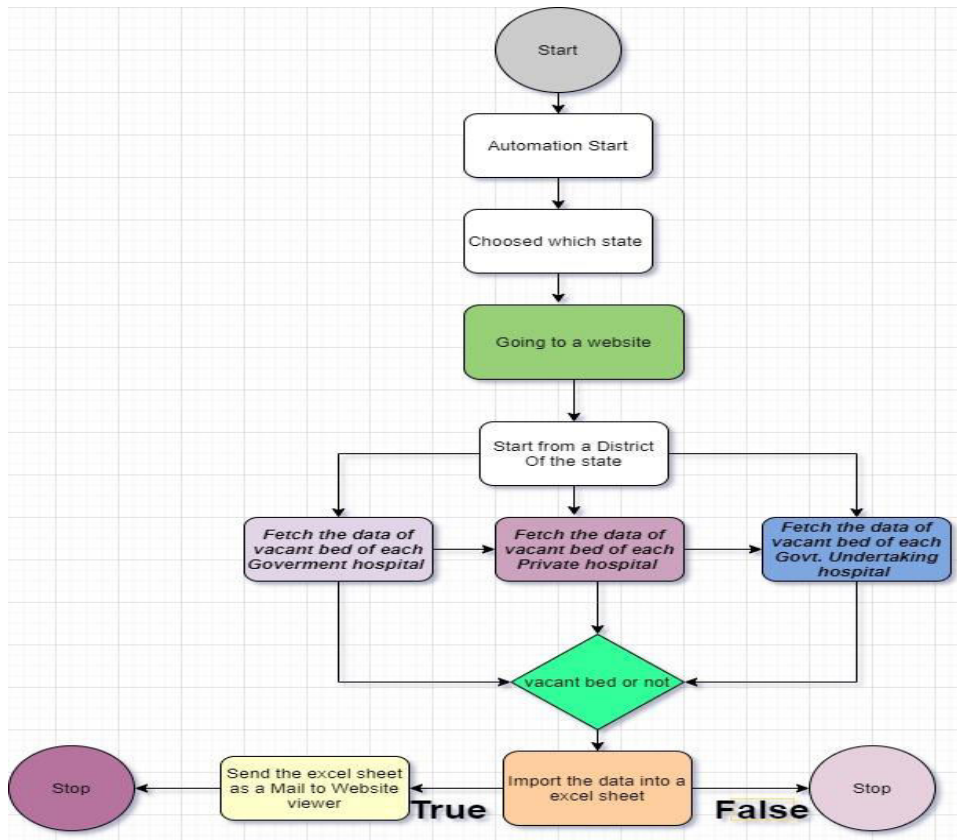


Fig.1 Flow diagram of proposed method

#### IV. SIMULATION RESULTS

The proposed algorithm is implemented in Python. The required URL for this automation process is [https://excise.wb.gov.in/CHMS/Public/Page/CHMS\\_Public\\_Hospital\\_Bed\\_Availability.aspx](https://excise.wb.gov.in/CHMS/Public/Page/CHMS_Public_Hospital_Bed_Availability.aspx). Fig. 2 shows the Run Time Environment of Robot Framework and Fig. 3 depicts Keywords of Robot Framework. A Test case is simulated for West Bengal as shown in Fig.4. Finally the output can be stored in a text file as given in Fig. 5 and it can be stored in a excel sheet as shown in Fig. 6.

