

**DIU FAQBOT: A Chat Bot for Frequently Asked Question related to
Daffodil Internal University**

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This Report Presented in Partial Fulfillment of the Requirements for the
Degree of Bachelor of Science in Computer Science and Engineering.

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DAFFODIL INTERNATIONAL UNIVERSITY

DHAKA, BANGLADESH

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APPROVAL

This Project/internship titled “**DIU FAQBOT: A Chat Bot for Frequently Asked Question related to Daffodil Internal University**”, submitted by Md. Kamruzzaman Kanak, ID No: 163-15-8401, Umma Habiba, ID No: 163-15-8372 and Md. Humayun Kabir, ID No: 163-15-8546 to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 12-09-2019.

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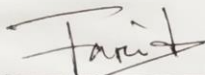


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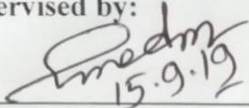
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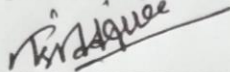
We hereby declare that; this project has been done by us under the supervision of Ahmed Al Marouf, Lecturer, Department of CSE Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

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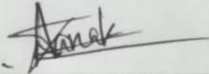
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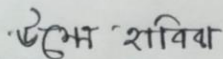


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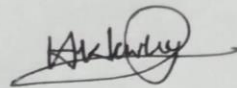
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Abstract

The communication of potential students with a university department is performed manually and it is a very time-consuming procedure. The opportunity to communicate with on a one-to-one basis is highly valued. However, with many hundreds of applications each year, one-to-one conversations are not feasible in most cases. The communication will require a member of academic staff to expend several hours to find suitable answers and contact each student. It would be useful to reduce his costs and time. The project aims to reduce the burden on the head of information officer or a support manager, and potentially other users, by developing a convincing chatbot. A suitable algorithm must be devised to search through the set of data and find a potential answer. The program then replies to the user and provides a relevant weblink if the user is not satisfied by the answer. Furthermore, a web interface is provided for both users and an administrator. The achievements of the project can be summarized as follows. To prepare the background of the project a literature review was undertaken, together with an investigation of existing tools, and consultation with the head of information officer or customer support manager. The requirements of the system were established and a range of algorithms and tools were investigated, including keyword and template matching. An algorithm that combines keyword matching with string similarity has been developed. A usable system using the proposed algorithm has been implemented. The system was evaluated by keeping logs of questions and answers and by feedback received by potential students and visitor that used it. A pre-trained application can deliver high quality information service to the user and the database can be designed on basis of frequently asked questions from the students and visitor. In the current days of technology, A chatbot application can build conversation with the customer or can make customer relationship by chatting. A customer, students or visitor can easily get any kind of specific answer of any question by just asking through the chat, and a computer program (known as chatbot) can deliver the answer or do the job for hundreds even thousands of visitors at a time.

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CHAPTER 1

Introduction

1.1 Introduction

A chatbot is a service that you can interact with computer application via a chat interface. Basically, it receives questions from users, matches it with pairs in its database and provide appropriate answers. Chatbot is to provide people a quick and easy way to have their questions answered. A chat bot will be used to give information or answers to any question asked by user. According to input, system will process the query and give response to user. In case the question asked by the user is not present in the database then it will store that question in a file or into the database for future reference.

1.2 Motivation

The motivation to work in this project is actually our real-life experience. We are some of the students of Daffodil International University, noticed that there is no automated chatbot embedded in our varsity's website or anywhere in web where a student can ask a question about the varsity's current situation without going to the academic office or any help desk. It will be very good to have a customized and specially designed chatbot for the university. So, we decided to develop a dynamic web-based application as known as chat bot which is a computer program that can be able to answer any kind of university related questions commonly asked by a student or any outside visitor. Developing a Chat bot is a challenging project and off-course an interesting project where a lot of new things to be learnt. And in the other hand, to developed this complete project, we need to do some research on some several field. We need to know that, what kind of information usually a user is going to search through web. So, we need to research and work with a large number of people related to the university. We have a huge potential to learn a lot of thing, we have to work with some real data and a great opportunity to do something for our own university. For all of this cause, we are decided to work on this very special project.

1.3 Rationale of the Study

Our research project was started for a need and, is to develop a platform and using this platform, we can do a lot of thing on a unique topic/subject which is “Frequently Asked Question”. Chat bot is a common thing and it is use in a huge range in these days. We actually work not just on a chatbot but work to find a wide range of possibilities about what people want to learn or know about our varsity. In our varsity, there is a big amount of data and information are available for the students and outside entity/actor. We are actually feeling the importance of a research on the frequently asked information and then decided to work on this particular field. So that we can learn about the statistic related this topic and find a better way to represent it.

1.4 Research Objectives

Research question is a very important objective of a study or a problem to be solved. The main objective of this project is to build a platform where a student or a visitor can find their frequently asked questions answer without contacting a person or any help desk by just using our software.

1. To develop a flexible and convenient space to find information.
2. To develop a database were all the relevant information about questions, answers, keywords, logs and feedback will be stored.
3. To develop a keyword matching algorithm and a string distance comparison algorithm and combine them in order to retrieve the best possible answer for a frequently asked question.
4. To develop a web interface which aims to give the ability to potential students and their families to submit questions in a chatbot and get convincing replies. The web system can be hosted on any computer or server.
5. To develop a web-based platform where a user can find a lot of opportunity to interact with the university. University related questions can be answered by just a single software and user reach the software application very easily.

1.5 Expected Outcome

The outcome of this project is very simple but important for us. Some points are mentioned below that can describe the project outcome:

- Investigated a range of algorithms for solving the problem of direct communication with the university and developed an algorithm that combines the use of a keyword matching with the string distance.
- Designed and implemented a usable chatting system for chat bot, which has been extended after being evaluated by users.
- Evaluated the extended system with users. The system was used by potential students of the university.
- Completed a literature research in order to learn more about natural language processing, investigated existing tools and established the requirements.

1.6 Report Layout

We developed an application which name is “**DIU FAQbot**” We make sure that the project complete in time. Respect to our workflow we design our project report.

In chapter 1 named Introduction, discuss about the Introduction, Motivation, Rationale of the Study, Research Questions, Expected Output, Report Layout.

In chapter 2 named Background, discuss about the Introduction, Related Works, Research Summary, Scope of the Problem and Challenges.

In Chapter 3 named Research Methodology, we discuss about the Introduction, Research Subject and Instrumentation, Data Collection Procedure, Statistical Analysis and Implementation Requirements

In chapter 4 named Experimental Results and Discussion, we discuss about the Introduction, Experimental Results, Descriptive Analysis, Summary

In chapter 5 named Summary, Conclusion, Recommendation and Implication for Future

Research, we discuss about the Summary of the Study, Conclusions, Recommendations, Implication for Further Study

In chapter 6 named Discussion and Conclusion we discuss about the Future Scope, Discussion and Conclusion of the whole project.

