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UECS: University Eligibility Checking System for State Universities in Sri Lanka

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Abstract: Most of the systems regarding the application submission are merged with the official web site of the education institute/university or organization. When selecting courses, the most eligible course should be mentioned as the first option in the application form. So, to make the right selection, the applicant should be more aware of the available degree programs suitable for his/her Z-Score. The requirement of the UECS system emerges as a solution to overcome the inconveniences caused during the selection of a suitable degree program when applying to the government universities in Sri Lanka. The current process of University Grant Commission (UGC) university application & the difficulties faced by the applicants are identified and the modules of the proposed system are discussed through the functional and non-functional requirements identified by analysing the existing system. The introduced application will help students to check their individual eligibly for degree programmes offered under state universities of Sri Lanka. The system is developed by using an open resource platforms such as PHP, Hyper Text Markup Language, Cascading Style Sheet. The system was able to guide the students to select most suitable degree programme and the universities which offer the degrees according to their eligibility criteria's.

Keywords: University eligibility, UGC, Z-score

Introduction

The University Grant Commission (UGC) is the apex body of the University System in Sri Lanka. The functions of the UGC are planning & coordination of university education, allocation of funds to higher educational institutions & maintenance of academic standards. Today, there are 10,390 government schools. The curriculum offered is approved by the Ministry of Education. Literacy rates and educational attainment levels rose steadily after Sri Lanka became an independent nation in 1948 and today the youth literacy rate stands 97% (Anon., 2020). The government gives high priority to improving the national education system and access to education.

In addition to the Government schools, there are 33 non- fee-levying Assisted Private Schools and 33 fee-levying autonomous Private schools (Anon., n.d.). Sri Lanka has 15 universities, all of which are public institutions (Anon., 2020). Admission at an undergraduate level to these public universities are based solely on the results of the G.C.E (A/L) Examination and the Z-score, which considers the difficulty level of the subjects. Only 6% of the students who sit the examination are admitted to the universities (Anon., 2013/2014). Due to restricted facilities admissions have become competitive. Accordingly, the selection of students to universities for the academic years are based on the Z- Scores of the G.C.E. (A/L) Examination to be held in the previous years, will be made in accordance with the

decisions subject to the rules and regulations to be issued with the Handbook on "Admission to Undergraduate Courses of the Universities in Sri Lanka". The percentage of students to be admitted to universities from those sitting for the G.C.E. (A/L) Examination for each degree program on district merit from each district and all-island merit shall be the composite average percentage of students admitted to universities through their very first attempt (Anon., n.d.).

Since the course selection should be done while referring to the handbook, it is not easy to filter the most suitable degree for one's z-score, and most of the time applicants choose the degree according to their desire. According to the UGC annual report, the percentage selected under normal provision out of qualified & applied is 17.1% & 38.8% respectively (Anon., 2011). The rest of them are unqualified may be due to the incorrect submission of the application or if they didn't possess the required results. Therefore, there is a huge need of providing support to choose the most suitable degree for each candidate to help them to get into universities in their first attempt. The existing system only provides eligibility checking while there is no filtering of degrees in the priority order when selecting for the application. Through the UGC handbook, it guides the user with instructions to fill up the application. Since the selection process is competitive, choosing the most suitable degree program for each z-score is most essential. The proposed University Eligibility Checking System (UECS) is a supportive system that can be used to simplify the overall procedure of the UGC Handbook.

Modules of the proposed UECS consists of the user Authentication Module, User Verification Module & Report Generation Module. Mainly we aim to create a dedicated web application for the system. The web application will be mainly based on the languages HTML, PHP, and CSS. We will be coding all the web pages in the web application using these three languages. The database connection will be done by using SQLite & there will be a database created for three different categories. The graphics will be created using Photoshop. And then they will be brought into the web pages to combine with the three languages. The basic part of the web application will be coded using HTML and CSS languages. But the database connection part will be done by using the PHP language.

The rest of the paper is structured as follows: A study on existing systems is given in section 2. Section 3 discusses the Methodology and section 4 discuss How the system works and finally, section 5 will provide some concluding remarks.

A Study on Existing Systems

Most of the systems developed in Sri Lanka are developed based on online application submission in both government and private universities.

UGC has developed their admission process to an online platform in recent past years.But still they ask hard copy of admissions filled by the students.They give instructions students to send the hard copy by post.Though we say it is online process we have to do a considerable part pf applying universities manually.UGC is providing a university handbook after they published AL results.Student have to buy them from the authorized book shops and go through it and select the universities that they can apply and their preference.It is a something big task as the hand book has large number of chapters.After going through the handbook we have to log the UGC site and fill the application according to their instructions.They have provide around 100 rows to select universities and courses according to students preference and eligibility.Students have to select them manually and fill them with their Unicode.