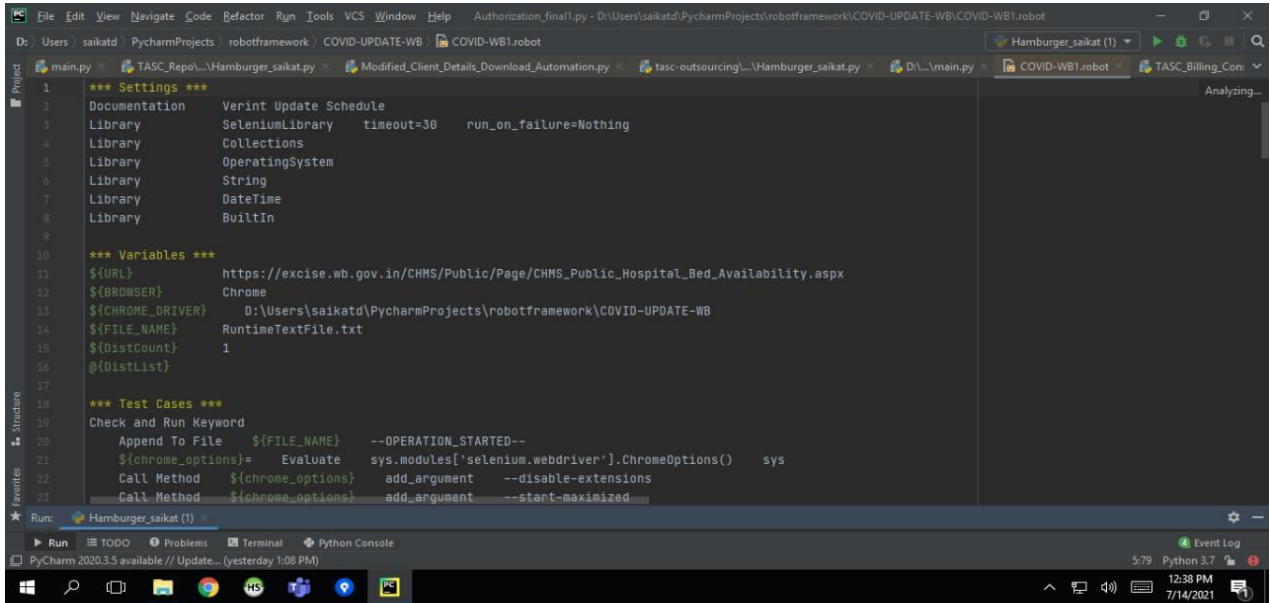


Fig. 2 Run Time Environment of Robot