And in the end of the report, we provide References of the information that we use in our report, and Appendices.

There is also some additional information is attached which is required by the project committee.

CHAPTER 2

Background

2.1 Introduction

This chapter contains the background research about topics relevant to the student's communication for the internal information. It presents an overview of our chatbots and their interaction with a student or a visitor. Furthermore, the keyword matching and the template matching technic are mentioned, followed by real world examples of their use. We are working with a field that is to be new and not so well known. Therefore there is some good amount of research and development is already done by a lot of researcher and developer. Chatting with a friend or a person in this day are common but chatting with a computer or with a chatbot is not so common in this day. But there are some major projects are done that is make it popular. Chatting bot is widely used many big companies or provide better service to the user and build a good customer relationship.

2.2 Related Works

A chatbot is a computer program that is used to participate in a conversation with humans. It uses an appropriate interface for input and output with the use of AI techniques it can provide realistic answers so the user will think that the communication taking place is with another human. The implementation of such systems varies from using keyword matching, string similarity or complex natural language processing techniques. More sophisticated chatbots could learn from the user input. Nowadays chat bots are used widely in web applications in order to provide help or information when it is asked by the users. There is some example of chatbot that are used by internationally on web.

Facebook Messenger: Facebook messenger is a well-known platform chat with human-to-human interaction. But now days, the chatting bots are available in messenger. Anyone or a company/institute can setup a chatbot for their Facebook page. When a visitor tries to interact with that Facebook page of that brand or company, the pre setup bots can build conversation and serve any specific offer or service related to that page. However, Facebook gives a complete tool for setup a chatbot but the chatbot is limited to the Facebook page and only work inside the Facebook. We can not set up a chatbot for any website or any specific web page.

A Facebook Messenger bot is a chatbot that lives in Facebook Messenger, meaning it converses with some of the 1.3 billion people who use Facebook Messenger every month [1]. Facebook messenger chatbot can be work on web interface and also work on both Android and iOS platform.

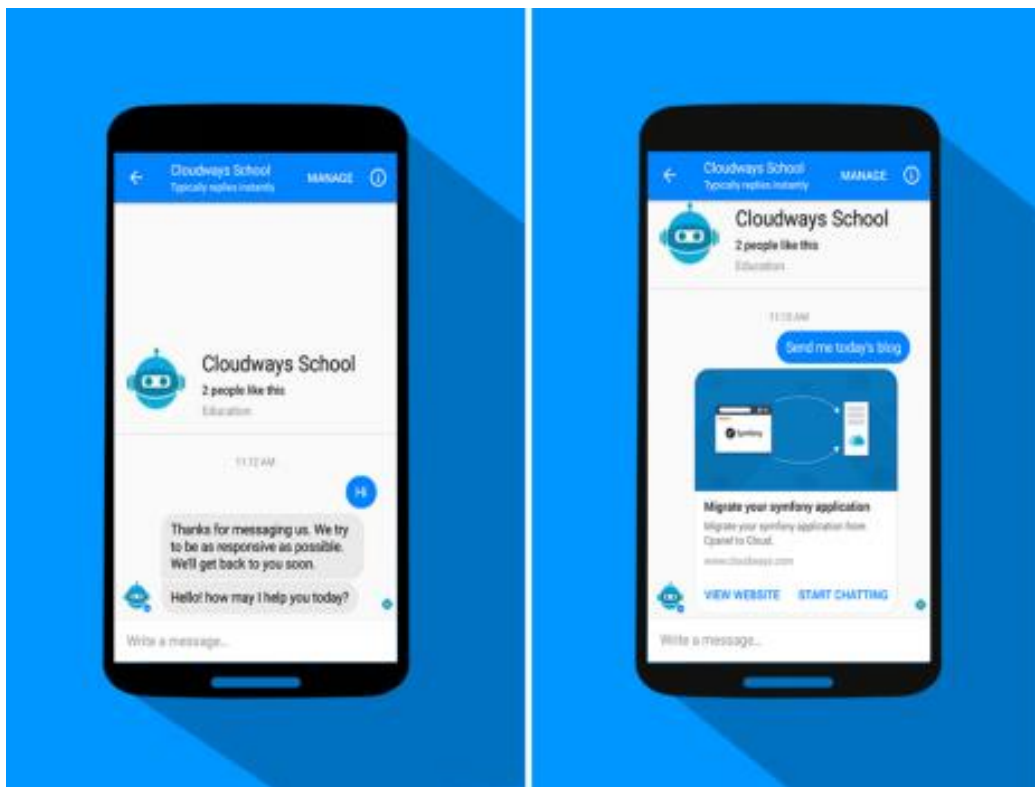


Figure 1: Facebook Messenger Chatbot

ChatBot.com: ChatBot™ is a software company that provide readymade paid chat bots for website and web page. They provide a bunch of service related to chatbot. Modern chatbots can retrieve valuable data, and pass them to the servers to perform more complicated operations such as a purchase or data verification [2]. ChatBot™ is provide some tools and technology that help to build chatbot for any specific service and they also provide server for host chatbot. This service is quite similar to our project. But our FAQbot is about to serve the information to the students and visitor related to the Daffodil International University.

There are some other software companies are available that provide customer chatting system. And in their system a chatting interface can be build with some online readymade tools. A chat admin is required to manage chats with the user. Chat admin or a customer manager are should be ready for all the time to answer the questions or interact with the users. Without having a specific person or manually answered/interact with the user, A user cannot get any service from there. So, that is not a chatbot, that is just a human-to-human chatting software.

2.3 Research Summery

Our research is about to develop a system where a students or visitor or user can find out their specific question related to the varsity. And also, we research on chatbot, how it works and how can we use a chatbot for this “FAQ” field. The intelligence of the chatbot is based on specified rules and by assuming that the user will give a correct answer. There are two types of learning and both use the same learning rules. The first one will understand what the user said, will store it for the current session and will reply with that answer if the user asks about. The second one will store the information in its database and will reply with that answer for any user. Certain rules can be specified to understand from previous user input if the possibility of a user saying the truth is high or not and decide to store the information for future users. Also, questions and answers among users can be saved in the database and compared to identify the possibility of something being true.

2.4 Scope of the Problem

Our research is based on the problem of finding a proper solution of common information gathering. However, there is such a system where we can get answered of the frequently asked question. And also, there is no wide range of information about a chatbot. Humans believe that the concept of a chatbot is not realistic and that a chatbot will not be able to provide satisfying answers to its users. Most of the time chatbots are being developed to serve certain purposes and if a human try to trick the chatbot, it is likely that he will succeed. Moreover, humans do not think that a computer program will be able to satisfy their needs and they do not even try to interact. Also, if a human is aware that a chatbot has extensive knowledge then he will be more demanding. In the case that we have to convince a human that the conversation is taking

place with another human then an extensive database has to be used along with certain rules such as answering multiple questions, occurrence of words and sentence parsing.