NSBM Green University is an identified national institute that allows students to engage with their higher education. The entrance to the online student registration and recruitment system is provided on the official website with a demonstration of an icon. National Institute of Business Management is also consisting of an online application form but still, it didn't have an eligibility checking option (Anon., n.d.). The online applying facility in NIBM is limited for several course modules. Since NIBM has not indicated any direct link to apply online, system users have to search for the system (Anon., n.d.).

The system implemented by NSBM and NIBM is having application forms to be filled in a very abstract way (Anon., 2009) Normally, details regarding the courses are provided in the web site as a separate web page rather than providing carrier guidance. The Providence of carrier guidance is an added advantage for the system's usability. The carrier guidance module is provided on the website of the ESOFT higher education institute. ESOFT doesn't comprise online application submission but it comprises a web-based system to place inquiries for a particular course program (Anon., n.d.).

The Open University of Sri Lanka is another national body that comprises of online application submission system initiated through the official website of the university. The secureness of the entire application submission system is at a high standard. An account must be created to access the application to be filled. And then the system themselves allows a secure server to pay the application fee online. This increases the usability, productiveness of the entire system of application submission (Anon., 2014).

CINEC is a leading private university in Sri Lanka. It doesn't have online admission criteria and it only consists of an inquiry system and the application for admission is available on their website (Anon., n.d.).

UNIVOTEC (University of Vocational Technology) is a government University which provides technical and vocational education for students. They provide their admission through an online process that can follow easily for students (UNIVOTEC, n.d.).

The KDU is the only university in the island which offers higher education opportunities for both military and civilian personnel in a disciplined environment. Kotelawala Defense University is the only university which can check the eligibility as a part of online application submission. But still, it isn't able to provide a prioritized list of degree programs according to user provide details (Anon., n.d.).

Methodology

A. The architecture of the system

Figure 1, The System Architecture illustrates the generic flow of handling the main components of the proposed system of UECS. Overall System Architecture segmented the

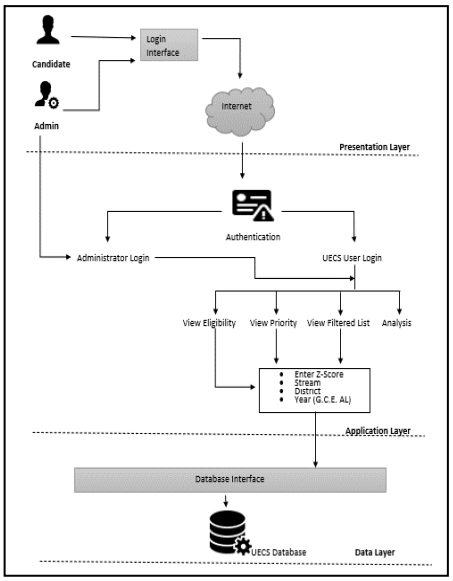

Figure 1: Overall System Architecture

whole system into three layers consecutively and all the three layers are interconnected.

The application layer, Data layer, Presentation layer are the three segments.

The application layer is focusing on the logic of how the users interact with the application while the Data layer is responsible for evaluating the method of how the data is stored in the database server. The presentation layer evaluates the details about how the user interacts with the interfaces of the proposed UECS.

Each general user of the system needs to be logged on to the system before using the system. Each user will be provided with a unique username and password to access the system by the administrator. When they are entered in the login interface those values will be verified using the data in the database and redirect the user to the system to achieve the results as user required. When the user is logged into the system he/she can request for their individual need by providing necessary information by filling the form. After that, the updates are stored in the database and the output will be received as required. The degree programs, the user is eligible for are displayed according to the most priority.

The UECS will have one centralized database in the server. MySQL database will be used for this purpose. Conceptual Data Design of the proposed system of UECS gives a detailed view of the database structure. Designing the database for particular applications is categorized and is denoted with supertype and subtype relations. Each table depicts the relevant attributes to the particular entity which is identified at the conceptual database design of the system.

B. Interface Design

To enter the given options of UECS, users need to first register in the system. When submitting the username and password database checks the validity of the entered username & password. Then it checks the user levels & provides the sign-in window. After a successful login, the user gets the home window. Figure 2 depicts the main home page when a user gets interacted with before logging in to the available options.

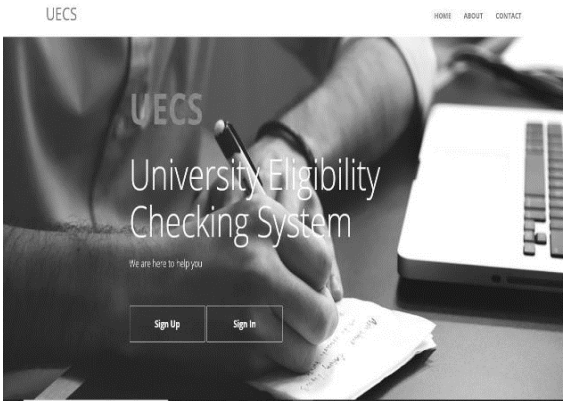

Figure 2: Home page UECS

It consists of a scroll up window while the menu tab displays above in return link back to the sub-windows which contains home, about & contact inside the home window. Once the user is login to the system, he is free to use any of the options provided by the website.