Framework

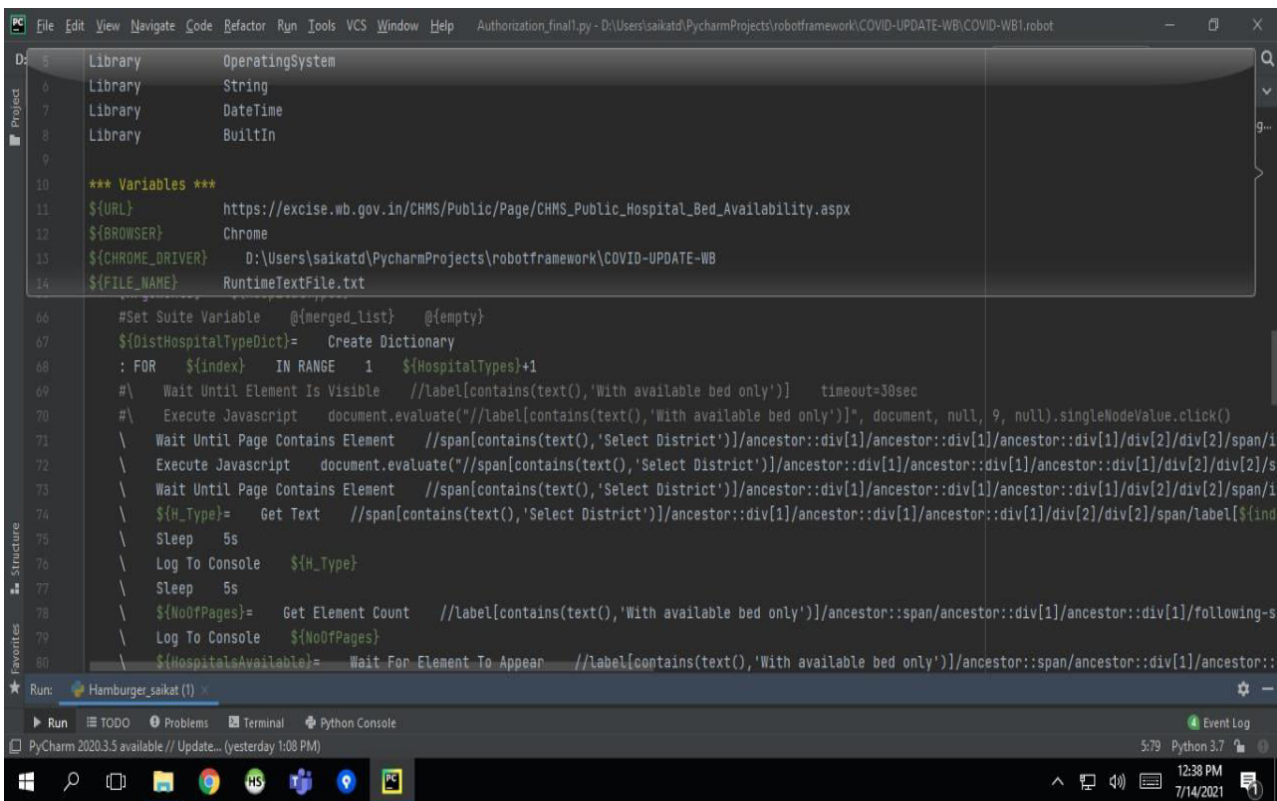


Fig. 3 Keywords Of Robot