2.5 Challenges

To develop a project on a new topic or a new field, lots of challenges are being faced. We also had some difficulties and challenges to overcome for fulfill and complete the research. Here we discuss about some un-conditional challenges that we face.

2.5.1 Information Collection: Chatbot is basically work by a informative database. And a database is a collection of data. We had made a big hard work to collecting data related to our loving university.

2.5.2 Database Design: An interactive database design is required for managing a large number of data. For the better experience, database should be familiar to our goal of information collection.

2.5.3 Finding a proper Interface: A interface is much important for a software product. And a good user interface is hard to develop that fulfill our needs.

2.5.4 Data Accuracy: Data accuracy is one of the components of data quality. We provide data and information related to the university through our FAQbot. So, data validation is so much important.

2.5.5 Data Integrity: Data integrity is also very important when it talk about to provide data or information publicly. Our chat bot provides a lot of information that can be helpful for the students and user. We are so much conscious about the data integrity.

2.5.6 Software Distribution: Software distribution is also a challenge for us. Because “FAQbot” is a chatbot and a chat bot is not a well-known application for all in these current days. People will be getting confused of the uses of our software or any chatbot. So, for distribution and make this application popular and useful is a big challenge for us.

CHAPTER 3

Research Methodology

3.1 Introduction

Research methodology is the specific procedures or techniques that is used to identify, select, process, and analyze information about a specific topic. The major purpose of this research was to determine a chatbot can solve the “distribution of information” problem or not. We are research for some several field of information and try to find out some statistics that help to know the importance of the software.

3.2 Research Subject and Instrumentation

We research on a basis of information technology. Our research is about the common and frequently asked information that is possible to provide by an online chatbot. Our primary research subject is the employees of Daffodil International University’s admission office and Computer Science and Engineering office staff. These employees are work with the existing students and with the possible upcoming students. In our project we need to know some real data that will help to generate some statistical view of “FAQ” information distribution process. Our research subjects are work with the administration department and know a lot of information about the university. We are decided to perform a survey on the following subjects and try to know about the needs of FAQ information by the students and visitor.

Our primary research subjects are:

1. Employees from the Admission Office
2. Employees from the CSE department.

For the research project, and for performing the survey we need an approval and we are getting the approval from our respected project supervisor Ahmed Al Marouf, Lecturer, Department of CSE, Daffodil International University.

The approval application and survey form scan copy are given bellow:

FAQ Survey

You can submit this survey through Google Form: <https://forms.gle/RgfmCoJV4AatmCKa6>

Name : _____
Designation : _____
Department : _____
Faculty : _____

1. How many hours do you work weekly?

2. How many hours do you work daily?

3. Approximately How many questions you face from one person?

4. Approximately how many querist/persons you face daily?

5. How many of them are non-student/outside person?

6. Select question category. (Check Tic Mark, Multiple options Can be Selected)

- a. Related to Academic Information
- b. Related to Admission Information
- c. Related to Academic Result
- d. Related to Due/Account Information
- e. Related to Faculty Members
- f. Related to Classroom/Conveniences Facility
- g. General Questions
- h. Others

Figure 2: Scan copy of survey form.

FAQ Bot Survey

You can submit this survey through Google Form: <https://forms.gle/RgfmCoJV4AatmCKa6>

Name : Ms. Ayesha Khan (PhD)
Designation : Senior Assistant Teacher
Department : Counseling & Admission
Faculty : Administration

1. How many hours do you work weekly?

70 hours.

2. How many hours do you work daily?

9-10 hour

3. Approximately How many questions you face from one person?

8-12 Question

4. Approximately how many querist/persons you face daily?

20 person minimum

5. How many of them are non-student/outside person?

10 minimum

6. Select question category. (Check Tic Mark, Multiple options Can be Selected)

- ☒ a. Related to Academic Information
- ☒ b. Related to Admission Information
- ☒ c. Related to Academic Result
- ☒ d. Related to Due/Account Information
- ☒ e. Related to Faculty Members
- ☒ f. Related to Classroom/Conveniences Facility
- ☒ g. General Questions → poor student facility
- ☒ h. Others

- ① University ranking, credit transfer for abroad.
- ② Extra curriculum activity.

Figure 3: Survey form with real data.

3.3 Data Collection Procedure

We are following some steps to collecting data from the university. Some of the common data set are collected by directly from the internet. By browsing the website of Daffodil International University, we found a wide range of data from there. The website is well designed and so much informative for the visitor. The visitor can get a lot of information about the varsity. And the other data is collected by the following trusted resource:

- a. **Admission Office of DIU:** DIU admission office is a great resource for the information of Admission that widely asked by the outside visitor.
- b. **CSE Building of DIU:** CSE building is the main place of computer engineering related information of DIU. We are getting a lot of data, related to the CSE department.

For collecting data from the subjects, we are designed a survey form and fill up that directly from the subjects. For getting the correct answer we are make sure not to disclosed their personal identity. The survey data is collected through the survey form and all the information managed by our hardworking team directly from the field and the workplace. The step by step procedure is given bellow for collecting information:

1. Select the information field and design the questions.
2. Create a survey form using MS Office Word Application.
3. Get the approval for performing the survey internally in the university.
4. Provide the survey form to the subjects.
5. Collect the filled-up survey form from the subjects.
6. Store the collected information in hard-copy and also soft-copy

We are asked the bellow questions to the subjects for the survey:

1. Identity: Name, Designation, Department, Faculty.
2. How many hours do you work weekly?
3. How many hours do you work daily?
4. Approximately How many questions you face from one person?
5. Approximately how many querist/persons you face daily?
6. How many of them are non-student/outside person?
7. Select question category.
 - a. Related to Academic Information
 - b. Related to Admission Information
 - c. Related to Academic Result
 - d. Related to Due/Account Information
 - e. Related to Faculty Members
 - f. Related to Classroom/Conveniences Facility
 - g. General Questions
 - h. Others

Our chatbot “FAQbot” work with a large number of information that is stored in a database. The database is being managed by the administrator of the software and some of the employees from the Administration department. The following table are shown a regular example of questions and answer conversation between a user (human) and FAQbot (computer):

Question from the user	Answer of FAQbot
Tell me about the online admission process?	In our website there is an option called admission portal, go there and fill up online admission form and then submit
How many semesters complete in one year?	Three semesters, each semester is around 4 months.
Tell me about Fall semester 2019 schedule?	Advising and registration on September 07-12,2019 class start on September 14, 2019 – class end of the semester December 15,2019 Final exam held on December 17-24,2019 And publication of semester results December 28,2019
How many campuses have in Daffodil International University	There are three campus in DIU Main campus, Permanent campus, Uttara campus
How much cost for admission BSc CSE	Total fees are only 793,000 tk for day program and 478,350 tk for evening program.
What is the rank of DIU	DIU is the 2 nd rank university among all private university in Bangladesh,2019
Is there any research center have in Daffodil International University or DIU	Yes, DIU have multi-disciplinary centers at Daffodil International University
Okay, thanks for your kind information	You are welcome! it’s my duty to provide information about DIU.