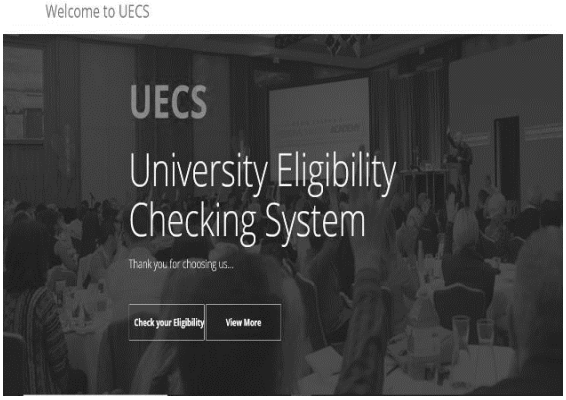

Figure 3: Home page after successful login

Figure 3 shows the main interface of the system after a successful login. Figure 4 shows the available options for the user to be select according to his/her wish.

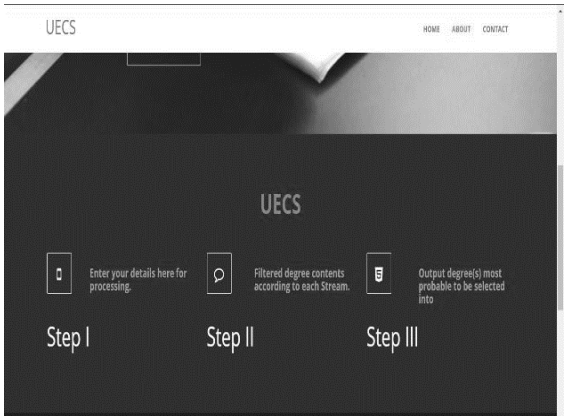

Figure 4: Options to be selected

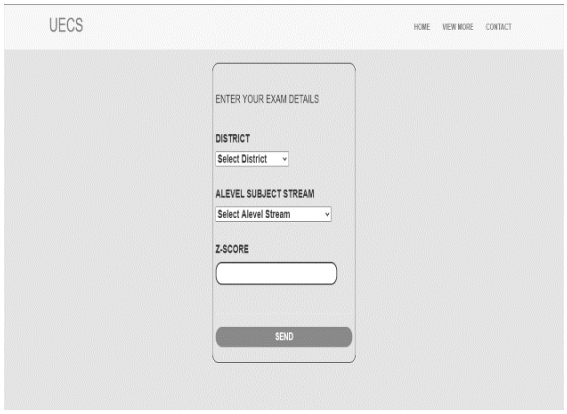

Figure 5: Form

Once he/she submits the form (Figure 5) after completing, it will be stored in the database and the prioritized degrees will be sorted out from most probable to least probable order, that he/she is eligible with. UECS will contain the main 3 sections namely "Output degrees most probable to be selected into", "filtered degree contents" & "Background analysis". Each section will have specific functions under them. The background analysis part will make the user get a clear idea about how the selections are made during the previous years and how the priorities are given in each university.

All the interfaces & forms needed which are described above are designed using HTML to produce user-friendly interfaces.

The protocols used in requirement gathering and the justification of using those protocols are analyzed so that the data gathered can be used appropriately in designing and developing the system. The modules of the proposed system are identified through the functional and non- functional requirements identified in analyzing. The proposed UECS aim is to deliver a system that is eligible in maximum user-friendliness through efficiency, accuracy, reliability achieving through the functionality of the system.

Information regarding the existing procedure is very much essential for the achievement of the goal of the proposed project. The following are the fact-finding techniques used.

- Interviews
- Questionnaires
- Documentary reviews

Information regarding the current procedure of university application submission was gathered by interviewing the relevant parties. An initial interview is carried out with the Deputy registrar of the examination department of UGC to understanding the process of the existing overall university applying process. While a Questionnaire is made to find the opinions of the applicants. Method of categorizing the applications and the selections made in previous years are emphasized through the documentary review.

Candidates who have the minimum qualification can apply for the university but the selecting of degrees in the most appropriate order is important because it may conclude that he/she is being selected for a government university or not. The applicant should know how the selections are made and this knowledge can be gain by referring to the UGC handbook as all the instructions are noted. Selecting a prioritize list of most eligible degrees while referring to the UGC handbook was somewhat difficult and time- consuming. If the applicant didn't have any idea about the previous year's selections, then he/she may not able to fill the application as required by the UGC

(Anon., 2019). Due to the incorrect submission of applications, most of the students are unqualified for the university entrance. Once the degree is mentioned it is not allowed to change the order of the list of degree programs the applicant is willing to apply and now this is cleared up to some extent but if a certain candidate wants to make a correction on their application form they have to inquire it and wait for an acceptance email and it is time-consuming.