Framework

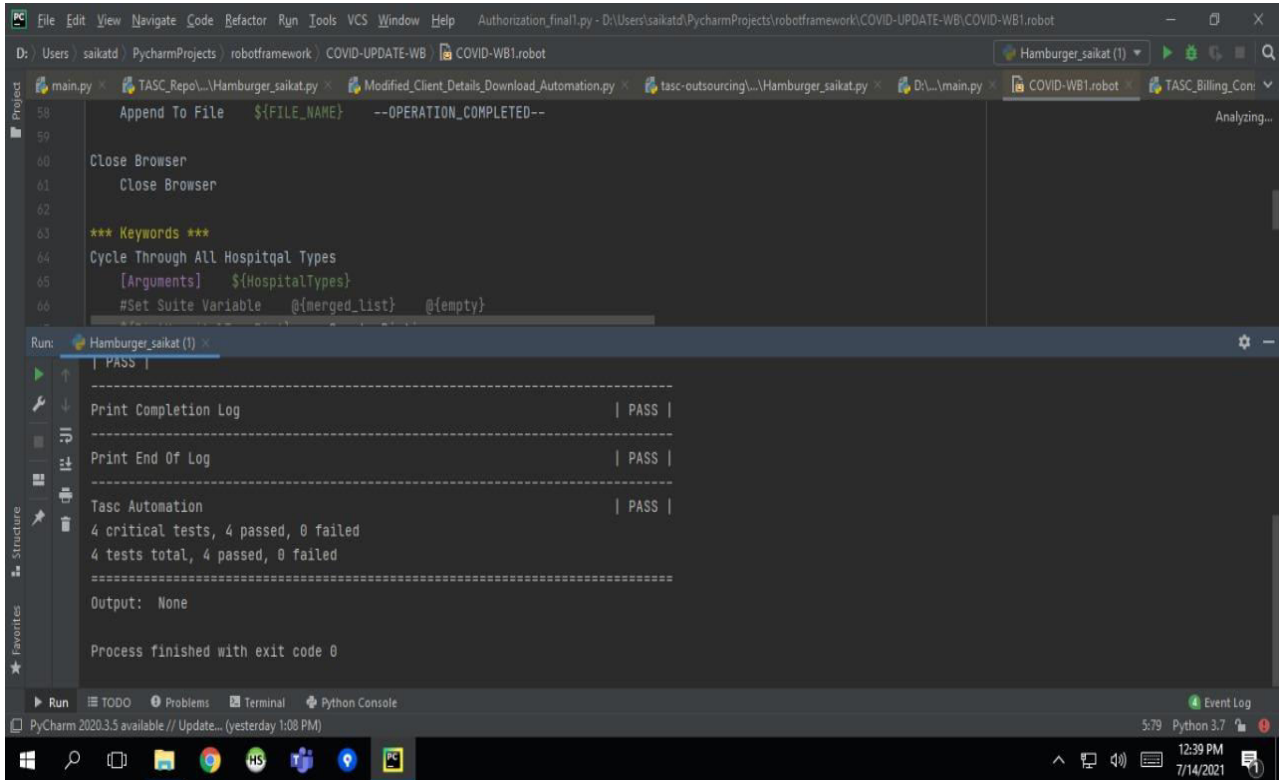


Fig. 4 TEST CASE