Table Name: Human and Computer conversation

3.3.1 Store of Data: We store the collected data from the subjects through the survey form. After completing the survey, the hard copy of the survey form with real data converted to the softcopy and data was inserted to a excel file for the data analysis. Our main goal is to find out a valuable statistic related to the needs of FAQbot. We are trying to find out the actual needs of FAQbot and what kind of information is most students are looking for directly to the office. The data is stored with the following methods:

1. First Stage: Hard-copy (Survey Form).
2. Second Stage: Soft-copy (Google Form and Excel File).
3. Third Stage: MySQL Database.

3.4 Statistical Analysis

Statistics is an important thing when talking about a research. A research is always based on some statistics and sometimes, research made statistic. In our project we develop a chatbot that deliver the frequently asked questions answer from some information set. Before developing such a system, we need to know how much services are served to the student and visitor by an employee. Our chat bot will have the scope to work if a good amount of information seeker is available in our varsity.

We perform a survey of total 8 people of the university whom are directly interact with student and outside visitor for the university and provide them varsity related information. They response our survey provides us some real time data. The summery of the collected data through the survey are given bellow:

1. How many hours do you work weekly?

9 responses

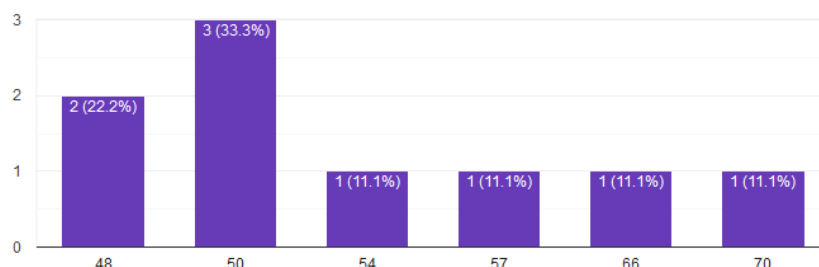


Figure 4: Summary of the survey result of weekly working hours.

2. How many hours do you work daily?

9 responses

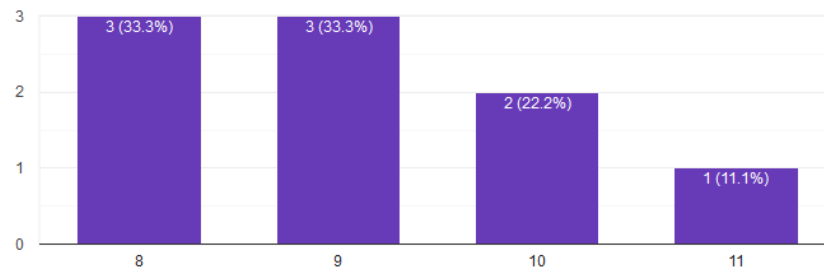


Figure 5: Summary of the survey result of daily working hours.

3. Approximately How many questions you face from one person?

9 responses

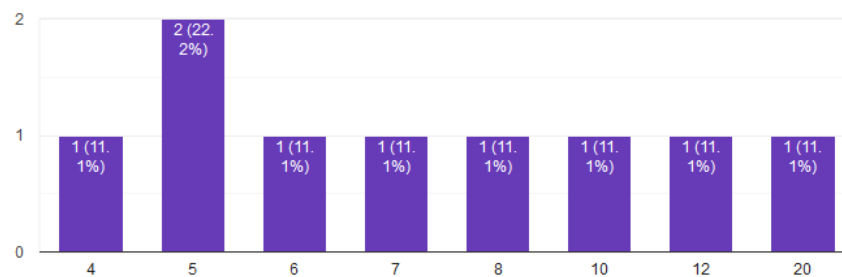


Figure 6: Survey result of number of question face.

4. Approximately how many querist/persons you face daily?

9 responses

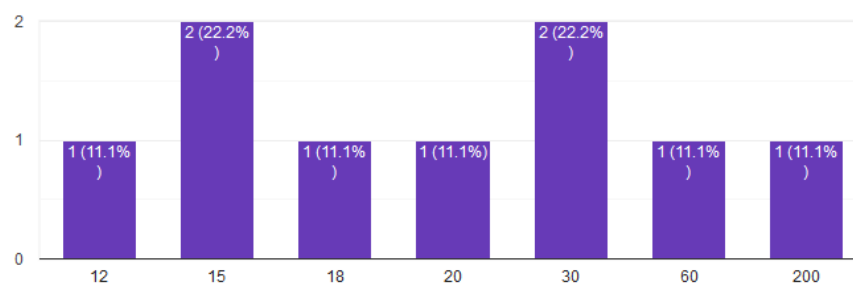


Figure 7: Survey result of how many people handle daily.

5. How many of them are non-student/outside person?

9 responses

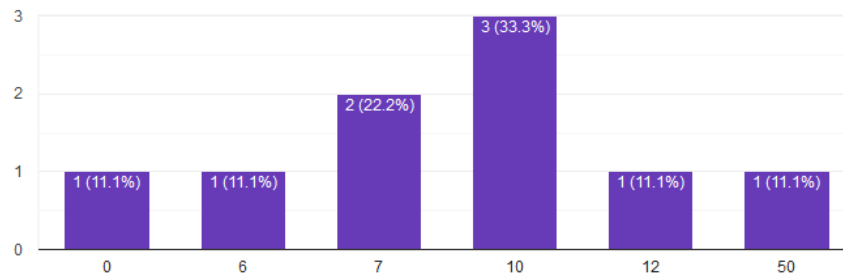


Figure 8: Summary of the survey result of outside person.

6. Select question category. (Check Tic Mark, Multiple options Can be Selected)

9 responses

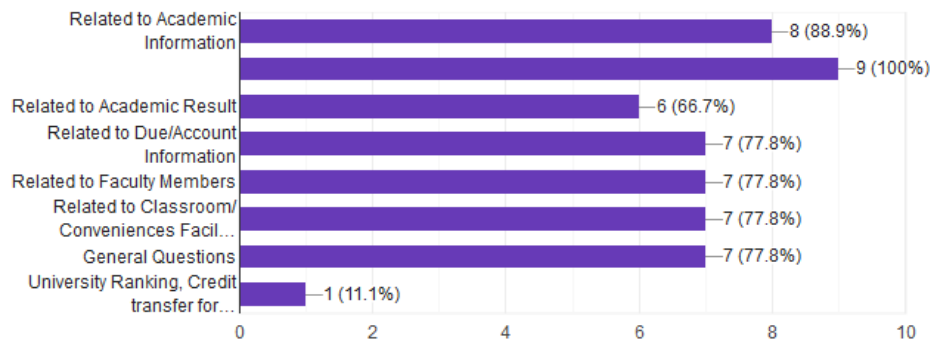


Figure 9: Summary of the survey result of category.