The outcome is analyzed as quantitative measurement and get the feedback about the prevailing system which we need to pay our attention when designing the UECS.

How the System Works

Figure 6 shows how the system interacts with each module. First, the user must create a login if he wants to use the platform. Then he can view three options as "Output degrees most probable to be selected into", "filtered degree contents" & "Background analysis". Once the user clicks on either the first or second option the system will guide them to a user form where the user needs to fill in all the details and submit.

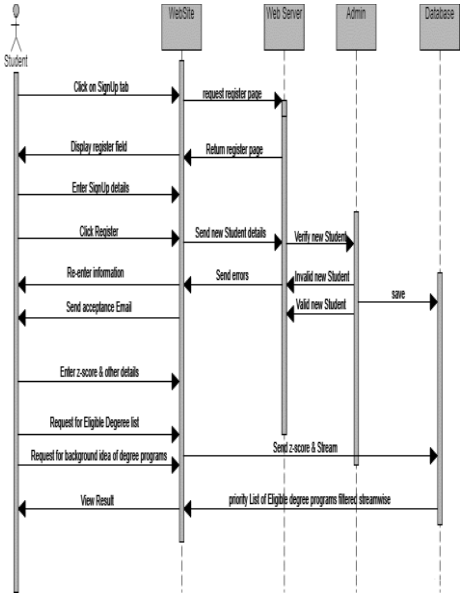

Figure 6: Order of interactions of the UECS operations

The submitted form is get stored into the database and filtered according to the user requirement which was requested as earlier when selecting the options. The functionalities of the system can be viewed below.

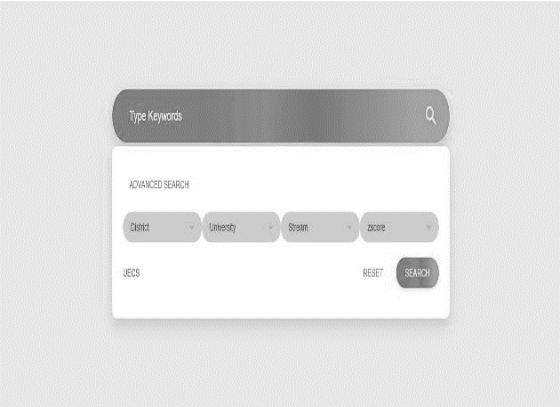

Figure 7: Advanced search

After entering the form details it will direct to the above form shown in figure 7 and it will direct the user to make the selection process more user friendly. He/she can differentiate more the list of eligible degrees by filtering them according to university, district, and stream. That is if one person is like to apply for a particular university from a particular district through a particular stream then the degrees he/she is eligible can be viewed in this way.in this option, the filtered list of eligible degrees is again subjected to another filtering process to view the best-sorted list from the system to user's satisfaction which is shown below in figure 8.

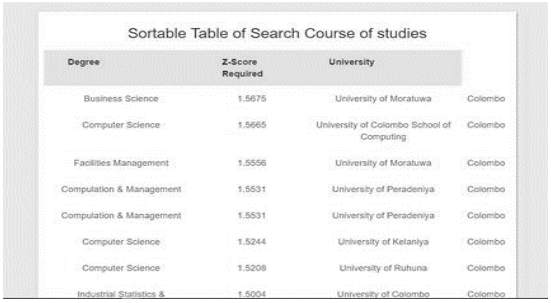

Figure 8: Sorted form of list of degrees

Rather than this he/she can directly have the eligible list of prioritizing the list of degrees as shown in figure 9 below.

Processing the advanced level results of the ever-increasing youth requires massive

amounts of manpower, resources and it consumes time, time that industries in the economy provide so little of. Taking advantage of this the private universities can recruit much of the candidates by registering students long before the UGC provides registration dates (Silva, n.d.). Rejection of University applications is a common problem seen today which can be caused by several reasons, all contributing to the candidates' frustration and causing them to overlook the fact that he or she could have been selected and make them select a private university (R.P.Gunawardane, 2017). If the students can know beforehand if they have the chance of being selected into a government university, it would help greatly in making future decisions. Our website does just that by taking user Streams and Z-scores and providing them with their eligible degree programs and showing them all the options, they have to start their careers.

Further enhancement proposed on the system will expand the planned scope of the development. The implemented system of UECS is planned to further develop by expanding the system to all the streams that students face AL. and supposed to develop a mobile application.

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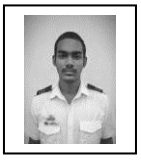

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