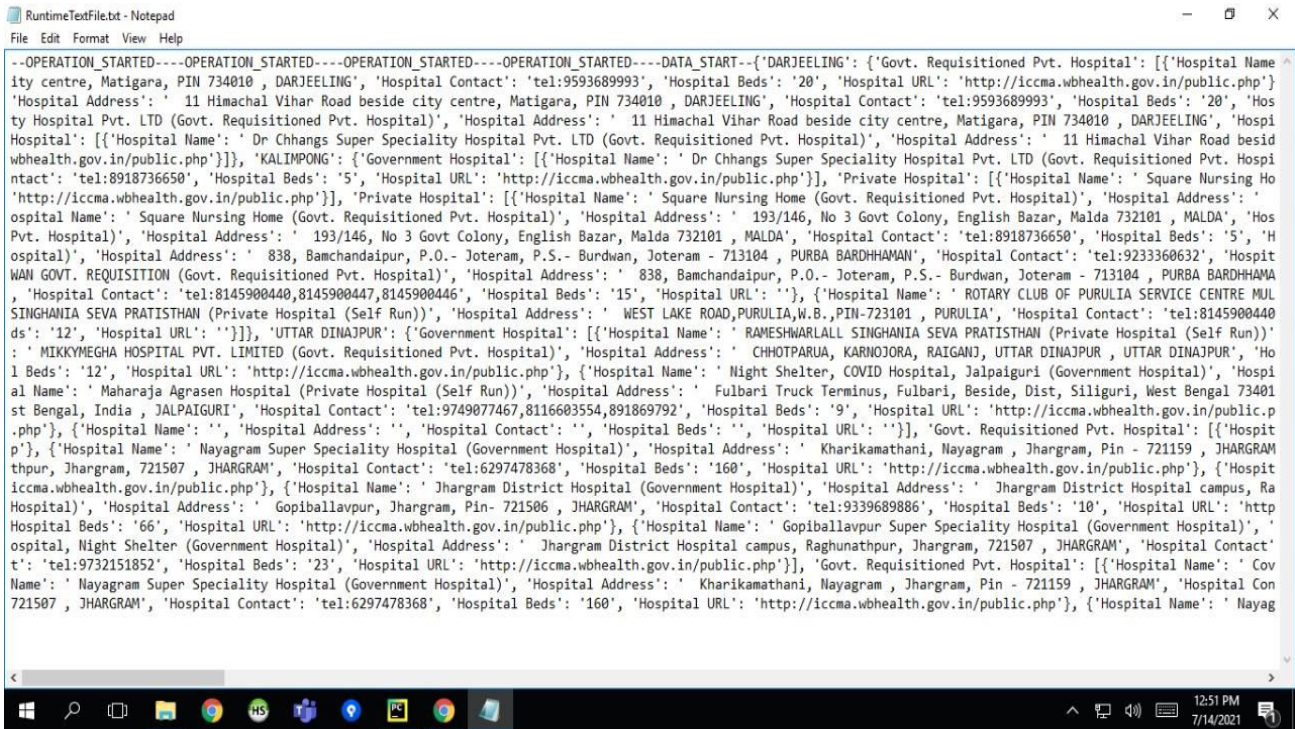
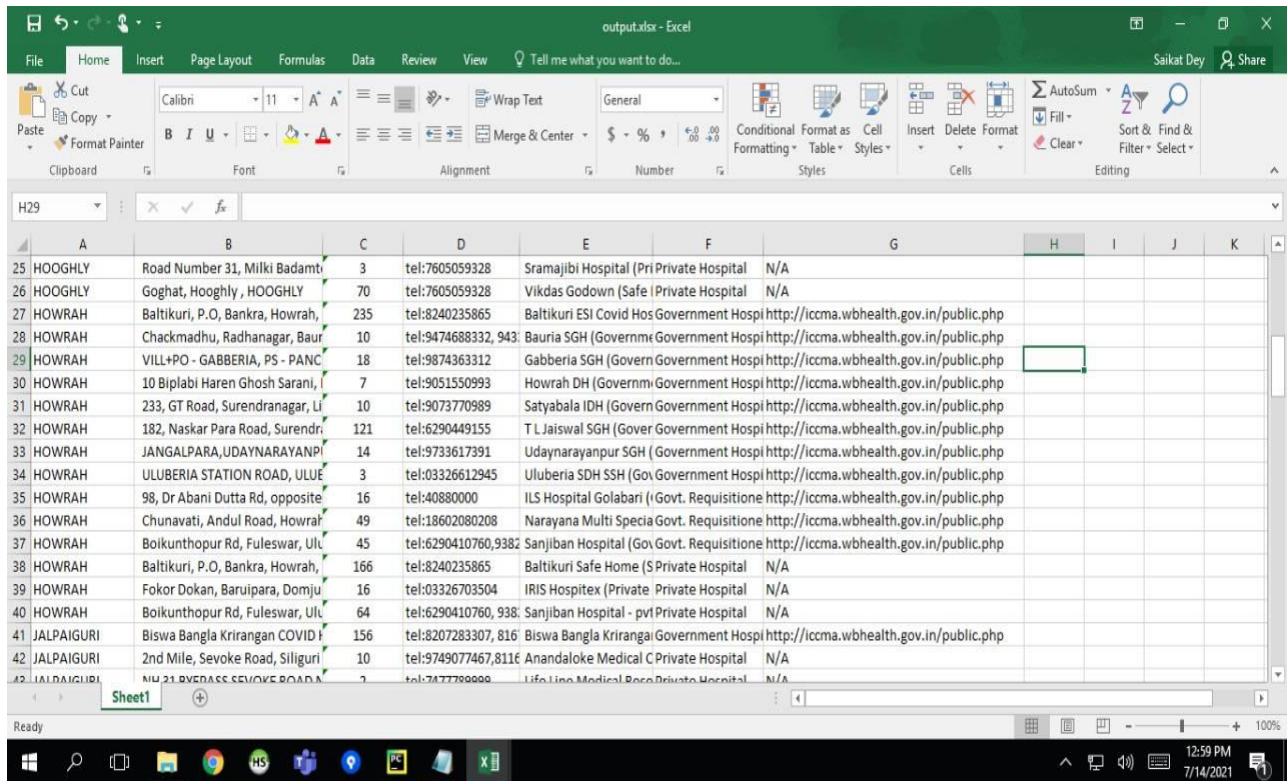