Calculate the average value from each field:

Serial No.	Daily (Hours)	Weekly (Hours)	Question Per Person	Person Daily	Outside Person
1	10	70	12	20	10
2	9	54	10	18	12
3	10	50	6	200	50
4	8	48	8	15	10
5	8	48	7	12	6
6	9	57	5	15	7
7	9	50	20	30	0
8	11	66	5	30	7
9	8	50	4	60	10
Average:	9.11	54.77	8.55	44.44	12.44

Table Name: Data Table of Survey.

We found the average value of an employee work with the students daily are 9.11 hours and 54.77 hours weekly based on 9 response whom work directly with the students and most of them from the counseling and admission department.

Calculating the total average question answered by a subject/employee:

Number of questions from a single person: 8.55

Number of daily people: 44.44

Daily question answered by an employee: $8.55 \times 44.44 = 379.96$ Quires/employee

So, we found an average number of questions are being answered by a single person every day.

Calculate the number of questions answered by per hour:

Number of total questions answered: 379.96

Number of daily working time: 9.11

Per hour question answered by human employee: $379.96 / 9.11 = 41.70$ questions

Daily total average person: 44.44

Non-student from the total: 12.44

So, Outside/Non-students are: $(12.44 \times 100) / 44.44 = 27.99\%$

Here, after calculating some statistics it's clearly shows that almost 379.96 questions are being asked by the students and 27.99% from the outside/non-student persons.

3.5 Implementation Requirements

Building up or implement a computer program on the basis of a research is a comprehensive work. There are some steps should be taken for implement the idea. The implementations Requirements was given us a very good idea. The main task of this part is to make the entire things easier, user friendly. The list of implementation requirements is given bellow;

1. Easily can create account
2. Easily can maintains account
3. Easily can analysis account
4. Dynamic pages
5. Simple and User-friendly

3.5.1 Finding a Platform

There is a wide range of technology and platform available to build a computer application. However, we are working to provide data through internet, So, we are implemented out complete project on Web based technology.

3.5.2 User Interface (UI) Design

User interface is the part of an application that directly interact with the user. In our chatbot, we are tried to build an easy-to-use user interface that help users to use the application without facing any major problem. The front end usually designed by two parts Back-end Application development and Front-end Application design. In present time, it has been cleared that there is a difference between Photoshop designed UI and HTML/CSS design. It has become more significant when people start working with HTML and CSS with JavaScript.

Everything that we can see is a combination of HTML, CSS and JavaScript. These include things like fonts, input forms, button, notification bar, image etc.

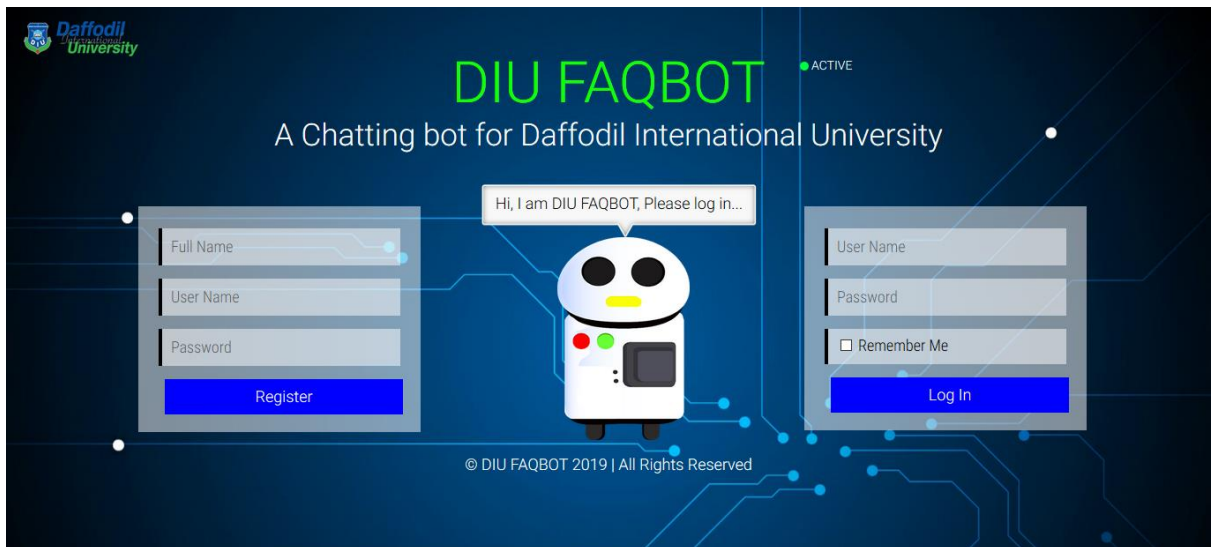


Figure 10: Landing page of FAQbot

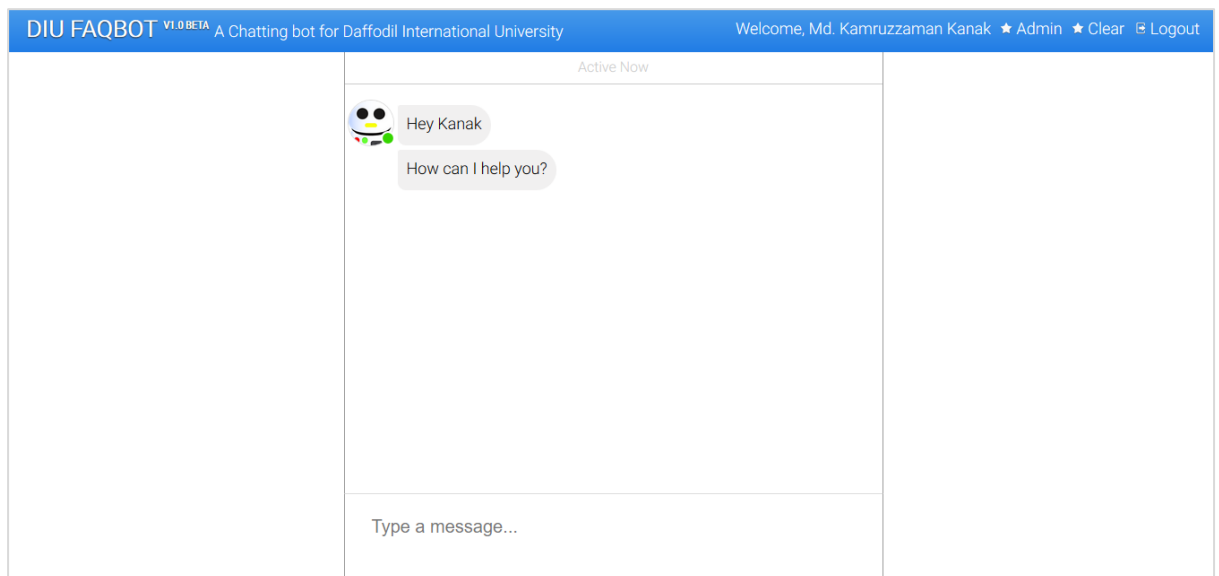


Figure 11: Chatting interface of FAQbot after login

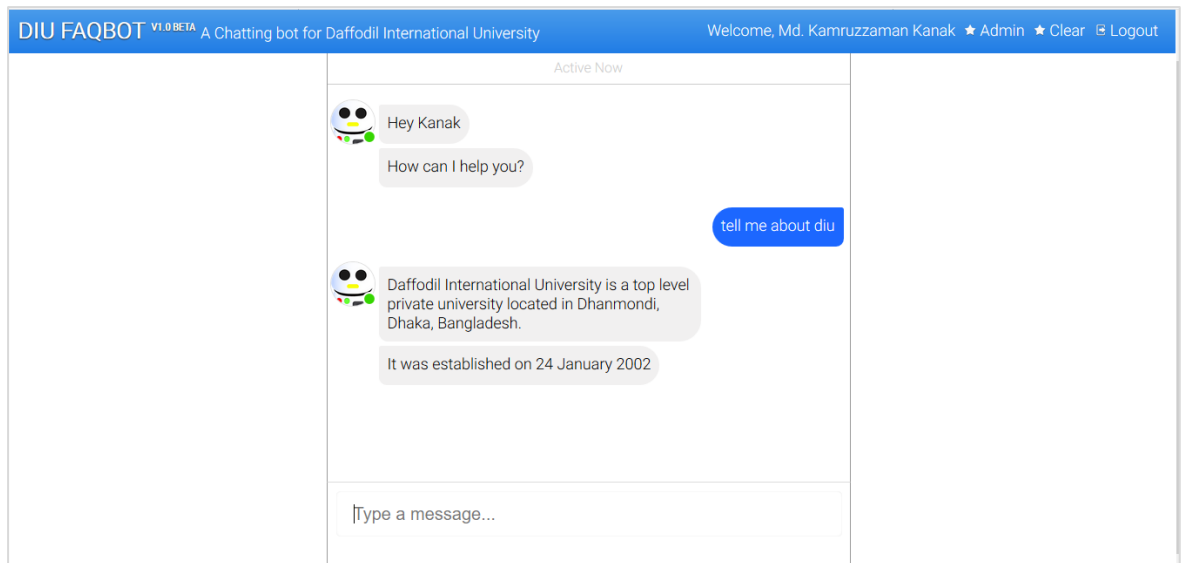


Figure 12: A conversation with FAQbot

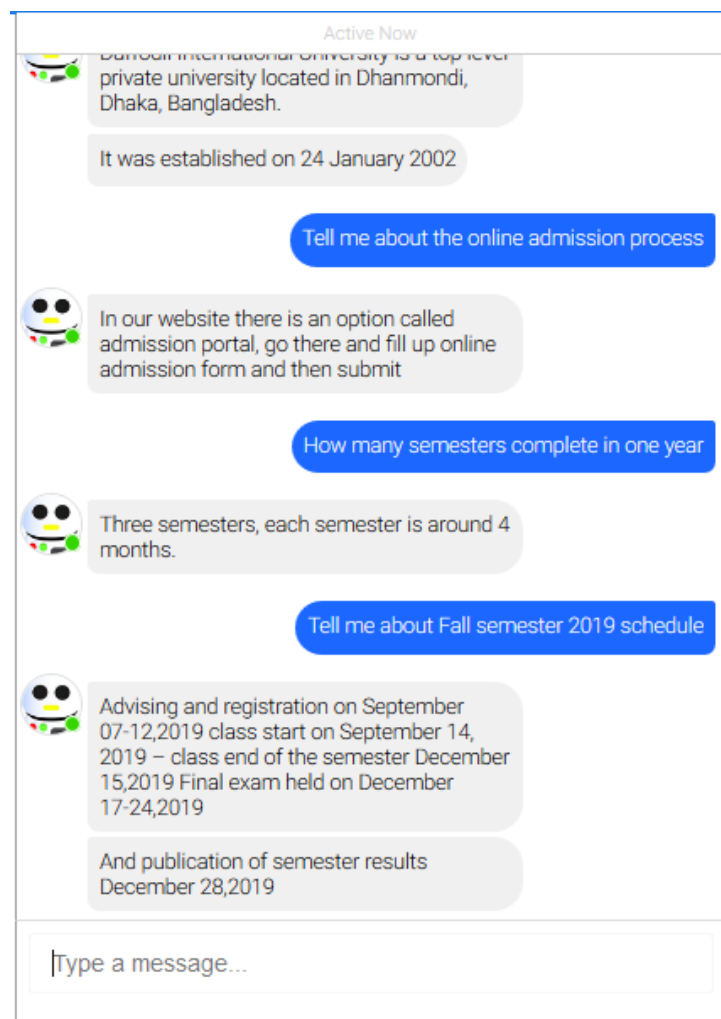


Figure 13: A conversation with FAQbot

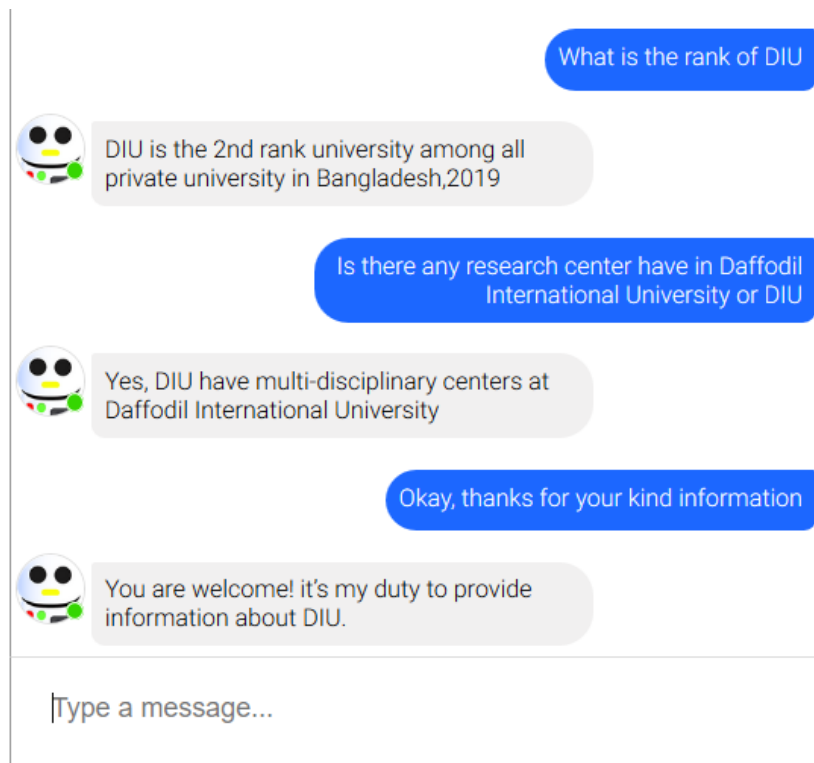


Figure 14: A conversation with FAQbot

3.5.3 Database Design

Server: 127.0.0.1 » Database: diuchatbot » Table: user_tbl

Showing rows 0 - 4 (5 total, Query took 0.0010 seconds.)