Fig. 5 Output in Text File



	A	B	C	D	E	F	G	H	I	J	K
25	HOOGHLY	Road Number 31, Milki Badamt	3	tel:7605059328	Sramajibi Hospital (Pri	Private Hospital	N/A				
26	HOOGHLY	Goghat, Hooghly , HOOGHLY	70	tel:7605059328	Vikdas Godown (Safe	Private Hospital	N/A				
27	HOWRAH	Baltikuri, P.O, Bankra, Howrah,	235	tel:8240235865	Baltikuri ESI Covid Hos	Government Hospi	<a href="http://icma.wbhealth.gov.in/public.php">http://icma.wbhealth.gov.in/public.php</a>				
28	HOWRAH	Chackmadhu, Radhanagar, Baur	10	tel:9474688332, 943	Bauria SGH (Governm	Government Hospi	<a href="http://icma.wbhealth.gov.in/public.php">http://icma.wbhealth.gov.in/public.php</a>				
29	HOWRAH	VILL+PO - GABBERIA, PS - PANC	18	tel:9874363312	Gabberia SGH (Govern	Government Hospi	<a href="http://icma.wbhealth.gov.in/public.php">http://icma.wbhealth.gov.in/public.php</a>				
30	HOWRAH	10 Biplabi Haren Ghosh Sarani,	7	tel:9051550993	Howrah DH (Governm	Government Hospi	<a href="http://icma.wbhealth.gov.in/public.php">http://icma.wbhealth.gov.in/public.php</a>				
31	HOWRAH	233, GT Road, Surendranagar, Li	10	tel:9073770989	Satyabala IDH (Govern	Government Hospi	<a href="http://icma.wbhealth.gov.in/public.php">http://icma.wbhealth.gov.in/public.php</a>				
32	HOWRAH	182, Naskar Para Road, Surendr	121	tel:6290449155	T L Jaiswal SGH (Gover	Government Hospi	<a href="http://icma.wbhealth.gov.in/public.php">http://icma.wbhealth.gov.in/public.php</a>				
33	HOWRAH	JANGALPARA,UDAYNARAYANP	14	tel:9733617391	Udaynarayanpur SGH (	Government Hospi	<a href="http://icma.wbhealth.gov.in/public.php">http://icma.wbhealth.gov.in/public.php</a>				
34	HOWRAH	ULUBERIA STATION ROAD, ULUE	3	tel:03326612945	Uluberia SDH SSH (Gov	Government Hospi	<a href="http://icma.wbhealth.gov.in/public.php">http://icma.wbhealth.gov.in/public.php</a>				
35	HOWRAH	98, Dr Abani Dutta Rd, opposit	16	tel:40880000	ILS Hospital Golabari (Govt.	Requisitione	<a href="http://icma.wbhealth.gov.in/public.php">http://icma.wbhealth.gov.in/public.php</a>				
36	HOWRAH	Chunavati, Andul Road, Howrah	49	tel:18602080208	Narayana Multi Specia	Govt. Requisitione	<a href="http://icma.wbhealth.gov.in/public.php">http://icma.wbhealth.gov.in/public.php</a>				
37	HOWRAH	Boikunthapur Rd, Fuleswar, UL	45	tel:6290410760,9382	Sanjiban Hospital (Gov	Govt. Requisitione	<a href="http://icma.wbhealth.gov.in/public.php">http://icma.wbhealth.gov.in/public.php</a>				
38	HOWRAH	Baltikuri, P.O, Bankra, Howrah,	166	tel:8240235865	Baltikuri Safe Home (S	Private Hospital	N/A				
39	HOWRAH	Fokor Dokan, Baruipara, Domju	16	tel:03326703504	IRIS Hospitex (Private	Private Hospital	N/A				
40	HOWRAH	Boikunthapur Rd, Fuleswar, UL	64	tel:6290410760, 938	Sanjiban Hospital - pvt	Private Hospital	N/A				
41	JALPAIGURI	Biswa Bangla Krirangan COVID	156	tel:8207283307, 816	Biswa Bangla Kriranga	Government Hospi	<a href="http://icma.wbhealth.gov.in/public.php">http://icma.wbhealth.gov.in/public.php</a>				
42	JALPAIGURI	2nd Mile, Sevoke Road, Siliguri	10	tel:9749077467,8116	Anandaloke Medical C	Private Hospital	N/A				
43	JALPAIGURI	NU 21, BVEDASS SEVOK	7	tel:7477780909	Lifo Line Medical Reso	Private Hospital	N/A				

Fig. 6 Output for test case in Excel format

## V. CONCLUSION AND FUTURE WORK

The simulated results showed that the proposed technique perform very well. It provides the real time data about the vacant bed of any states of all the hospitals of all the districts. It gives the data for government, government undertaken and private hospital too. In this pandemic situation it is very much required. This automated system will save the valuable time of patient party and also reduce the human effort. In our future work we want to make a app which will run parallel to government COVID website and it will provide real-time valid data and patient can easily access it.

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