SELECT * FROM `user_tbl`

UPDATE `user_tbl` SET `user_created` = '06/04/2019 12:21:50am' WHERE `user_tbl`.`user_name` = 'demo';

Number of rows: 25 Filter rows: Search this table Sort by key: None

	user_name	user_fullname	user_password	user_created	user_power	user_ban
<input type="checkbox"/> Edit Copy Delete	demo	Mr. Demo User	demo123	06/04/2019 12:21:50am	2	0
<input type="checkbox"/> Edit Copy Delete	demo1	DemoName	demo123	03/08/2019 07:10:41pm	2	0
<input type="checkbox"/> Edit Copy Delete	Kanak	Md. Kamruzzaman Kanak	kanak123		1	0
<input type="checkbox"/> Edit Copy Delete	lablu	Lavlu	lavlu123	03/08/2019 05:58:11pm	2	0
<input type="checkbox"/> Edit Copy Delete	test	Test Name	test123	04/08/2019 01:03:04pm	2	0

Check all With selected: Edit Copy Delete Export

Number of rows: 25 Filter rows: Search this table Sort by key: None

Query results operations

Print Copy to clipboard Export Display chart Create view

Figure 15: A sample of user table in MySQL database of FAQbot

3.5.4 Use case Design

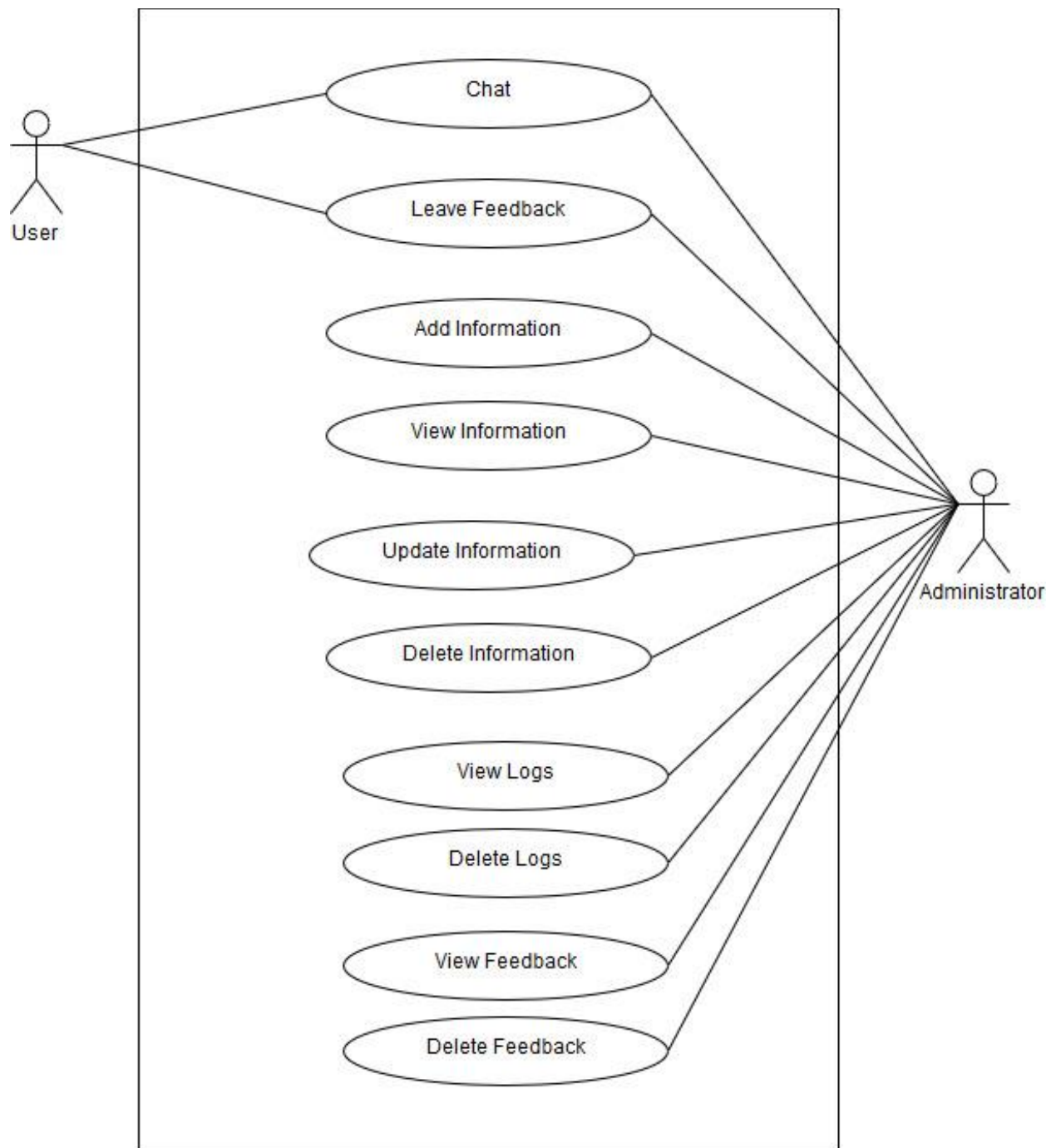


Figure 16: Use case design of FAQbot

CHAPTER 4

Experimental Results and Discussion

4.1 Introduction

This chapter is discussing about the experimental result of our research. The result describes how the system was evaluated. Every unit of the system was tested to make sure that the actual result of its operation was what we expected. Furthermore, when every unit was integrated with other units during the development it was tested again to check its operation with other system units.

4.2 Experimental Results

Through the feedback page of the system thirteen messages were received, with an overall score of 2.53. An assumption has been made through the feedback received and by the number of logs that approximately 50 people have used the system. The table below represents the categories and the percentage of questions answered by the system for each category.

Relevant	45%
Irrelevant	15%
No Response	35%
Poor Response	5%

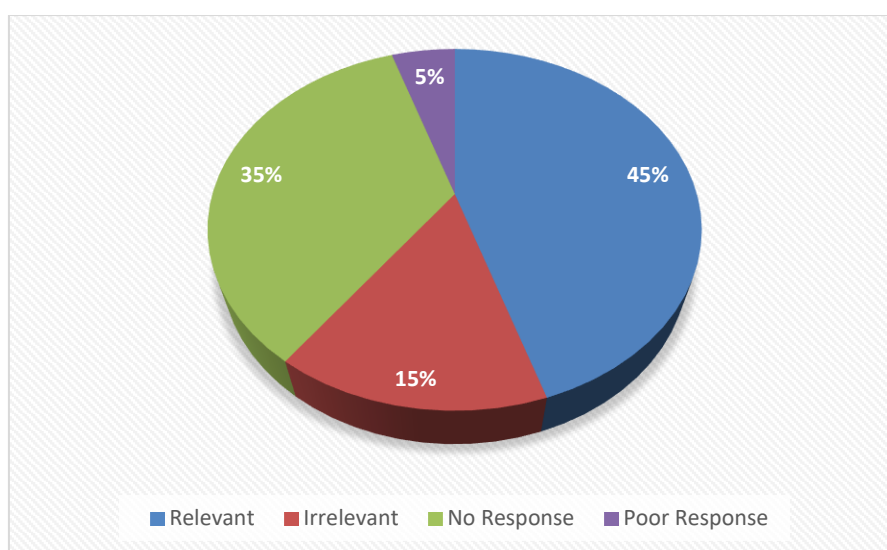


Figure 17: Pie chart presentation of Chatbot test.

For the purposes of analysis and testing, the types of questions that a user could possibly ask have been categorized into four main categories that are describe bellow.

Relevant question: A relevant question refers to a valid question. The answer exists in the database and the algorithm is able to retrieve it.

Irrelevant question: An irrelevant question refers to a question that is not related to the Daffodil International University and has not been included in the database.

No response question: A no response question refers to a valid question, however the answer does not exist at the moment in the database.

Poor response question: A poor response would be that the answer exists in the database but the algorithm would fail to retrieve it and would come back with an incorrect or irrelevant reply.

4.3 Descriptive Analysis

Every component developed passed through a performance test to ensure that the system meets certain performance requirements. Finally, when each unit was developed and tested then it was integrated with the rest of the system to do a performance test.

4.4 Summary

A number of positive points were identified. A working system was developed using JavaScript and PHP and a number of third-party libraries. The system was used by a small number of potential students and users, which left feedback and some modifications took place. An interesting part was the logs kept by the system that revealed how people interact with a chatbot and what kind of queries are being asked. The fact that the system used a spell checker is considered to be a positive aspect, since the possibility of retrieving the wrong answer due to an error is reduced. Moreover, a sentence parser was used to inform the user if a sentence is valid or not, before submitting, If the user was not happy by the answer and a log of the question and the answer is kept at this stage. Moreover, the user has the option to submit a feedback message. Another positive thing is that the web application is dynamic and has an administrator interface. An administrator has the option to log in and make appropriate changes in a number of ways. The administrator has the option to add information to the database, such as questions and answers. Information already in the system can be viewed, updated and deleted.

CHAPTER 5

Summary, Conclusion, Recommendation and Implication for Future Research

5.1 Summary of the Study

DIU FAQbot is a web-based application where a user can get answered of the frequently asked question related to Daffodil International University. We developed this project by doing a research and collect some data from the various source of varsity. Users who use this application can chat/texting to our computer program and the program can replied their answer or what they want to about Daffodil International University. We are made a database of frequently asked question, our computer program or chatbot “FAQbot” traverse the database, find the proper answer for that specific asked question from the database and then replies the answer with a chatting/messaging environment or interface. Who try to find out a proper answer until be satisfied, he/she can continue the chatting with our FAQbot and FAQbot can answered multiple time for the multiple question or queries? We find out some common “FAQ” information and design a database to store the data. Make a chatbot for traverse the database and from there it could be possible to know or find out a statistic that, which topic or which information people want to know desperately. And by this statistic, we can determine that, what kind of information is publicly searched or demanded. So that, we can work for the information to make available.

Bellow points are the main steps of our research project:

1. Research on the Frequently asked Question
2. Collect questions directly from the potential users.
3. Collect answer from the trusted source
4. Design a database
5. Store the question and answer to the database
6. Develop a web application called “FAQbot”
7. Connect the application with the database

Our research at the beginning is a short-range project and it has a huge future scope to research and development. We are just trying to development a platform by our research where a user can find trusted information that is related to the varsity.

5.2 Conclusions

A chatbot System is a very exciting topic to work. After going through the work, we faced many challenging tasks that are surprisingly related to our varsity and educational system.

We researched so many communication tools that showed us the direction how to develop our system. We interact with the students that what type of problems and questions they are facing. They were very happy to take this application as it will give them some relief in modern online era.

We talked with several teachers, took some guideline that helped us a lot to develop this application. They encouraged a lot to do this project.

Despite everything we achieved, we faced many challenges to finish this project. After all it's an online based system so in real life both visitor and student need to follow the using rules otherwise its goal will be failed.

5.3 Recommendations

We are recommending some proposal to make our research project more useful and helpful for the students and other users. The following points describe our recommended proposal.

- a. Embed our application FAQbot to the website of Daffodil International University. So that, when a visitor visits the website can also use the chatbot and get interact with the website.
- b. Put our application URL to the all possible web pages so people get know about it and can interact with the FAQbot.
- c. The news of the project or application can be published on the social media of Daffodil International University so many people can get to know about it and can be use.

5.4 Implication for Further Study

Communication and information system are always a changeable system. It develops day by day, getting better and better. Today what's look good is tomorrow becomes old. So, we have to update this system from time to time. It can useable not only for our universities but also for all the other institutes or company from all over the world. To fulfill that goal, we have several ideas to do.

1. We want to develop it for a wide range of standard company and institute.
2. We want to make this application more suitable, flexible, user friendly, keep update the users time to time.
3. Now it has only text messaging option to its user but we want to start the voice recognition technic in our application.
4. We also want to develop a mobile application for the mobile users, so anyone from a mobile device can use this application without go through a webpage.

APPENDIX

Appendix A: Project Reflection

1. Introduction

This document covers an introduction to the project including the context, a description of aims and objectives and a sound plan for completion.

2. Context

Experience has shown that applicants are more likely to choose to come to a department where they believe that they are treated as a valued individual. The opportunity to communicate with on a one to-one basis is highly valued. However, with many hundreds of applications each year, one-to-one conversations are not feasible in most cases.

Although the admissions process, basic information works properly as it is, it is very difficult and time consuming to contact a member of staff of the university to get answered of a question. However, the problem would be partially solved if the applicant could talk to a convincing chatbot, able to respond to their concerns with information about admissions, booking accommodation and what pre-sessional courses are on offer.

Appendix B: Related Issues

The system has been developed using web technologies and it is recommended to open the project directory using a text editor like “Sublime Text” or “Dreamweaver”. The project directory can be found in the CD and it is called “DIU FAQbot”

It’s not possible to run the application in a computer if the computer is not a server computer. However, it’s possible to execute the application into a local computer by installing local server software like “XAMPP” or “WAMP”. After installing a local host, the project directory must be placed the specific directory of the local host.

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[1] Facebook Messenger Bot Guide for Business available at << <https://blog.hootsuite.com/facebook-messenger-bots-guide> >>, last accessed on 12-08-2019 at 12:37 pm.

[2] Chatbot Help Center available at << <https://www.chatbot.com/help/overview/meet-our-chatbot-platform>>>, last accessed on 13-08-2019 at 10:48 pm.

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